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Research article

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Contribution to the knowledge of the genus *Thumatha* Walker, 1866 (Lepidoptera: Erebidae: Arctiinae) from Africa with descriptions of four new species

Anton V. Volynkin

The African Natural History Research Trust (ANHRT), Street Court Leominster, Kingsland, HR6 9QA, UK
Altai State University, Lenina Avenue 61, RF-656049, Barnaul, Russia

Email: anton@anhrt.org.uk

urn:lsid:zoobank.org:author:25EA1403-9502-42BE-A820-96AC51CE862E

Abstract. The present paper contains descriptions of four new species of the genus *Thumatha* Walker, 1866: *T. ngewo* sp. n. (Liberia, Guinea and Ivory Coast), *T. smithi* sp. n. (Zambia), *T. kuehnei* sp. n. (Zambia) and *T. jiwundu* sp. n. (Zambia). The hitherto unknown female of *T. punctata* Kühne, 2010 is illustrated and described. *Thumatha punctata* is reported for the first time from Zambia and *T. lunaris* Durante, 2007 is reported for the first time from Cameroon and South Sudan. Adults together with male and female genitalia of the new and similar species are illustrated.

Key words. Lithosiini, Nudariina, Zambia, Cameroon, South Sudan.

INTRODUCTION

Thumatha Walker, 1866 is a distinctive lithosiine genus belonging to the subtribe Nudariina of the Lithosiini distributed widely from the Afrotropics through the Palaearctic and Oriental Regions to Australia. Despite the fact that several species of the genus were described during the last two decades (Holloway 2001; Durante 2007, 2009; Kühne 2007, 2010), the taxonomy of the genus, especially its African members, has remained poorly studied and the genus is in need of revision. In the course of studying the Lithosiini collection of the African Natural History Research Trust (Leominster, UK), four unidentified species of *Thumatha* collected in Zambia, Liberia, Guinea and Ivory Coast were found. The comparison of the genitalia structures of these species with other similar taxa in the genus has confirmed their specific distinctness and they are described below as species new to science. Additionally, the illustration and diagnosis of the hitherto unknown female of *Thumatha punctata* Kühne, 2010 are provided in the present paper.

MATERIAL AND METHODS

Abbreviations of the depositories used

ANHRT = African Natural History Research Trust, Leominster, UK
LKP = private collection of L. Kühne, Potsdam, Germany
MFN = Museum of Natural History, Berlin (Museum für Naturkunde), Berlin, Germany
OUMNH = Oxford University Museum of Natural History, Oxford, UK
ZSM = The Bavarian State Collection of Zoology (Zoologische Staatssammlung München), Munich, Germany

Other abbreviations

AV = genitalia slide prepared by A.V. Volynkin
HT = holotype
PT = paratype

The genitalia were dissected and mounted in euparal on microscope slides. The photos of adults were taken using a Nikon D3100/AF-S camera equipped with a Nikkor 18–55 mm lens while the photos of genitalia were taken using the same camera attached to a microscope with an LM-scope adapter. All pictures were processed using the Adobe Photoshop CC 2018 software.

RESULTS

Genus ***Thumatha*** Walker, 1866

Thumatha Walker, 1866 (Walker 1866: 1900). Type species: *Thumatha fuscescens* Walker, 1866, by monotypy.
= *Pelobrochis* Lucas, 1892 (Lucas 1892: 250). Type species: *Scaeodora rava* Lucas, 1890 (a junior synonym of *Thumatha fuscescens*), by monotypy.

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= *Dictenus* Butler, [1897] (Butler 1896: 846). Type species: *Dictenus inconstans* Butler, [1897], by monotypy.
= *Nudaridia* Hampson, 1900 (Hampson 1900: 420). Type species: *Nudaria muscula* Staudinger, 1887, by original designation.
= *Thumata* auct. (Draudt 1914; Witt et al. 2011, an incorrect spelling).

Diagnosis. The members of the genus are small or medium sized moths with a relatively wide forewing and ochreous or brownish coloration. The male antenna is bipectinate with short branches or serrate while the female antenna is serrate or ciliate. The male genitalia of *Thumatha* are similar to those of certain members of the *Asura*/*Miltochrista* generic complex namely the Javan *Thamoma* Volynkin, 2020 (illustrated by Volynkin (2020)) from which *Thumatha* differs in the relatively short and swollen uncus bearing a dorsal crest (an autapomorphic feature) whereas the uncus of *Thamoma* is markedly more elongate, lacking a dorsal crest and only slightly swollen subapically. The ventral costal protrusion is fused with the base of the ventro-distal process of the valva in both genera but in *Thumatha* it is wider and originates from the distal section of the costa whereas in *Thamoma* it is narrower and projects subdistally while the distal section of the costa is thin and protrudes distally. Additionally, in *Thumatha*, the ventral costal protrusion lacks a process or (in certain species) bears only a small setose bulge whereas that of *Thamoma* bears a large, heavily sclerotized stick-like process directed dorso-distally with the outer edge of its base fused with the ventro-distal process of the valva (an autapomorphic feature of the genus). The female genitalia of the genus are characterized by the presence of sclerotized areas in the posterior section of the corpus bursae whereas the corpus bursae of *Thamoma* is rugose posteriorly.

Distribution. Sub-Saharan Africa (including Madagascar), temperate and southern Eurasia, Sundaland and Australia.

The species composition of the genus *Thumatha*

– *africana* Kühne, 2007 (Kenya, Tanzania)
– *brunnea* Kühne, 2007 (Rwanda)
– *fuscescens* Walker, 1866 (Australia, Indochina, India, Sri Lanka)
  = *rava* Lucas, 1890
– *inconstans* (Butler, [1897]) (Malawi, South Africa)
  = *inconstans* var. *limbatula* Strand, 1912
  = *inconstans* var. *delimbatula* Strand, 1912
  = *thumathaeformis* Strand, 1912
– *infantula* (Saalmüller, 1880) (Madagascar, Democratic Republic of Congo, Sudan, Nigeria, Guinea)
– *insularis* Durante, 2009 (Indonesia: Java)
– *jiwundu* sp. n. (Zambia)
– *kakamegae* Kühne, 2007 (Kenya, Uganda)
– *kuehnei* sp. n. (Zambia)
– *lunaris* Durante, 2007 (Nigeria, Cameroon, South Sudan)
– *monochroa* Zolotuhin, 1996 (SE Kazakhstan)
– *muscula* (Staudinger, 1887) (southern Russian Far East, Japan)
  = *inouei* Okano, 1958
– *ngewo* sp. n. (Guinea, Liberia, Ivory Coast)
– *ochracea* (Bremer, 1861) (southern Russian Far East, Japan)
  = *japonica* Okano, 1957
– *orientalis* Holloway, 2001 (Malaysia: Borneo)
– *punctata* Kühne, 2010 (Namibia, Zambia)
– *senex senex* (Hübner, [1808]) (Europe, West and East Siberia, NE Kazakhstan)
  = *rotunda* Haworth, 1809
  = *karvajszkyi* Diószeghy, 1923
  = *tramontana* Dannehl, 1929
– *senex syriaca* (Daniel, 1939) (Turkey)
– *smithi* sp. n. (Zambia)

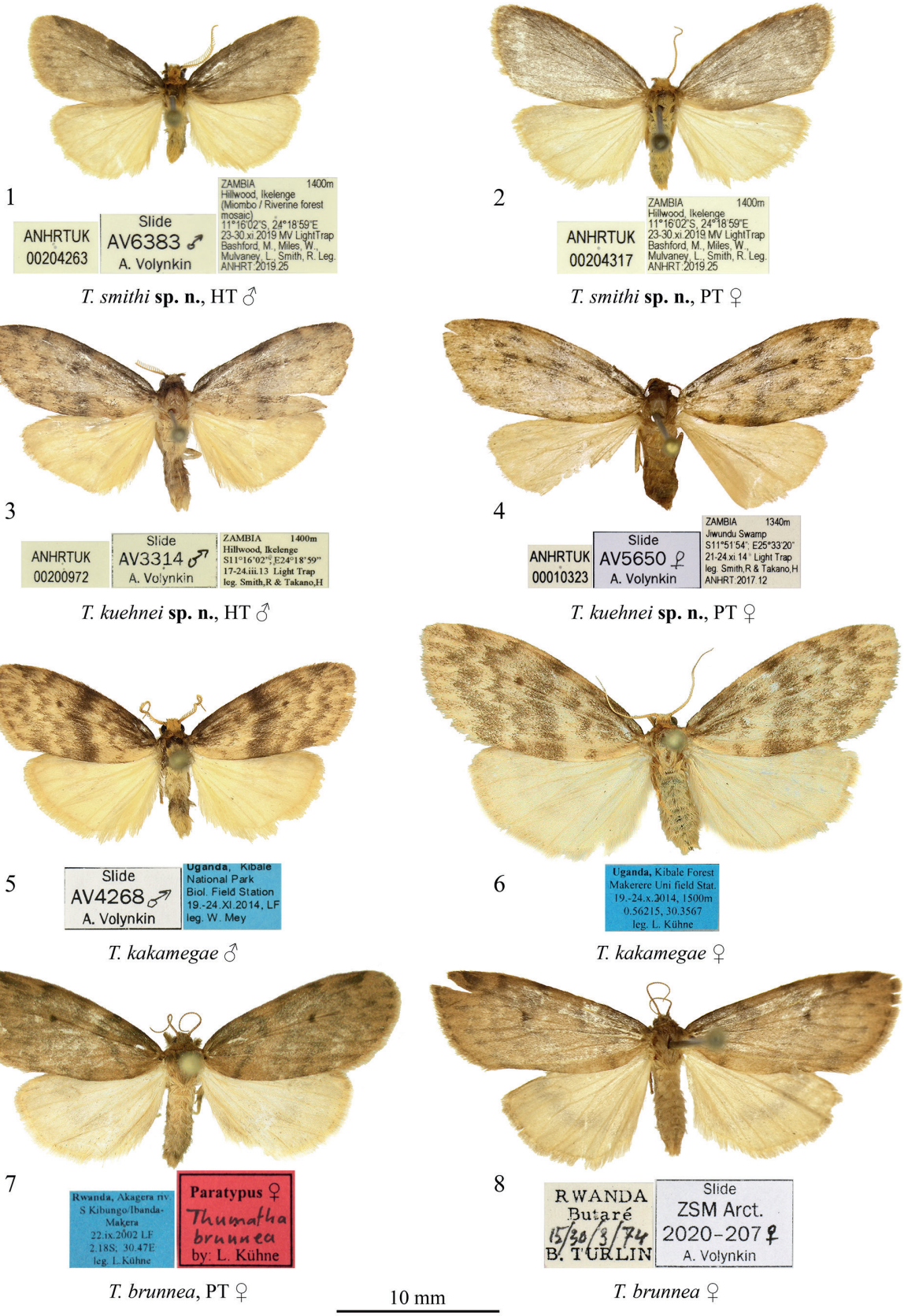
Description of the new species

Thumatha smithi sp. n.
(Figs 1–2, 19–21, 34)
urn:lsid:zoobank.org:act:B5ACEB15-846C-470B-857C-D56309072261

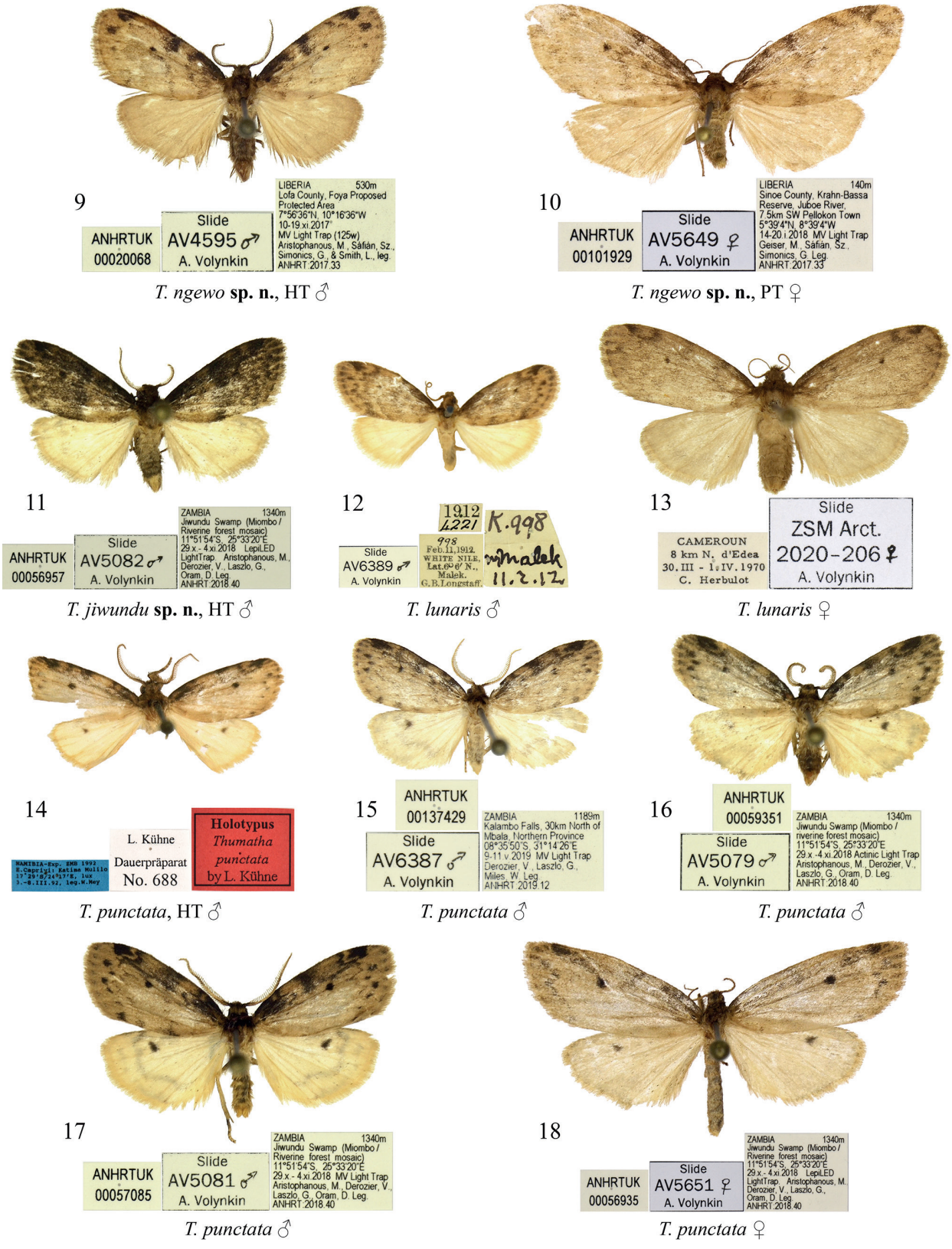
Type material

Holotype (Figs 1, 19). ♂, "Zambia, 1400m, Hillwood, Ikelenge (Miombo / Riverine forest mosaic) 11˚16′02″ S, 24˚18′59″ E, 23–30.xi.2019 MV Light Trap, Bashford, M., Miles, W., Mulvaney, L., Smith, R. Leg. ANHRT:2019.25", ANHRT unique number: 00204263, gen. prep. No.: AV6383 (ANHRT).

Paratypes. **ZAMBIA**: 1 ♂, same data as for holotype, ANHRT unique number: 00204264 (ANHRT); 1 ♀, 1400 m, Hillwood, Ikelenge, 11˚16′02″ S, 24˚18′59″ E, 23–30.xi.2019, MV Light Trap, Bashford, M., Miles, W., Mulvaney, L., Smith, R. leg. ANHRT:2019.25, ANHRT unique number: 00204317 (ANHRT); 1 ♂, the same locality, but 30.iv.–11.v.[20]14, Light Trap, leg. Smith, R., Takano, H., Chmurova, L., Smith, L., ANHRT unique number: 00200974, gen. prep. No.: AV4498 (ANHRT); 1 ♀, the same locality, but 9–16.v.[20]15, Light Trap, leg. Smith, R., Takano, H. & Aristophanous, M., ANHRT:2017.13, ANHRT unique number: 00039466, gen. prep. No.: AV5646 (ANHRT); 1 ♂, 1147m, Lukwakwa, West Lunga NP, 12˚39′40″ S, 24˚26′13″ E, 28–29.iv.[20]14, Light Trap, leg. Smith, R., Takano, H., Chmurova, L., Smith, L., ANHRT unique number: 00201063 (ANHRT); 1 ♂, 1437m, Kapishya Hot Springs, Shiwa N'gandu Estate, 11˚10′13″ S, 31˚36′00″ E, i–iii.2016, M.T. Harvey Coll., Smith, R., Takano, H. leg., ANHRT: 2017.29, ANHRT unique number: 00070216, gen. prep. No.: AV5645 (ANHRT).



Figs 1–8. *Thumatha* spp., adults. Depositories of the specimens: 1–4. = ANHRT; 5. = MFN; 6–7. = LKP (photo by L. Kühne); 8. = ZSM.



Figs 9–18. *Thumatha* spp., adults. Depositories of the specimens: 9–1, 15–18. = ANHRT; 12. = OUMNH; 13. = ZSM; 14 = MFN.

Diagnosis. *Thumatha smithi* (Figs 1–2) is superficially reminiscent of *T. punctata* (Figs 14–18) but can easily be distinguished by the somewhat wider forewing, the olive brown forewing ground color (it is ochreous brown in *T. punctata*), the paler and more indistinct forewing markings and the absence of a discal spot on the hindwing which is distinct in *T. punctata*. Additionally, the head of *T. smithi* is ochreous yellow whereas it is brown with a suffusion of black scales in *T. punctata*. The male genitalia of the new species (Figs 19–21) are most similar to those of the externally dissimilar *T. kakamegae* (Figs 22–23). In the male genital capsule, the uncus of *T. smithi* is somewhat less dilated medially than in *T. kakamegae*, the valva is less dilated distally with costa markedly less concave medially, the medial costal process is conspicuously shorter and narrower basally and the ventro-distal process of the valva is narrower basally. The aedeagi of the two species display no differences. In the vesica of *T. smithi*, the main chamber is large and protruding distally whereas it is very short in *T. kakamegae*. The medial diverticulum of the new species is less elongate and more rounded than that of *T. kakamegae* bearing fewer cornuti. The female genitalia of *T. smithi* (Fig. 34) differ from those of *T. kakamegae* (Fig. 35) in the narrower 8th abdominal segment, the narrower antrum, the longer sclerotized posterior section of the corpus bursae (in proportion to the length of the anterior section), and the somewhat more elongate appendix bursae.

Description

External morphology of adults (Figs 1–2). Forewing length 9.0 mm in males and 10.5 mm in males. Sexual dimorphism limited: Female somewhat larger than male with forewing having more elongate apex and more indistinct markings than in male. Antenna yellow, bipectinate in male and ciliate in female. Head ochreous yellow. Thorax brown with ochreous yellow collar. Forewing ground color olive brown. Markings indistinct, dark brown. Subbasal and costal area with intense brown suffusion. Discal spot almost round in male and falcate and indistinct in female. Subterminal line sinuous, interrupted constituting small spots on veins. Cilia olive brown. Hindwing and cilia pale ochreous with slight brown suffusion along costal margin. Abdomen ochreous yellow.

Male genitalia (Figs 19–21). Uncus elongate, swollen, dilated distally with small claw-shaped tip and short dorsal crest. Tuba analis membranous, scaphium thin and weakly sclerotized. Tegumen approximately half as long as valva, its arms moderately wide, fused in distal quarter. Vinculum ca. 1.6 × longer than tegumen, saccus short (ca. ⅓ of vinculum length), moderately sclerotized, U-shaped. Juxta weakly sclerotized, wide, shield-like with shallow, rounded medio-distal depression. Valva lobe-like, dilated distally. Costa narrow, convex medially and curved ventrad subapically, its distal section thin, fused with distal membranous lobe of valva dorsally. Medial costal process elongate and thin, tapered and slightly curved distally, rounded apically. Ventral protrusion of costa projecting subapically, dilated ventrally, fused with base of ventro-distal process of valva, bearing small, setose bulge medio-distally. Ventro-distal process of valva triangular with rounded tip. Distal membranous lobe of valva wide, almost triangular with rounded apex. Saccus narrow, short (ca. 1.4 × shorter than ventral margin of valva), weakly setose dorsally. Aedeagus dilated distally with short and narrow coecum. Distal quarter of aedeagus serrulate. Main chamber of vesica broadly conical and rounded distally. Medial diverticulum globular, as large as main chamber, bearing three short, stout cornuti of wide base. Distal diverticulum twice as narrow as medial one, bearing an elongate cluster of numerous short, acute triangular cornuti of various sizes. Vesica ejaculatorius constricted basally, weakly granulated subbasally, directed anteriad.

Female genitalia (Fig. 34). Papillae anales trapezoidal with rounded corners, weakly setose. Apophyses anteriores and posteriores moderately long and thin, equal in length. Antrum short and wide with wide but shallow medial depression ventrally and convex lateral margins, moderately sclerotized and granulated. Posterior section of corpus bursae heavily sclerotized, equal in length with anterior one, asymmetrical with left side longer and more heavily sclerotized than right one. Anterior section of corpus bursae membranous, teardrop-shaped. Appendix bursae erected postero-ventrally, broadly conical, moderately sclerotized, directing postero-laterally on right side.

Distribution. The species is to date only known from Zambia.

Etymology. The species is dedicated to Mr Richard Smith, founder and director of the African Natural History Research Trust, and one of the collectors of the holotype who has organized and undertaken numerous entomological expeditions to Sub-Saharan Africa.

Thumatha kuehnei sp. n.
(Figs 3–4, 24–25, 36)
urn:lsid:zoobank.org:act:E57F7EFF-03F7-417B-AD2D-79ABDA80B60C

Type material

Holotype (Figs 3, 24), ♂, "Zambia, 1400m, Hillwood, Ikelenge, 11°16′02″ S, 24°18′59″ E, 17–24.iii.[20]13 Light Trap leg. Smith, R. & Takano, H.", ANHRT unique number: 00200972, gen. prep. No.: AV3314 (ANHRT).

Paratypes. **ZAMBIA**: 1 ♂, 1400 m, Hillwood, Ikelenge (Miombo/Riverine forest mosaic) 11°16′02″ S, 24°18′59″ E, 23–30.xi.2019 MV Light Trap, Bashford, M., Miles, W., Mulvaney, L., Smith, R. leg. ANHRT:2019.25, ANHRT unique number: 00204231, gen. prep. No.: AV6384 (ANHRT); 4 ♂♂, 1340 m, Jiwundu Swamp, 11°51′54′ S′, 25°33′20″ E, 21–24.xi.[20]14, Light Trap, leg. Smith, R. & Takano, H., ANHRT:2017.12, ANHRT

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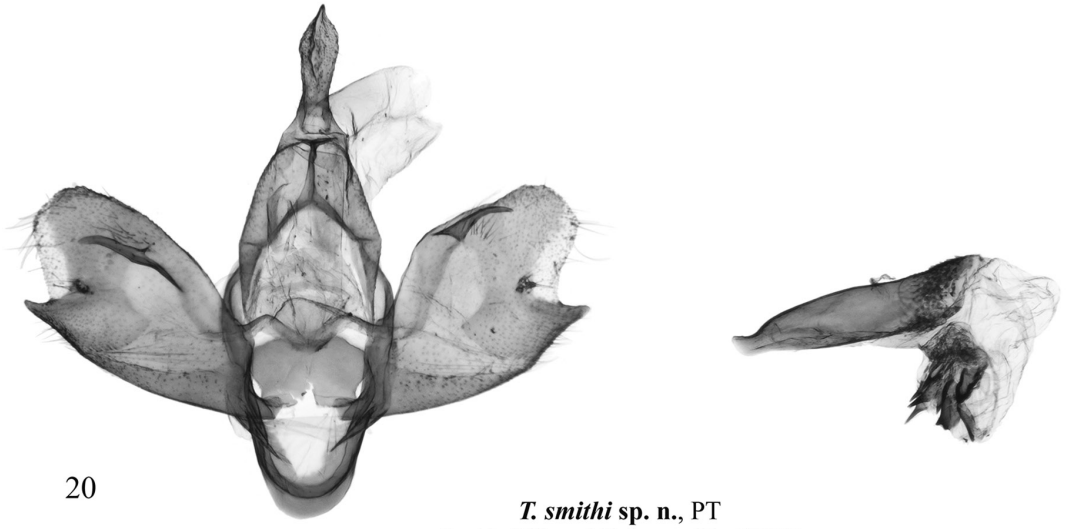
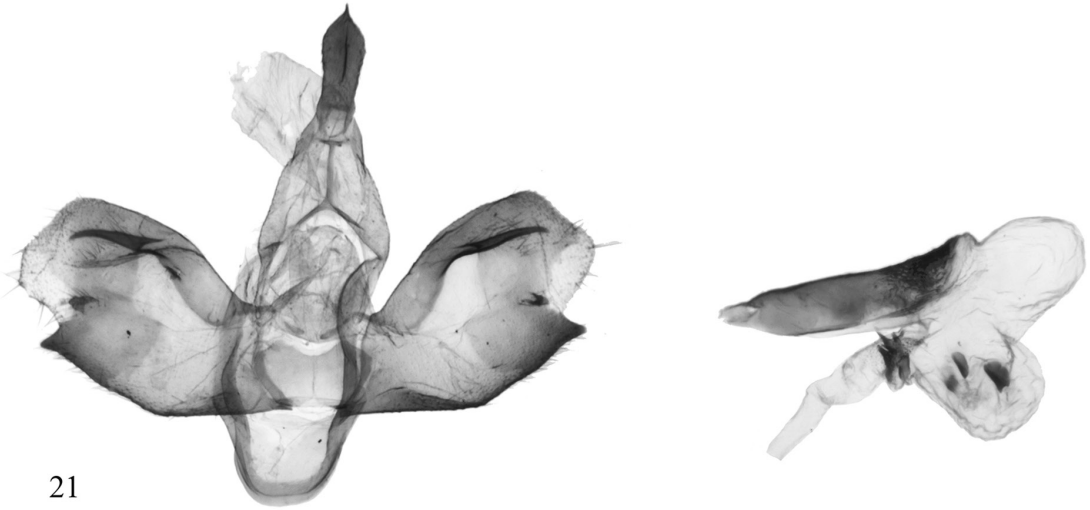
***T. smithi* sp. n.**, HT
Zambia, Hillwood, Ikelenge, slide AV6383



20

***T. smithi* sp. n.**, PT
Zambia, Hillwood, Ikelenge, slide AV4498



21

***T. smithi* sp. n.**, PT
Zambia, Kapishya Hot Springs, slide AV5645

Figs 19–21. *Thumatha smithi* sp. n., male genitalia. The specimens dissected are deposited in ANHRT.

unique numbers: 00008718, 00010323, 00010381, 00200973, gen. prep. Nos.: AV3315, AV5650 (ANHRT).

Diagnosis. *Thumatha kuehnei* (Figs 3–4) is superficially similar to *T. kakamegae* (Figs 5–6) but differs in its brown head (it is ochreous yellow in *T. kakamegae*) and the more diffuse forewing markings. The new species is also reminiscent of *T. brunnea* (Figs 7–8) which is so far only known from males, but is distinguished by its paler forewing ground color. Compared to *T. kakamegae* (Figs 22–23), the male genital capsule of *T. kuehnei* (Figs 24–25) has a dorso-ventrally more dilated uncus, distally less dilated valva with somewhat narrower ventro-distal process. Additionally, the medial costal process of the valva is somewhat shorter (in proportion to the valva length) and directed more or less distally in the new species whereas that of *T. kakamegae* is directed rather dorso-distally. The aedeagus of *T. kuehnei* is more dilated distally than that of *T. kakamegae*. In the vesica of the new species, the main chamber is markedly longer and wider than in *T. kakamegae* (in proportion to the aedeagus dimensions), the medial diverticulum is broader bearing fewer, somewhat more robust cornuti, and the distal diverticulum is reduced and replaced by two short but robust cornuti (whereas in *T. kakamegae*, the distal diverticulum is elongate bearing a row of numerous smaller cornuti). The female genitalia of *T. kuehnei* (Fig. 36) differ from those of *T. kakamegae* (Fig. 35) in the larger papillae anales (in proportion to the ovipositor), the somewhat narrower antrum, and the laterally more heavily sclerotized appendix bursae. Compared to *T. brunnea* (Figs 37–38), the female genitalia of the new species have a wider, funnel-like antrum (whereas in *T. brunnea*, it has almost parallel lateral margins and triangular lateral processes directed posteriorly), a markedly wider posterior sclerotized section of the corpus bursae, and a conspicuously wider and longer appendix bursae.

Description

External morphology of adults (Figs 3–4). Forewing length 11.0 mm in males and 13.5 mm in males. Sexual dimorphism limited: Female somewhat larger than male with forewing having more pointed apex. Antenna yellow, bipectinate in male and ciliate in female. Head ochreous brown. Thorax ochreous brown. Patagia dark brown. Tegula dark brown basally and ochreous brown distally. Forewing ground color ochreous brown, markings dark brown. Costal half of subbasal area with intense dark brown suffusion. Antemedial line thick, diffuse, its anal half inwardly oblique. Medial line wide, diffuse, somewhat inwardly oblique between cell and anal margin. Discal spot small, round, diffuse. Postmedial line irregularly zigzagged, thin, diffuse. Subterminal line thin and diffuse, irregularly zigzagged, dilated into an amorphous costal patch. Terminal line interrupted constituting indistinct spots between veins. Cilia ochreous brown. Hindwing and cilia paler than forewing, pale ochreous yellow. Medial transverse line indistinct, wavy, comprised of slight dark brown suffusions. Abdomen ochreous brown with admixture of brown scales medially.

Male genitalia (Figs 24–25). Uncus elongate, swollen but somewhat flattened laterally, strongly dilated medially, tapered distally with tiny claw-like tip. Tuba analis membranous, scaphium thin and weakly sclerotized. Tegumen 1.7 × shorter than valva, its arms moderately wide, fused in distal third. Vinculum ca. 1.2 × longer than tegumen, saccus short (ca. 2/5 of vinculum length), moderately sclerotized, U-shaped. Juxta weakly sclerotized, wide, shield-like with a wide but shallow medio-distal depression. Valva lobe-like, strongly dilated distally. Costa narrow, convex medially and curved ventrad subapically, its distal section thin, fused dorsally with distal membranous lobe of valva. Medial costal process long, apically rounded, distally gradually tapering with wide triangular base somewhat protruding beyond the costa dorsally. Ventral protrusion of costa projecting from subapical section of costa, wide, dilated ventrally, fused with base of ventro-distal process of valva, bearing a small, setose bulge medio-distally. Ventro-distal process of valva triangular with rounded tip. Distal membranous lobe of valva wide, short with convex outer margin. Sacculus narrow, short (ca. 1.5 × shorter than ventral margin of valva), weakly setose dorsally. Aedeagus dilated distally with short and narrow coecum and serrulate ventro-distal section protruding distally. Main chamber of vesica broad, curved dorsad. Medial diverticulum large, sack-like, bearing 3–5 short, wide-based cornuti. Distal diverticulum reduced, replaced with two short, acute, wide-based cornuti. Vesica ejaculatorius constricted basally, weakly granulated subbasally, directed anteriad.

Female genitalia (Fig. 36). Papillae anales trapezoidal with rounded corners, weakly setose. Apophyses elongate and thin, apophyses posteriores ca. twice as long as apophyses anteriores. Antrum short, wide, funnel-shaped, moderately sclerotized and granulated. Anterior section of corpus bursae moderately sclerotized, strongly asymmetrical, its right side equal in length with antrum, left side very short. Posterior section of corpus bursae ca. half as long as anterior one, asymmetrical with left side more heavily sclerotized than right side with convex lateral margin. Anterior section of corpus bursae globular, membranous. Appendix bursae positioned postero-ventrally, broadly conical, moderately sclerotized with membranous tip, directed postero-laterally on right side.

Distribution. The species is known from north-western Zambia.

Etymology. The species is named after Mr Lars Kühne (Potsdam, Germany), a renowned lepidopterist and author of the related species *T. kakamegae* and *T. brunnea*.

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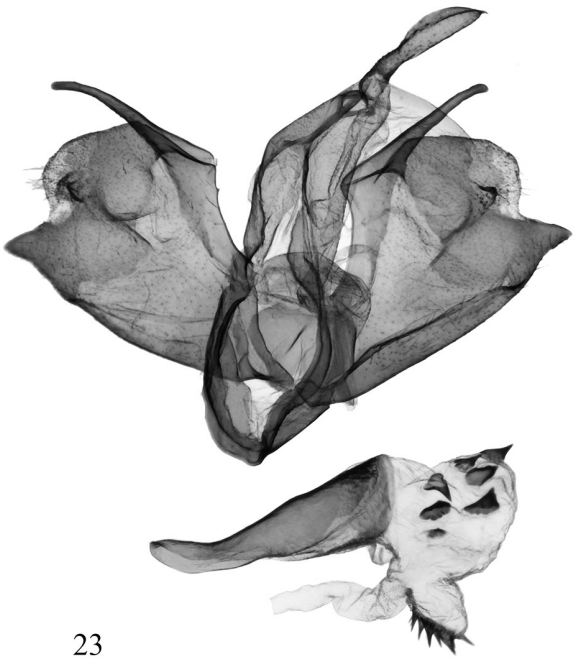
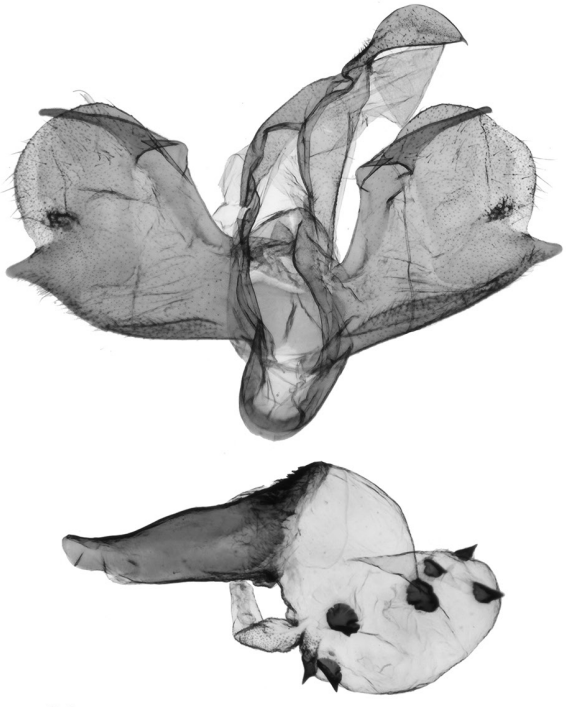
T. kakamegae, PT
Kenya, Kakamega Forest, slide AV4267



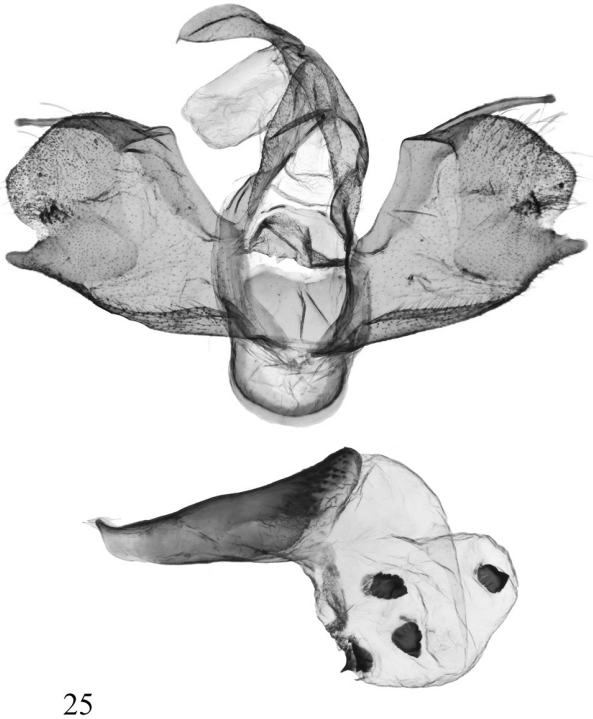
23

T. kakamegae
Uganda, Kibale National Park, slide AV4268



24

***T. kuehnei* sp. n.**, HT
Zambia, Hillwood, Ikelenge, slide AV3314



25

***T. kuehnei* sp. n.**, PT
Zambia, Hillwood, Ikelenge, slide AV6384

Figs 22–25. *Thumatha* spp., male genitalia. Depositories of the specimens dissected: 22–23. = ANHRT; 24–25. = MFN.

Thumatha ngewo sp. n.
(Figs 9–10, 26–29, 39)
urn:lsid:zoobank.org:act:20EBC310-B334-4521-8617-FC946EA4A958

Type material

Holotype (Figs 9, 26). ♂, "Liberia, 530m, Lofa County, Foya Proposed Protected Area, 7°56′36″ N 10°16′36″ W, 10–19.xi.2017, MV Light Trap (125w), Aristophanous, M., Sáfián, Sz., Simonics, G. & Smith, L. leg., ANHRT:2017.33", ANHRT unique number: 00020068, gen. prep. No.: AV4595 (ANHRT).

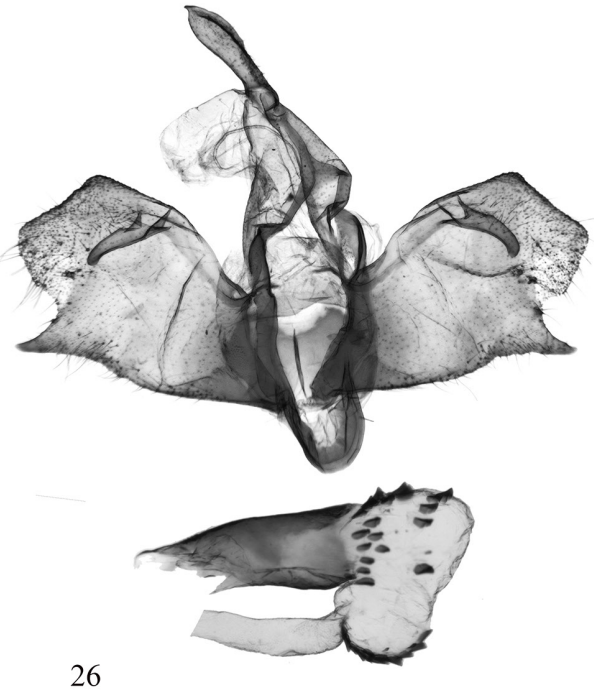
Paratypes. LIBERIA: 7 ♂♂, 2 ♀♀, 140 m, Sinoe County, Krahn-Bassa Reserve, Juboe River, 7.5 km SW Pellokon Town, 5°39′4″ N, 8°39′4″ W, 14–20.i.2018, MV Light Trap, Geiser, M., Sáfián, Sz., Simonics, G. leg., ANHRT:2017.33, ANHRT unique numbers: 00099497, 00099512, 00099526, 00100802, 00101894–00101896 (♂♂), 00089715, 00101929 (♀♀), gen. prep. Nos.: AV5648 (♂♂), AV5649 (♀) (ANHRT). **GUINEA**: 2 ♂♂, 540–600 m, 619 km ESE of Conakry, Nzerekore Region, Prefecture de Lola, Ziela env., x.2017, 7°42′ N, 8°21′ W, Local collectors leg., ANHRT:2020.6, ANHRT unique numbers: 00192371, 00192372, gen. prep. No.: AV6386 (ANHRT). **IVORY COAST**: 174 m, Taï NP, Taï Research Station, 05°49′59.8″ N, 07°20′32″ W, 5–10.vii.2015, Light Trap, Aristophanous, M., Moretto, P., Ruzzier, E. leg., ANHRT:2017.14, ANHRT unique number: 00108987, gen. prep. No.: AV6385 (ANHRT).

Diagnosis. The new species (Figs 9–10) is vaguely reminiscent externally of *T. lunaris* (Figs 12–13) but is distinguished by the larger size, the paler forewing ground color, the more intense blackish brown subbasal suffusion of the costa and the darker blackish brown subapical spots. The male genital capsule of *T. ngewo* (Figs 26–29) is similar to that of *T. lunaris* (Fig. 31) but differs in the distally more dilated valva, the medially more convex costa, the more angular apex and the somewhat more elongate distal lobe of the valva. The ventro-distal process of the valva of the new species is tapered distally and pointed apically whereas it is broader distally and rounded apically in *T. lunaris*. Additionally, the juxta of *T. ngewo* is wider than in *T. lunaris* and the saccus is much broader and more rounded. The aedeagus of *T. ngewo* is conspicuously dilated distally whereas in *T. lunaris* it has a more or less uniform width along its length. The vesica of the new species is basally wider than in *T. lunaris*. The cornuti of *T. ngewo* are short with a wide base whereas they are spine-like in *T. lunaris*. In the female genitalia of *T. ngewo* (Fig. 39), the antrum is a wide funnel-shape whereas in *T. lunaris* (Fig. 40) it is markedly narrower (in proportion to the 8th abdominal segment) with almost parallel lateral margins, a wide medio-distal depression ventrally and triangular lateral protrusions directed posteriorly. The anterior section of the ductus bursae is reduced in the new species whereas it is present in *T. lunaris*. Additionally, the posterior sclerotized section of the corpus bursae of *T. ngewo* is longer (in proportion to the length of the anterior section), more swollen postero-laterally and the appendix bursae is more elongate and basally wider than that of *T. lunaris*.

Description

External morphology of adults (Figs 9–10). Forewing length 9.0 mm in males and 12.0 mm in males. Sexual dimorphism limited: Female somewhat larger than male, its forewing wider with more pointed apex. Antenna dark brown, bipectinate with short branches in male and ciliate in female. Head and thorax brown with admixture of black scales. Forewing ground color ochreous brown, markings blackish brown. Antemedial line diffuse, smoothly curved medially and angled outwards at anal margin. Subbasal area with intense blackish brown suffusion between vein Cu and costa. Medial line wide forming an amorphous patch between costa and vein Cu, curved inwards in cell, narrow and indistinct medially and posteriorly. Discal spot small but distinct, elliptical in male and more or less round in female. Postmedial line thin and indistinct with a loop-like curve anteriorly and inwardly oblique posteriorly. Subterminal line interrupted forming a large trapezoid spot on the costa, a smaller elliptical spot opposite cell, and series of indistinct tiny spots on veins posteriorly. Terminal line interrupted constituting small indistinct spots between veins. Cilia ochreous brown with admixture of dark brown scales opposite the spots of terminal line. Hindwing and cilia ochreous brown, somewhat paler than forewing. Postmedial transverse line consisting of weak brown suffusion in the male. Abdomen brown with admixture of black scales medially and distally.

Male genitalia (Figs 26–29). Uncus elongate, swollen, dilated distally with small claw-shaped tip and short dorsal crest. Tuba analis membranous, scaphium thin and weakly sclerotized. Tegumen half as long as valva, its arms moderately wide, fused in distal third. Vinculum ca. 1.5 × longer than tegumen, saccus short (ca. ⅓ of vinculum length), moderately sclerotized, U-shaped. Juxta weakly sclerotized, shield-like with triangular medio-distal depression. Valva lobe-like, dilated distally, costa narrow, convex medially and strongly angled ventrad subapically, its distal section thin, fused with distal membranous lobe of valva dorsally. Medial costal process elongate, finger-shaped, somewhat curved distally with rounded tip. Ventral protrusion of costa projecting subapically, dilated ventrally, fused with base of ventro-distal process of valva, bearing small, setose bulge medio-distally. Ventro-distal process of valva triangular with rounded tip. Distal membranous lobe of valva wide, almost triangular with rounded apex. Sacculus narrow, short (ca. half as long as ventral margin of valva), setose dorsally. Aedeagus dilated distally with short and narrow coecum. Main chamber of vesica almost globular, bearing a cluster of short, triangular cornuti ventrally and

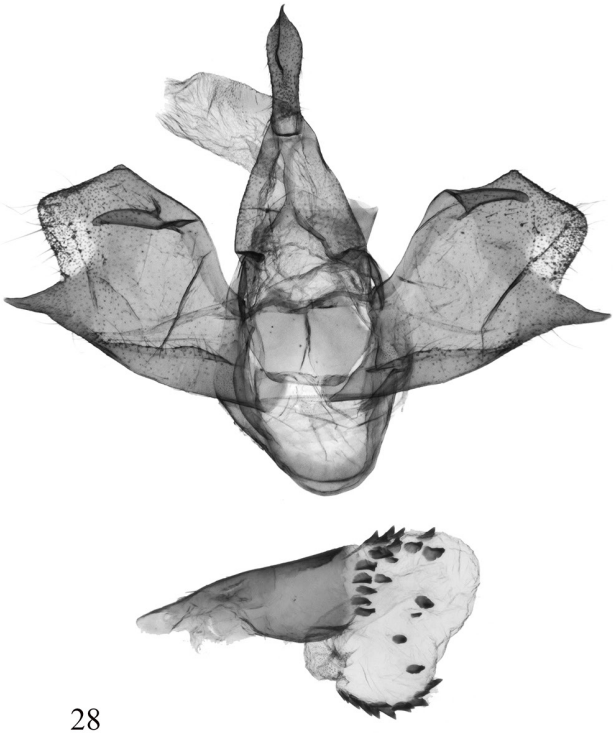


26

***T. ngewo* sp. n.**, HT
Liberia, Lofa County, Foya, slide AV4595

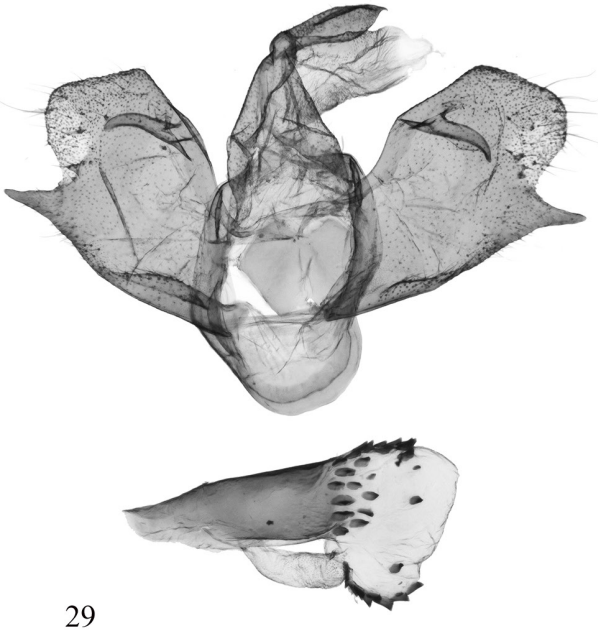
27

***T. ngewo* sp. n.**, PT
Liberia, Sinoe County, Krahn-Bassa Reserve, slide AV5648



28

***T. ngewo* sp. n.**, PT
Guinea, Nzerekore Region, slide AV6386



29

***T. ngewo* sp. n.**, PT
Ivory Coast, Tai National Park, slide AV6385

Figs 26–29. *Thumatha ngewo* sp. n., male genitalia. The specimens dissected are deposited in ANHRT.

latero-subbasally. Distal chamber of vesica somewhat narrower than main chamber, curved dorsad, bearing a cluster of short triangular cornuti subapically. Vesica ejaculatorius constricted basally, weakly granulated subbasally, directed anteriad.

Female genitalia (Fig. 39). Papillae anales trapezoidal with rounded corners, weakly setose. Apophyses anteriores and posteriores elongate and thin, equal in length, apophyses anteriores somewhat dilated apically. Ductus bursae represented only by antrum, anterior section reduced. Antrum short and wide, funnel-like, moderately sclerotized and granulated. Posterior section of corpus bursae somewhat narrower than anterior section, asymmetrical with left side more heavily sclerotized and having more convex lateral margin than right side. Anterior section of corpus bursae ovoidal, membranous. Appendix bursae positioned postero-laterally on right side of posterior section of corpus bursae, conical, sclerotized basally and membranous apically.

Distribution. The species is known from Guinea, Liberia and Ivory Coast.

Etymology. Ngewo is the supreme god in the traditional beliefs of the Mende people inhabiting Sierra Leone and Liberia.

Thumatha jiwundu sp. n.
(Figs 11, 30)
urn:lsid:zoobank.org:act:62DB7CF4-BB9A-4924-AD58-5648593F7D00

Type material

Holotype (Figs 11, 30). ♂, "Zambia, 1340m, Jiwundu Swamp (Miombo / Riverine forest mosaic), 11˚51′54″ S, 25˚33′20″ E, 29.x–4.xi.2018, LepiLED Light Trap, Aristophanous, M., Derozier, V., Laszlo, G., Oram, D. leg., ANHRT:2018.40", ANHRTUK unique number: 00056957, gen. prep. No.: AV5082 (ANHRT).

Diagnosis. *Thumatha jiwundu* (Fig. 11) can easily be distinguished from the closely related *T. lunaris* (Figs 12–13) by its somewhat larger size (the male wingspan is 17.5 mm versus 15.0–17.0 mm in *T. lunaris*), the black head, tegulae and patagia (brown in *T. lunaris*), the much darker forewing with indistinct transverse lines due to the intense black suffusion (in *T. lunaris*, the forewing is pale brown with more distinct brown markings) and the larger, round discal spot on the forewing which is dot-like in *T. lunaris*. The male genital capsule of the new species (Fig. 30) is very similar to that of *T. lunaris* (Fig. 31) but differs in the somewhat shorter uncus and tegumen, the longer vinculum (both in proportion to the valva length), the more or less rectangular saccus (it is U-shaped in *T. lunaris*), and the somewhat less convex costal margin of the valva. The aedeagus of *T. jiwundu* is more dilated distally than in *T. lunaris*. The subbasal chamber of the vesica of *T. jiwundu* is broader than in *T. lunaris* (in proportion to the aedeagus width) and lacking spinulose scobination whereas that of *T. lunaris* bears a cluster of spinules distally.

Description

External morphology of adult (Fig. 11). Forewing length 9.0 mm in holotype male. Male antenna dark brown, bipectinate with short branches. Head black. Thorax dark brown, tegulae and patagia black. Forewing ground color brown with intense black suffusion along costa. Transverse lines indistinct consisting of narrow areas of black suffusion, darker at costa. Discal spot diffuse, round. Terminal line interrupted constituting spots between veins. Cilia brown with admixture of black scales between veins. Hindwing ground color and cilia pale ochreous brown. Medial transverse line diffuse, constituting very slight suffusion of black scales. Abdomen brown with admixture of black scales subapically

Male genitalia (Fig. 30). Uncus elongate, swollen, dilated distally with small claw-shaped tip and short dorsal crest. Tuba analis membranous, scaphium thin and weakly sclerotized. Tegumen half as long as valva, its arms moderately wide, fused in distal third. Vinculum ca. 1.3 × longer than tegumen, saccus short (ca. ⅓ of vinculum length), moderately sclerotized, somewhat tapered distally with rectangular tip. Juxta weakly sclerotized, shield-like with elongate and somewhat tapered apex. Valva lobe-like, slightly dilated medially and distally with narrow, medially slightly convex costa, its apex thin, fused with distal membranous lobe of valva dorsally. Medial costal process elongate, curved, somewhat tapered distally, rounded apically. Ventral protrusion of costa projecting subapically, dilated ventrally, fused with base of ventro-distal process of valva, bearing a small, setose bulge medio-distally. Ventro-distal process of valva narrowly triangular with rounded tip. Distal membranous lobe of valva wide but short with convex outer margin. Sacculus narrow, short (ca. half as long as ventral margin of valva), weakly setose dorsally. Aedeagus narrow with short and rounded coecum, somewhat dilated distally, its distal section with a cluster of spines directed distally extending over the base of vesica. Main chamber of vesica short, elliptical with three short spine-like cornuti laterally. Distal chamber of vesica somewhat narrower than main chamber, tubular, curved anteriad bearing a cluster of short spine-like cornuti distally. Vesica ejaculatorius weakly granulated subbasally and medially, directed anteriad.

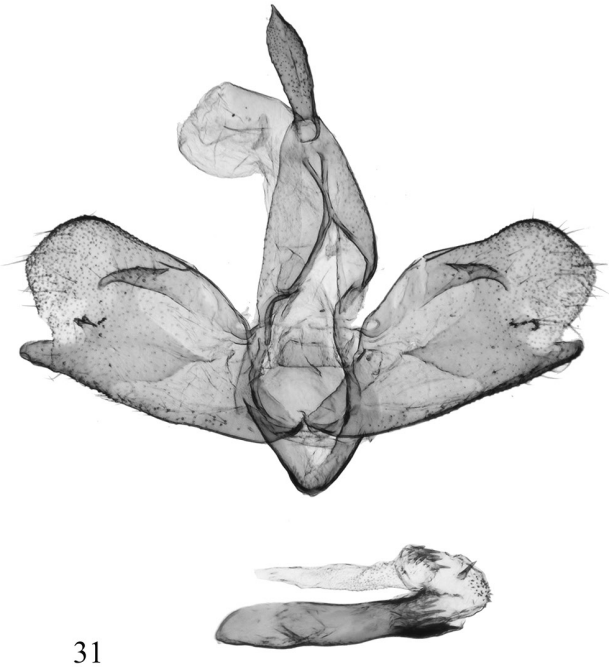
Female unknown.

Distribution. The species is known only from north-western Zambia.

Etymology. The species is named after its type locality, Jiwundu Swamp.

30

***T. jiwundu* sp. n.**, HT
Zambia, Jiwundu Swamp, slide AV5082

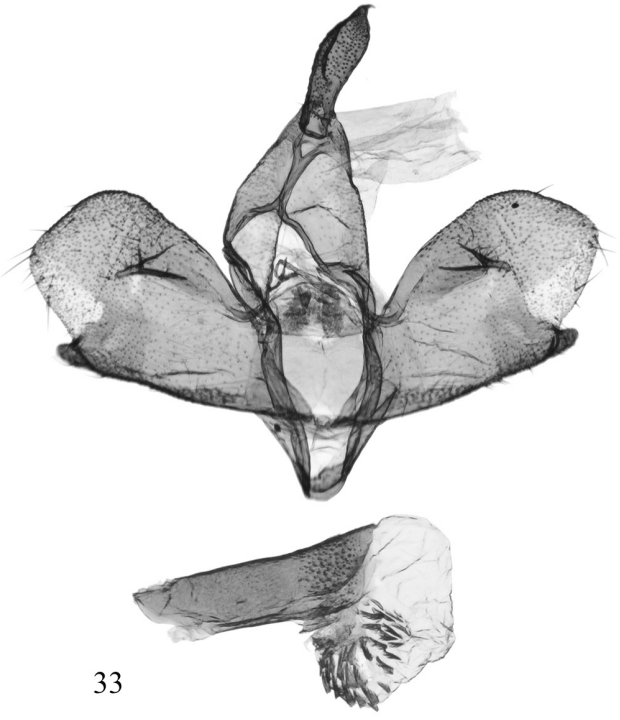


31

T. lunaris
South Sudan, White Nile, slide AV6389

32

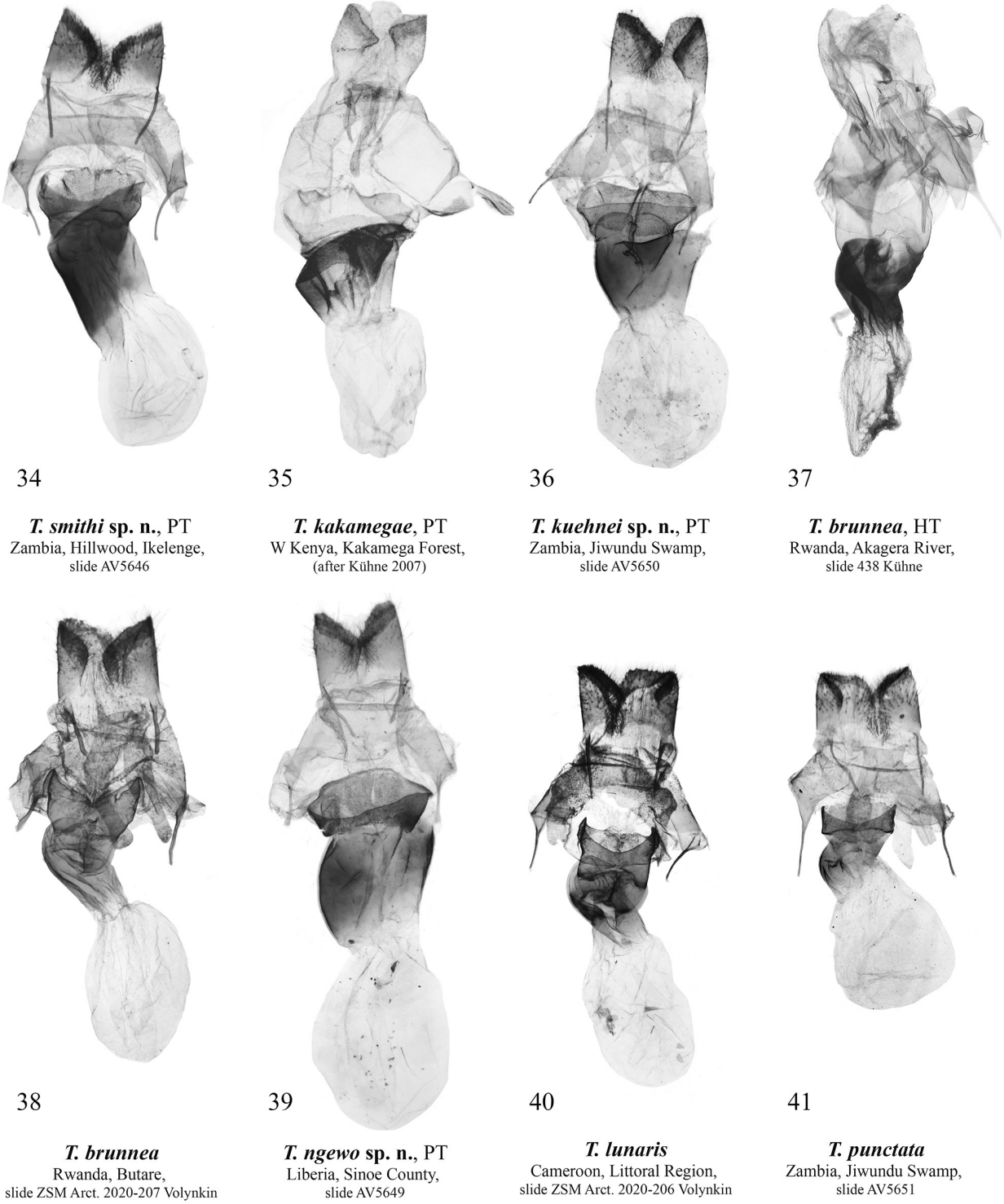
T. punctata, HT
NE Namibia, E Capriyi, slide 688 Kühne



33

T. punctata
Zambia, Jiwundu Swamp, slide AV5079

Figs 30–33. *Thumatha* spp., male genitalia. Depositories of the specimens dissected: 30, 33. = ANHRT; 31. = OUMNH; 32 = MFN.



Figs 34–41. *Thumatha* spp., female genitalia. Depositories of the specimens dissected: 34, 36, 39, 41. = ANHRT; 35. = LKP (after Kühne 2007); 37. = LKP (photo by L. Kühne); 38, 40. = ZSM.

Thumatha lunaris Durante, 2007
(Figs 12–13, 31, 40)
Thumatha lunaris Durante, 2007 (Durante 2007: 86, figs 3–6, 15–17, 20, 22).

Type locality. "Nigeria, Rivers State, Port Harcourt".

Material examined. **CAMEROON**: 1 ♀, Cameroun, 8 km N d'Edea, 30.iii–1.iv.1970, C. Herbulot, gen. prep. No.: ZSM Arct. 2020-206 (prepared by Volynkin) (ZSM). **SOUTH SUDAN**: 1 ♂, 998, Feb. 11 1912, White Nile, Lat. 6˚6′ N, Malek, G.B. Longstaff / K.998 Malek 11.2.12 / 1912 4221, gen. prep. No.: AV6389 (OUMNH).

Remark. The species was described from southern Nigeria and is currently known only from its type locality. The male specimen from South Sudan and the female specimen from Cameroon are similar to the paratypes illustrated by Durante (2007: figs 3–6). The detailed comparison with *T. jiwundu* and *T. punctata* is provided under the diagnosis sections of these species.

Distribution. The species is known from southern Nigeria (Durante 2007), south-western Cameroon and South Sudan (new country records).

Thumatha punctata Kühne, 2010
(Figs 14–18, 32–33, 41)
Thumatha punctata Kühne, 2010 (Kühne 2010: 442 (description), 453 (male genitalia), pl. 27, fig. 25 (adult)).

Type locality. "Namibia, E of Caprivi Katima Mulilo".

Type material examined

Holotype (Figs 14, 32). ♂, blue label "Namibia-Exp. ZMB 1992, E. Capriyi: Katima Mulilo, 17˚29′ S/24˚17′E, lux, 3.–8.III.[19]92, leg. W. Mey" / red label "Holotypus *Thumatha punctata* by L. Kühne" / "L. Kühne Dauerpräparat No. 688" (MFN).

Additional material examined. **ZAMBIA**: 3 ♂♂, 1 ♀, 1340m, Jiwundu Swamp (Miombo / Riverine forest mosaic), 11˚51′54″ S, 25˚33′20″ E, 29.x–4.xi.2018, Actinic Light Trap, Aristophanous, M., Dérozier, V., László, G., Oram, D. leg., ANHRT:2018.40, gen. prep. Nos.: AV5079, AV5081, AV5647 (♂♂), AV5651 (♀♀) (ANHRT); 2 ♂♂, 2 ♀♀, 1340m, Jiwundu Swamp, 11˚51′54″ S, 25˚33′20″ E, 21–24.xi.[20]14, Light Trap, leg. Smith, R. & Takano, H., ANHRT:2017.12, gen. prep. Nos.: AV4497, AV4512 (♂♂), AV4492 (♀) (ANHRT); 1 male, 1189m, Kalambo Falls, 30 km North of Mbala, Northern Province, 08˚35′50″ S, 31˚14′26″ E, 9–11.v.2019, MV Light Trap, Dérozier, V., László, G., Miles, W. leg., ANHRT:2019.12, gen. prep. No.: AV6387 (ANHRT).

Diagnosis. The forewing length is 7.5–10.0 mm in males and 11.5–12.5 mm in males. Males of the species (Figs 14–17) significantly vary in size within the same population. The species is externally reminiscent of *T. smithi*, *T. lunaris* and *T. ngewo* but can easily be distinguished by the distinct black discal spot on the hindwing which is absent in its congeners. The male genital capsule (Figs 32–33) is most similar to those of *T. lunaris* (Fig. 31) and *T. jiwundu* (Fig. 30) but in *T. punctata*, the costa is more convex subapically, the medial costal process is shorter and distally thinner, and the ventro-distal process of the valva is markedly shorter. The aedeagus of *T. punctata* is thicker with an area of short dentation apically compared to *T. lunaris* and *T. jiwundu,* which bear a dense cluster of elongate spines directed distally in the distal section of the aedeagus. The vesica of *T. punctata* is broader than in *T. lunaris* and *T. jiwundu*, lacking a small medial cluster of cornuti which is present in the other two species, and having a wider distal cluster of more numerous and more robust but short cornuti. The female genitalia of *T. punctata* (Fig. 41) differ from those of *T. lunaris* (Fig. 40) in the somewhat longer apophyses anteriores (in proportion to the ovipositor), the shorter and more rectangular antrum having a shallower medio-ventral depression, and the longer and more heavily sclerotized posterior section of the corpus bursae.

Description of female

External morphology of adult (Fig. 18). Female larger than male with serrate antenna (bipectinate with short branches in male) and more elongate forewing having less convex costal margin and more pointed apex. Head and thorax dark brown with admixture of black scales. Forewing ground color brown. Forewing markings black, more diffuse than in male. Sub-costal area with three wide spots of black suffusion subbasally, medially and subapically. Discal spot round, distinct. Subterminal line indistinct, zigzagged. Terminal line diffuse, interrupted, in the form of small spots between veins. Cilia brown. Hindwing and cilia paler than forewing, ochreous brown. Discal spot semilunar with diffuse margins. Abdomen brown

Female genitalia (Fig. 41). Papillae anales rectangular with rounded corners, setose. Apophyses anteriores and posteriores elongate and thin, equal in length. Antrum relatively wide, rectangular, its ventral margin with wide but shallow posterio-medial depression. Anterior section of ductus bursae somewhat longer than antrum, tapered anteriorly, sclerotized. Posterior section of corpus bursae somewhat longer than ductus bursae, heavily sclerotized with wide rounded lateral protrusion on the left side. Anterior section of corpus bursae ca. twice as long as posterior section, teardrop-shaped, membranous. Appendix bursae reduced.

Distribution. The species is known from north-eastern Namibia (Kühne 2010) and Zambia (new country record).

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Axel Hausmann, Dr Wolfgang Speidel and Mr Ulf Buchsbaum (ZSM), and Dr James Hogan (OUMNH). I am also grateful to Mr Lars Kühne (Potsdam, Germany) for providing me with pictures of specimens of *T. brunnea* and *T. kakamegae* from his private collection.

The following collaborative partners and authorities are thanked for the diverse administrative and technical assistance provided during the field work. Guinea: Mr Mamadou Diawara (Guineé Ecologie), Colonel Layaly Camara and Mr Cece Papa Konde (Ministère de l'Environment et aux Eaux et Forêts), Mr Jamison Suter (Societe des Mines de Fer de Guineé – Responsibilite Environmentale et Social). Ivory Coast: Scientific Research in Côte d'Ivoire was authorised by the Ministère de l'Enseignement Supérieur et de la Recherche Scientifique. The Office Ivoirien des Parcs et Réserves (OIPR) and the Société de Développement des Forêts (SODEFOR) are thanked for authorising access to protected forests and providing export permits. Liberia: Mr Mike Doryen, Mr Darlington Taugben and Mr Kederick F. Johnson (Forestry Development Authority). Zambia: Ms Rhoda Kachali (Department of National Parks and Wildlife - ZAWA, Lusaka), Ms Claire Mateke and Ms Martha Imakando (Livingstone Museum, Livingstone).

The author declares that to the best of his knowledge he conforms to the national regulations and meets with the conditions and requirements of International Conventions concerning collecting/export and handling of the specimens presented in this Article.

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