

- 7-A Palpi without dusky purple markings on palpal tibiae; leg IV unmarked 8
- 7-B Palpi with triangular dusky purple markings on distal end of palpal tibiae; legs pale and unmarked 9
- 8-A Base of fixed finger narrower than width of fondal notch; mesoventral groove broad but distinguishable, running beneath setal articulation area of fixed finger joshui
- 8-B Base of fixed finger wider than width of fondal notch; mesoventral groove indistinct tuttlei
- 9-A Base of fixed finger equal to or wider than width of fondal notch; dorsal edge of fixed finger slightly notched to give it a scythe-like appearance; mesoventral groove broad but distinct extending under setal articulation area of fixed finger arenus
- 9-B Base of fixed finger equal to or narrower than width of fondal notch; dorsal edge of fixed finger slightly curved downward, mesoventral groove indistinct pimanus

ARENOTHERUS,
A NEW GENUS OF EREMOBATIDAE
(SOLPUGIDA),
IN THE UNITED STATES

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ENTERED SEP 15 1987

INTRODUCTION

The genus Eremorhax was erected by Roewer (1934) to include his designated type species Datames magna Hancock and related forms. Roewer stated that he had not seen the type when he described the genus, and examination of his drawings, 126, 319c, 319i, and 324a, indicate that his specimens were also not magnus. His (1934) drawings of the male chelicerae show no tiny to small teeth distal of the principal tooth on the movable finger; two small but distinct teeth are always present on magnus. His drawings of the female chelicerae do not show the normal reduced dentition of the fixed finger, nor the reduced size of the intermediate and anterior teeth of the movable finger. Further, his drawings of the female opercula fail to illustrate the highly visible antero-ectal pits that seem to invade the lateral margins of the opercula. Although color and color patterns are often suspect as diagnostic characters, it may also be noted that Roewer (1934) in his description of his "magnus" stated that the pedipalpi (palpi) were browned only on the apical half of the metatarsi and tarsi; the magnus of Hancock (1888), Muma (1951 and 1970), and here is dusky purple on the tarsus, metatarsus, and apical end of the tibia of the palpus.

On the bases of these findings, it is apparent that the genus Eremorhax Roewer is a junior synonym of Eremobates Banks. Arenotherus new genus is here erected to include the species previously placed in the magnus group of Eremorhax. Further, this new genus is divided into two species groups, the magnus complex and the pulcher complex.

The ECCS of Muma (1985) are included here for both males and females as a matter of record. They need to be further studied, and to be validated before they can be utilized effectively.

Eremorhax formidabilis Simon is removed from the magnus complex and tentatively placed in the presently recognized Eremorhax striatus (Putnam) species-group because of the placement and form of the mesoventral groove. Examination of Eremorhax nigrimanus Pocock indicates that it too should probably be placed in the striatus species-group. Eremopus mexicanus Roewer, female type has opercula uncharacteristic of this group and may be an immature female. Until more specimens from Mexico are collected, these problems will remain unsolved.

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³Sponsored in part by National Science Foundation grant 43566.

Collections of this genus by pitfall or around light indicate that magnus complex is less numerous than pulcher complex and is generally associated with gravel ridges. The magnus complex appears to be Chihuahuan in origin extending from Mexico up the front range of the Rocky Mountains into Colorado, New Mexico, and eastern and northern Arizona. The pulcher complex is found in the Sonoran desert regions of Mexico and extends into western Arizona, the Great Basin regions of Nevada, the Mojave Desert, and between the Coastal Ranges of California. It is much more common in collections, which probably indicates a greater mobility than the magnus complex. The greater length of appendages also substantiates this conclusion.

METHODS

Specimens were collected by the authors and recalled from museum collections. Measurements were made using an ocular micrometer as in Muma (1951). Measurements are given in millimeters rounded to the nearest half millimeter for legs and palpi and indicate ranges because of the small number of study specimens. Ratios are simple comparisons. A/CP is the ratio of combined length of palpi plus legs I and IV divided by the combined lengths of the chelicerae and propeltidium. (Brookhart and Muma, 1981). Fondal notch ratios (FN) are determined by orienting a micrometer grid with the tip of fondal tooth I and ventral edge of fixed finger for width; for fondal length, measurements are from tip of tooth I to longest possible length available in the fondal notch. The ratio is computed by dividing the length by the width. Comparison of width of fixed finger to fondal notch width (FF/FN) was made by measuring by ocular grid the base of the finger directly above the beginning of the fondal notch and comparing with width of fondal notch. Examination of dorsal setation of tarsi of legs III and IV as in Roewer (1934) was of little diagnostic value. Presence of "bacilli" (Roewer, 1934) on ventral aspect of the prosoma was noted on some specimens but was not consistent as a diagnostic tool. Measurements of female opercula were not made because distension of sternite made orientation in a plane difficult and we did not wish to destroy the few specimens available for examination by removing each opercula for examination. Instead, a visual estimate of length to width was made. The term "arms" refers to the anterior extension of the opercula and the term "lobes" refers to the lateral extensions. Two opercula were removed, cleared manually of tissue, and examined for position of opercular pits.

Coloration, structure of mesoventral groove, ratio of fondal length to fondal width, and fondal notch width to fixed finger width proved species indicative for males. Coloration, shape of opercula, and position of opercular pits were indicative for females.

Arenotherus new genus

Males with mesoventral groove narrow to wide, indistinct to distinct, but shallow, and extending to or below the origin of the flagellar setal complex of the fixed finger when it is viewed meso-anteriorly. Flagellar complex with no specialized setae, composed of tubular to slightly striate setae dorsally, and slightly striate setae ventrally. Setae of the fondal notch and movable finger composed of a row of reddish tubular setae ventrally and plumose setae as an underlying row in the fondal notch, fond, and basal end of the movable finger setal articulation area. Males without a scopula of papillae on the tarsus and metatarsus of the palpus, and without ctenidia on the first post-spiracular sternite.

Fixed finger without teeth or modified teeth. Fondal teeth graded I, III, II, IV. Fondal tooth IV often indistinguishable. Movable finger of males and females with a large principal tooth; on males at most a ridge with or without tiny to small abortive teeth anteriorly; on females, a small anterior tooth and smaller intermediate tooth. Mesal tooth generally distinct and often forming a cup-like structure when viewed antero-dorsally. Females with only three teeth anterior to the principal tooth of the fixed finger. Genital opercula with pits ranging from distinct to tiny, lateral and or anterior to or on the sclerotized portion of the opercula.

Magnus complex

Males small to large (17-42 mm.) in size. Generally short legged as indicated by an A/CP ratio varying from 3.2 to 5.9 Coloration dusky red brown to cream. Teeth absent on fixed finger. Movable finger with a ridge and occasionally small teeth anterior to the large principal tooth. Width of base of fixed finger equal to or smaller than width of fondal notch. Movable finger sinuate in ventral view (Fig. 3). Mesoventral groove distinct (Fig. 2) but shallow (Fig. 18). Palpi clothed with thin spine-like setae, tricobothria but not the "palpal brushes" of Hancock (1888). Females with similar sizes and coloration. Genital opercula clavate with narrow arms and broad lobes that are slightly to strongly angled at their union; arms converging anteriorly. Pits on the anterior-ectal margins of opercula large and distinct and seemingly a part of the genital sternite. Fixed finger straight or smoothly curved in ventral view.

Arenotherus magnus (Hancock)

Figures 1-9

Datames magna Hancock, 1888, p. 107.

Eremobates magnus (Hancock), Kraepelin, 1901, p. 127.

Eremorhax magnus (Hancock), Muma 1951, p. 43-44; 1970, p. 5-6.

Type Locality: Male type, Laredo, Texas. Type deposition unknown and type at present must be considered lost.

Description: A medium to large (27-42 mm.) robust species. Muma's descriptions (1951, 1970) are adequate. Mesoventral groove narrow and shallow but distinct extending to and slightly below the origin of flagellar setal complex (Fig. 2). Palpi dusky purple on tarsi, metatarsi, and a triangular patch on the apical, mesal portion of tibiae (Fig. 5). Leg IV dusky at the femoral-tibial joint. Two small abortive teeth present anterior to principal tooth of movable finger. Fondal notch longer than wide. Mesal tooth distinct. Base of fixed finger less than width of fondal notch. Female coloration as in males. Genital opercula with distinct pits on the genital sclerite but not invading the opercula (Fig. 9). Arms narrow and at right angles to the wider and longer lobes.

Measurements: MALES: (N=9) length leg IV 26-34, leg I 11-16, palpus 23-29, chelicera length 8.8-13.3, width 4.5-5.6 propeltidium length 4.6-6.3, width 7-10.5. RATIOS: A/CP 4.3-5.5, FN 1.1-1.5, FF/FN .77-.93. FEMALES: (N=5) length leg IV 24-26, leg I 14-16, palpus 18-20, chelicera length 8.3-10.6, width 4.6-5.4, propeltidium length 3.6-5.0, width 7.1-9.0. RATIOS: A/CP 4.0.

Diagnosis: At the present time magnus seems to be the largest species of the group. Males are distinguished from other group species by the low, often indistinct, ridge anterior to the principal tooth of the movable finger with 2 small abortive intermediate teeth, and the dusky purple apical ventral surface of the palpal tibia. Females have a similar size and color pattern as males and opercula as shown.

Distribution: Texas, Mexico. Specimens examined; (Males) Texas: Edinburg (4), Mission (1), San Miguel (1), Terral City (1), Rio Grande (1); Mexico: Chihuahua (2). (Females) Texas: Edinburg (1), Turkey (1), Terral City (1), Sheffield (1); Mexico: Chihuahua (2).

Discussion: This study restricts the distribution of this species indicated by Muma (1951, 1970). The few specimens from Mexico are currently included in this species but further collections are needed from Southern Texas into the Chihuahuan Desert region of Mexico. Mature specimens were collected from late April in extreme southern Texas to early June in northwestern Texas.

Arenotherus puebloensis (Brookhart)
Figures 10-16

Eremorhax magnus (Hancock), Muma, 1962, p. 3, male. Misidentification.
Eremorhax puebloensis Brookhart, 1965, p. 154, male; Muma, 1970, p. 6.
Eremorhax puebloensis Brookhart, 1972, p. 36-37, female.

Type Locality: Male holotype and female allotype collected at Pueblo, Colorado by J.O. Brookhart and a student. Deposited in the American Museum

of Natural History, New York, N.Y.

Description: A medium sized (22-25 mm.) species. Brookhart's description, but not drawings, (1965, 1972) are adequate. Male chelicerae (Fig. 10). Mesoventral groove wide, less distinct, and extending under flagellar setal articulation area (Fig. 11). Palpi with light purple coloration on entire tibiae, tarsi, and metatarsi (Fig. 15); purple coloration on femur-tibia joint of all legs and much more extensive on leg IV (Fig. 15). Fondal notch longer than wide; and wider than base of fixed finger.

Female opercular arms longer but narrower than width of lobes. Lobes at right angles to arms (Fig. 16).

Measurements: MALES: (N=8) length leg IV 22-26.5, leg I 14.5-16.5, palpus 19-21, chelicera length 6.9-8.4, width 3.22-4, propeltidium length 3.1-4.8, width 5.3-6.7. RATIOS: A/CP 4.84-5.94, FN 1.1-1.23, FF/FN .77-.91. FEMALES: (N=2) length leg IV 24-26.5, leg I 14-14.5, palpus 16.5-18, chelicera length 7.5-8.0, width 3.5, propeltidium length 3.4-3.5, width 4.2-6.0. RATIOS: A/CP 4.9-5.1.

Diagnosis: Generally distinctly smaller than magnus. Palpus light purple on entire tibiae. Mesal tooth of male movable cheliceral finger small; a distinct ridge with no or 2 tiny, abortive intermediate teeth anterior to principal tooth. Mesoventral groove slightly wider than that of magnus but less distinct and perhaps shallower. Females with opercular notch moved slightly posteriorly; lobes smaller than those of magnus but still distinct. Females similar in size and coloration to males.

Distribution: Colorado, Northern New Mexico, Northwest Texas, Northern Arizona. Specimens examined; (Males) Colorado: Pueblo (2); Texas: El Paso (1), Sierra Blanca (1). New Mexico: Bernalillo (1), Arizona: Tuba City (2). (Females) Colorado: Pueblo (1), Arizona: Meoncopi (1).

Discussion: This species is most closely related to magnus and mumai from which it differs in both size and coloration of palpus. It occupies a distribution much wider than any others of this species group. More than one species may still be confused here but until we are able to collect a series from several localities no further separations can be made. Reproductive maturity as determined by collection records occurs in June and early July.

Arenotherus magnellus new species
Figures 17-21

Type Locality: Male holotype and female allotype from Lordsburg, New Mexico. Collected by Martin H. Muma. Deposited with Arthropod Collections, Division of Plant Industry, Gainesville, Florida.

Description: A small to medium sized (20-35 mm.) species. Color creamy to dusky gray. Palpi with typical dusky purple coloration on tarsi, metatarsi, and a large triangular patch on mesoventral surface of palpal tibiae covering most of the segment (Fig. 20). Legs IV dusky purple on distal two thirds of femora and apical third of tibiae (Fig. 20). Legs III dusky purple on

distal half of femora and apical half of tibiae. Propeltidia with a pale violet streak along lateral edges. Papillae and ctenidia absent. Females tend to be darker than males. Males with mesoventral groove narrow but indistinct, and extending below setal articulation area of fixed finger. Fondal notch considerably longer than wide. Base of fixed finger equal to or wider than fondal notch width. Females with opercular arms and lobes at more than right angles to each other; arms ellipsoidal with lobes clavate.

Measurements: MALES: (N=10) length leg IV 20.0-28.0, leg I 13.0-19.0, palpus 17.5-25.0, chelicera length 4.8-9.3, width 2.5-4.0, propeltidium length 2.9-4.9, width 4.3-6.8. RATIOS: A/CP 5.1-5.7, FN 1.5-1.8, FF/FN 1.12-1.14. FEMALES: (N=5) leg IV 19.5-28.0, leg I 12-16, palpus 14.5-20.0, chelicera length 6.9-11.0 width 3.0-6.0, propeltidium length 2.9-5.7, width 5.0-9.2. RATIOS: A/CP 3.8-4.9.

Diagnosis: Male mesoventral groove wider and less distinct than any other members of this group and extending to just below origin of setal articulation area. Fondal notch longer than wide. Width of fixed finger to width of fondal notch equal or slightly larger than 1; teeth absent on ridge anterior to principal tooth of fixed finger. Opercular lobes less obvious and narrower than on magnus.

Distribution: New Mexico, Arizona, and probably Mexico. Specimens examined; (Males) New Mexico: Lordsburg (5), Deming (3), Big Hatchet Ranch (7), Burro Mtns. (2); Arizona: Portal (1). (Females) New Mexico: Lordsburg (7), Deming (2), Big Hatchet Ranch (2); Arizona: Portal (4).

Discussion: This species is related to A. magnus but differs in coloration and shape of fixed finger in the male. Female opercula are also significantly different. The shape of the mesoventral groove of the male also shows a relationship with the pulcher complex with which it is contiguous in eastern Arizona. Based on collections, maturity occurs in late May and June.

Arenotherus mumai (Brookhart)
Figures 22-27

Eremorhax mumai, Brookhart, 1972, p. 33-36.

Type Locality: Male holotype, Boone, Colorado. Collected by J.O. Brookhart. Deposited in the American Museum of Natural History, New York, N.Y.

Description: A tiny to small (17-20 mm.) species. Male mesal tooth small but distinct. One or two tiny intermediate teeth on ridge anterior to principal tooth of movable finger (Fig. 22). Mesoventral groove distinct but narrow extending under setal articulation area (Fig. 23). Large accessory tooth in fond above fondal tooth I. Fondal notch longer than wide. Width of fondal notch and width of fixed finger base about equal. Female chelicerae (Fig. 26). Female opercula with thin arms and broad lobes at right angles to each other (Fig. 27).

Measurements: MALES: (N=4) length leg IV 15-18, leg I 7.0-9.0, palpus 10.5-12.2, chelicera length 4.5, width 3.0, propeltidium length 2.0-2.5, width 3.0-4.0. RATIOS: A/CP 4.71-5.54, FN 1.3-1.5, FF/FN .98-1.1. FEMALES: (N=2) length leg IV 10.5-16.5, leg I 6.0-10.5, palpus 7.5-14.0, chelicera length 5.0-7.5, width 3.8-6.0, propeltidium length 3.2-3.6, width 4.0-5.5. RATIOS: A/CP 3.2-3.6.

Diagnosis: Dusky purple coloration more extensive than on either magnus or puebloensis. The long, narrow, distinct mesoventral groove, the large accessory tooth in the fond, and the small size distinguish the species. Brookhart's (1972) description is adequate, but not his drawings.

Distribution: Colorado. Specimens examined; (Males) Colorado: Boone (5), El Paso County (1); (Females) Colorado: Boone (2).

Pulcher complex

Males small to large in size. Lighter in color than magnus complex ranging from amber to cream colored. Mesoventral groove modified as a flat, blade-like structure seen from an anteriomesal view, generally extending under setal articulation area of fixed cheliceral finger. Ridge anterior to principal tooth of movable cheliceral finger less pronounced or absent. Movable finger of male with a more regular, slightly curved edge in ventral view (Fig. 46). Palpal papillae and ctenidia absent. Setal armament of palpus consists of short bristle-like setae that form a "brush" as well as longer spine-like setae, and trichobothria. Longer appendages than magnus complex as evidenced by A/CP varying from 3.5-6.4. Females similar to males in size and coloration. Female dentition similar to magnus complex. Genital opercula broadly triangular with broad arms and lobes which may or may not be slightly angled at their union. Marginal pits are ectal, smaller than in magnus complex, and seem to be part of the sclerotized part of the opercula as opposed to magnus complex females which seem to have the pits as part of the genital sternite.

Arenotherus pulcher (Muma)
Figures 39-43

Eremorhax pulcher Muma, 1963, p. 2; Muma, 1970, p. 6, male and female.

Type Locality: Male holotype and female allotype, Mercury, Nevada, deposited in the American Museum of Natural History, New York, N.Y.

Description: This is a medium-sized (20-31 mm.) species. Base coloration ranging from pale to dusky. Mesoventral groove broad, extending beneath setal articulation area (Fig. 39). Extensive dusky coloration of palpus, and leg IV is easily identifiable (Fig. 42); fond wider than long; fixed finger wider than width of fondal notch; male chelicerae (Fig. 41). Female opercula subtriangular with union of arms and lobes not angled. Pits very tiny and

seemingly invade opercula. This species has the darkest coloration of all the members of the pulcher complex. Male cheliceral configuration typical. Female opercula distinctive.

Measurements: MALES: (N=5) leg IV 19.0-25.0, leg I 11.5-16.0, palpus 16.5-29.5, chelicera length 5.3-6.7, width 2.4-3.2, propeltidium length 2.5-3.4, width 3.0-5.1. RATIOS: A/CP 5.66-6.1, FN 1.2-1.7, FF/FN 1.2-1.5. FEMALES: (N=3) length leg IV 16.0-20.0, leg I 9.5-13.5, palpus 11.0-14.5, chelicera length 6.0-7.0, width 2.5-3.5, propeltidia length 2.9-4.0, width 4.3-5.2. RATIOS: A/CP 4.1-4.4.

Diagnosis: Muma's (1963) description is also adequate. Palpal tibiae, tarsi, and metatarsi have large well defined spine-like setae, uncharacteristic of this complex.

Distribution: Nevada, Arizona. Specimens examined; (Males) Nevada: Nevada Test Site, Mercury (5), Sulfur (20). Arizona: Yarnell (1). (Females) Nevada: Nevada Test Site, Mercury (5).

Discussion: Adults were collected in relatively large numbers at the Nevada Test site during June and July. (Muma, 1963).

Arenotherus pimanus new species
Figures 50-55

Type Locality: Male holotype from Saguaro National Monument, Pima County, Arizona by the authors. Female allotype from Tucson, Arizona by Jack R. Compeau. Deposited in Arthropod Collections, Division of Plant Industry, Gainesville, Florida.

Description: Pale to dusky yellow, large (26-42 mm.) species. Palpi dusky purple on tarsi and metatarsi, distal ends of tarsi often with definite pale region (Fig. 53); small triangular patch of dusky purple on the mesal region of the anterior ends of the tibiae on some specimens. Leg IV with a pale violet tinge at the femoral-tibial joint. Anterior region of propeltidia tinged in violet extending half way down sides. Females with dusky purple patch on each of the abdominal tergites. Males with mesoventral groove starting posterior to tip of fixed finger and extending only to setal articulation area of fixed finger (Fig. 52). Fondal notch longer than wide; base of fixed finger wider than fondal notch (Figs. 50 and 52). Females with very broad genital opercula and with the lateral pits small and not easily seen (Fig. 55).

Measurements: MALES: (N=5) leg IV 29.5-34.00, leg I 20.5-22.0, palpus 25.0-29.0, chelicera length 8.8-10.2, width 4.3-5.0, propeltidium length 4.2-5.6, width 6.3-11.5. RATIOS: A/CP 5.44-6.0, FN 1.2-1.8, FF/FN 0.7-0.9. FEMALES: (N=3) length leg IV 22-27, leg I 12-19, palpus 14-24.5, chelicera length 9-12.5, width 4.5-7, propeltidium length 4-6.8, width 6.3-11.5. RATIOS: A/CP 3.5-4.1.

Diagnosis: Large species with indistinct mesoventral groove. Fondal notch longer than wide. Distinguished from tuttlei new species by coloration of palpi and shape of mesoventral groove and from both tuttlei and joshui

by ventral groove and from both tuttlei and joshui by gross width of fondal notch.

Distribution: Arizona, probably Mexico. Specimens examined; (Males) Arizona: Tucson (5), Ajo (1), Reddington (2), Gila Bend (1), Red Rocks, Pinal County (2), Mesa (1). (Females) Arizona: Tucson (2), Carefree (1), Red Rocks (1).

Discussion: This species shows considerable variation and may indicate intergradation between two or more Mexican species and or an influx from the Mojave province. Collected females were the largest species of the genus in total length. Maturity during May and June was indicated by collected specimens.

Arenotherus tuttlei new species
Figures 32-38

Type Locality: Male holotype and female allotype from Yuma, Arizona. Collected by Don Tuttle and deposited in the Arthropod Collections, Division of Plant Industry, Gainesville, Florida.

Description: Large pale to dusky species (28-36 mm.) Palpi dusky on tarsi and metatarsi but distinctly pale on basal ends of metatarsi (Fig. 35). All legs pale. Male chelicerae (Fig. 32), a barely discernable mesoventral groove visible on the broad blade-like portion of the fixed finger and extending under the setal articulation area (Fig. 34). Female chelicerae (Fig. 37). Female opercula with broad arms and slightly angled, broader lobes (Fig. 38).

Measurements: MALES: (N=5) leg IV 25.5-33, leg I 15-19; palpus 23-29.5, chelicera length 7.5-10, width 3.5-5, propeltidium length 4-5.1, width 5.7-10. RATIOS: A/CP 5.4-6.4, FN 1-1.5, FF/FN 1.2-1.3. FEMALES: (N=3) leg IV 23-24, leg I 15, palpus 20-21, chelicera length 10.0, width 4.0-5.0, propeltidium length 4.4, width 6.9-7.0. RATIOS: A/CP 4.1.

Diagnosis: Coloration of palpus and shape of fixed finger distinguish this species from pimanus with which it may prove to be conspecific. Genital opercula are also distinctive.

Distribution: Specimens examined; (Males) Arizona: Yuma (5), Wellton (3), Reddington (2). (Females) Arizona: Yuma (2), Dateland (1).

Discussion: Collections of this species are meager but it apparently matures in April and May. It would appear that it should also be found nearby in Mexico.

Arenotherus joshui new species
Figures 44-49

Type Locality: Male holotype and female allotype from Jumbo Rocks, Joshua Tree National Monument, Collection Unknown. Deposited in Ar-

thropod Collections, Division of Plant Industry, Gainesville, Florida.

Description: Very pale large species (32-38 mm.). Dusky purple on tarsi and metatarsi of palpi; distal half of tarsi and basal end of metatarsi pale (Fig. 48). Legs without coloration. Male chelicerae (Figs. 44-47); fond longer than wide; fixed finger wider than fondal notch; mesoventral groove indistinct and blade-like the entire length of fixed finger and extending well under area of setal articulation. Female genital opercula broadly triangular with arms narrow anteriorly and broadening posteriorly but not angled with short and broad lobes (Fig. 49).

Measurements: MALES: (N=10) leg IV length 24-30.0, leg I 16.5-21.5, palpus 22.0-28.0, chelicera length 7.22-9.5, width 3.2-4.6, propeltidium length 3.32-4.4, width 4.4-5.3. RATIOS: A/CP 5.4-6.1, FN 1-1.3, FF/FN 1.1-1.8. FEMALES: (N=2) leg IV 22.0-27.0, leg I 12.0-16.0, palpus 18.0, chelicera length 9.5-11.0, width 4.0-5.0, propeltidium length 3.7-5.4, width 6.2-8.6. RATIO: A/CP 3.8-4.0.

Diagnosis: Fixed finger of male chelicerae considerably narrower than either tuttlei or pimanus to which it is closely related and may in fact be conspecific. Female opercular arms narrower than tuttlei.

Distribution: California. Specimens examined; (Males) California: Joshua Tree National Monument (6), Borrego Springs (19), Coachella Valley (3), Palm Springs (6), Indio (1). (Females) California: Joshua Tree (1), Saline Valley (1), Barstow (1), Borrego Springs (1).

Arentherus arenus new species
Figures 28-31

Type Locality: Male holotype and a paratype series collected by the authors at light in a sand "blow-out" 16 miles east of Palmdale, California, July 12, 1975. Deposited in the California Academy of Science, Golden Gate Park, San Francisco, California.

Description: On the basis of eight males collected, this is a large (33-36 mm.) species. Color basically pale. Chelicerae as in (Fig. 28). Fixed finger slightly notched dorsally to give a scythe-like appearance; fixed finger broad with base wider than width of fondal notch; mesoventral groove indistinct anteriorly but distinct under the setal articulation area of fixed finger (Fig. 30). Palpi dusky purple on tarsi and metatarsi with small pale areas distally on tarsi and proximally on metatarsi. Very distinct dusky purple triangular patch on meso-distal region of palpal tibiae (Fig. 31). Leg IV with distinct purple patch on mesoventral area of femora.

Measurements: MALES: leg IV 28.0-3.0, leg I 19.5-22.0, palpus 24.0-29.5, chelicera length 8.4-10.0, width 3.6-4.5, propeltidium length 4.1-5.1, width 5.9-8.1. RATIOS: A/CP 5.5-6.1, FN 0.9-1.7, FF/FN 1.3-1.8. Females unknown.

Diagnosis: Easily identified by the scythe-shaped fixed finger, with a broad base, and very narrow fondal notch. Dusky purple patch on palpal tibia

and leg IV femur are also significant.

Distribution: California: Palmdale (6), Stanislaus County (1), Twentynine Palms (1).

Discussion: This species is the most distinctive of the pulcher group. Females are presently unknown.

Arenotherus latus (Muma)
Figures 56-59

Eremorhax latus Muma, 1951, p. 44; Muma, 1970, p. 5, male.

Male holotype (unlabeled) deposited in Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

Description: This is a moderate sized (27 mm.) darkly colored species. Chelicerae as in (Figs. 56, 57, and 58). Mesoventral groove of fixed finger apparently wide but indistinct (Fig. 58). Fondal notch much longer than wide; base of fixed finger wider than fondal notch. Palpus dusky purple on tarsi and metatarsi; leg IV faintly purple on femur and tibia, and more distinct at the union. Muma's (1951) description is adequate.

Measurements: MALES (N=2) length leg IV 25.5-26, leg IV 14.0-17.0, palpus 22.5, chelicera length 7.3-7.7, width 3.4-3.9, propeltidia length 4.1-4.3, width 5.9. RATIOS: A/CP 5.16-5.74, FN 2.0, FF/FN 1.8-2.0. Females unknown.

Diagnosis: Shape of fixed finger and mesoventral groove are diagnostic; no other species approaches it in these characters.

Distribution: Arizona and probably Mexico.

Discussion: This species is placed in the pulcher complex because it lacks the narrow defined mesoventral groove. However, it has a sinuate movable finger when viewed ventrally as in the magnus complex. An additional male has been found in the collection of the MCZ with a given locality of Nogales, Arizona. This probably represents the northern extension of its range. Females are presently unknown.

ACKNOWLEDGEMENTS

We would like to acknowledge the following who made specimens available to us: Norman I. Platnick, American Museum of Natural History, New York, New York; Herbert W. Levi, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts; Vincent F. Lee, California Academy of Science, San Francisco, California; C. Griswold, University of California, Berkley, California; Otto Kraus, Natur-Museum und Forschungs-Institut, Hamburg, West Germany; D. J. Clark, British Museum of Natural History, London, England.

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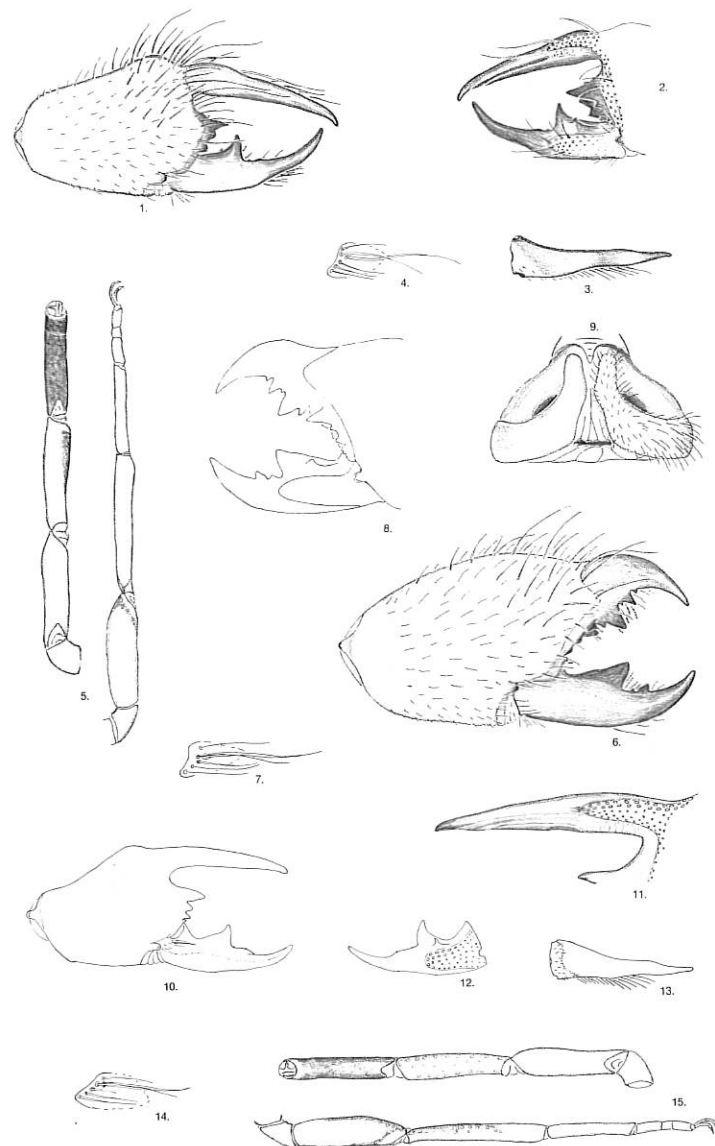


Plate I. Figures 1-15. Arenotherus magnus. 1. Right male chelicera, ectal view. 2. Right male chelicera, mesal view. 3. Male movable finger, ventral view. 4. Male ECCS. 5. Male palpus and leg IV. 6. Right female chelicera, ectal view. 7. Female ECCS. 8. Female chelicera, mesal view. 9. Female opercula. Arenotherus puebloensis. 10. Right male chelicera, ectal view. 11. Male fixed finger, mesal view. 12. Male movable finger, mesal view. 13. Male movable finger, ventral view. 14. Male ECCS. 15. Male palpus and leg IV.

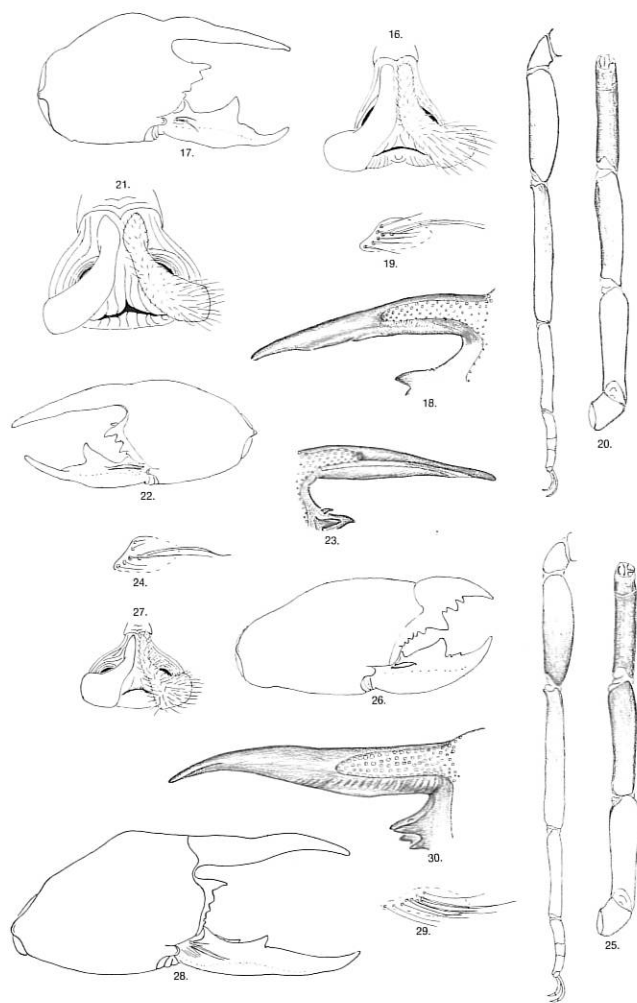


Plate II. Figures 16-30. Arenotherus puebloensis. 16. Female opercula. Arenotherus magnellus new species. 17. Right male chelicera, ectal view. 18. Male fixed finger, mesal view. 19. Male ECCS. 20. Male palpus and leg IV. 21. Female opercula. Arenotherus mumai. 22. Male chelicera, ectal view. 23. Male fixed finger, mesal view. 24. Male ECCS. 25. Male palpus and leg IV. 26. Right female chelicera, ectal view. 27. Female opercula. Arenotherus arenus new species. 28. Right male chelicera, ectal view. 29. Male ECCS. 30. Male fixed finger, mesal view.

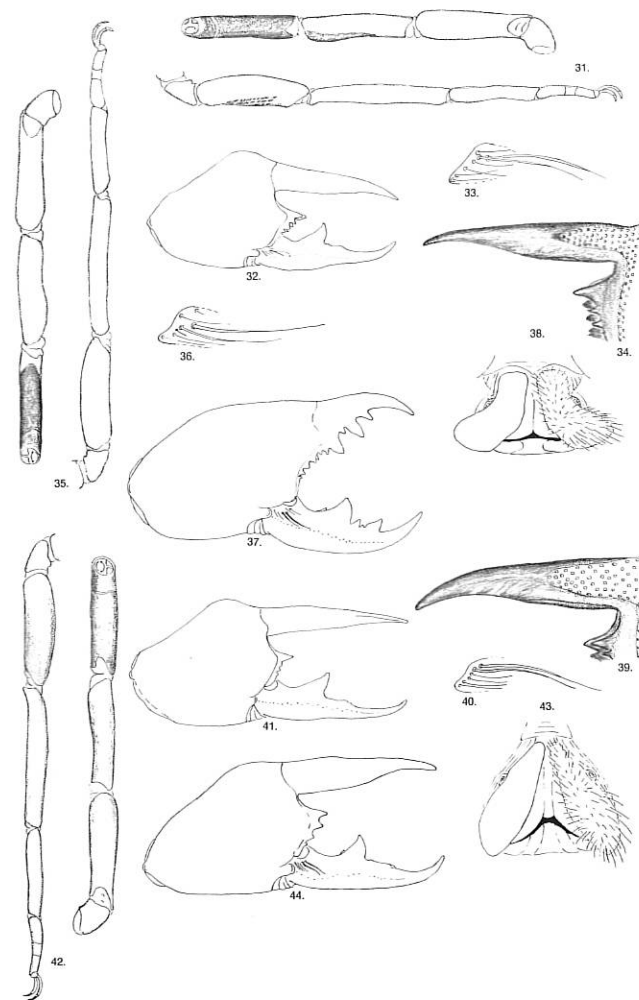


Plate III. Figures 31-44. Arenotherus arenus new species. 31. Male palpus and leg IV. Arenotherus tuttlei new species. 32. Right male chelicera, ectal view. 33. Male ECCS. 34. Male fixed finger, mesal view. 35. Male palpus and leg IV. 36. Female ECCS. 37. Female chelicera, ectal view. 38. Female opercula. Arenotherus pulcher. 39. Male fixed finger, mesal view. 40. Male ECCS. 41. Male chelicera, ectal view. 42. Male palpus and leg IV. 43. Female genital opercula. Arenotherus joshui new species. 44. Right male chelicera, ectal view.

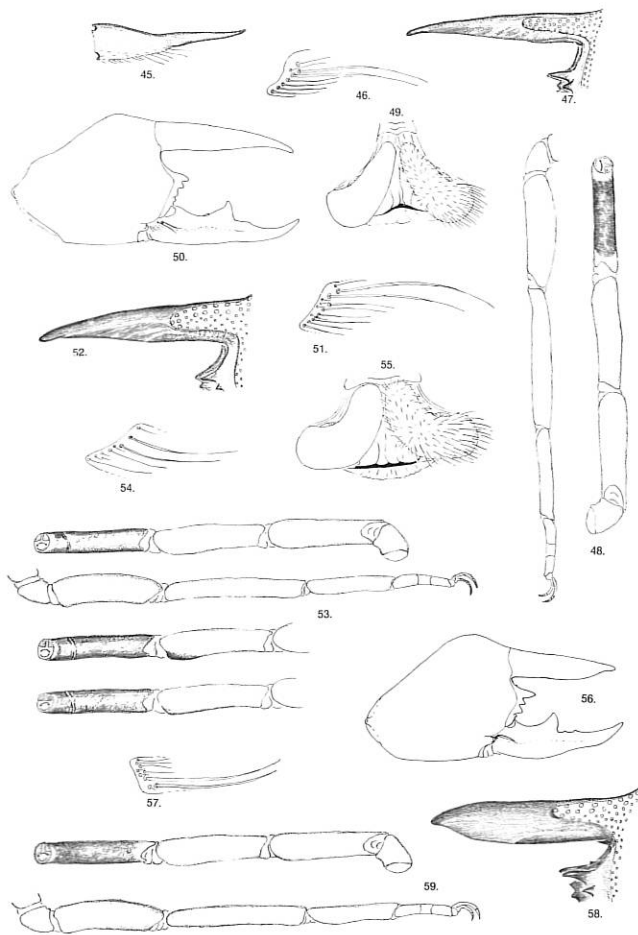


Plate IV. Figures 45-59. Arenotherus joshui new species. 45. Male movable finger, ventral view. 46. Male ECTS. 47. Male fixed finger, mesal view. 48. Male palpus and leg IV. 49. Female opercula. Arenotherus pimanus new species. 50. Right male chelicera, ectal view. 51. Male ECTS. 52. Male fixed finger, mesal view. 53. Male palpus variations and leg IV. 54. Female ECTS. 55. Female opercula. Arenotherus latus. 56. Right male chelicera, ectal view. 57. Male ECTS. 58. Male fixed finger, mesal view. 59. Male palpus and leg IV.

KEY TO MALES OF ARENOTHERUS NEW GENUS

- 1-A Mesoventral groove of fixed finger narrow and distinct with an elevated ventral margin; width of fixed finger base less than width of fondal notch; movable finger sinuate in ventral view, magnus complex 2
- 1-B Mesoventral groove of fixed finger wide with only part of a ventral margin; width of fixed finger base equal to or greater than width of fondal notch; movable finger slightly curved in ventral view. pulcher complex 5
- 2-A Palpi tibiae with dusky purple triangular markings apically; mesoventral groove distinct, and narrow, extending to base of setal articulation area of fixed finger; 2 small teeth on ridge anterior to principal tooth. Dusky species magnus
- 2-B Palpi tibiae dusky purple over most of length 3
- 3-A Mesoventral groove narrow and distinct extending below setal articulation area; width at base of fixed finger equal to width of fondal notch; accessory tooth present in fondal notch. Cream colored species mumai
- 3-B Mesoventral groove wider and less distinct; width of base of fixed finger less than width of fondal notch 4
- 4-A Mesoventral groove wider but less distinct than mumai and extending to or only slightly under setal articulation area; distinct ridge without teeth or 2 tiny teeth anterior to principal tooth of movable finger. Cream colored species puebloensis
- 4-B Mesoventral groove indistinct and extending well under the setal articulation area. An indistinct ridge without tiny teeth anterior to principal tooth of movable finger. Abortive teeth sometimes present on fixed finger. Dusky species magnellus
- 5-A Dusky to darkly colored; extensive dusky purple markings on tarsi, metatarsi, and tibiae of palpi as well as femur-tibia union of leg IV pulcher
- 5-B Pale to cream colored; at most triangular dusky purple markings on the distal end of palpal tibiae 6
- 6-A Fixed finger broad with base nearly twice the width of the fondal notch; mesoventral groove wide apically but indistinct latus
- 6-B Narrow fixed finger; narrow mesoventral groove with indistinct ventral margin 7

- 7-A Palpi without dusky purple markings on palpal tibiae; leg IV unmarked 8
- 7-B Palpi with triangular dusky purple markings on distal end of palpal tibiae; legs pale and unmarked 9
- 8-A Base of fixed finger narrower than width of fondal notch; mesoventral groove broad but distinguishable, running beneath setal articulation area of fixed finger joshui
- 8-B Base of fixed finger wider than width of fondal notch; mesoventral groove indistinct tuttlei
- 9-A Base of fixed finger equal to or wider than width of fondal notch; dorsal edge of fixed finger slightly notched to give it a scythe-like appearance; mesoventral groove broad but distinct extending under setal articulation area of fixed finger areus
- 9-B Base of fixed finger equal to or narrower than width of fondal notch; dorsal edge of fixed finger slightly curved downward, mesoventral groove indistinct pimanus

ENTERED SEP 15 1987