

2016

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Research article

urn:lsid:zoobank.org:pub:C8C08037-C7EA-45C6-B21B-D2AEAC25FEA5

Two new species of freshwater crabs from the highlands of northern Uganda, East Africa and a redescription of *Potamonautes amalerensis* (Rathbun, 1935) stat. rev. from Mount Kadam (Brachyura: Potamoidea: Potamonautidae)

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Abstract. Two new species of potamonautid freshwater crabs are described from the Imatong Mountains and Mount Moroto in northern Uganda, East Africa, and a third highland species, *Potamonautes amalerensis* (Rathbun, 1935) stat. rev. from Mount Kadam is re-diagnosed based on examination of the holotype. All three species are endemic to a different mountain range and their collection localities indicate a distinct preference for higher altitudes. Diagnoses, illustrations and distribution maps are provided for these taxa, and they are compared to similar species from the region. The conservation status of all three species is discussed.

Key words. *Potamonautes imatongensis* sp. nov., *Potamonautes morotoensis* sp. nov., Imatong Mountains, Mount Moroto, Mount Kadam.

Cumberlidge N. & Clark P.F. 2016. Two new species of freshwater crabs from the highlands of northern Uganda, East Africa and a redescription of *Potamonautes amalerensis* (Rathbun, 1935) stat. rev. from Mount Kadam (Brachyura: Potamoidea: Potamonautidae). *European Journal of Taxonomy* 182: 1–18. <http://dx.doi.org/10.5852/ejt.2106.182>

Introduction

Freshwater crabs from the highland regions of northern Uganda collected by Trefor R. Williams (formerly University of Liverpool, United Kingdom) and his colleagues in the 1960s were made available to the authors for examination. This material proved to include two new species that are described here based on a unique combination of adult male characters including the first gonopod, carapace, thoracic sternum and chelipeds. The two new species were collected from streams and rivers draining the slopes of mountain ranges in the Acholi and Karamajo Provinces of northern Uganda during a survey aimed at a better understanding of the transmission of river blindness (Onchocerciasis) to humans (Barnley & Prentice 1958; McMahon *et al.* 1958; Hynes *et al.* 1961; Williams *et al.* 1964; Williams 1968, 1991;

Crosskey 1990). The third species, *Potamon (Geothelphusa) amalerensis* Rathbun, 1935 stat. rev., is from Mount Kadam in the Karamoja Province of Uganda and was collected by Arthur Loveridge during the American Natural History Museum Expedition to Kenya and Uganda in 1933–1934. This species is re-described here as *Potamonautes amalerensis* (Rathbun, 1935) stat. rev. and a second locality is recorded.

Recently, Cumberlidge & Clark (2010) reported on four species of freshwater crabs from Mount Elgon, a highland region in southeast Uganda, south of Mount Kadem, one of the highland ranges included in the present study. The freshwater crab faunas of Uganda's northern and eastern highlands include high-altitude taxa that are typically small-bodied restricted-range species that are endemic to their mountain ranges, despite the relatively close proximity of some of these localities.

All of the freshwater crabs reported on here belong to *Potamonautes* MacLeay, 1838. Specimens of the two new species are deposited in the NHM, London, UK, while the holotype and paratypes of *P. amalerensis* stat. rev. are registered in the MCZ, Harvard University, Cambridge, MA, U.S.A. The re-description of *P. amalerensis* stat. rev. is based on examination of the type material and is necessary because it is still difficult for the non-specialist to distinguish between the many *Potamonautes* species from Uganda. This is due to an absence of modern taxonomic treatments, not least because the only available identification keys (Rathbun 1921; Chace 1942; Bott 1955) are insufficient by modern standards and their systematics is dated. At present, the only way to make reliable identifications of freshwater crabs from this part of Africa is to refer to the original type series of all relevant taxa but these are held in different European and North American museums. Unfortunately, molecular data for the three species reported on here are not available, because all of this material was originally preserved in formalin. Diagnoses, illustrations, and distribution maps are provided for these taxa, and they are compared to similar species from the region. The conservation status of all three species is discussed. The addition of *P. imatongensis* sp. nov. and *P. morotoensis* sp. nov., and the recognition of a previously suppressed taxon, *P. amalerensis* stat. rev. raises to 13 the number of freshwater crabs known from Uganda (Cumberlidge & Clark 2010).

Material and methods

Measurements were made with digital calipers and are given in millimeters. The terminology is adapted from Cumberlidge (1999) and the higher classification used here follows that of Ng *et al.* (2008). Line drawings were prepared using a Leica MZ 16 binocular microscope. The habitus photographs were taken with a digital camera in combination with a Leiz MZ 95 adapter. Post processing was undertaken using Adobe Photoshop CS5.

Abbreviations

- a = abdominal somite
- a7/a6 = sutures between abdominal somites
- CW = carapace width measured at widest point
- CL = carapace length measured along median line from anterior to posterior margin
- CH = carapace height measured at maximum height of cephalothorax
- e = thoracic episternite
- FW = front width measured along anterior frontal margin between orbits
- G1 = first gonopod
- G2 = second gonopod
- IUCN = International Union for the Conservation of Nature
- MCZ = Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA
- NHM = Natural History Museum, London, UK
- NMU = Northern Michigan University, Marquette, MI, USA

p1-p5 = pereopods 1–5
s = thoracic sternite
s4/s5 = sternal sulci between adjacent thoracic sternites
s4/e4 = episternal sulci between adjacent thoracic sternites and episternites
ZSM = Zoologische Staatssammlung, München, Germany

Results

Infraorder Brachyura Latreille, 1802
Superfamily Potamoidea Ortmann, 1896
Family Potamonautidae Bott, 1970
Subfamily Potamonautinae Bott, 1970
Genus *Potamonautes* MacLeay, 1838

Potamonautes imatongensis sp. nov.

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Figs 1A–B; 2A–B, G, J; 3A–B, G–H; 4 A–C; 7A–B; 8

Diagnosis

Postfrontal crest faint but complete, lateral ends well defined, meeting epibranchial teeth; exorbital tooth low, blunt; epibranchial tooth reduced to granule; anterolateral margin posterior to epibranchial tooth smooth. Third maxilliped ischium lacking vertical groove. Sternal sulcus s3/s4 deep at edges, faint medially, almost meeting thickened, raised anterior margin of sternoabdominal cavity; margins of s4 distinctly raised, thickened. Fixed finger (propodus), movable finger (dactylus) of major cheliped of adult male both slim, elongated, lined by small teeth; movable finger (dactylus) highly arched, enclosing oval interspace when closed. Cheliped carpus: first tooth medium sized, pointed; second tooth small, broad, pointed. G1 terminal article short, straight, in line with longitudinal axis, cone-shaped, evenly tapering, tip narrow, tube-like.

Etymology

The new species is named for the Imatong Mountains on the border between Uganda and South Sudan, which is the locality where this species was first collected.

Material examined

Holotype

UGANDA: adult ♂, CW 21.5, CL 14.4, CH 7.4, FW 6.5 mm, Imatong Mountains, near border with South Sudan (3.79° N, 32.87° E), at 2,134 m asl, 11 Aug. 1955, L.C. Beadle (NHM 1955.11.8.26–27).

Paratypes

UGANDA: 5 adult ♂♂, CWs 19.7, 18.7, 21.5, 18.6, 18.2; 2 adult ♀♀, CWs 20.5, 21.3 mm, Aringa River, northern Acholi District (3.74° N, 32.90° E), at 1,173 m asl, 11 Aug. 1955, L. C. Beadle (NHM 1955.11.8.20–25).

Other material examined

UGANDA: adult ♂, CW 21.5, CL 14.7, CH 7.7, FW 6.5 mm (NHM 2016.16); 5 adult ♂♂, CWs 20.0, 18.0, 19.2, 21.2, 21.3 (NHMUK 2016.17–21); 4 adult ♀♀, CWs 23.1, 19.4, 18.2, 19.2 mm (NHMUK 2016.22–25), 2 juveniles CW 12.1, 13.0 mm (NHMUK 2016. 26–27), tributary of the Aringa River at Lututuru (48 km north of Kitgum), Imatong Mountains, northern Acholi District near border with South Sudan (3.75° N, 32.90° E), at 1,524 m asl, 22.5 °C, at 4:00 pm, 16 May 1968, A.W.R. McRae (NMU TRW 1968.03); adult ♂, CW 21.5, CL 14.4, CH 7.4, FW 6.5 mm, Aringa River, northern Acholi District (3.74° N, 32.90° E), 1,173 m asl, 11 Aug. 1955, L. C. Beadle (NHM 1955.11.8.20–25).

Type locality

Uganda, Imatong Mountains, near border with South Sudan (3.79° N, 32.87° E), at an altitude of 2,134 m asl.

Description

Based on holotype (adult male CW 21.5). Carapace outline transversely oval, medium height (CH/FW 1.1); front broad, measuring one-third CW (FW/CW 0.30). Postfrontal crest faint but complete, lateral ends well defined, meeting epibranchial teeth; epigastric crests clear, median sulcus between crests short, forked posteriorly, semi-circular, urogastric, cardiac, posterior, cervical carapace grooves all distinct. Exorbital tooth low, blunt; epibranchial tooth reduced to granule; anterolateral margin posterior to epibranchial tooth smooth; anterolateral margin between exorbital, epibranchial teeth smooth, curving slightly outward, lacking intermediate tooth; carapace sidewall vertical sulcus faint, incomplete,

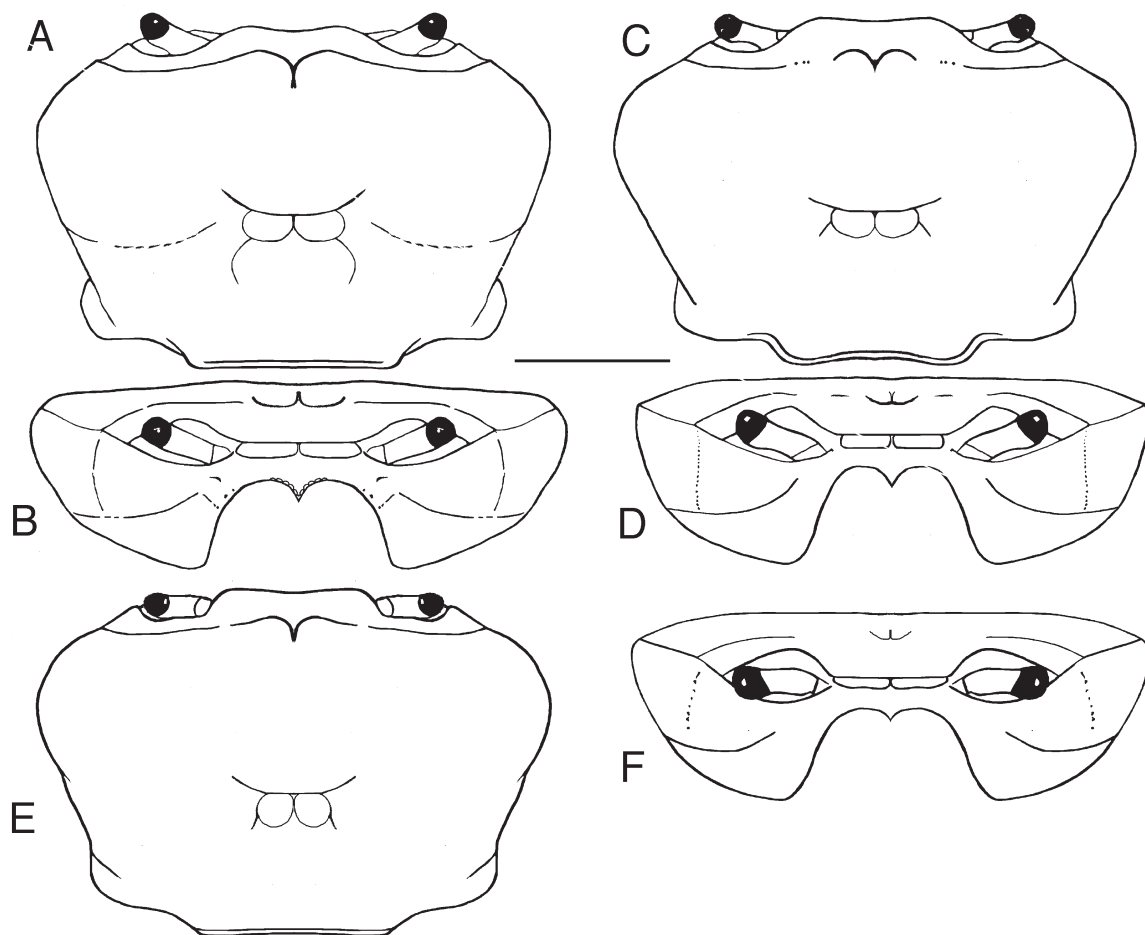


Fig. 1. A–B. *Potamonautes imatongensis* sp. nov., holotype, adult ♂, CW 21.5 mm, from the Imatong Mountains in northern Uganda (NHM 1955.11.8.26-27). A. Carapace, dorsal view. B. Carapace, frontal view. — C–D. *Potamonautes morotoensis* sp. nov., holotype, adult ♂, CW 26 mm, from Mount Moroto in northern Uganda (NHM 2015.3056). C. Carapace, dorsal view. D. Carapace, frontal view. — E–F. *Potamonautes amalerensis* (Rathbun, 1935) stat. rev., holotype, adult ♂, CW 31.5 mm, from Mount Kadam, northern Uganda (MCZ 8238). E. Carapace, dorsal view. F. Carapace, frontal view. Scale bar: A–B = 6.3 mm; C–D = 7.3 mm; E–F = 9.1 mm.

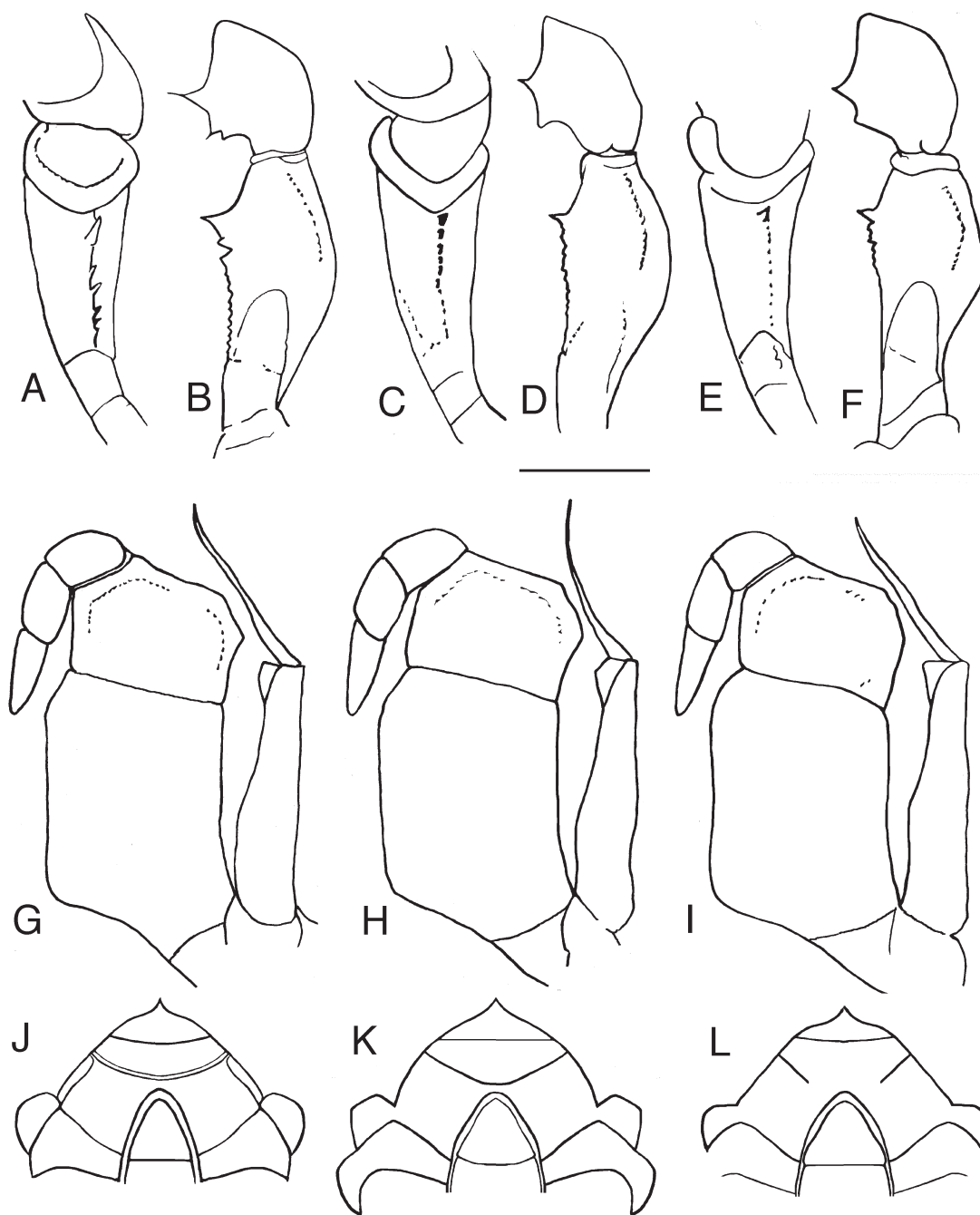


Fig. 2. A–B, G, J. *Potamonautes imatongensis* sp. nov., holotype, adult ♂, CW 21.5 mm, from the Imatong Mountains in northern Uganda (NHM 1955.11.8.26–27). A. Carpus and merus of right cheliped, dorsal view. B. Carpus and merus of right cheliped, ventral view. G. Third maxilliped frontal view. J. Anterior thoracic sternum. — C–D, H, K. *Potamonautes morotoensis* sp. nov., holotype, adult ♂, CW 26 mm, from Mount Moroto in northern Uganda (NHM 2015.3056). C. Carpus and merus of right cheliped, dorsal view. D. Carpus and merus of right cheliped, ventral view. H. Third maxilliped, frontal view. K. Anterior thoracic sternum. — E–F, I, L. *Potamonautes amalerensis* (Rathbun, 1935) stat. rev., holotype, adult ♂, CW 31.5 mm, from Mount Kadam, northern Uganda (MCZ 8238). E. Carpus and merus of right cheliped, dorsal view. F. Carpus and merus of right cheliped, ventral view. I. Third maxilliped frontal view. L. Anterior thoracic sternum. Scale bar: A–B = 3.4 mm; C–D = 3.8 mm; E–F = 5.5 mm; G = 4.6 mm; H = 4.9 mm; I = 7.8 mm; J = 5.9 mm; K = 7.3 mm; L = 9.5 mm.

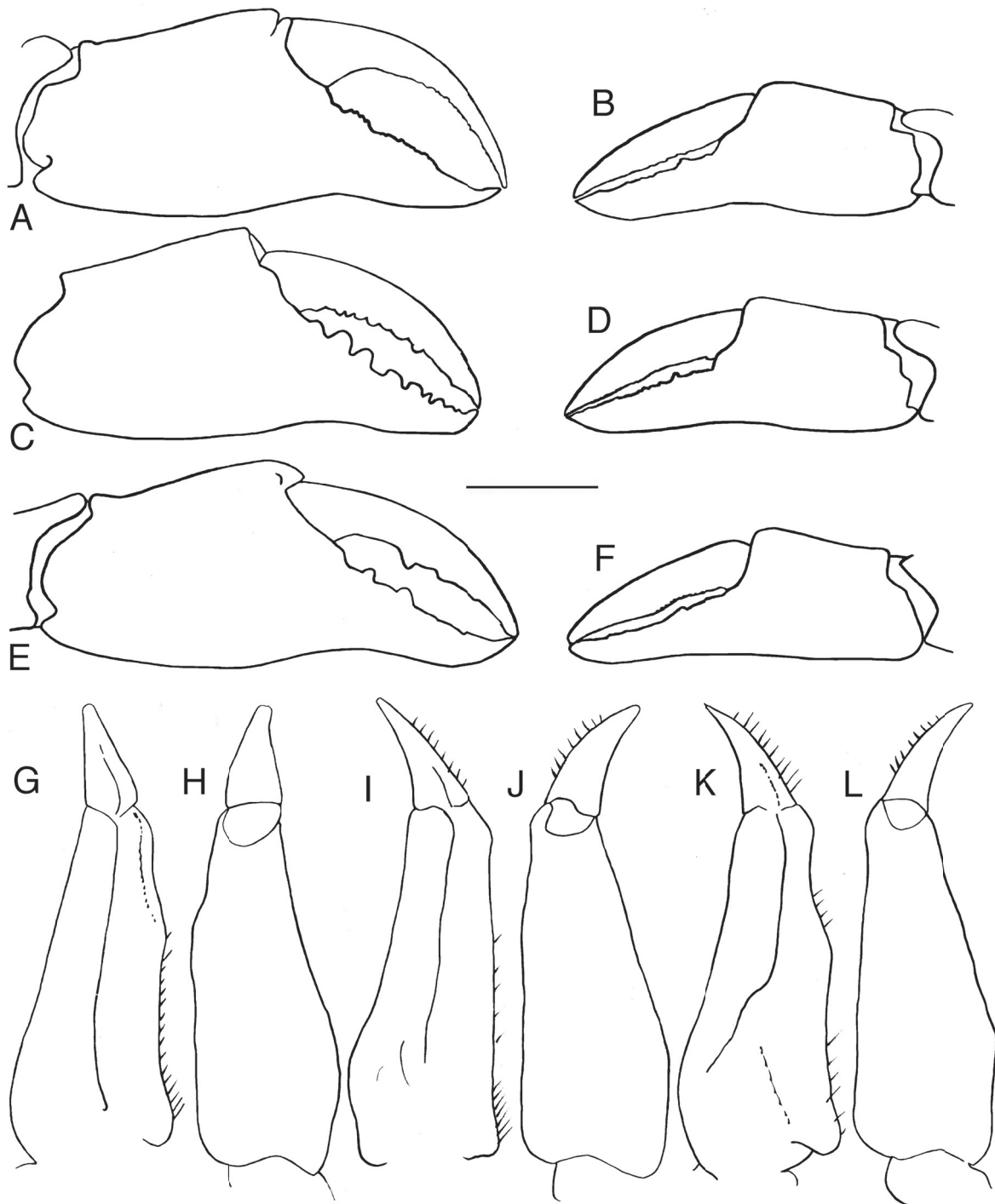


Fig. 3. A–B, G–H. *Potamonautes imatongensis* sp. nov., holotype, adult ♂, CW 21.5 mm, from the Imatong Mountains in northern Uganda (NHM 1955.11.8.26-27). A. Right cheliped, frontal view. B. Left cheliped, frontal view. G. G1 ventral view. H. G1 dorsal view. — C–D, I–J. *Potamonautes morotoensis* sp. nov., holotype, adult ♂, CW 26 mm, from Mount Moroto in northern Uganda (NHM 2015.3056). C. Right cheliped, frontal view. D. Left cheliped, frontal view. I. G1 ventral view. J. G1 dorsal view. — E–F, K–L. *Potamonautes amalerensis* (Rathbun, 1935) stat. rev., holotype, adult ♂, CW 31.5 mm, from Mount Kadam, northern Uganda (MCZ 8238). E. Right cheliped, frontal view. F. Left cheliped, frontal view. K. G1 ventral view. L. G1 dorsal view. Scale bar: A–B = 6.8 mm; C–D = 5.1 mm; E–F = 6.5 mm; G–L = 4.5.

not meeting anterolateral margin. Suborbital margin smooth. Carapace sidewall pterygostomial region with distinct granulated vertical sulcus, ending at longitudinal sulcus, dividing sidewall into 3 parts. Third maxilliped exopod with long flagellum, ischium lacking vertical groove. Epistomial tooth large, triangular, edges lined by large rounded granules. Mandibular palp 2-segmented; terminal segment simple. Thoracic sternal sulcus s2/s3 deep, running horizontally across sternum; thoracic sternal sulcus s3/s4 deep at edges, faint medially, almost meeting thickened, raised anterior margin of sternoabdominal cavity; margins of s4 distinctly raised, thickened. Thoracic episternal sulci s4/e4, s5/e5, s6/e6, s7/e7 all visible grooves. Chelipeds of adult male unequal; fixed (propodus) and movable (dactylus) fingers of adult male slim, elongated, both lined by small teeth, movable finger (dactylus) highly arched, enclosing oval interspace when closed. Cheliped carpus: first tooth medium size, pointed, second tooth small, broad, pointed. Inferior margins of merus of cheliped with series of small sharp teeth; distal meral tooth pointed; superior surface of merus granulated. Abdomen outline broadly triangular with straight edges. G1 terminal article short, straight, in line with longitudinal axis of gonopod, cone-shaped, evenly tapering, tip narrow, tube-like. G2 terminal article long, flagellum-like.

Size

Small species, adult size range CW 18.2–23 mm.

Colour

Preserved specimens uniformly light brown.

Distribution

The localities where this species is known to occur are in the Aringa River or its tributaries in northern Acholi Province of Uganda close to the border with South Sudan. The Aringa River is part of the Nile River drainage and flows north out of Uganda, eventually meeting the White Nile River in South Sudan (Fig. 10). The third locality from the ‘Sudan (now South Sudan)/Uganda border at 7,000 feet (= 2,134 m asl)’ is vague, but has been estimated here based possible places at that altitude in the Aringa River basin in the Imatong Mountains.

Ecology

This species is so far known only from high altitude localities, and has been collected from streams at over 1,500 m asl, and in the Aringa River at 2,134 m asl.

Vernacular name

The Imatong Mountains Crab.

Conservation status

An IUCN conservation assessment of *Potamonautes imatongensis* sp. nov. has not yet been carried out.

Remarks

Potamonautes imatongensis sp. nov. is superficially similar to several other *Potamonautes* species that share the following characters: a small body size at maturity (beginning at CW 18 mm), a complete postfrontal crest; completely reduced or absent exorbital and epibranchial teeth; smooth anterolateral margins immediately behind each epibranchial tooth; a third maxilliped ischium that lacks a visible sulcus; the first tooth on the carpus of the cheliped that is strong and pointed; a distal meral tooth of the cheliped that is strong and pointed; and a slim, elongated, highly arched dactylus of the male major cheliped. East African crabs that share this suite of characters include *P. mutandensis* (Chace, 1942)

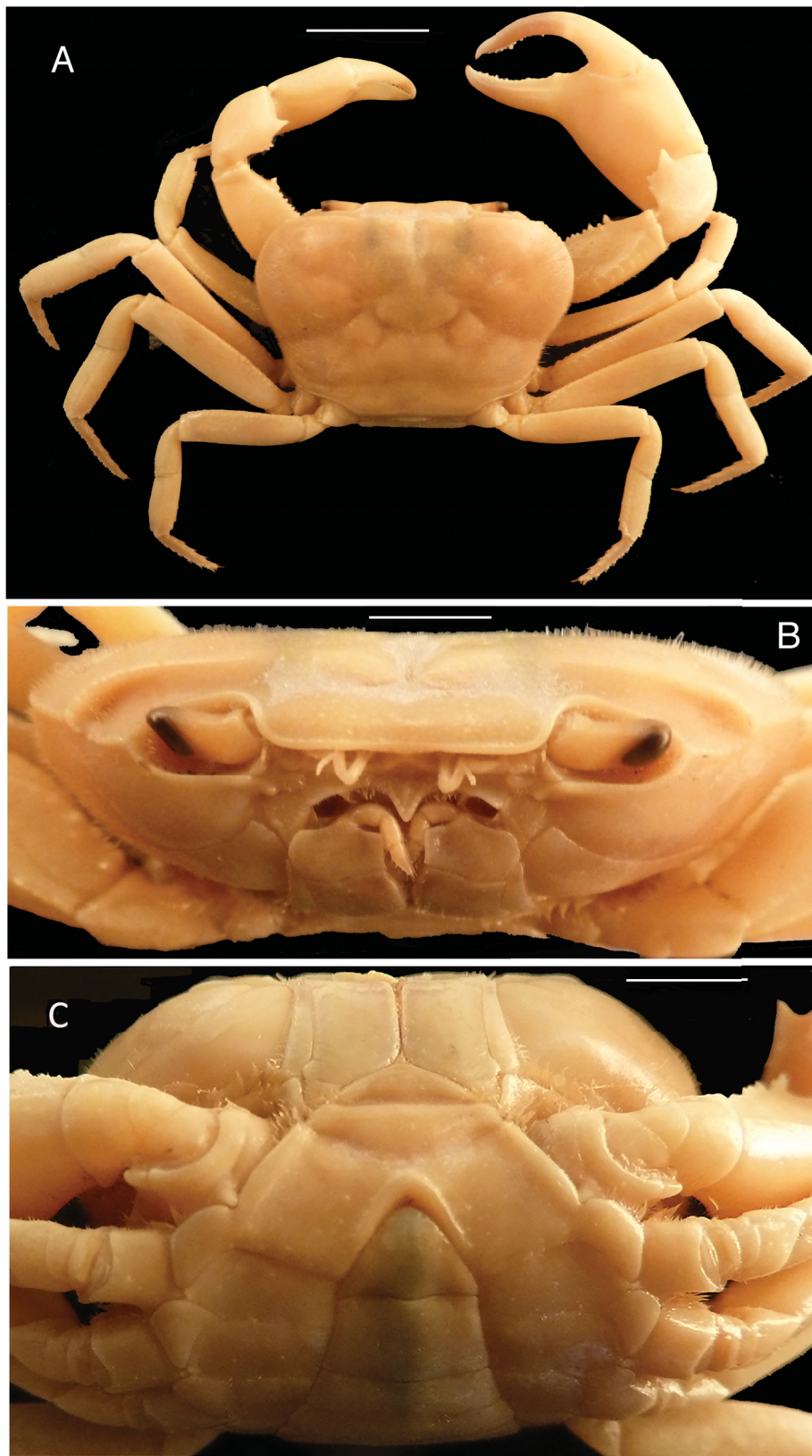


Fig. 4. *Potamonautes imatongensis* sp. nov., holotype, adult ♂, CW 21.5 mm, from the Imatong Mountains in northern Uganda (NHM 1955.11.8.26–27). **A.** Whole animal, dorsal view. **B.** Frontal view. **C.** Ventral view, anterior sternum. Scale bars: 21.4 mm.

(southwest Uganda), *P. berardi* (Audouin, 1826) (Nile River basin), *P. williamsi* Cumberlidge & Clark, 2010 (Mount Elgon, Uganda), *P. amalerensis* (Rathbun, 1935) stat. rev. and *P. morotoensis* sp. nov.

Potamonautes imatongensis sp. nov. differs from *P. mutandensis* in that the second tooth on the carpus of the cheliped is weak, low and blunt (vs pointed and as large as the first carpal tooth in *P. mutandensis*), the outer margins of sternal segment s4 are distinctly thickened (vs slim and not thickened in *P. mutandensis*; see Chace 1942; Cumberlidge & Meyer 2011), and the G1 terminal article of *P. imatongensis* sp. nov. is straight and cone-shaped and not directed only slightly outward (vs s-shaped, widened medially, and angled outward at a 45° angle to the longitudinal axis of the gonopod in *P. mutandensis*).

Potamonautes imatongensis sp. nov. differs from *P. berardi* in that the G1 terminal article is straight, cone-shaped and not directed outward (vs straight at first, then bent sharply outward at 45° to the longitudinal axis in the mid-section in *P. berardi*) and the outer margins of thoracic sternite s4 are distinctly thickened (vs slender and not thickened in *P. berardi*; see Chace 1942; Cumberlidge & Meyer 2011).

Potamonautes imatongensis sp. nov. differs from *P. williamsi* from Mount Elgon, Uganda, in that the first tooth on the carpus of the cheliped is strong and pointed (vs small and low in *P. williamsi*), thoracic sternal sulcus s3/s4 is deep at the edges and medially faint (vs s3/s4 is reduced to two short notches on the external margins of the sternite in *P. williamsi*) and the outer margins of thoracic sternite s4 are distinctly thickened (vs slender and not thickened in *P. williamsi*; see Cumberlidge & Clark 2010).

As for the species described here, *P. imatongensis* sp. nov. differs from *P. morotoensis* sp. nov. in that the G1 terminal article is straight, cone-shaped and tapering, with a long tube-like tip (vs straight at first, bent outward at 45° to the longitudinal axis, and cone-shaped, tapering evenly to a down-turned tip in *P. morotoensis* sp. nov.), the first tooth on the carpus of the cheliped is medium sized and pointed, and the second carpal tooth is small, broad and pointed (vs both teeth small and low in *P. morotoensis* sp. nov.) and the dactylus of the cheliped is highly arched, enclosing a widely oval interspace when closed (vs a cheliped dactylus that is only slightly arched and enclosing a long narrow interspace when closed in *P. morotoensis* sp. nov.).

Potamonautes imatongensis sp. nov. differs from *P. amalerensis* stat. rev. in that the G1 terminal article is straight and cone-shaped with a long tube-like tip (vs straight at first, bent outward at 45° to the longitudinal axis and cone-shaped, tapering evenly to a pointed tip in *P. amalerensis* stat. rev.), the first tooth on the carpus of the cheliped is medium sized and pointed, and the second carpal tooth is small, broad and pointed (vs a small first carpal tooth and reduced granule-sized second carpal tooth in *P. amalerensis* stat. rev.), and the dactylus of the cheliped is highly arched, enclosing a widely oval interspace when closed (vs a cheliped dactylus that is only slightly arched and encloses a long narrow interspace when closed in *P. amalerensis* stat. rev.).

***Potamonautes morotoensis* sp. nov.**

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Figs 1C–D; 2C–D, H, K; 3C–D, I–J; 5A–C; 7C–D; 8

Diagnosis

Based on holotype (adult male CW 26). Carapace outline transversely oval, medium height (CH/FW 1.0); exorbital tooth low, blunt, epibranchial tooth reduced to granule, postfrontal crest complete faint medially, lateral ends well defined meeting epibranchial teeth; anterolateral margin posterior to epibranchial tooth smooth; carapace sidewall vertical sulcus meeting anterolateral margin. Third maxilliped ischium lacking vertical groove. Sternal sulcus s3/s4 deep, completely crossing sternum, meeting thickened,

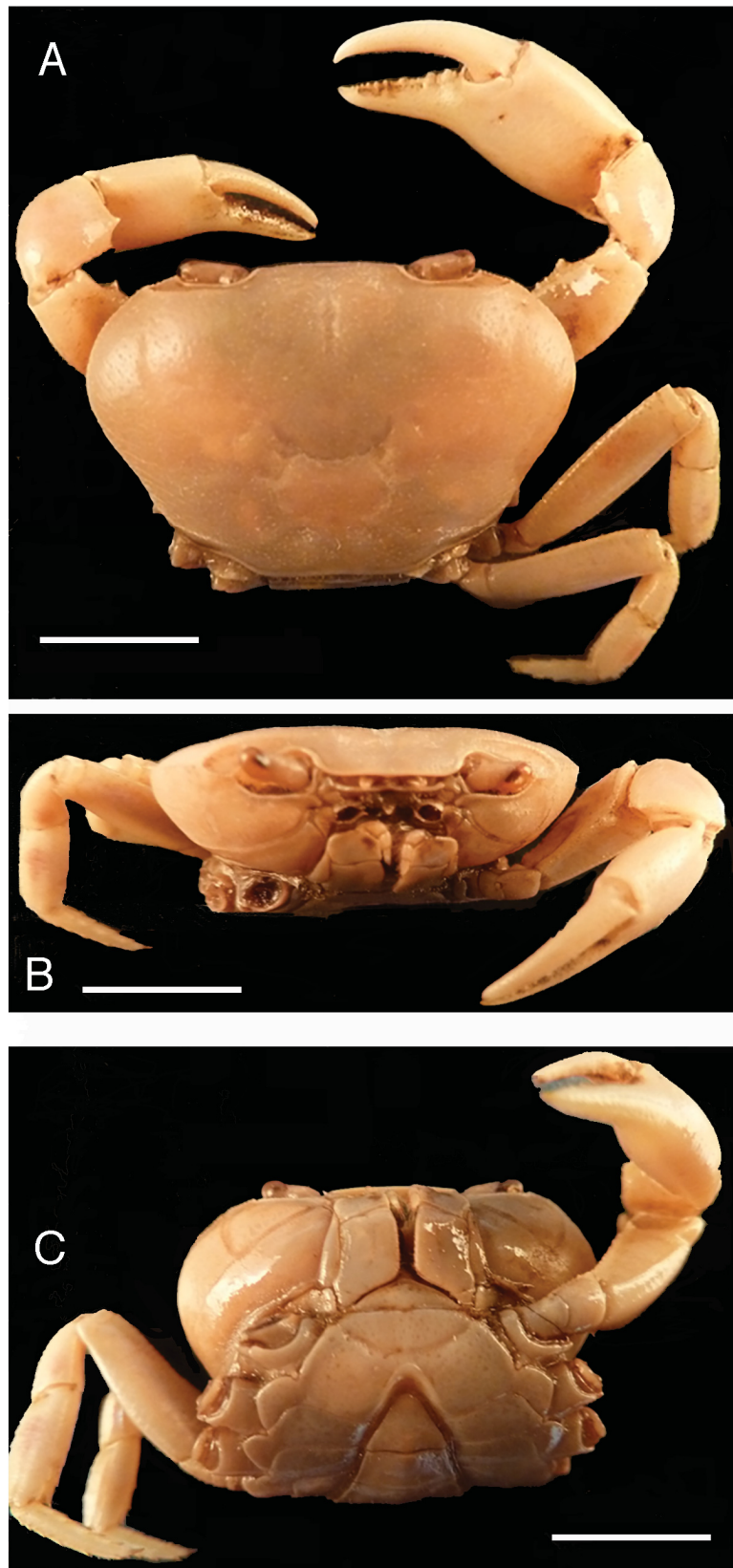


Fig. 5. *Potamonautes morotoensis* sp. nov., holotype, adult ♂, CW 26 mm, from Mount Moroto in northern Uganda (NHM 2015.3056). **A.** Whole animal, dorsal view. **B.** Frontal view. **C.** Ventral view, anterior sternum. Scale bars: 21.4 mm.

raised anterior margin of sternoabdominal cavity; margins of s4 distinctly raised, thickened. Chelipeds of adult male unequal; movable finger (dactylus) and fixed finger (propodus) of major cheliped of adult male slim, elongated, fixed finger (propodus) with 2 large teeth proximally followed by series of small teeth; movable finger (dactylus) slightly arched, enclosing narrow rectangular interspace when closed. Inferior margins of merus of cheliped lined by series of small granules, distal meral tooth small pointed; superior surface of merus granulated. Cheliped carpus first and second teeth small, low, equal-sized. G1 terminal article short, straight, in line with longitudinal axis, cone-shaped, evenly tapering to pointed tip.

Etymology

The new species is named for Mount Moroto in Karamoja District, Uganda which is the only locality where this species has been collected.

Material examined

Holotype

UGANDA: adult ♂, CW 26, CL 17, CH 8.4, FW 8.4 mm (photographed), Lipath River, Mt. Moroto, near Matheniko Game Reserve, Karamoja District (2.54° N, 34.73° E), extreme headwaters, about 2,438 m asl, in grassland, 9 Jul. 1963, T.R. Williams (NHM 2015.3056, formerly TRW collection 9 Jul.1963).

Type locality

Uganda, Lipath River, Mt. Moroto, near Matheniko Game Reserve, Karamoja District (2.54° N, 34.73° E), extreme headwaters, about 2,438 m asl, in grassland.

Description

Carapace medium height (CH/FW 1.0); front broad, measuring one-third CW (FW/CW 0.32). Semi-circular, urogastric, cardiac, posterior, cervical carapace grooves all distinct. Postfrontal crest complete, faint medially, lateral ends well defined meeting epibranchial teeth; exorbital tooth low, blunt. Epigastric crests clear, median sulcus between crests short, forked posteriorly. Epibranchial tooth reduced to granule; anterolateral margin between exorbital, epibranchial teeth smooth, curving slightly outward, lacking intermediate tooth; anterolateral margin posterior to epibranchial tooth smooth; carapace sidewall vertical sulcus faint, incomplete, not meeting anterolateral margin. Suborbital margin smooth. Carapace sidewall with distinct granulated, vertical sulcus, ending at longitudinal sulcus, dividing sidewall into 3 parts. Third maxilliped exopod with long flagellum, ischium lacking vertical groove. Epistomial tooth large, triangular, edges lined by large round granules. Mandibular palp 2-segmented; terminal segment simple. Thoracic sternal sulcus s2/s3 deep, running horizontally across sternum; thoracic sternal sulcus s3/s4 deep at edges, faint in middle, almost meeting thickened, raised anterior margin of sternoabdominal cavity; margins of s4 distinctly raised, thickened. Thoracic episternal sulci s4/e4, s5/e5, s6/e6, s7/e7 all visible grooves. Chelipeds of adult male unequal; movable finger (dactylus) and fixed finger (propodus) of major cheliped of adult male slim, elongated, propodus with 2 large teeth proximally followed by series of small teeth, dactylus slightly arched, enclosing narrow rectangular interspace when closed. Inferior margins of merus of cheliped with series of small granules, distal meral tooth small pointed; superior surface of merus granulated. Cheliped carpus first, second teeth small, low, equal-sized. Abdomen outline broadly triangular with straight edges. G1 terminal article short, straight, in line with longitudinal axis, cone-shaped, evenly tapering to broad tip. G2 terminal article long, flagellum-like.

Size

Small species, adult at CW 26 mm.

Colour

Preserved specimens uniformly light brown.

Distribution

Mount Moroto (2,438 m asl) in Karamoja Province, northern Uganda.

Ecology

This species is so far known only from a single high altitude locality, and was collected from a mountain stream at 2,438 m asl.

Conservation status

An IUCN conservation assessment of *Potamonautes morotoensis* sp. nov. has not yet been carried out, but given the fact that this species is known from a single specimen from a single locality it would probably be regarded as Data Deficient.

Vernacular name

Mount Moroto Crab

Remarks

Potamonautes morotoensis sp. nov. is superficially similar to several other *Potamonautes* species that share the following characters: a small body size at maturity, a complete postfrontal crest; completely reduced or absent exorbital and epibranchial teeth; smooth anterolateral margins immediately behind each epibranchial tooth; a third maxilliped ischium that lacks a visible sulcus; a first tooth on the carpus of the cheliped that is strong and pointed; a strong and pointed distal meral tooth; and a slim, elongated, highly arched dactylus of the cheliped. East African crabs that share these characters include *Potamonautes imatongensis* sp. nov., *P. mutandensis* (Chace, 1942) (southwest Uganda), *P. berardi* (Audouin, 1826) (Nile River basin), and *P. williamsi* Cumberlidge & Clark, 2010 (Mount Elgon, Uganda).

Potamonautes morotoensis sp. nov. differs from *P. amalerensis* stat. rev. in that the second tooth on the carpus of the cheliped is small and low (vs the second carpal tooth is reduced to a granule in *P. amalerensis* stat. rev.) and the G1 terminal article tapers evenly to a broad tip (vs G1 terminal article tapering evenly to a pointed tip in *P. amalerensis* stat. rev.).

For comparisons of *P. morotoensis* sp. nov. with *P. imatongensis* sp. nov., see above.

Potamonautes amalerensis (Rathbun, 1935) stat. rev.

Figs 1E–F; 2E–F, I, L, 3E–F, K–L, 6A–C, 7E–F, 8

Potamon (Geothelphusa) amalerensis Rathbun, 1935: 25, pl. 2.

Potamonautes amalerensis Ng *et al.*, 2008: 170 (in catalogue).

Potamon amalerensis – Chace 1942: 204, fig 8.

Potamonautes amalerensis – Cumberlidge *et al.* 2009, appendix 1: 894 (in list).

Rediagnosis

Carapace medium height (CH/FW 1.1); exorbital tooth low, blunt, epibranchial tooth reduced to granule, postfrontal crest complete, faint medially, lateral ends well defined, meeting epibranchial teeth; anterolateral margin posterior to epibranchial tooth finely serrate, almost smooth; carapace sidewall vertical sulcus meeting anterolateral margin. Third maxilliped ischium lacking vertical groove. Sternal sulcus s3/s4 deep, completely crossing sternum, meeting thickened, raised anterior margin of

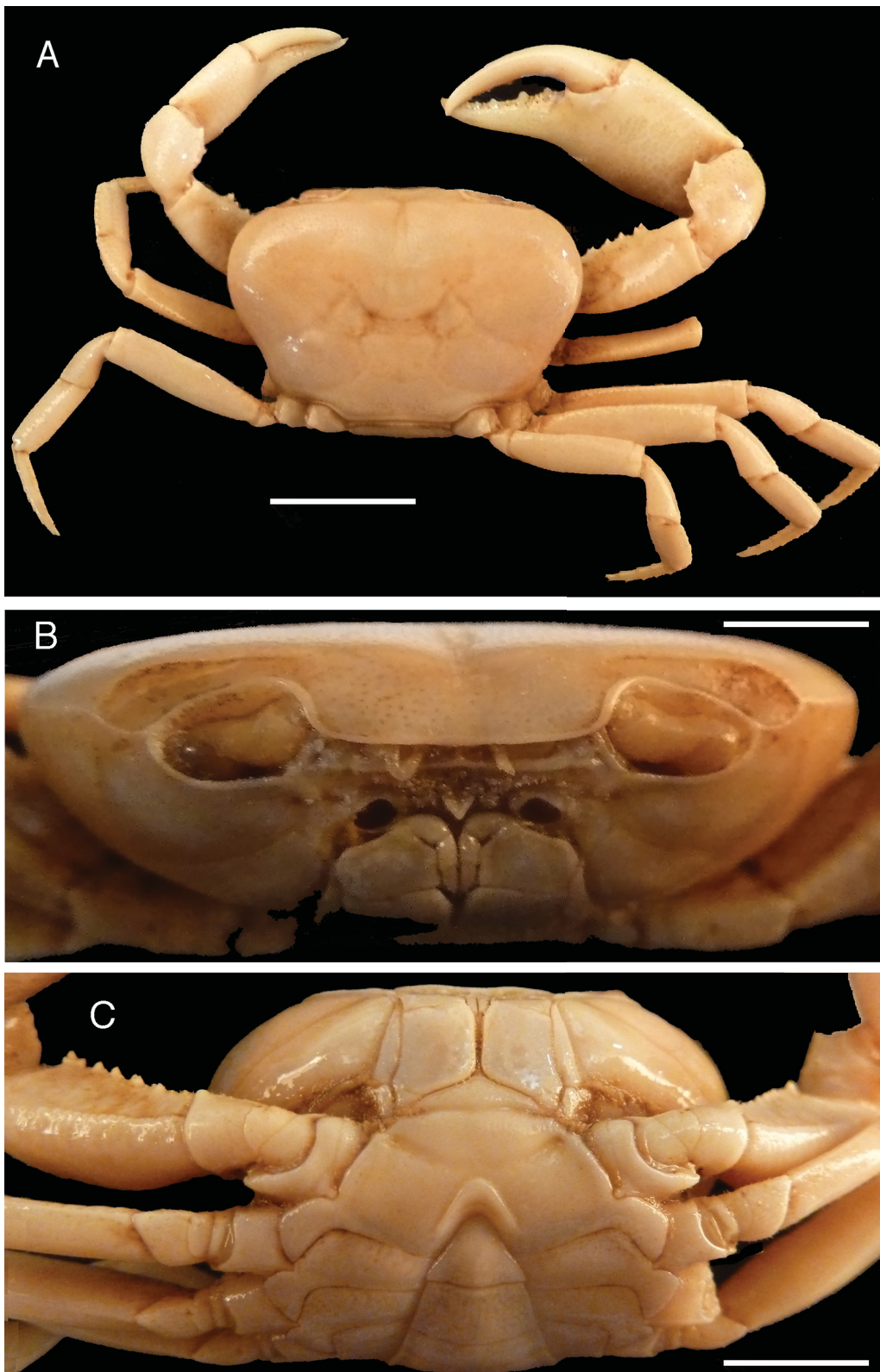


Fig. 6. *Potamonautes amalerensis* (Rathbun, 1935) stat. rev. **A, C.** Holotype, adult ♂, CW 31.5 mm, from Mount Kadam, northern Uganda (MCZ 8238). **B.** Adult ♂, CW 31.5 mm, from north side of Mt. Kadam northern Uganda (NMU TRW 1962.04). **A.** Whole animal, dorsal view. **B.** Frontal view. **C.** Ventral view, anterior sternum. Scale bars: 21.4 mm.

sternoabdominal cavity; margins of s4 distinctly raised, thickened. Inferior margins of merus of cheliped with series of small granules, distal meral tooth pointed; first cheliped carpal tooth small, second cheliped carpal tooth reduced to small granule. Fixed finger (propodus) and movable finger (dactylus) of major cheliped of adult male each with larger teeth interspersed with small teeth, dactylus slightly arched,

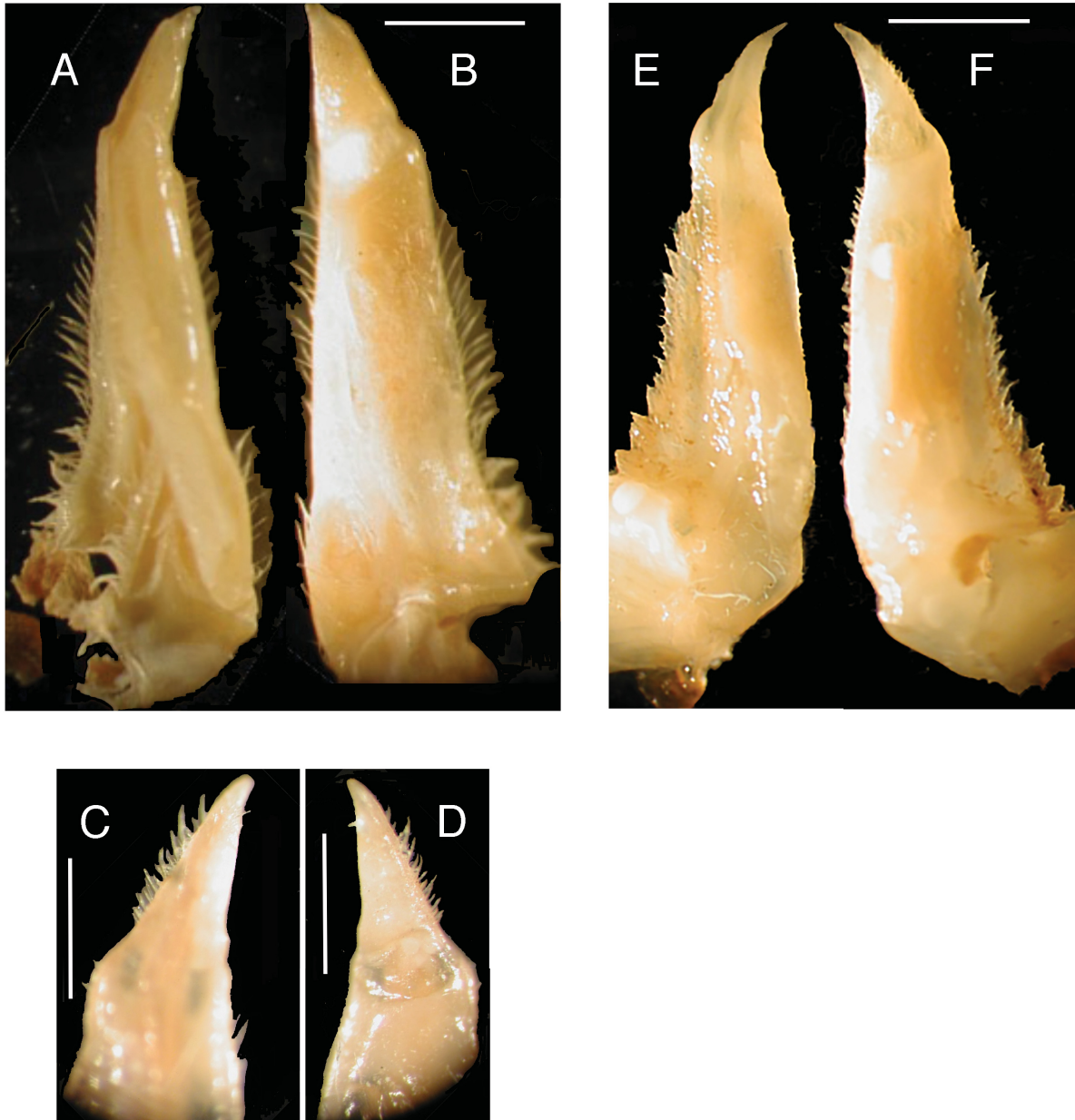


Fig. 7. A–B. *Potamonautes imatongensis* sp. nov., holotype, adult ♂, CW 21.5 mm, from the Imatong Mountains in northern Uganda (NHM 1955.11.8.26-27). A. G1 ventral view. B. G1 dorsal view. — C–D. *Potamonautes morotoensis* sp. nov., holotype, adult ♂, CW 26 mm, from Mount Moroto in northern Uganda (NHM 2015.3056). C. G1 ventral view. D. G1 dorsal view. — E–F. *Potamonautes amalerensis* (Rathbun, 1935) stat. rev., holotype, adult ♂, CW 31.5 mm, from Mount Kadam, northern Uganda (MCZ 8238). E. G1 terminal article ventral view. F. G1 terminal article dorsal view. Scale bars: A–B = 2.34 mm, C–D = 3.1 mm, E–F = 3.3 mm.

enclosing long narrow interspace when closed. G1 terminal article short cone-shaped, directed outward at 45° angle to longitudinal axis of gonopod, evenly tapering to pointed tip.

Material examined

Holotype

UGANDA: adult ♂, CW 26, CL 17.4, CH 8.4, FW 8.4 mm, Amaler River, Mt. Kadam (formerly Mt. Debasien), Karamoja District (1.72° N, 34.72° E), at 1,524 m asl, Sep. 1933, A. Loveridge (MCZ 8238).

Paratypes

UGANDA: adult 4 ♂♂, adult 5 ♀♀, 1 juvenile, Amaler River, Mt. Kadam (formerly Mt. Debasien), Karamoja District (1.72° N, 34.72° E), at 1,524 m asl, Sep. 1933, A. Loveridge (MCZ 8237).

Other material examined

UGANDA: adult ♂, CW 31.5 mm, north side of Mt. Kadam (formerly Mt. Debasien), Karamoja District (1.81° N, 34.71° E) (NMU TRW 1962.04).

Type locality

Uganda, Amaler River, Mt. Kadam (formerly Mt. Debasien), Karamoja District (1.72° N, 34.72° E).

Size

Small species, adult size range between CW 26.0–31.5 mm.

Colour

Preserved specimens uniformly light brown.

Distribution

Uganda, Amaler River, Mt. Kadam (formerly Mt. Debasien), Karamoja District in Karamoja Province, northern Uganda. This species is known from only two localities: Amaler River (1.72° N, 34.72° E), and the north side of Mt. Kadam (1.81° N, 34.71° E).

Ecology

This species was collected from high altitude mountain streams at 1,524 m asl.

Vernacular name

Mount Kadam Crab.

Conservation status

This species is known only from two localities both on Mount Kadam in Uganda, and from a total of 11 specimens collected in 1935 and 1962. *Potamonautes amalerensis* stat. rev. was listed as Data Deficient (IUCN 2003; Cumberlidge *et al.* 2009) in view of the absence of further information on its extent of occurrence, ecological requirements, population size, population trends, and long-term threats (Cumberlidge 2008). The addition of a second locality on Mount Kadam would probably not warrant a change in assessment category.

Remarks

The type material was collected during the AMNH 1933–1934 Expedition to the then colonies of Kenya and Uganda led by Mr. Arthur Loveridge, a Fellow of the Guggenheim Memorial Foundation. *Potamon (Geothelphusa) amalerensis* Rathbun, 1935 stat. rev., is redescribed here as the valid species

Potamonautes amalerensis stat. rev., because Bott (1955) erroneously treated this taxon as a junior synonym of *Potamonautes (Rotundopotamonautes) didieri* (Rathbun, 1904) from the D.R. Congo (Cumberlidge & Clark 2012). This opinion of Bott (1955) is further undermined by the fact that he re-described *P. didieri* based on a non-type museum specimen from ‘Ethiopia’ using photographs of the carapace and illustrations of the gonopods of this (unidentified) specimen (ZSM, CW 37 mm). As a result, a number of subsequent authors (Cumberlidge 1997, 1998; Ng *et al.* 2008; Cumberlidge *et al.* 2009) did not accept the opinion of Bott (1955), and recognized *P. didieri* and *P. amalerensis* stat. rev. as valid *Potamonautes* species. Illustrations and photographs of the holotype of *P. amalerensis* stat. rev.



Fig. 8. Distribution map showing the known localities of *Potamonautes imatongensis* sp. nov. (black circles, not shown to scale), *Potamonautes morotoensis* sp. nov. (black star, not shown to scale) and *Potamonautes amalerensis* (Rathbun, 1935) stat. rev. (black squares, not shown to scale) in Uganda. East Africa. For exact localities see text.

were provided by Rathbun (1935: 25, plate 2) as *Potamon* (*Geothelphusa*) *amalerensis* stat. rev. and by Chace (1942: 204, fig. 8) as *Potamon amalerensis* stat. rev.

Potamonautes amalerensis stat. rev. is superficially similar to several other species of African freshwater crabs in that they share the following characters: a small body size at maturity (beginning at CW 18 mm); a complete postfrontal crest; completely reduced or absent exorbital and epibranchial teeth; smooth anterolateral margins immediately behind each epibranchial tooth; a third maxilliped ischium that lacks a visible sulcus; a cheliped merus with a strong and pointed distal meral tooth; and a slim, elongated, arched dactylus of the male major cheliped that when closed encloses either a wide oval interspace or a long narrow interspace. For comparisons of *P. amalerensis* stat. rev. with *P. morotoensis* sp. nov. and *P. imatongensis* sp. nov. see above.

Acknowledgements

We would like to acknowledge support from an NMU Faculty Grant Award, and the contributions of NMU biology student Wesley S. Bos for assisting in part of this work.

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Manuscript received: 13 August 2015

Manuscript accepted: 17 November 2015

Published on: 17 March 2016

Topic editor: Rudy Jocqué

Desk editor: Kristiaan Hoedemakers

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