

A new genus and species of aquatic beetle, *Caenelmis octomeria*, from Kenya, Africa (Coleoptera: Elmidae: Elminae)

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Abstract: The new genus and species, *Caenelmis octomeria*, belonging to the Elmidae and subfamily Elminae, are described. Character states used for recognition of the new genus are illustrated by line drawings and scanning electron micrographs. The 8-segmented antenna of the new genus will readily distinguish it from the other 25 elmid genera known from Africa.

Key words: Aquatic, Coleoptera, Elmidae, Elminae, *Caenelmis octomeria*, new genus, new species.

During ecological investigations of some streams in Kenya in December 1989 and January 1990, Scott Cooper, Sheila Wiseman, and Jackson Gutwa collected a variety of elmid beetles. The elmids were sent to me for identification and among them was a small distinctive new taxon. The new genus and species are described below so that this taxon may be included in reports by name along with the others collected during the investigations.

Although the elmid literature is scattered in many journals and keys to genera and, especially, species are scarce, Delève (1966) published a key to the 25 elmid genera reported from Africa and Madagascar. In Delève's key, the new genus *Caenelmis* keys to couplet 14 where one is given two choices: antennae either 10 segmented or 11 segmented. With 8-segmented antennae, *Caenelmis* could be interpolated at that point of the key; however, a review of the number of antennal segments found on the 25 known African elmid genera reveals that *Caenelmis* is the only one with 8-segmented antennae. All other known African elmids have 7-segmented, 10-segmented, or the most common 11-segmented antennae and *Caenelmis* may be easily recognized.

Caenelmis Spangler, new genus

Diagnosis: *Caenelmis octomeria*, may be readily distinguished from all other known genera (25) of African elmid beetles by its short, 8-segmented antennae. All other elmid genera known from Africa and Madagascar have antennae of 7, 10, or 11 segments.

Description: Elongate, subrectangular; moderately convex dorsally. Antenna, 8 segmented. Integument mostly granulate, without plastron setae. Clypeus and labrum both narrow, trans-

verse, strap-like, and anterior margin arcuate. Maxillary palpus, 4 segmented. Labial palpus, 3 segmented. Ligula, between labial palpi, V-shaped. Mentum narrow, transverse, strap-like. Submentum narrower than mentum.

Pronotum moderately arcuate laterally; posterior two-thirds subparallel; anterior third convergent; widest across midlength; with a low, indistinct, bisinuate lateral groove on each side and a vague, medial, longitudinal groove on basal two-thirds; posterior margin trisinate. Elytron without carinae or basal accessory stria between striae 1 and 2; humeral area swollen; clasping device to firmly hold elytra and abdomen together formed by robust, preapical, tooth-like process opposed to deep notch on lateral margins of last abdominal sternum. Prosternum long in front of procoxae. Prosternal process broad, twice as wide as procoxal cavity. Mesosternum broadly concave between mesocoxae for reception of apex of prosternal process. Metasternum with intercoxal area broad, shallowly emarginate anteriorly. Tibial cleaning fringe formula, 1-0-0. Tarsal claws small, slender, without teeth.

Type species of the genus: *Caenelmis octomeria*, new species, here designated and by monotypy.

Etymology: Because it is a genus new to science and the Elmidae of Africa, the generic name is from the Greek kainos ("new") combined with *Elmis*, the type genus of the family group name; gender, feminine.

Caenelmis octomeria, new species (Figures 1-20)

Holotype Male: Body Form and Size: Elongate, subrectangular; pronotum narrower than base

of elytra; dorsal surface moderately convex (Figures 1-3). Length, 1.75 mm; width, 0.80 mm.

Color: Uniformly black except antennae, mouthparts, anterior margin of prosternum, and legs dark reddish brown; labrum light yellow brown.

Head (Figures 4, 5, 8): Coarsely, densely granulate; granules cordate, separated by 1/3 granule width to granule width; surface between granules appearing microreticulate. Eyes normal (Figures 4, 6). Antenna (Figure 6) with segments 1 and 2 swollen; segments 3-7 short but becoming progressively longer distally; ultimate segment about one-third longer than penultimate segment and bearing several campaniform sensilla on lower surface (Figures 6, 7). Clypeal surface finely densely punctate, microreticulate, and sparsely granulate. Labrum microreticulate, finely punctate, sparsely granulate basally; with a tuft of long apicolateral setae. Gena microreticulate; with 2 types of plastron setae as illustrated (Figures 12, 13). Maxillary palpus with segments 1-4 becoming progressively longer; ultimate segment acuminate and slightly longer than combined length of segments 1-3 (Figure 8); ventrally, with preapical sensory field of round sensilla (Figures 10, 11) preceded by several campaniform sensilla (Figure 10). Labial palpus with segment 1 very short, small and triangular; segment 2 compressed dorsoventrally, broadly diverging distally, and slightly longer and narrower than subcylindrical ultimate segment (Figure 8); apex of ultimate segment with apical cluster of sensilla (Figure 9). Ligula with a low but distinct, median, longitudinal carina and numerous, golden setae on distal half (Figure 8). Mentum with sparse, golden setae. Submentum without setae. Gula with transverse wrinkles and very sparse, golden setae (Figure 8).

Thorax: Pronotum (Figure 5) with surface densely, coarsely granulate; granules cordate (Figure 16), separated by 1/3 to 1/2 granule width; anterolateral and posterolateral angles obtuse. Elytron with 10 shallow striae alternating with 11 rows of coarse, close-set cordate granules (Figure 16) on intervals; rows more poorly defined laterally. Hypomerion with minute papilliform plastron setae with dimpled centers and fringed margins; with a basal row of coarse cordate-striate granules (Figures 14, 15). Scutellum (Figure 5) moderately convex, subtriangular; with a few large, seta-bearing punctures. Prosternum (Figure 2) densely granulate; anterior half bent downward; sides with some cordate-striate granules and minute, papilliform plastron setae as on hypomerion (Figure 14). Pros-

ternal process broadly rounded apically, wider and obtusely angulate apicolaterally; surface coarsely, densely granulate. Metasternum rimmed anteriorly and laterally adjacent to mesocoxae; discrimen indistinct but apparently extends from hind margin of metasternum forward to a level slightly behind mesocoxae; surface of basal two-thirds between metacoxae broadly, shallowly concave. Protibia with cleaning fringe of golden setae on distal two-thirds of medial surface (Figure 18).

Abdomen: All sterna coarsely, densely granulate. Intercostal area of first visible sternum broadly angular between metacoxae. Last sternum subrectangular; granules progressively finer and sparser toward hind margin.

Genitalia: As illustrated (Figures 19, 20).

Female: Unknown.

Type Data: Holotype, male: Africa, Kenya, Kakamega Forest, Mayakalo, 00°12'N 34°52.5'E, 9 Jan 1990, Scott Cooper; deposited in the National Museum of Natural History, Smithsonian Institution.

Paratype, male: Same data as holotype; coated and on SEM stub.

Etymology: Named *octomeria* from the Greek okto ("eight") plus Greek meros ("part") in reference to the distinctive 8-segmented antennae.

Habitat: The two specimens of the new taxon were collected from a small (width = 1.7-2.5 m), shallow (depth = 0.1-0.45 m) turbid stream that crossed a large meadow. The stream had a rocky bottom with some sand. Water temperature was 25°C at mid-afternoon. Lumbering activities were underway adjacent to the stream. Small catfish (probably *Clarias* and *Chiloglanis*), the cyprinid, *Barbus*, and several freshwater crabs (*Potamonantes*) were also present. The riparian vegetation included *Tithonia* (dominant), *Kigelia moosa*, *Croton macrostachyus*, *Fagara macrophylla*, *Acanthus arboreus* (dominant), and *Neoboutonia macrocalyx*. Upland vegetation included *Bridelia micrantha* (dominant), *Eucalyptus saligna* (dominant), *Croton sylvaticus*, *Blighia unijugata*, and *Entada abyssinica*.

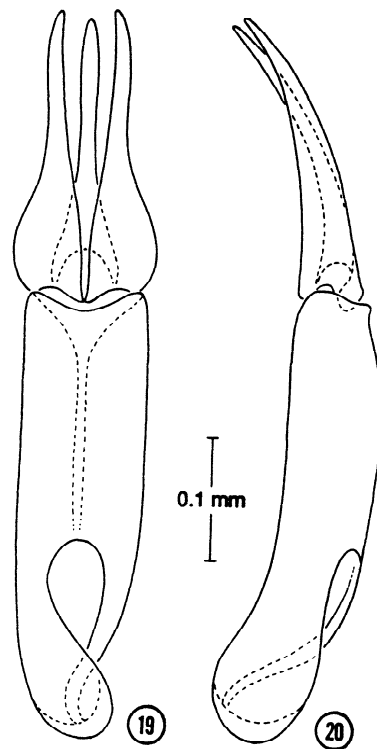
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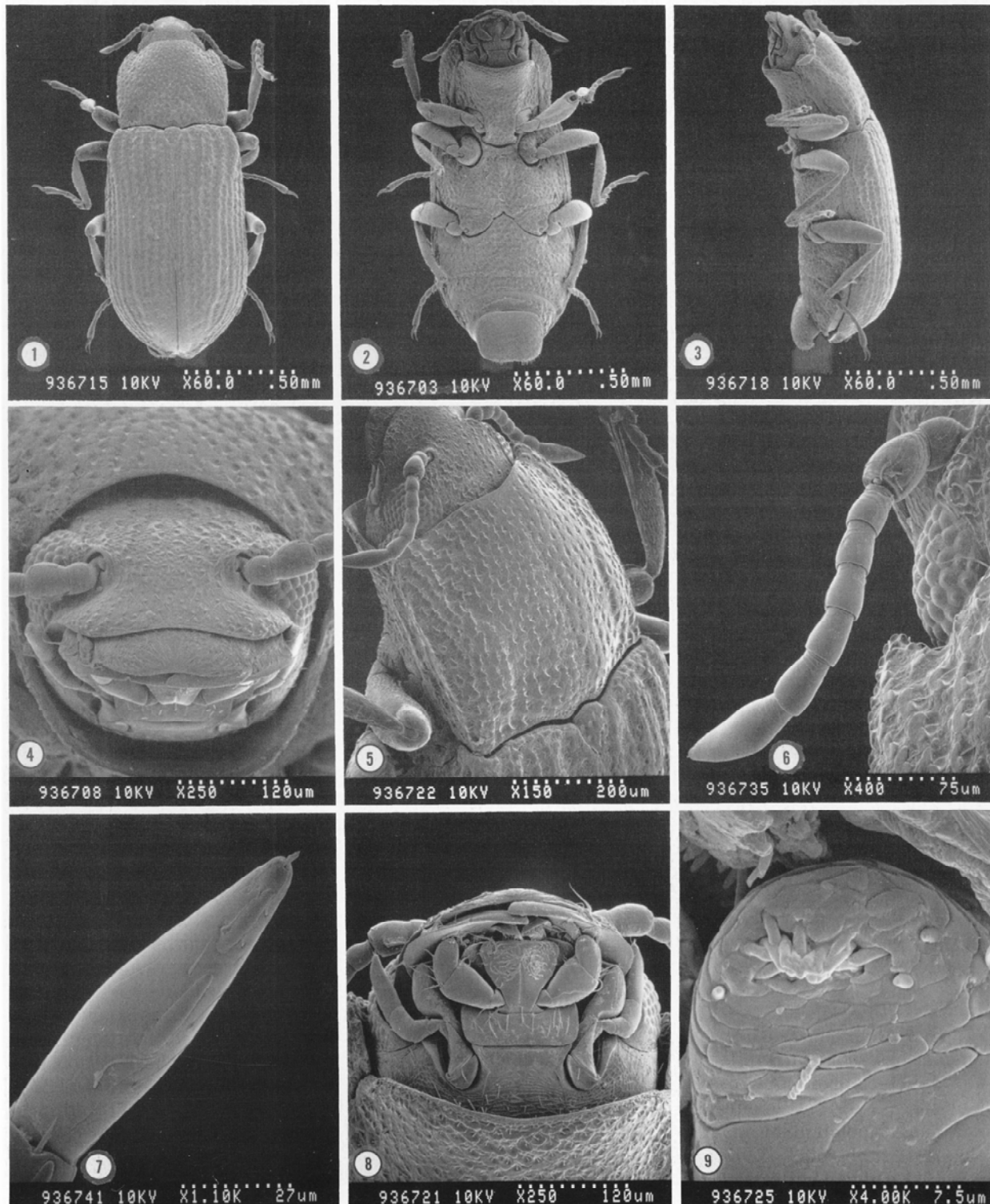
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References

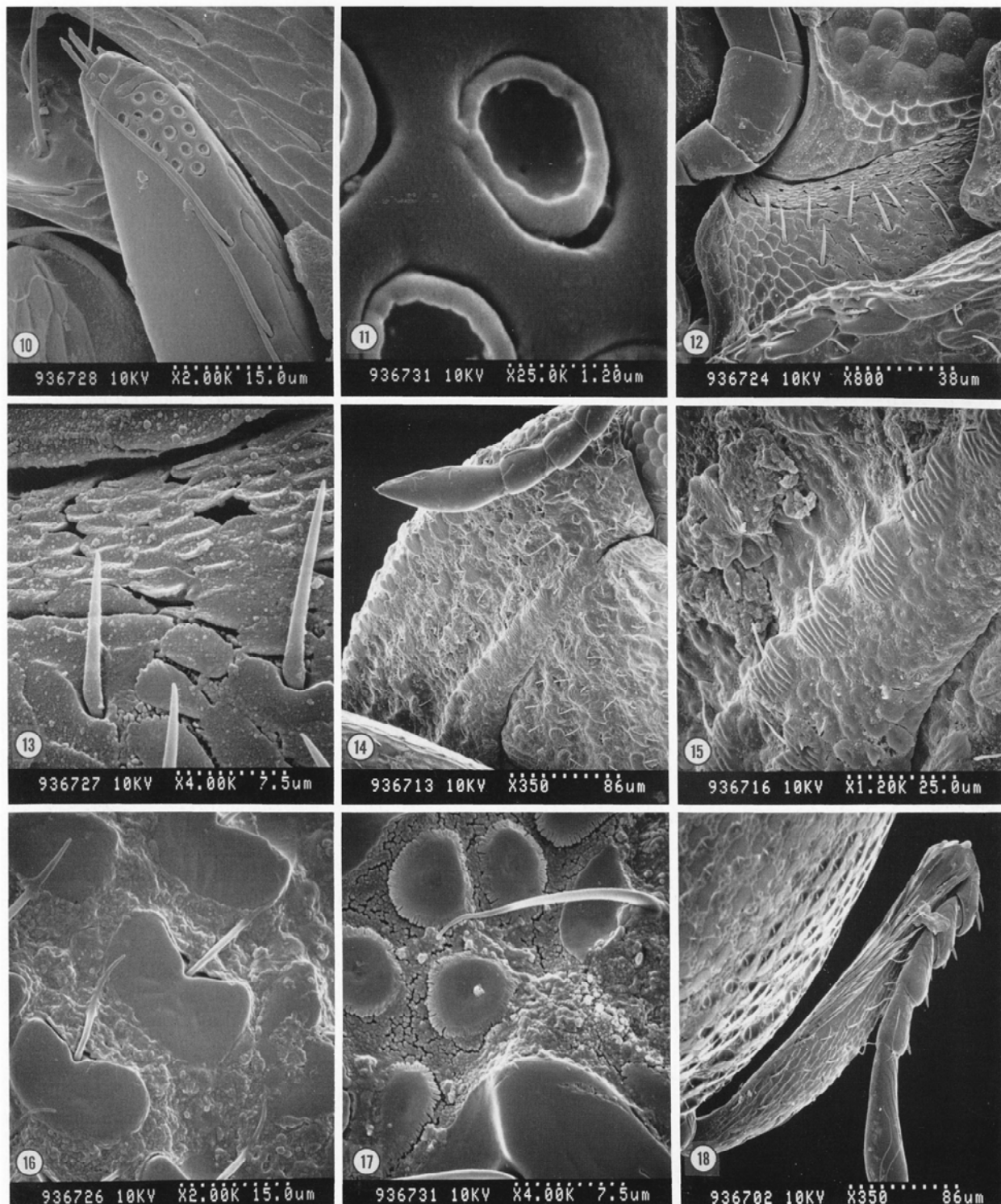
Delève, J. 1966. Dryopidae and Elminthidae de l'Angola. Museu do Dundo. Publicações Culturais Da Companhia De Diamantes De Angola, No. 76. 62 pages.



Figures 19, 20. *Caenelmis octomeria*, new species. 19, male genitalia, ventral view; 20, male genitalia, lateral view.



Figures 1-9. *Caenelmis octomeria*, new species. 1, habitus, dorsal view, X60; 2, habitus, ventral view, X60; 3, habitus, lateral view, X60; 4, head, adoral view, X250; 5, head, pronotum, and scutellum, diagonal view, X150; 6, eye and antenna, X400; 7, antennal sensilla, on lower surface of apical segment, X1,100; 8, head and mouthparts, ventral view, X250; 9, labial palpus, apical segment, sensilla, X4,000.



Figures 10–18. *Caenelmis octomeria*, new species. 10, maxillary palpus, apical segment, sensilla, X2,000; 11, maxillary palpus, apical segment, sensilla, X25,000; 12, gena, plastron, 2 types, X800; 13, gena, plastron, 2 types, X4,000; 14, hypomerion and side of prosternum, X350; 15, hypomerion, cordate-striate granules and papilliform plastron setae, X1,200; 16, pronotal cordate granules, X2,000; 17, elytral papilliform plastron setae, X4,000; 18, cleaning fringe, protibia, X350.