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Redescription of two species of freshwater crabs from Tanzania, East Africa: *Arcopotamonautes unisulcatus* (Rathbun, 1933) and *A. xiphoidus* (Reed & Cumberlidge, 2006) (Brachyura: Potamoidea: Potamonautidae)

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Abstract

This work focuses on two little-known species of freshwater crabs from Tanzania, East Africa: *Arcopotamonautes unisulcatus* (Rathbun, 1933) and *A. xiphoidus* (Reed & Cumberlidge, 2006) (Potamoidea: Potamonautidae). Both species are redescribed in detail from the examination of type specimens and other available material, supported by diagnoses, illustrations, and a distribution map.

Key words: Decapod crustaceans, Potamonautinae, taxonomy

Introduction

The freshwater crab fauna of East Africa has been the subject of a number of studies (Bott 1955; Reed & Cumberlidge 2006; Cumberlidge & Daniels 2022) and currently comprises over 40 species belonging to five genera. Four genera, *Arcopotamonautes* Bott, 1955, *Acanthothelphusa* Ortmann, 1897, *Rotundopotamonautes* Bott, 1955, and *Sudanonautes* Bott, 1955, are assigned to the family Potamonautidae Bott, 1970, while the fifth genus, *Deckenia* Hilgendorf, 1868, is assigned to the Afrotropical family Deckeniidae Ortmann, 1897 (Cumberlidge & Daniels 2022). The two freshwater crab species that are the focus of the present study, e.g., *Arcopotamonautes unisulcatus* (Rathbun, 1933) and *A. xiphoidus* (Reed & Cumberlidge, 2006), from Tanzania are redescribed based on the examination of type material and other available specimens. Each species has distinct morphological characteristics that sets them apart from the other East Africa species.

The redescriptions are necessary because the original descriptions were either brief or incomplete, and important taxonomic characters (such as those of the gonopods and mandible) needed to be updated. The distributional ranges of both species have also been revised. In addition, the classification of both species has been impacted by the major taxonomic revision of Cumberlidge & Daniels (2022).

A distribution map and a discussion of the conservation status of each species are also provided, but molecular data are currently not available for these two species.

Material and methods

The types of *Potamon* (*Potamonautes*) *unisulcatus* Rathbun, 1933 are deposited in the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA (MCZ). Type specimens of *A. xiphoidus* are deposited in the Northern Michigan University Museum, Marquette, MI, USA (NMU). Characters of the gonopods, carapace, thoracic sternum, cheliped, third maxilliped and mandible were examined in detail and photographed with a digital camera and a Keyence VHX 5000 digital microscope, and post-processing was undertaken using Adobe Photoshop

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CC5. Measurements were made with callipers and are given in millimetres (mm). Measurements of the subterminal articles of G1 and G2 were made along a straight line beginning at the midpoint of the basal margin and ending at the midpoint of the distal margin (at the junction between the two articles). Measurements of the terminal article of G1 and G2 were made on the ventral face along the midline beginning at the midpoint of the basal margin (at the junction between the two articles) and ending at the tip. The length of the terminal article of G1 and G2 relative to the length of the subterminal article of each of these structures is presented as the ratio of the terminal article to the subterminal article (TA/SA). The terminology used follows Cumberlidge (1999) and Davie *et al*. (2015), and the classification follows Cumberlidge & Daniels (2022). The following abbreviations are used: ASL, altitude above sea level in meters; CH, carapace height measured at maximum height of cephalothorax; CL, carapace length measured along median line from anterior to posterior margin; coll., collected by; CW, carapace width measured at widest point; FW, front width measured along anterior frontal margin between inner angles of orbits; E, thoracic episternite; G1, first gonopod; G2, second gonopod; juv., juvenile; P2–5, pereiopods 2 to 5 (ambulatory legs 1–4); PL, pleomere; S, thoracic sternite; S4/5, sternal sulci between adjacent thoracic sternites; S4/E4, episternal sulci between adjacent thoracic sternites and episternites; SA, subterminal article of G1 or G2; and TA, terminal article of G1 or G2.

Systematics

Infraorder Brachyura Linnaeus, 1758

Superfamily Potamoidea Ortmann, 1896

Family Potamonautidae Bott, 1970

Subfamily Potamonautinae Bott, 1970

Genus *Arcopotamonautes* Bott, 1955

Arcopotamonautes unisulcatus (Rathbun, 1933)

(Figures 1–5, 10)

Potamon (*Potamonautes*) *johnstoni unisulcatus* Rathbun, 1933: 255, pl. 2, figs. 2–4.
Potamon unisulcatus—Chace 1942: 223.
Potamonautes (*Lirrangopotamonautes*) *johnstoni johnstoni*—Bott 1955: 265–267, pl. XV, fig. 2a–d, fig. 36a, b.
Potamonautes unisulcatus—Reed & Cumberlidge 2006: 3–5, 11, 15, 23, 37, 38, 58–60, pl. XIII, figs. A–D, table 1–4, figs. 124–133, 169,170, 185, appendix.—Ng *et al*. 2008: 171.
Arcopotamonautes unisulcatus—Cumberlidge & Daniels 2022: 1274, 1294.

Type material. Holotype: MCZ CRU-7678, adult female (CW 52.0 mm, CL 35.0 mm), Tanzania, Uluguru Mountains, Bagilo (-7.105079, 37.654157, 1,935m ASL), coll. A. Loveridge, September 1926. Paratypes: MCZ CRU-7678a, adult male (CW 33.0 mm, CL 21.0 mm), same data as holotype. – MCZ CRU-7678b, 3 adult males (no measurements available), 2 adult females (no measurements available), same data as holotype.

Other material examined: NMU TRWEA62.45, subadult male (CW 31.6 mm), subadult female (CW 41.1 mm), 2 juvs. (CWs 17.1, 16.3 mm), Tanzania, Uluguru Mountains, Bunduki, Kitange-Tange River, tributary of Mgeta River 2.4–3.0 m wide, near Hululu Waterfalls Mgeta (-7.049021, 37.642489, 1,603 m ASL), riverbed with large boulders, gravel, stones and sand, coll. T.R. Williams, 23 February 1962. – NMU TRWEA62.47, 2 subadult males (CWs 29.8, 27.0 mm), 4 juvs. (CWs 15.6 mm, 15.9 mm, 16.2 mm, 17.8 mm), Tanzania, Uluguru Mountains, Bunduki rest house, Kitange-Tange River, 1859–1890 m ASL, river falling rapidly over large boulders, with gravel flats and occasional large stones, coll. T.R. Williams, 23 February 1962. – NMU TRWEA62.49 (illustrated), adult male (CW 33.6 mm, CL 23.4 mm, CH 11.1 mm, FW 10.6 mm), adult female ovigerous (CW 28.3 mm), Tanzania, Bunduki, Uluguru Mountains, from small, shaded stream near forest margin, coll. T.R. Williams, 23 February 1962.

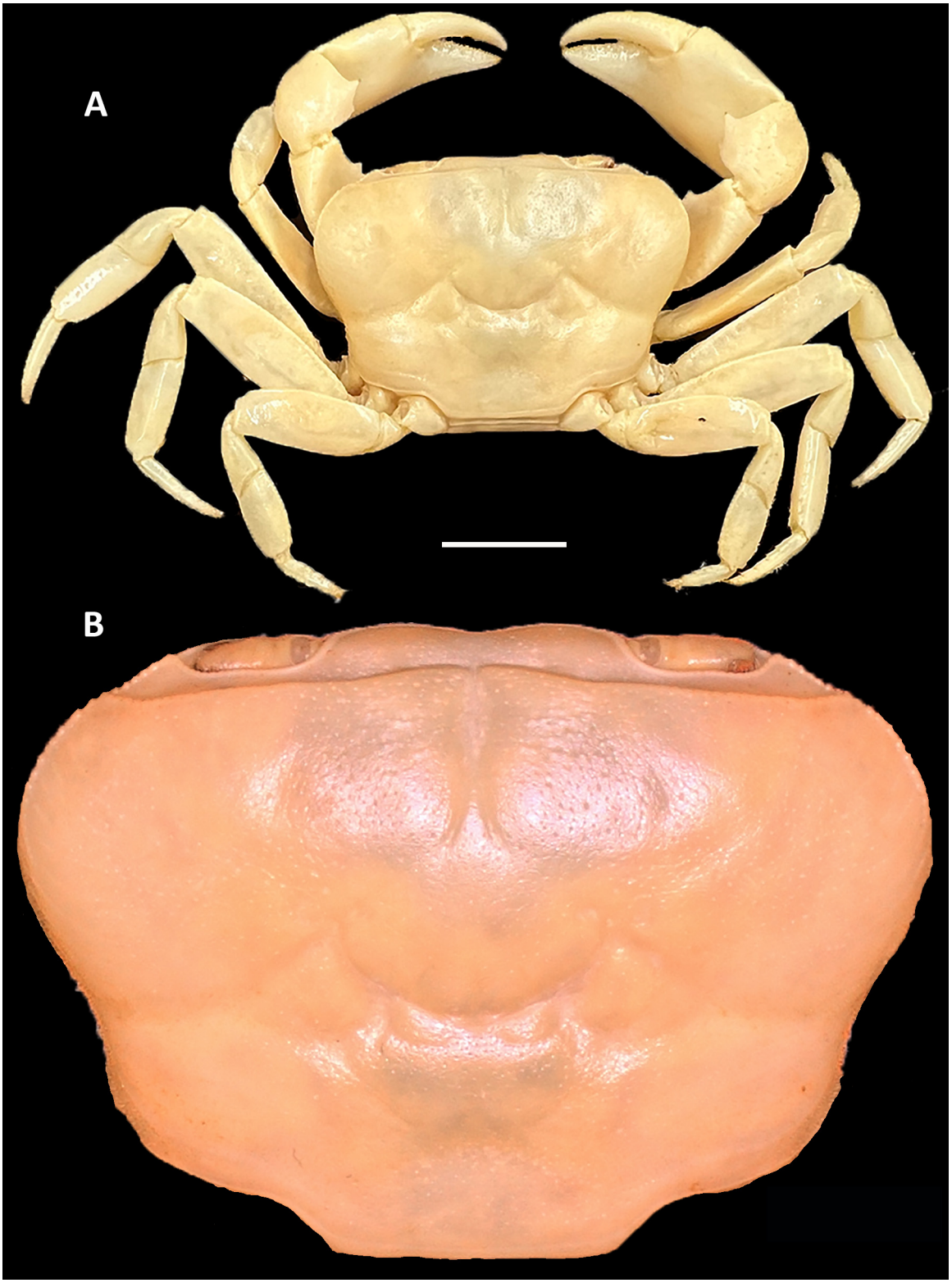

FIGURE 1. *Arcopotamonautes unisulcatus* (Rathbun, 1933), adult male (CW 33.6 mm) (NMU TRWEA62.49), from Bunduki, Uluguru Mountains, Tanzania. A, whole animal, dorsal view; B, carapace dorsal view. Scale bar: A = 11.2 mm; B = 4.6 mm.

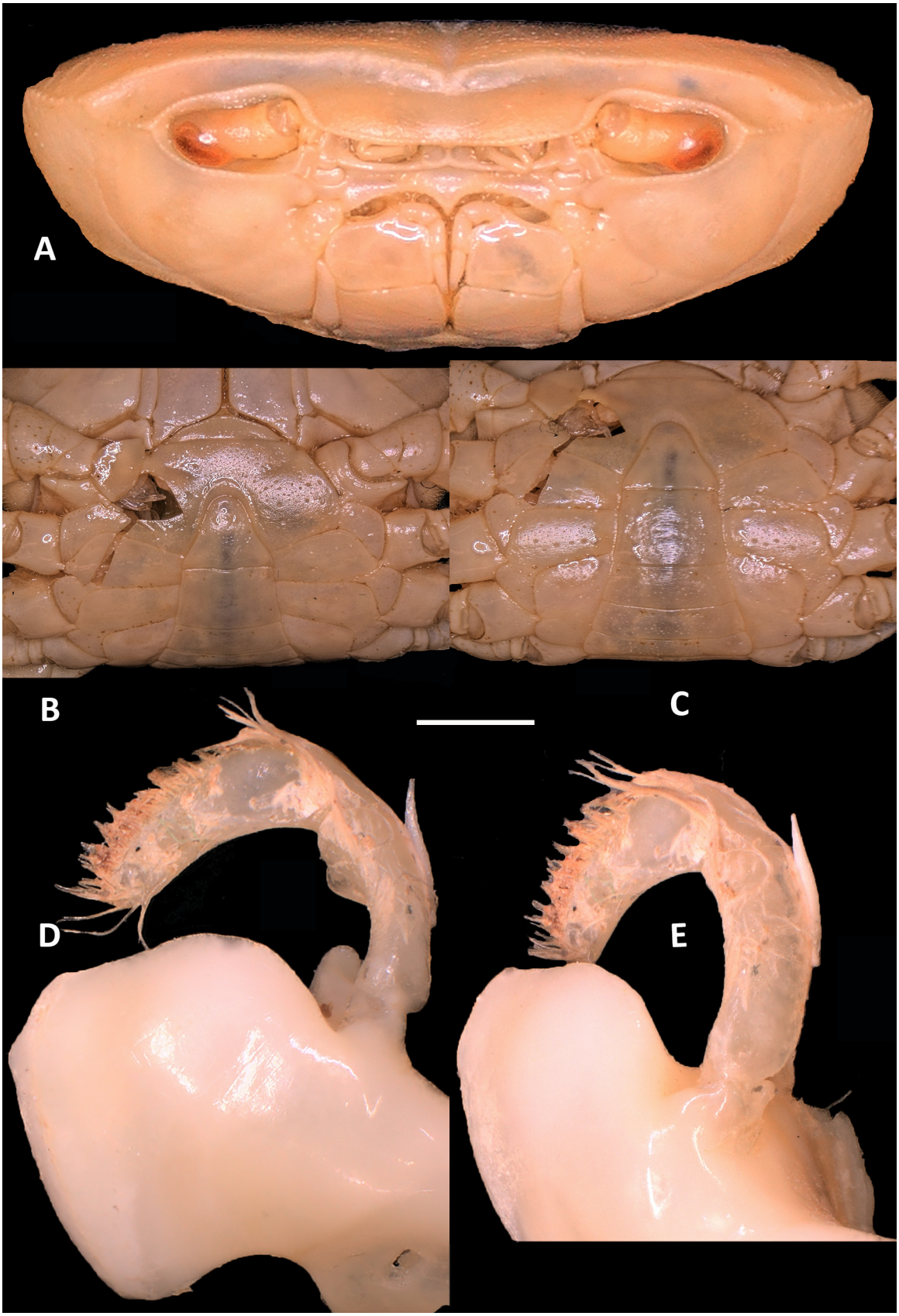

FIGURE 2. *Arcopotamonautes unisulcatus* (Rathbun, 1933), adult male (CW 33.6 mm) (NMU TRWEA62.49), from Bunduki, Uluguru Mountains, Tanzania. A, carapace, frontal view; B, cephalothorax showing anterior thoracic sternum, ventral view; C, cephalothorax showing pleon and posterior thoracic sternum, ventral view; D, mandible, frontal view; E, mandibular palp turned to show ridge on terminal article. Scale bar: A = 5.0 mm; B, C = 6.7 mm; D = 1.3 mm; E = 1.7 mm.

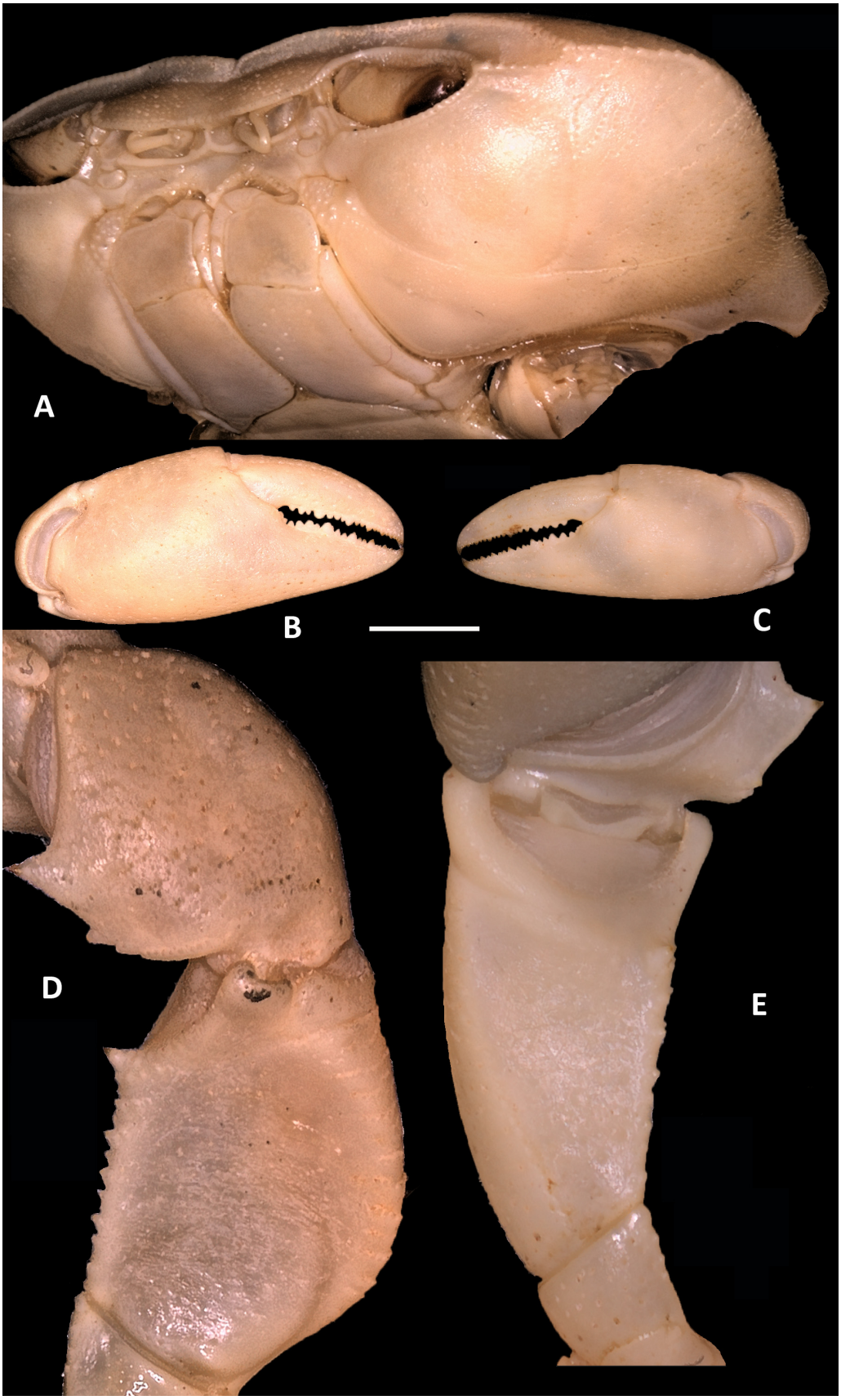

FIGURE 3. *Arcopotamonautes unisulcatus* (Rathbun, 1933), adult male (CW 33.6 mm) (NMU TRWEA62.49), from Bunduki, Uluguru Mountains, Tanzania. A, Anterior left branchiostegite; B, right chela, frontal view; C, left chela, frontal view; D, left cheliped carpus and merus, dorsal view; E, left cheliped merus, ischium, ventral view; F, third maxilliped, frontal view. Scale bar: A = 4.0 mm; B, C = 7.1 mm; D = 4.3 mm; E = 5.0 mm; F = 2.4 mm.

FIGURE 4. *Arcopotamonautes unisulcatus* (Rathbun, 1933), adult male (CW 33.6 mm) (NMU TRWEA62.49), from Bunduki, Uluguru Mountains, Tanzania. A, left G1, ventral view; B, left G1, dorsal view; C, left G2, ventral view. Scale bar: A, B = 1.0 mm; C = 1.3 mm.

Diagnosis. Postfrontal crest sharp-edged, completely crossing carapace; exorbital tooth low but distinct, epibranchial tooth reduced to small granule; (Fig. 1A, B); anterolateral, lateral carapace margins distinctly granulated; carapace branchiostegite smooth; third maxilliped ischium lacking vertical sulcus; S3/4 incomplete, deep at sides, obscure in middle; thoracic episternal sulci S4/E4, S5/E5 deep, complete, S6/E6, S7/E7 obscure (Fig. 2B, C). Male right (major) chela dactylus straight, not arched, broad, cutting edge lined by large teeth, largest proximally, becoming smaller distally; cheliped merus stout, anterior inferior margin lined by small teeth, distal meral tooth large, posterior inferior margin smooth (Fig. 3C, D); cheliped carpus inner margin distal tooth medium sized pointed,

proximal tooth small, pointed, followed by two granules (Fig. 3E); G1TA about 1/3 G1SA length (G1TA/G1SA 0.4), basal half straight, distal half curved outward at 45° to longitudinal axis of G1SA; G1TA tapering to pointed straight tip, mid-section widened by additional rounded crest on dorsal lobe with distinct setae on ventral lobe; G1TA dorsal, ventral lobes separated in middle by long groove (Figs. 4A–C, 5B, C).

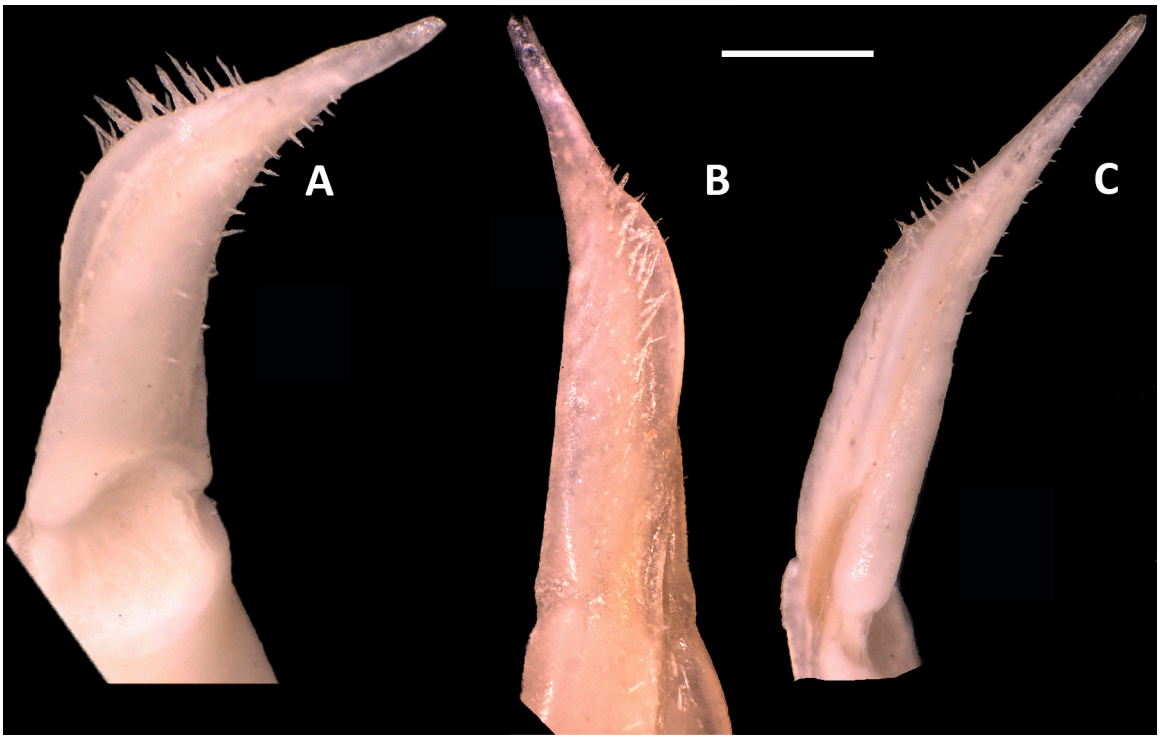

FIGURE 5. *Arcopotamonautes unisulcatus* (Rathbun, 1933), adult male (CW 33.6 mm) (NMU TRWEA62.49), from Bunduki, Uluguru Mountains, Tanzania. A, left G1TA, ventral view; B, left G1TA, turned to show detail; C, left G1TA, superior view. Scale bar: A = 0.5 mm; B = 0.7 mm; C = 0.6.

Description. Carapace surface smooth, widest in anterior third (CW/FW 3.1), medium height (CH/FW 1.1) (Figs. 1A, B, 2A), semi-circular, urogastric grooves deep; cardiac region weakly marked, cervical grooves short, faint; transverse branchial grooves faint (Fig. 1A, B). Front about 1/3 carapace width (FW/CW 0.3); frontal margin straight (Figs. 1A, B, 2A); exorbital tooth small, blunt; epibranchial tooth reduced to granule; postfrontal crest sharply defined, complete, traversing entire carapace; lateral carapace margin posterior to epibranchial tooth granulated (Fig. 1A, B). Branchiostegite with two sutures, one longitudinal (epimeral), one vertical, dividing carapace sidewall into suborbital, subhepatic, pterygostomial regions, all smooth (Fig. 3A).

Third maxillipeds filling entire oral field, except for transversely oval efferent respiratory openings at superior lateral corners, exopod with long flagellum, endopod ischium smooth (Fig. 2D). Mandibular palp consisting of basis plus two articles; terminal article simple, undivided, lacking lobe or ridge at junction between articles (Fig. 2E). Anterior, posterior male thoracic sternum surface completely smooth; sternal sulci S1/2, S2/3 completely traversing sternum; S3/4 incomplete, deep at sides, obscure in middle; thoracic episternal sulci S4/E4, S5/E5 deep, complete, S6/E6, S7/E7 obscure (Fig. 2B, C).

Male right (major) chela dactylus straight, not arched, broad, cutting edge lined by large teeth, largest proximally, becoming smaller distally; immovable finger (propodus pollex) broad, cutting edge lined by large teeth, largest proximally, becoming smaller distally; tips of both fingers touching when chela closed, enclosing long narrow interspace; major chela propodus palm enlarged, swollen, lower margin curving downward, distinctly convex, cutting edge toothed, largest teeth proximally, becoming smaller distally (Fig. 3A). Male left (minor) chela dactylus slim, gently curved, cutting edge with large teeth proximally, small teeth distally; propodus pollex cutting edge lined by large teeth, largest proximally, becoming smaller distally; tips of both fingers touching when chela closed, enclosing long narrow interspace; minor chela propodus palm subequal to that of major chela; lower margin gently curved, convex (Fig. 3B). Cheliped merus stout, anterior inferior margin lined by small teeth, distal meral

tooth large, posterior inferior margin smooth (Fig. 3C, D); cheliped carpus inner margin distal tooth medium sized, pointed; proximal tooth small, pointed, followed by two granules (Fig. 3E); ambulatory legs P2–5 stout, distal limb articles (merus, carpus, propodus, dactylus) not elongated; dactyli of P2–5 tapering to point, each bearing four rows of downward-pointing sharp bristles (Fig. 1A). Male pleon, telson together forming slim triangle; pleon edges slightly indented; telson triangular, apex rounded, base broadest, sides outwardly sloping; pleomeres PL1–6 rectangular, wider than long, PL 6 longest, more than 1/2 as long as wide; remaining pleomeres short, less than 1/3 as long as wide (Fig. 2B, C).

G1TA about 1/3 G1SA length (G1TA/G1SA 0.4), basal half straight, distal half curved outward at 45° to longitudinal axis of G1SA; G1TA with setae on lateral margin, rounded crest in midsection, distal third tapering to pointed straight tip; G1TA dorsal lobe low, ventral lobe low widened by additional rounded crest in mid-section which has long setae; lobes separated in middle by thin groove (Fig. 4A–C, 5B, C). G1SA widest at base, narrowest at G1TA-G1SA junction; G1SA mesial, lateral margins lined by long setae (Fig. 4A, 5B). G2SA (Fig. 5A) long, slim, subequal to G1SA; G2SA widest at base, tapering sharply inward about one-third along length, last 2/3rds forming long, thin, tapering, upright process supporting long flagellum-like G2TA (G2TA/G2SA 0.5) (Fig. 5A).

Size. Medium-sized species, the adult size range is between CW 33.0–52.0 mm.

Type locality. Tanzania, Uluguru Mountains, Bagilo.

Colour. Living male specimens have a purple-pink carapace and paler walking legs. Carapace of living female distinctly mottled with darker areas. Specimens preserved in ethanol are light brown.

Habitat. At Bunduki in the Uluguru Mountains this species is most abundant either near, or within, higher altitude forest and occurs only rarely at lower altitudes. Crabs were collected from a small shaded stream near the forest margin.

Distribution. Endemic to the Uluguru Mountains, Tanzania, East Africa (Fig. 10).

Conservation status. *Arcopotamonautes unisulcatus* is currently assessed as vulnerable because it is only known from two locations, has a restricted extent of occurrence, less than 20,000 km², and a small area of occupancy that are both below the thresholds for vulnerable (IUCN 2004). In addition, its distribution is fragmented, and it is threatened by a continuing decline in the extent and quality of its habitat due to degradation driven by human population increases and industrial and agrarian development, and *A. unisulcatus* is not found in a protected area.

Remarks. Bott (1955) treated *Potamon* (*Potamonautes*) *unisulcatus* Rathbun, 1933 as a junior synonym of *A. johnstoni* (Miers, 1885). The present study, however, agrees with the opinion of Reed & Cumberlidge (2006) that both of these taxa are each valid species. *Arcopotamonautes unisulcatus* is redescribed here because the earlier redescription of this species by Reed & Cumberlidge (2006) provided only a brief account and did not make comparisons with other species. In addition, the earlier descriptions have been expanded by adding new taxonomic characters such as mandibles and gonopods that were not previously described. Furthermore, this species is also compared with similar newly-described taxa from the region.

Comparisons. *Arcopotamonautes* (Bott, 1955) currently comprises 18 species from the D.R. Congo, Kenya, Malawi, Rwanda, Tanzania, and Zambia (Reed & Cumberlidge 2006; Cumberlidge & Daniels 2022; Cumberlidge & Jonas 2024; Cumberlidge & Conners 2025). *Arcopotamonautes unisulcatus* can be distinguished from *A. suprasulcatus* (Hilgendorf, 1898), *A. xiphoidus* (Reed & Cumberlidge, 2006), *A. infravallatus* (Hilgendorf, 1898), and *A. bellarussus* (Daniels, Phiri & Bayliss, 2014) by the form of the G1TA, which is distinctly widened in the midsection in *A. unisulcatus* (Figs. 4A–C, 5A, C, 9A–C, 10B, C) (versus slim, curved, and needle-like in *A. suprasulcatus* and *A. bellarussus* (Daniels *et al*. 2014: fig, 5A, B), or cone-shaped, not widened, and tapering to a pointed tip in both *A. xiphoidus* (Fig. 9A, B) and *A. infravallatus*; Cumberlidge & Conners 2025: figs. 1A, B, D, 6E). *Arcopotamonautes unisulcatus* can be distinguished from *A. orbitospinus* (Cunnington, 1907) from Lake Malawi and *A. platynotus* (Cunnington, 1907) from Lake Tanganyika by the form of the carapace lateral margin which is granular in *A. unisulcatus* (Figs. 1A, B, 6A, B) (versus a lateral margin that has several teeth behind the epibranchial tooth in *A. orbitospinus* (Reed & Cumberlidge 2006: pl. V, A, B; fig. 42 as *Potamonautes lirrangensis*), and *A. platynotus*; Reed & Cumberlidge 2006: fig. 94). *Arcopotamonautes unisulcatus* can be distinguished from *A. platycentron* (Hilgendorf, 1897) from Lake Chala (Kenya and Tanzania) by the form of the cheliped carpus distal tooth, which is slim and pointed in *A. unisulcatus* (Figs. 3C, 8E) (versus extremely broad, flat and blunt in *A. platycentron*; Reed & Cumberlidge 2006: figs. pl. IX, A).

Arcopotamonautes unisulcatus can be distinguished from *A. amosae* (Cumberlidge, Johnson, Clark & Genner, 2021), *A. caputanatis* Cumberlidge, Clark & Fastiggi, 2019), *A. johnstoni* (Miers, 1885), *A. raybouldi* (Cumberlidge

& Vannini, 2004), *A. gerdalensis* (Bott, 1955) and *A. montivagus* (Chace, 1953) by the form of the G1TA, which has a rounded low crest arising out of the dorsal lobe in *A. unisulcatus* (Figs. 4A–C, 5A, C, 9A–C, 10B, C) (versus a G1TA, where a high thin crest arises from the dorsal lobe in *A. amosae*, *A. caputanatis*, *A. johnstoni* (Reed & Cumberlidge 2006: figs. 151, 152), *A. raybouldi* (Reed & Cumberlidge 2006: figs. 165, 166), *A. gerdalensis* (Reed & Cumberlidge 2006: figs. 147, 148), and *A. montivagus*; Chace 1953: fig. 3e–g, j). *Arcopotamonautes unisulcatus* can be distinguished from *A. parekeeae* Cumberlidge & Jonas, 1924 and *A. ngae* Cumberlidge & Jonas, 1924 by the sulci on the anterior thoracic sternum, where the S3/4 is missing except for two short notches at the margins in *A. unisulcatus* (versus deep and completely traversing the thoracic sternum in *A. parekeeae* and *A. ngae* (Cumberlidge & Jonas, 1924: figs. 2B, C, 7B, C)). Finally, *A. unisulcatus* can be distinguished from *A. picus* Cumberlidge & Conners, 2025 by the form of the G1TA, which is distinctly widened in the midsection in *A. unisulcatus* (Figs. 4A–C, 5A, C, 9A–C, 10B, C) (versus slim and tapering to a slightly upcurved tip in *A. picus*; Cumberlidge & Conners 2025: fig. 4A, B, D–F).

Arcopotamonautes xiphoidus (Reed & Cumberlidge, 2006)

(Figures 6–10)

Type material. Holotype: NMU TRW1966.06b, adult male (CW 38.3 mm, CL 26.1 mm, CH 15.6 mm, FW 11.4 mm), Tanzania, West Usambara Mountains, Herkulu Estate, Lushoto District, Tanga region, coll. J.N. Raybould, November 1964. Paratype: NMU TRW1966.06b, adult male (CW 27.2 mm, CL 19.3 mm, CH 11.7 mm, FW 8.4 mm), same data as holotype.

Other material examined. NMU TRW1966.06a, 5 subadult & adult males (CWs 16.1–33 mm), 2 adult females (CWs 30.9 mm, 33.1 mm), 6 subadult & adult females (CWs 16.0–25.3 mm) Tanzania, West Usambara Mountains, streams and dams near Herkulu Estate, Lushoto District, Tanga region, coll. J.N. Raybould, November 1964. – USNM 64108, female (damaged), male (damaged), Tanzania, East Usambara Mountains, Amani, coll. A. Loveridge, 8 December 1926.

Diagnosis. Exorbital tooth small, blunt; epibranchial tooth reduced to granule; postfrontal crest sharply defined, complete, traversing entire carapace; carapace lateral margin posterior to epibranchial tooth smooth (Fig. 6A, B). Branchiostegite suborbital, subhepatic, pterygostomial regions, all smooth (Fig. 7A, B). Ischium of third maxilliped with deep vertical sulcus (Fig. 8E). Dactylus of except for several small granule-like teeth distally; both finger tips touching when chela closed, enclosing long oval interspace; major chela propodus palm enlarged, swollen, lower margin distinctly concave (Fig. 8A). G1TA smooth, tapering sharply to pointed straight tip; G1TA widened basally; ventral, dorsal lobes low (Fig. 7A, B).

Redescription. Carapace surface smooth, widest in anterior third (CW/FW 3.4), medium height (CH/FW 1.4) (Figs. 6A, B, 7A), semi-circular groove deep, urogastric, cardiac, cervical, transverse branchial grooves faint (Fig. 6B). Front about 1/3 carapace width (FW/CW 0.3); frontal margin slightly indented (Figs. 6B, 7A); exorbital tooth small, blunt; epibranchial tooth reduced to granule; postfrontal crest sharply defined, complete, traversing entire carapace; carapace lateral margin posterior to epibranchial tooth smooth (Figs. 6A, B, 7A). Branchiostegite with two sutures, one longitudinal (epimeral), one vertical, dividing carapace sidewall into suborbital, subhepatic, pterygostomial regions, all smooth (Fig. 7A).

Third maxillipeds filling entire oral field, except for transversely oval efferent respiratory openings at superior lateral corners (Fig. 7A), exopod with long flagellum maxilliped, endopod ischium with deep vertical sulcus (Fig. 8E). Mandibular palp consisting of basis plus two articles; terminal article undivided, lacking ridge at junction between articles (Fig. 7D–F). Thoracic sternum S4 outer margin thickened and raised, sternal sulci S1/2, S2/3 completely traversing sternum; S3/4 deep, V-shaped, completely traversing sternum; thoracic episternal sulci S4/E4, S5/E5, S6/E6, S7/E7 present (Fig. 7A, B).

Dactylus of male right (major) chela distinctly arched, slim, cutting edge lacking teeth except for several small granule-like teeth distally; immovable finger (propodus pollex) slim, cutting edge with two medium teeth proximally; both finger tips touching when chela closed, enclosing long oval interspace; palm of propodus of major chela enlarged, swollen, lower margin distinctly concave (Fig. 7A). Dactylus of male left (minor) chela long, slim, gently curved, cutting edge lined by series of small teeth; immovable finger (propodus pollex) with four medium teeth interspersed by small teeth; both fingers touching at tip when chela closed, enclosing long oval interspace;

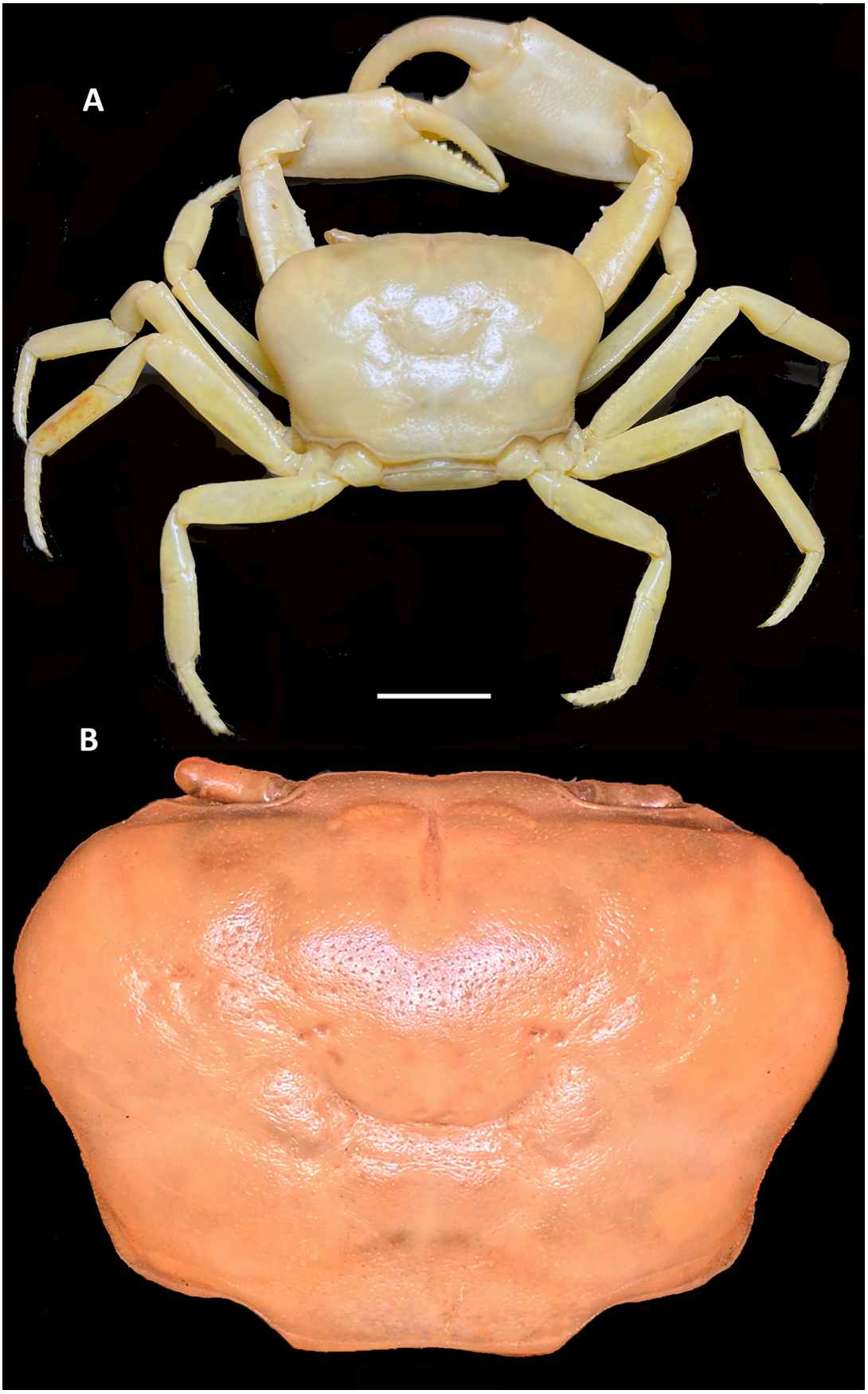

FIGURE 6. *Arcopotamonautes xiphoidus* (Reed & Cumberlidge, 2006) adult male holotype (CW 38.3 mm) (NMU TRW1966.06b), from West Usambara Mountains, Herkulu Estate, Lushoto District, Tanga region, Tanzania. A, whole animal, dorsal view; B, carapace dorsal view. Scale bar: A = 13.3 mm; B = 5.1 mm.

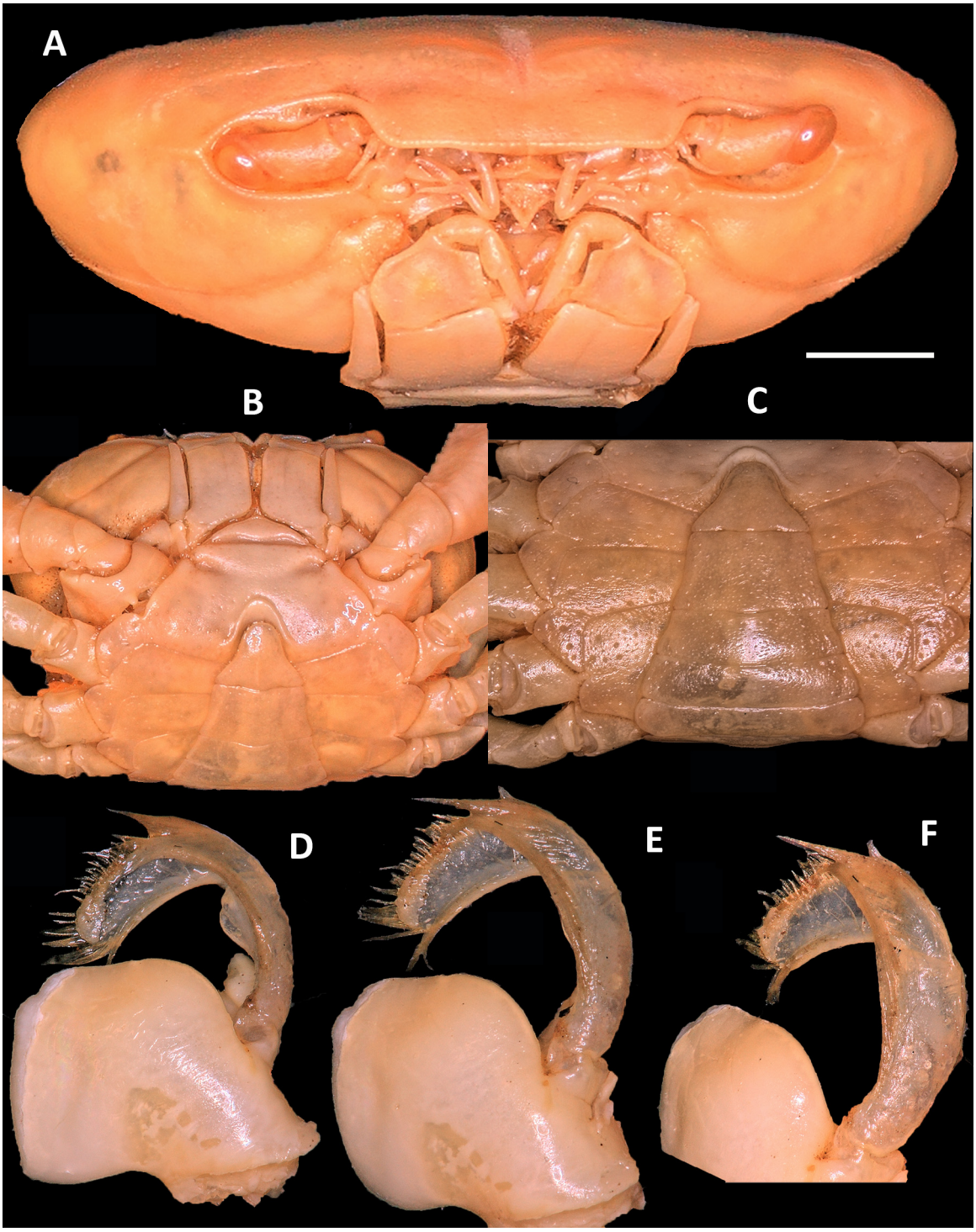

FIGURE 7. *Arcopotamonautes xiphoidus* (Reed & Cumberlidge, 2006) adult male holotype (CW 38.3 mm) (NMU TRW1966.06b), from West Usambara Mountains, Herkulu Estate, Lushoto District, Tanga region, Tanzania. A, carapace, frontal view; B, cephalothorax showing anterior thoracic sternum, ventral view; C, cephalothorax showing pleon and posterior thoracic sternum, ventral view; D, mandible, frontal view; E, mandible, turned slightly to show ridge on terminal article of mandibular palp; F, mandibular palp, showing ridge on terminal article. Scale bar: A = 6.1 mm; B = 13.3 mm; C = 8.0 mm; D, E = 2.0 mm; F = 1.7 mm.

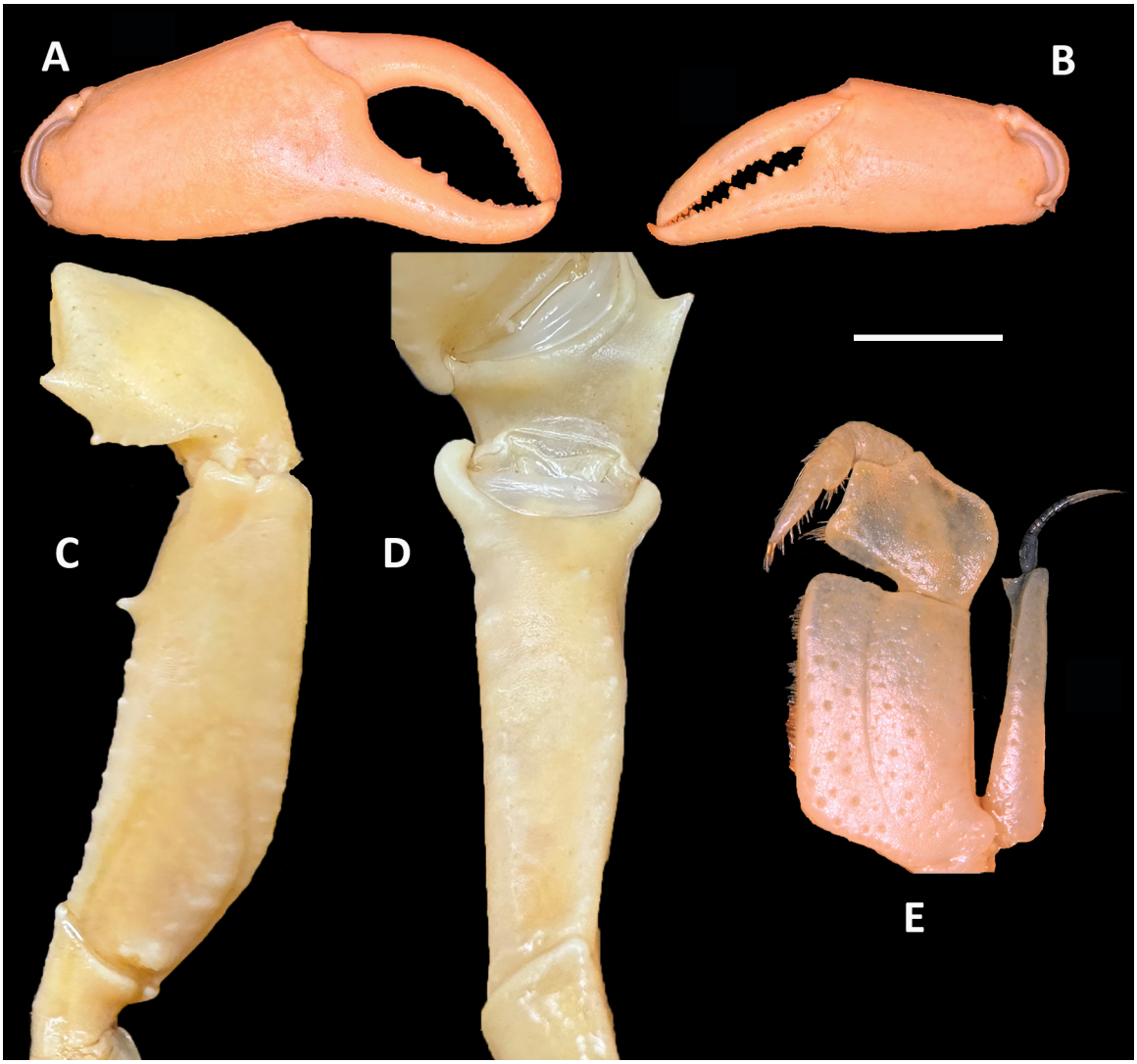

FIGURE 8. *Arcopotamonautes xiphoidus* (Reed & Cumberlidge, 2006) adult male holotype (CW 38.3 mm) (NMU TRW1966.06b), from West Usambara Mountains, Herkulu Estate, Lushoto District, Tanga region, Tanzania. A, right chela, frontal view; B, left chela, frontal view; C, left cheliped, carpus, merus, ischium, dorsal view; D, left cheliped, merus, ischium, ventral view; E, third maxilliped. Scale bar: A, B = 16.7 mm; C, D = 6.0 mm; E = 4.2 mm.

palm of propodus of minor chela subequal to that of major chela, 0.8× propodus height of major chela; lower margin slightly concave (Fig. 7B). Cheliped merus elongated, almost as long as CW; inferior margin proximally with three granule-like teeth and larger one at midpoint, otherwise smooth, distal meral tooth lacking (Fig. 8C, D); cheliped carpus inner margin distal tooth medium sized, blunt; proximal tooth small, blunt, margin behind it granulated (Fig. 8C); ambulatory legs P2–5 long, distal limb articles (merus, carpus, propodus, dactylus) elongated; dactyli of P2–5 tapering to point, each bearing four rows of downward-pointing sharp bristles (Fig. 6A). Male pleon together with telson forming slim triangle; telson triangular, apex rounded, base broadest, sides slightly indented inwardly sloping; pleomeres PL1–6 rectangular, wider than long, PL 6 longest, more than 1/2 as long as wide; remaining pleomeres short, less than 1/3 as long as wide (Fig. 7B, C). G1TA about 1/3 G1SA length (G1TA/G1SA 0.3), angled outward at 45° to longitudinal axis of G1SA; G1TA smooth, lined by short setae, tapering sharply to pointed straight tip; G1TA widened basally; ventral, dorsal lobes low (Fig. 9A, B). G1SA widest at base, narrowest at G1TA-G1SA junction; basal G1SA mesial margin lined by sparse short setae; G1SA lateral margin mostly smooth (Fig. 9A, B). G2SA (Fig. 9C) long, slim, subequal to G1SA; G2SA widest at base, tapering sharply inward about one-third along length, last 2/3rds forming long, thin, tapering, upright process supporting long flagellum-like G2TA (G2TA/G2SA 0.6) (Fig. 9C).

FIGURE 9. *Arcopotamonautes xiphoidus* (Reed & Cumberlidge, 2006) adult male holotype (CW 38.3 mm) (NMU TRW1966.06b), from West Usambara Mountains, Herkulu Estate, Lushoto District, Tanga region, Tanzania. A, left G1, ventral view; B, left G1, dorsal view; C, left G2, ventral view. Scale bar: A, B = 1.0 mm; C = 1.1 mm.

Size. Medium-sized species, adult size range between CWs 24–38 mm.

Type locality. The Herkulu Estate is a tea plantation in the Western Usambara Mountains in Lushoto District of the Tanga region of Tanzania (Fig. 10). This locality is situated in the montane forest zone (1,666 m ASL) where much of the forest has been cleared, but patches of forest have been retained to prevent soil erosion.

Distribution. This species is endemic to the East and West Usambara Mountains in Tanzania (Fig. 10). The rivers of the western slopes of the Usambaras drain into the Pangani River, while the eastern slopes of these mountains are drained by the Sigi River and its tributaries.

Conservation status. *Arcopotamonautes xiphoidus* is assessed as vulnerable because it is still known only from three localities, has a narrow extent of occurrence, and a restricted area of occupancy that are all below the thresholds for vulnerable (IUCN 2004). This species is threatened by increasing habitat disturbance and destruction by deforestation associated with growing human populations in the region. In addition, *A. xiphoidus* is not found in a protected area.

Remarks. *Arcopotamonautes xiphoidus* is morphologically close to *A. unisulcatus*, but the two taxa can be recognized by differences in the G1TA, which is long, straight, smooth, evenly-tapering, and spear-like in *A.*

xiphoidus (Fig. 9A, B) (versus curved and tapering to a pointed straight tip, with a mid-section widened by an additional rounded crest, and distinct setae on the ventral lobe in *A. unisulcatus*; Figs. 4A, B, 5A–C).

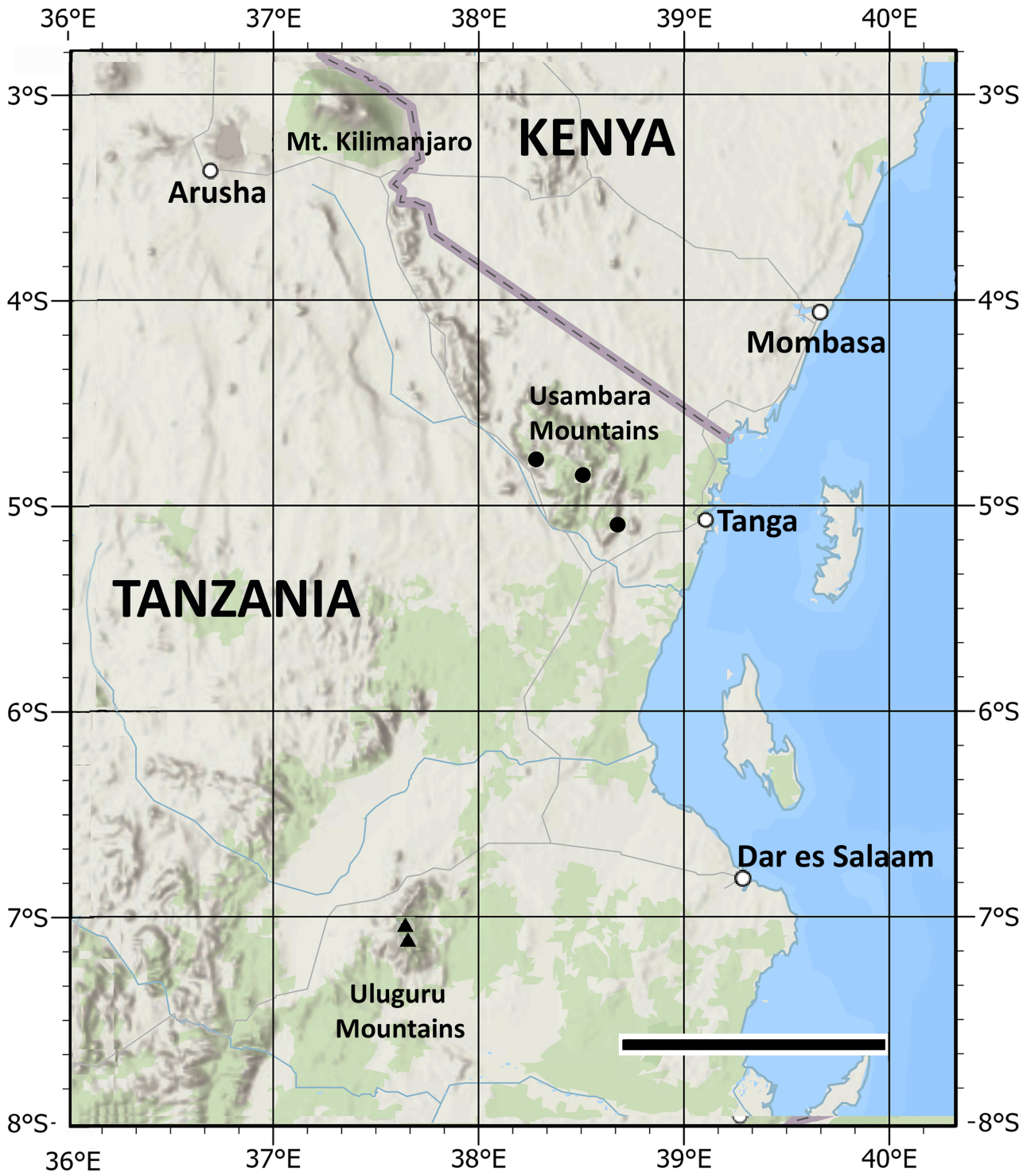

FIGURE 10. Map of south eastern Kenya and eastern Tanzania, East Africa, showing the geographic distribution of *Arcopotamonautes unisulcatus* (black triangles) and *A. xiphoidus* (black circles). Scale bar = 140 km. See text for exact localities.

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