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New Species and Records of American Terrestrial Isopods

BY

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NEW SPECIES and RECORDS of AMERICAN TERRESTRIAL ISOPODS

By STANLEY and DOROTHEA MULAİK

While collecting various arthropods during the past ten years, the authors accumulated a sizable series of Isopods. This paper is a report of a study of certain genera in which seven new species are designated as new and of some species whose ranges are considerably extended.

As pointed out by Van Name (1936), the great majority of specimens to be taken by the average collectors will be limited to a few species. However, many rare as well as new species will be the reward for more exacting collectors. Some of the new species described in this paper were taken during the past two years while on field expeditions for the University of Utah arranged through the kindly efforts of Dr. R. V. Chamberlin. Others were taken earlier by the authors while residing in Texas. All specimens described here are now deposited in the collections of the University of Utah.

Van Name (1936) arranged the species of the genus *Cubaris* in five groups based on the structure and location of the coxopodite cleft and on the degree of extension of this cleft into a sulcus along the first thoracic segment. In this paper, the new species of *Cubaris* considered fall into two of the groups. *Cubaris arizonicus* and *Cubaris tanneri* belong in Group II which has the coxopodite cleft scarcely extended forward as a sulcus. *Cubaris apacheus* and *Cubaris chamberlini* belong in Group I in which the coxopodite sulcus is well developed along the entire margin of the first thoracic segment.

Two species of the genus *Ligidium* and one species of *Trichoniscus* are here described as new.

Family LIGIIDAE

LIGIA Fabricius, 1798

Ligia olfersii Brandt, 1833

Ligia olfersii Brandt, 1833, "Conspectus monographiae Crustaceorum oniscodorum Latreille."

TEXAS: Corpus Christi, numerous specimens, June, 1937.

LIGIDIUM Brandt, 1833

Ligidium mucronatum Mulaik, new species

Pl. IV, ff. 53-56; Pl. V, ff. 57-60

Length of male 7.2 mm., of female 6.0 mm.; width of male 3.4 mm., of female 2.7 mm. The thorax is twice the length of the abdomen. The body surface is smooth. The head width is two and a half

times the length; the frontal margin is very little sinuate. Viewed from above or in front, the eye patch forms a continuous outline with the head. The transverse groove is deep and short, not reaching the eye by one third its longer diameter. The frontal groove is very weakly defined, and extends but a short distance from the dorsal edge of the eyes. The eyes are fairly large, composed of about eighty ocelli. The eye interspace is sixty per cent of the head width due to the larger eyes.

Antennae are fairly thin and reach the rear of the third somite. The flagellum is composed of twelve segments, and is two and two-thirds as long as its peduncle. The first antenna is well developed and reaches to the second joint of the other.

The inner process of the uropod is stout, curved on its inner edge. Exopod is five-sevenths of the endopod. The telson is notched at the postero-lateral border. It is twice as wide as long. The second pleopod of the male is abruptly constricted into an elongate mucronate tip.

The postero-lateral borders of the first three thoracic somites are rounded, the fourth is subsquare, the remaining three are acute rounded. The abdominal segments I and II are subequal; III and IV about one-third longer, and V two-thirds longer.

The ground color is brown with numerous pale yellow blotches so distributed as to leave a more or less irregular median and lateral longitudinal stripes. Legs are pale yellow with numerous brown blotches. The front of the head is uniformly dark, the top is mottled.

The distinguishing features of this species are numerous. The most obvious are the rear of the telson outline, the mucronate tip of the second male pleopod, the much wider head and small size. The figures will make the more important characteristics clearer.

LOCALITIES: Male holotype, female allotype, and two female paratypes were secured under a well rotted log near Gonzales, Louisiana, and female paratypes in Roosevelt State Park in Louisiana in August, 1940. These specimens are very active runners so that a number of individuals escaped by their agility.

***Ligidium lapetum* Mulaik, new species**

Pl. V, ff. 61-66

Length of the body of male, 6.3 mm.; width, 2.4 mm.; length of female, 9.1 mm.; width, 3.5 mm. Head width is three and a half times the length. The eyes are small, upper edge extends but little higher than the upper edge of the antennal socket. Viewed dorsally, the eyes are contained in the head transversely to the midline about four times; the eye interspace is eighty per cent of the head width. The ends of the dorsal groove are removed from the eyes by about their dorso-ventral diameter. The rear margin of the eye is concave. The inner plate of the first pair of pleopods in the male is slightly produced at the tip and provided with several long apical bristles. The second endopod of the male is elongated and provided with an oval projection near the tip along the inner edge. The last male

pleopod has the posterior corner elongated into a mucronate process directed dorso-caudally. The rear border of the telson is broadly rounded with a slight angle on each side somewhat resembling that found in *L. hypnorum*. The uropoda (without the terminal bristles) are about equal in length to the metasome. The inner branch is one and a half times as long as the peduncle measured on the inner side. Outer branch is but little shorter than the inner (9-10).

The first four segments of the thorax are subequal. The epimera are not distinctly separated on any of the segments. The brood pouch contained about twenty young.

This species differs from *L. mucronatum* in the much smaller eyes, the very different pleopoda II of the male and in the much shorter telson. It differs from *L. gracile* by the placement of the eye nearer the rear margin of the head, in the details of the second male pleopod and in the distribution of the fine filaments of the first exopods.

LOCALITIES: Male holotype, female allotype and two female paratypes were secured under well rotted logs ten miles east of Hammond, California at about 3500 feet elevation in the Sierra Nevada Mountains in March, 1941.

Family TRICHONISCIDAE

TRICHONISCUS Brandt, 1833

Trichoniscus humus Mulaik, new species

Pl. IV, ff. 42-52

The body is rather narrow, length of the female is 4.7 mm., of the male 4.2 mm.; width of the female 1.5 mm., of the male 1.2 mm. Numerous acute pointed tubercles are scattered over the head and body. The color is a pale salmon which fades to a pale yellow in alcohol. The abdomen is abruptly narrower than the thorax.

The dense black eyes are small, about 0.6 mm., composed of a single lens. The antennae are fairly thick with four articles in the flagellum at the tip of which is a tuft of fine bristles. The peduncle is about one and a half times the flagellum. The scale-like spines of the antennae are in tufts. The head is moderately arched. Viewed from above, the lateral lobes are scarcely discernable.

The telson is more than twice as wide as long, truncate, the posterior margin is slightly convex. The inner ramus of the uropods bears two spines. The pleopods bear fine hair-like bristles along the margins as figured. In the male the second endopod has on its tip four fine bristles which are about two-thirds the length of the pleopod. The legs are provided with numerous stout spines. The last segment bears a tuft of fine bristles at the extremity which merge into a single comb-like row along the dorsal surface extending proximally for two-thirds the length of the segment. The details of the maxilliped are as figured. The antennal lobe is small.

This species can be distinguished from *T. halophilus* by the details of the leg VII, broader male pleopod II, by the small antennal lobe, and the placement of the inner ramus of the uropods farther from the outer.

LOCALITIES: Male holotype, female allotype, and eight paratypes were taken west of Eunice, Louisiana in August, 1940. These were found in the humus beneath well rotted logs.

PROTRICHONISCUS Archangeli, 1932

Protrichoniscus heroldi Archangeli, 1932

Protrichoniscus heroldi Archangeli, "Isopodi terrestri raccolti dal Prof. Silvestri nel Nord-America."

CALIFORNIA: Males and females were taken ten miles east of Hammond at about 3500 feet elevation in humus under well rotted logs.

Family ONISCIDAE

ALLONISCUS Dana, 1856

Alloniscus perconvexus Dana, 1856

Alloniscus perconvexus Dana, 1856, "Catalogue and description of Crustacea collected by Dr. John L. LeConte." Proc. Phila. Acad. of Nat. Sci., VII.

CALIFORNIA: Six miles west of Watsonville in sand bank above high tide, and at Aptos in March, 1941.

PORCELLIO Latreille, 1804

Porcellio scaber Latreille, 1804

Porcellio scaber Latreille, 1804, "Hist. Nat. des Crustaces et Insects," VII.

CALIFORNIA: Six miles west of Watsonville, Isabella, 25 miles east of Gilroy, Aptos, Kernville. Many specimens were taken in March, 1941.

UTAH: Many specimens were taken in 1940-41.

Porcellio laevis Latreille, 1804

Porcellio laevis Latreille, 1804, "Hist. Nat. des Crustaces et Insects," VII.

CALIFORNIA: Many specimens were taken at Marshallville, Jacumba, Coyote Wells, six miles west of Watsonville, Visalia, West of Banos, and Jackson in March, 1941.

ARIZONA: Numerous specimens were taken at Theba, Patagonia, Litchfield Park, Phoenix, Nogales, Tellison, and Yuma, in December, 1940 and January, 1941.

UTAH: Specimens were taken in numerous places around Salt Lake City and Bingham during 1940 and 1941.

TEXAS: Several specimens were secured at Laredo in November, 1934 and Clyde Rutherford secured about fifteen from Jourdanton in December, 1935.

PORCELLIONIDES Miers, 1877

Porcellionides pruinosus (Brandt), 1833

Porcellio pruinosus Brandt, 1833, "Conspectus monographiae Crustaceorum Oniscodorum Latreillii."

CALIFORNIA: Numerous specimens were taken at Mt. Springs, Cardiff, Isabella, and south of Marshall during March, 1941.

ARIZONA: Numerous specimens were taken from Olberg, Litchfield Park, and Patagonia in January, 1941.

NEW MEXICO: Several specimens were taken near Clayton in September, 1939.

TEXAS: Many specimens were taken between 1935 and 1940 from Edinburg, McCook, Houston, Falfurius and Rio Grande City.

Porcellionides virgatus (Budde-Lund), 1885

Metaponorthus virgatus Budde-Lund, 1879, (nomen nudum); 1885, "Crustacea Isopoda Terrestria per familias et genera et species descripta."

MISSISSIPPI: West of Forest, several specimens; south of Wiggins, several specimens all taken in August and September, 1940.

TEXAS: Numerous specimens were taken at McCook, Kerrville and northwest of Uvalde during 1934 to 1940.

Porcellionides mulaiki Van Name, 1936

Porcellionides mulaiki Van Name, 1936. The American Land and Fresh Water Isopod Crustacea. Bull. Amer. Mus. Nat. Hist. LXXI.

TEXAS: Edinburg, May, 1936 (Waite, Coll.), Alice, December, 1940: numerous specimens.

RHYSCOTUS Budde-Lund, 1885

Rhyscotus texensis (Richardson), 1905

Hypergnathus texensis Richardson, 1905, "A Monograph of the Isopods of North America."

TEXAS: Edinburg, female; Harlingen, male; Rio Grande City, male and female all taken in 1935.

Family ARMADILLIDIIDAE

ARMADILLIDIUM Brandt, 1830

Armadillidium vulgare (Latreille), 1804*Armadillo vulgare* Latreille, 1804, "Hist. Crust.," p. 48.

TEXAS: This Isopod was taken in many localities in Texas from Houston on the east to Langtry on the west, and from Dallas south to Edinburg. It is, however, rather uncommon in the southern part of its range.

UTAH: The most westerly published records noted are for Colorado. It is common in the Salt Lake City region and numerous specimens were secured. These make a new record for the state.

CALIFORNIA: Twelve miles south of Los Gatos, Aptos, and twenty-five miles east of Gilroy. These are the first known records for California.

LOUISIANA: Numerous specimens were taken at New Orleans and Lake Charles in June, 1937, and at Shreveport in August, 1940.

MISSISSIPPI: Several specimens were taken at Eunice in August, 1940.

Family CUBARIDAE

CUBARIS Brandt, 1833

Cubaris apacheus Mulaik, new species

Pl. I, ff. 1-14

The body is highly arched, head is rounded in front. The posterior portion of the thoracic segments are slightly but not abruptly elevated above the anterior part which fits under the preceding segment.

The head is about a third as long as wide, and viewed from above, the anterior is convex, the posterior is concave. The upper border of the epistome is arched and upturned forming a narrow groove back of it. The eyes are quite small with about eight ocelli. The first antennae are minute, the second stout and rather short. The flagellum is composed of two articles and together they are about two-thirds as long as the peduncle. The distal article is nearly three times the proximal one. The coxopodal cleft at the postero-lateral border of the first thoracic segment is distinct, the external border forms an angle of about ninety degrees; the apex is broadly rounded; the internal border extends caudally beyond the external and forms rather an acute angle. The sulcus arising from this cleft is distinct along the entire ventral border. Since the internal border of the sulcus extends ventrally below the edge of the external border, the sulcus can be seen either from a lateral or a ventral view. The external border is slightly rolled outward. Separating this border from

the rest of the segment is a deep groove formed by a depression in that area running from the anterior edge to nearly the posterior edge. The anterior of the second thoracic segment fits into the cleft of the first when the body is rolled up. The coxopodal cleft at the posterior-ventral angle of the second thoracic segment is distinct. The internal border is produced caudally by an acute angled process.

The telson is moderate, constricted somewhat near the middle, and arched or domed outward so that this area is back of the external border. From a dorsal view, the telson, uropods, and ends of the fifth abdominal segment are obscured by the middle of the fifth abdominal segment which also is bulged caudally. The uropods are normal, the inner branches oval and very short, reaching to about the middle of the telson. The external branches are minute, set in depressions below the narrowest point of the telson, and removed from the border of the telson a distance equal to the diameter of the depression. The legs are fairly stout and with few spines.

The larger specimens when extended are about 6 mm. long and 2 mm. wide.

LOCALITIES: Alice in Brooks County, Texas, male holotype, female allotype and numerous male and female paratypes were taken in December, 1939. Numerous paratypes were taken in August, 1939 ten miles south of Kerrville, and several at Kerrville in Kerr County, in July, 1939, and several specimens from 32 miles southeast of Laredo in Zapata County, all in Texas.

***Cubaris chamberlini* Mulaik, new species**

Pl. II, ff. 15-21

This species is very close to *Cubaris apacheus*, new species. The single specimen is a male, but it has definite points of difference. The specimen is about 7 mm. long and 3.5 mm. wide. The head is three times as wide as long. The eyes are small, rather indistinct, and with about six ocelli.

The body is highly arched, ovate. The epimera does not flare out. The anterior end is more rounded than the posterior. Viewed from above, the telson, uropods and lateral margins of the abdominal segments are visible, while in *C. apacheus* the posterior margins are obscured by the bulging base of the telson and uropods.

The coxopodal sulcus extends the entire length of the lateral margin of the first thoracic segment. The posterior angle of the internal border of the coxopodite cleft does not extend appreciably beyond the external border. The internal border is acute, the external forms almost a right angle with the apex rounded in each case. Viewed from the side, the sulcus cannot be seen as in *C. apacheus*, nor is there any appreciable groove separating the external border of the sulcus from the rest of the segment as in the related species. The ends of the first thoracic segments are not visible from a dorsal view since the broadest portion of this segment is some distance from the ends.

The telson is wider than long, its narrowest part is about a fourth of the distance from the end. The external branch of the uropod is minute, set in a depression located below the narrowest part of the telson and about the diameter of the depression from the border of the telson.

Viewed from in front, the eye masses are raised above the general line of the head. The upper border of the epistome is turned up and forms back of it a deep groove. This border is arched. Viewed from above, the front of the head is very slightly convex. The frontal line is about three-fourths as long as the head width.

LOCALITY: Male holotype was secured at Edinburg, Hidalgo County, Texas, in June, 1935.

***Cubaris arizonicus* Mulaik, new species**

Pl. II, ff. 22-28; Pl. III, ff. 29-30

The body is highly arched, truncate in front, the end of the abdomen is highly arched and lightly oblique. The body surface is rather smooth, though under higher magnification fine granulations are visible. The exposed portion of the thoracic segments are slightly but not abruptly elevated above the portion fitting under the preceding segment. The legs are moderate in length.

The head is nearly four times as wide as long. Front of the head viewed from above forms almost a straight line. The upper border of the epistome is arched and upturned, back of which a thin narrow groove is formed. The eyes are quite small with about fourteen ocelli. The second antennae are moderate, the terminal article of the flagellum is about two and half times the proximal one. The first antennae are minute, composed of three segments (0.3 mm.).

The coxopodite sulcus of the first thoracic segment is very short, being limited largely to the postero-lateral portion, extending forward less than a fourth of the lateral margin. The lateral border is somewhat thickened but not flared outward. Separating this border from the main part of the segment is a deep cleft-like groove which extends for most of the length, not involving the rear border, and not deeply in the front border. The two sides of the notch at the rear angle do not differ greatly in size. The coxopodite process of the second segment is distinct, forming a cleft at the rear margin.

The telson is moderate, the end is about two-thirds as wide as the base, the middle is moderately constricted. The inner branches of the uropoda are very short, not reaching the middle of the telson. The outer branches are minute with about five fine bristles. These are set in the inner edge of the depression formed by a small lapet-like process of the uropodal base which extends over the telson. The length of the largest specimens is about 11 mm.

LOCALITIES: Male holotype, female allotype and about fifty paratypes were taken west of Robles, one female and one male paratype from Nogales, and two female paratypes from Olberg, all in Arizona were taken in December, 1940. Five paratypes were taken at Rock Springs in Arizona in September, 1939.

Cubaris tanneri Mulaik, new species

Pl. III, ff. 31-39

The body is convex, oblong oval, and comparatively smooth. The head is transverse and half as wide as the posterior of the first thoracic segment. Viewed from above, the front of the head forms nearly a straight line, the lateral edge projects more than the middle. The posterior margin of the head is distinctly concave. Viewed from the side, the front of the head is rounded and its curvature continues that of the first thoracic segment. The eyes are small and composed of about eight ocelli. The second antennae are rather slender, the first antennae are minute.

The first thoracic segment is very concave at the sides and the lateral margins are flared outward as are the others to a less degree. The segments are all distinctly flexed backward on the sides. The terminal segment of the body is about as broad as long. The external ramus of the uropod is longer than the others of this genus described in this paper. It is set in a depression along the internal margin and extends over the telson. The internal branch is narrow and elongate. The legs are weak and moderately spined.

The coxopodal cleft of segment I is small and is scarcely continued along the lateral margin; the two sides of the cleft are subequal. The coxopodite process on segment II is considerably removed from the posterior margin, and is small and flattened.

The color of this specimen in alcohol is a reddish-brown. There are a few paler markings scattered over the body, but these make no conspicuous pattern. This species is closely related to *Cubaris gigas* Miers, but differs from it in having smaller eyes with about a third as many ocelli, and in the proportionately higher head. The narrowest part of the uropod is nearer the posterior end.

This species is named for Mr. H. J. Tanner of Edinburg, Texas, who facilitated many collecting trips.

LOCALITY: Female holotype was secured at Edinburg, Hidalgo County, Texas, in April, 1935.

Cubaris microphthalmus (Arcangeli), 1932

Armadillo (Diploexochus) microphthalmus Arcangeli, 1932,
"Isopodi terrestri raccolti dal Pro. Silvestri nel Nord-America."

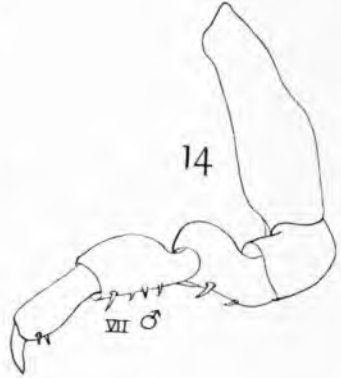
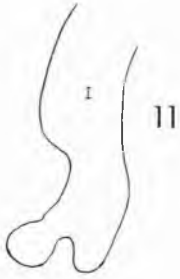
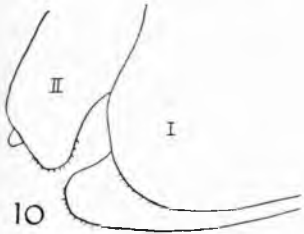
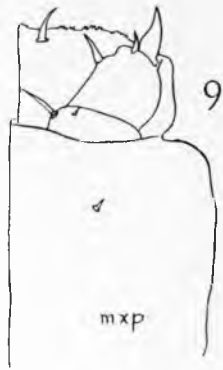
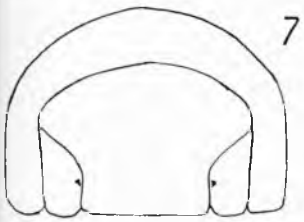
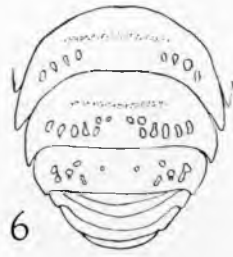
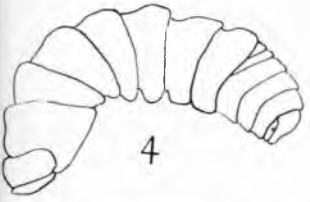
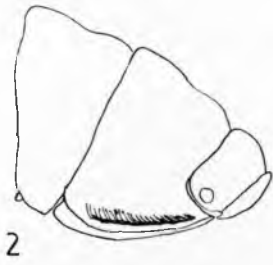
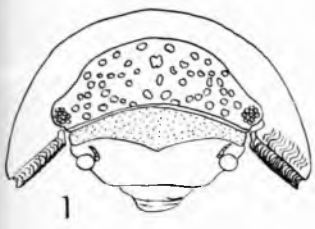
CALIFORNIA: Several females were taken ten miles east of Hammond, Tulare County; two males and two females came from nine miles north of Woodlake; three specimens from six miles west of Jackson, and three specimens from twelve miles northeast of Hammond. All were found in well rotted logs and the humus beneath them.

Figures and Explanations

I.

Cubaris apacheus Mulaik, new species.

1. Head and first thoracic segments, anterior view.
2. The same, lateral view.
3. Head and segment I, dorsal view.
4. Body, lateral view.
5. Posterior part of body, lateral view.
6. Posterior part of body, dorsal view.
7. Posterior of body, posterior view.
8. Posterior body segments, ventral view.
9. Left maxilliped.
10. Ends of first two thoracic segments, lateral view.
11. Section through epimera of first segment.
12. Left coxopodites of segments I and II, ventral view.
13. Second endopodite of male.
14. Leg VII, male.



II

I

I

♂

mxp

♂

VII ♂

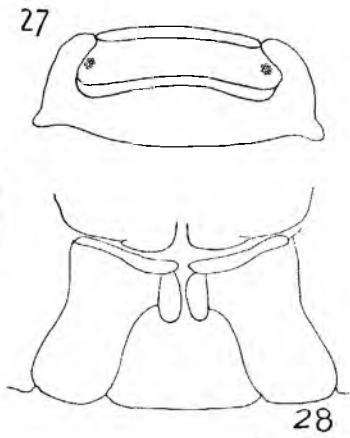
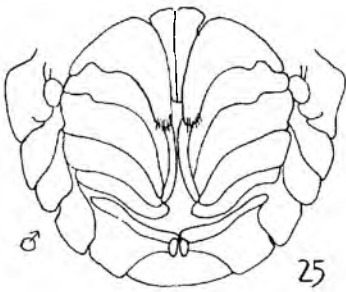
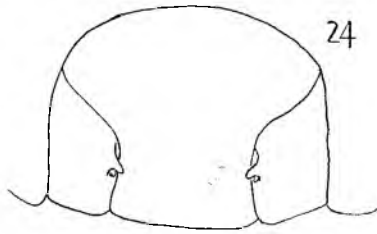
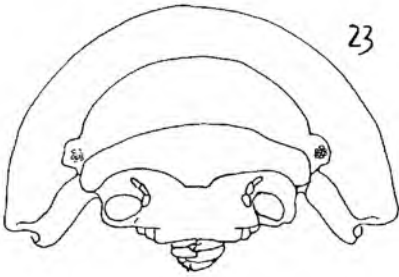
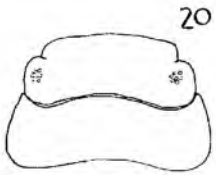
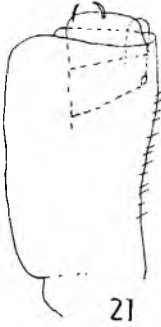
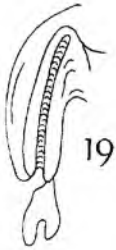
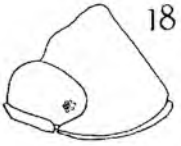
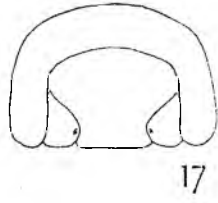
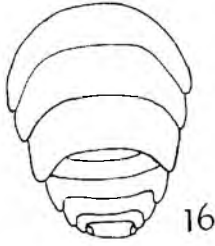
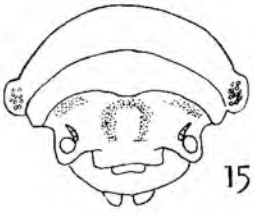
II.

Cubaris chamberlini Mulaik, new species.

15. Head of female, anterior view.
16. Posterior part of body, dorsal view.
17. Posterior segments, posterior view.
18. Head of female, lateral view.
19. Right coxopodites of segments I and II, ventral view.
20. Head of female, dorsal view.
21. Maxilliped.

Cubaris arizonicus Mulaik, new species.

22. Maxilliped.
23. Head and segment I, anterior view.
24. Telson and uropods, posterior view.
25. Abdomen of male, ventral view.
26. Left coxopodites of segments I and II, ventral view.
27. Head, dorsal view.
28. Telson and uropods, antero-ventral view.



III.

Cubaris arizonicus Mulaik, new species.

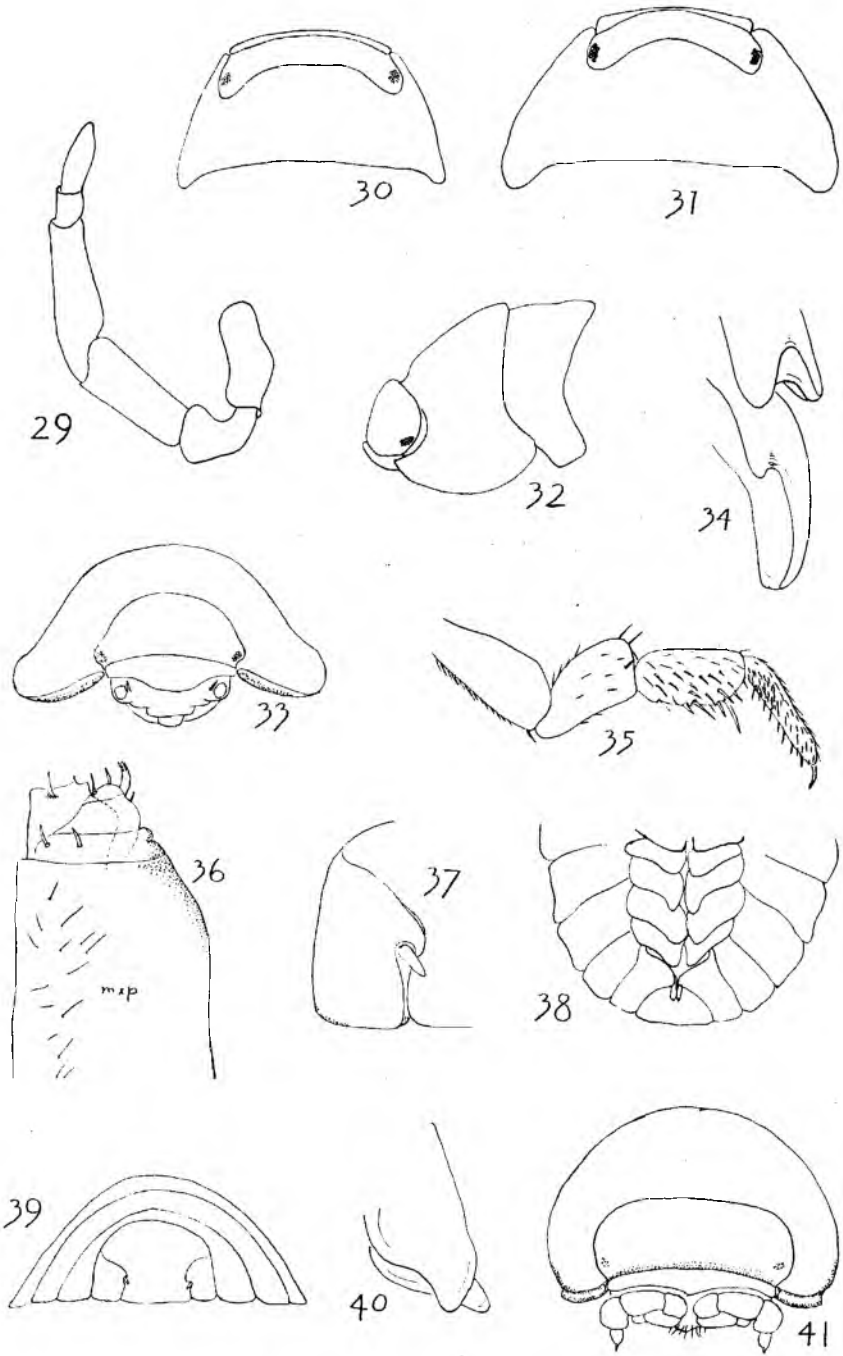
29. Antenna, anterior view.
30. Head of female, dorsal view.

Cubaris tanneri Mulaik, new species.

31. Head of female, dorsal view.
32. Same, lateral view.
33. Same, anterior view.
34. Left coxopodites of segments I and II, ventral view.
35. Leg I, lateral view.
36. Maxilliped.
37. Left uropod showing external ramus.
38. Abdomen, ventral view.
39. Posterior of abdomen, posterior view.

Cubaris microphthalmus Arcangeli, 1932.

40. Tip of segment II, lateral view showing coxopodite process.
41. Head of male, anterior view.



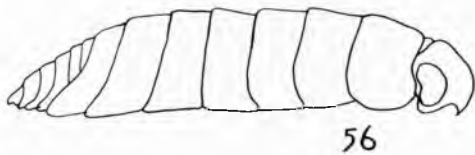
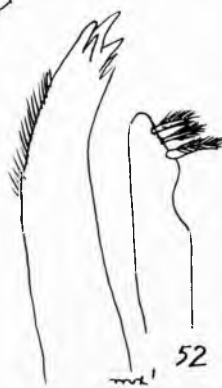
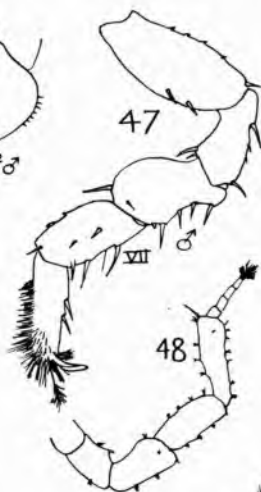
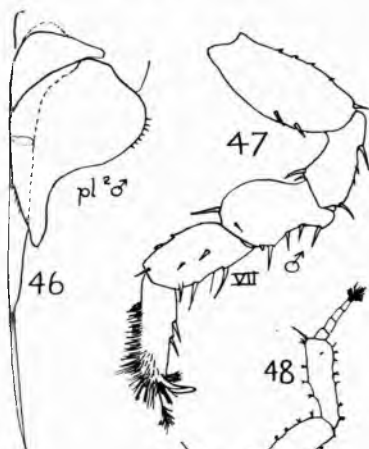
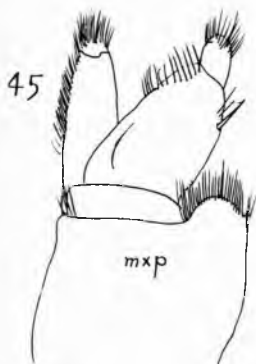
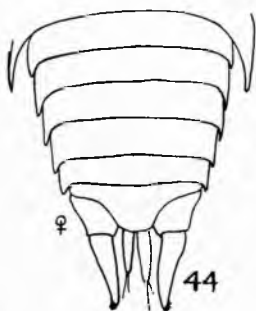
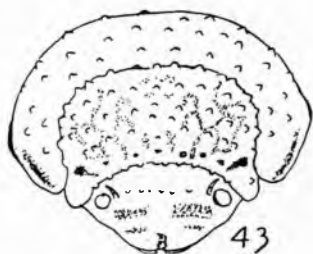
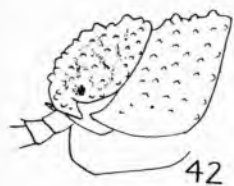
IV.

Trichoniscus humus Mulaik, new species.

42. Head and segment I, lateral view.
43. Same, anterior view.
44. Abdomen, dorsal view.
45. Maxilliped.
46. Second pleopod of male.
47. Leg VII of male.
48. Antenna.
49. Right exopods of male.
50. First endopod of male.
51. Second maxilla.
52. First maxilla.

Ligidium mucronatum Mulaik, new species.

53. Second endopodite of male.
54. Maxilliped.
55. Head, anterior view.
56. Lateral view of female.



V.

Ligidium mucronatum Mulaik, new species.

57. Head and segment I, lateral view.
58. Telson, dorsal view.
59. Leg I of female.
60. Left uropod.

Ligidium lapetum Mulaik, new species.

61. Head, lateral view.
62. Telson and uropods, dorsal view.
63. Maxilliped.
64. Distal part of second left endopod of male.
65. Leg I.
66. Exopod I, female.

Protrichoniscus heroldi Arcangeli, 1932.

67. Leg VII of female.
68. First maxilla.
69. Left mandible.
70. Maxilliped.

