

A new genus *Thrombialis* Park, gen. n. and a new species of *Furcalis* Park, 2018 from Uganda (Lepidoptera: Lecithoceridae)

K.-T. Park & J.-M. Koo

Abstract

A new genus, *Thrombialis* Park, gen. n., with type species, *T. sylvestrana* Park & Koo, sp. n., and a new species of *Furcalis* Park, *Furcalis mpangensis* Park & Koo, sp. n., are described from Uganda. Adults and male and female genitalia of the new species are illustrated.

KEY WORDS: Lepidoptera, Lecithoceridae, new genus, new species, taxonomy, Uganda.

Un nuevo género *Thrombialis* Park, gen. n. y una nueva especie de *Furcalis* Park, 2018 de Uganda (Lepidoptera: Lecithoceridae)

Resumen

Se describen de Uganda un nuevo género *Thrombialis* Park, gen. n., con la especie tipo *T. sylvestrana* Park & Koo, sp. n., y una nueva especie de *Furcalis* Park, *Furcalis mpangensis* Park & Koo, sp. n. Se ilustran el adulto y la genitalia macho y hembra de la nueva especie.

PALABRAS CLAVE: Lepidoptera, Lecithoceridae, nuevo género, nueva especie, taxonomía, Uganda.

Introduction

The diversity of Lecithoceridae (Lepidoptera: Gelechioidea) in the Afrotropical and Madagascan regions is enumerated less than 130 species, according to Afromoths, the online database of Afrotropical moth species (Lepidoptera) by J. and W. De Prins. However, the real existence in these areas can be predicted more than ten times, because many unknown species are continuously being reported by recent works (PARK, 2018a, b, c; PARK *et al.*, 2019a, b, c, d, e, f).

The new genus *Thrombialis* Park, gen. n. is defined by the specialized antenna with basal segment extremely elongated, with dimorphism in both sexes, and the labial palpus with also dimorphism: atypically broadened second segment with rough scales (Figs 1E, F) in male, but simply thickened in female (Fig. 1H). It is related to the Afrotropical genus *Furcalis* Park, 2018, with similar shape and color pattern of wings, but it is differentiated from the latter by the hind wing with M_2 absent, and the specialized antenna and labial palpus as noted above. It is also strongly supported by the COI sequence (Fig. 3).

The new species, *Furcalis mpangensis* Park & Koo, sp. n. is the 2nd species known from Uganda. Little differences between this new species and *F. hemigastra* (Meyrick, 1931) in the venation of the hindwing is observed, but it is grouped into a same clade by the result of COI sequence.

Material and methods

Material examined is based on the loan specimens from the Museum für Naturkunde (MfN), Berlin, Germany, which were collected by W. Mey in 2014 from Uganda, and the Naturhistorisk Museum of Oslo (NHMO), Oslo, Norway, collected by L. Aarvik from Malawi in 2004. Additional specimens were provided by the Royal Museum for Central Africa (RMCA), Tervuren, Belgium. Preparation of the genitalia and the wing slide followed PARK *et al.* (2019a). The genitalia slide numbers are abbreviated as “gen. slide no.”. The wingspan was measured from the apex of the left wing to the apex of the right wing. DNA extraction, PCR, and sequence alignment followed PARK *et al.* (2019a). The colour standard of adults followed KORNERUP & WANSCHER (1978). Abbreviations of type depositories are as follows:

NIBR	The National Institute of Biological Resources, Incheon, Korea.
NHMO	Naturhistorisk Museum of Oslo, Oslo, Norway.
MfN	Museum für Naturkunde, Berlin, Germany.
RMCA	Royal Museum for Central Africa, Tervuren, Belgium.

Taxonomic accounts

Genus *Thrombialis* Park, gen. n.

<http://zoobank.org/900E8D01-1C89-45C4-A97F-BC36199DDD21>

Type species: *Thrombialis sylvestrana* Park & Koo, sp. n.

Thrombialis Park, gen. n. of the subfamily Lecithocerinae has a similar wing venation with the Palaearctic genus *Eurodachtha* Gozmány, 1978, by having all veins free, excepting R_4 and R_5 stalked on the forewing, and the hindwing with M_2 absent. It is one of the genera in Lecithocerinae as well as *Eurodachtha* which has spinous zones on abdominal tergites. However, *Thrombialis* Park has definitely distinguishable characters from *Eurodachtha*: 1) antenna with basal segment extremely elongated, longer than the 2nd segment of labial palpus, with dimorphism in flagellum of both sexes: male with broadened basal 1/5, angled, burrowed on inner surface (Figs 1D, D’), while that of the female simply serrate (Fig. 1G); 2) labial palpus also with dimorphism: male characterized by atypically broadened second segment with rough scales (Figs 1E, F); 3rd segment shorter than 2nd segment, while 2nd segment of female just thickened (Fig. 1H); 3rd very slender, longer than 2nd segment. The new genus is related to the Afrotropical genus *Furcalis* Park, 2018, with similar shape and color pattern of wings, sharing the modified character of the abdominal segments with a bundle of long hair-pencils, arising from between VI and VII. However, it is no doubttable to separate it from *Furcalis* Park because the M_2 on the hind wing is definitely absent and the specialized antenna and labial palpus as noted above, and it is also strongly supported by the result of COI sequence (Fig. 3). The generic name is derived from the Greek, *θρομβός* (= lump, swelling) with Latin suffix added to noun roots, *-alis*.

Thrombialis sylvestrana Park & Koo, sp. n. (Figs 1A-I; 2A-F)

<http://zoobank.org/FC4D2EA7-7D79-4593-8277-41F8A7273DCD>

Type. Holotype: ♂, [UGANDA], Mpigi, Mpanga Forest, 0°12’24.51”N 32°18’05.66”E, 27-30-IV-2019, K.-T. Park, J.-M. Koo, J. D. Kim, deposited in NIBR.

Paratypes: 86 ♂♂, 23 ♀♀, same locality as holotype, 27-30-IV / 1-5-V-2019, K.-T. Park, J.-M. Koo, J. D. Kim; gen. slide no. -7285(♂), CIS-7321(♀), -7433(♀); COI barcode CBNU148, -150, -153, -154, deposited in NIBR. 12 ♂♂, 6 ♀♀, [UGANDA], Mpigi, Mpanga Forest, 25-30-XI-2014, L. F. leg. W. Mey; COI Barcode CBNU009; 6 ♂♂, 1 ♀, [UGANDA], Kibale Nat. Park, Biol. Field Station, 19-24-XI-2014, LF leg. W. Mey; gen. slide no. CIS-7011(♂), -7023(♀); COI barcode CBNU041; wing slide no. CIS-7020, in MfN. 1 ♂, [UGANDA], Kasese Distr., Kibale National Park, 36N TF 05826208, 1500 m,

19-24-X-2014, Leif Aarvik and Knud Larsen; gen. slide no. CIS-7132, in NHMO. 1 ♂, [DR CONGO], Belge, P. N. A. [Parc National Albert = Virunga National Park], 4-V-1958, P. Vanschuytbroeck VS-377; Massif Ruwenzori Grotte Ibatama 1,610 m [Lumfère = Lumière (light)]; gen. slide no. CIS-7297, in RMCA.

Description. Adult (Figs 1A-I). Male and female. Wingspan 20.0-20.5 mm. Head: Head yellowish brown dorsally, with short, orange-white erect scales along upper margin of compound eyes. Antenna longer than forewing; basal segment extremely elongated, longer than width of head, dilated distally, yellowish brown dorsally, orange white laterally and ventrally; flagellum orange white, with dark-brown annulations, dimorphism in both sexes: basal 7-8th segments broadened, dilated distally, sunken on inner surface, prominently expanded on outer surface in the male (Figs 1D, D'), but the female simply serrate (Fig. 1G). Labial palpus also dimorphism: male second segment characterized by agglomerated rough scales, more or less atypical, hollowed on inner surface, black medially and remains yellowish-brown mixed with orange-white scales (Fig. 1E), dark brown on outer surface (Fig. 1F), 3rd segment of male strongly recurved, slender, shorter than 2nd segment, but 2nd segment of female simply thickened with rough scales and 3rd segment very slender, longer than 2nd segment, porrected, sharply pointed apically (Fig. 1H). Thorax and tegula dark yellowish brown. Hind tibia dark brown with three orange-white bands; broad one at near base, narrower ones at middle and before apex. Forewing ground color dark yellowish brown uniformly, slightly dilated distally; costa slightly concave beyond middle, then oblique from beyond 1/5; apex obtuse; termen slightly oblique; fringe concolorous with orange-white basal line; venation (Fig. 1I) with R₁ arising from near middle of discal cell; distance between origins of R₁ and R₂ more than 4 times that of R₂ and R₃; R₃ nearly parallel to R₂; R₄ and R₅ stalked for basal 3/5, R₅ reaching termen; M₁ remote from R₄₊₅ at base; M₂ remote from M₁ at base and closer to M₃; M₃, CuA₁ and CuA₂ free; 1A+2A narrowly long-forked in basal 1/4; discal cell about 3/5 length of wing, closed. Hindwing ground color slightly paler than forewing, with broad white expansion along costa in basal half, slightly broader than forewing; costa nearly straight; apex produced; fringe concolorous with ground color; venation with M₁ nearly connate with Rs at base; M₂ absent; M₃ and CuA₁ stalked for basal 3/5; cell opened. Abdomen (Fig. 2D): Dark brown dorsally; spinous zones on tergites broadly developed; abdominal sternite VII with a bundle of long hair-pencils and converted Y-shaped sclerite; sternite VIII deeply emarginate medially, strong bristles along posterior margin.

Male genitalia (Figs 2A-C): Basal lobe of uncus poorly developed, with semi-ovate dorsal plate, bearing setae. Median process of gnathos abruptly narrowed beyond half, strongly bent pre-apically, sharply pointed apically. Costal bar connecting tegumen and valva broad, triangularly angled medially. Valva with basal part as long as cucullus; ventral margin nearly straight, with a bundle of short setae at apex, followed by a deep emargination at base of cucullus; cucullus broadened, as wide as valva, densely setose on surface, with broadly rounded apex. Juxta relatively short, broader posteriorly, weakly sclerotized. Vinculum broad, rounded apically. Saccus broadly developed, with nearly flat anterior margin. Aedeagus slightly bent in basal 1/3, with a small spine apically; cornuti consisting several long strings, about 1/2 length of aedeagus, often these strings removed.

Female genitalia (Figs 2E, F): Abdominal sternite with broad, semi-ovate plates latero-anteriorly. Apophyses anteriores short, less than half length of apophyses posteriores. Antrum triangular, weakly sclerotized. Ductus bursae shorter than corpus bursae, slightly wrinkled; ductus seminalis very narrow, arising from before middle. Corpus bursae ovate; signum small, transversally elongated, with dense spines.

Distribution: Uganda (Mpigi), DR Congo (Lumfère).

Etymology: The species name is derived from the Latin, *sylvestr* (= Forest), with a Latin suffix, -ana.

Genus *Furcalis* Park, 2018

Furcalis Park, 2018. *Zootaxa*, **4415**: 573

Type species: *Furcalis triodontata* Park, 2018. *Zootaxa*, **4415**: 574, figs 27, 28, 30a-b

Type Locality: CAMEROON

Genus *Furcalis* Park, 2018 is related to *Homaloxestis* Meyrick, 1910, sharing similar wing venation, but it can be distinguished by the forewing venation with R_3 free on the forewing, and the male genitalia with uniquely specialized valva, and the abdominal segments with a bundle of long hair-pencils, arising from between VI and VII. Three species of the genus have been known: two species are from Cameroon and one species, *F. hemigastra* (Meyrick, 1931) from Uganda.

***Furcalis mpangensis* Park & Koo, sp. n.** (Figs 4A-D; 5A-F)
<http://zoobank.org/D1A050C6-6A4B-4781-B1CB-5349922667A2>

Type: Holotype: ♂, [UGANDA], Mpigi, Mpanga Forest, 0°12'24.51"N 32°18'05.66"E, 1-5-V-2019, leg. K.-T. Park, J.-M. Koo, J. D. Kim; gen. slide no. CIS-7427, in NIBR.

Paratypes: 4 ♂♂, 1 ♀, same data as holotype, 27-30-IV-2019, leg. K.-T. Park, J.-M. Koo, J. D. Kim; gen. slide no. CIS-7428, COI barcode CBNU157; gen. slide no. CIS-7425 (♂), -7429 (♂), 7428(♀); 1 ♂, same data as holotype, 1-5-V-2019, leg. K.-T. Park, J.-M. Koo, J. D. Kim; COI barcode CBNU149, in NIBR. 2 ♂ (%%), [UGANDA], Kibale National Park, 19-24-XI-2014, leg. Mey; gen. slide no. CIS-7065; wing slide no. CIS-7066, in MfN. 2 ♂♂, [UGANDA], western, Budongo Forest, 3000 ft, 17-18-VII-2000, leg. D. J. L. Agassiz, in NHMUK.

Diagnosis: This new species is characterized by the male genitalia uniquely modified valva with a long, specialized linear, comb-like row along ventral margin from median expansion of valva to broadened distal part of cucullus.

Description: Adult (Figs 4A-D). Male and female. Wingspan 11.0-12.0 mm. Head: Grayish brown centrally on vertex, with light-orange erect scales laterally, arising from upper margin of compound eyes. Antenna longer than forewing, about 1.2 times; basal segment elongated, slightly dilated toward apex; flagellum, pale yellow, without annulations in basal 2/3, then with dark-brown annulations beyond. Second segment of labial palpus thickened, gradually dilated toward apex; dark brown on outer surface, pale yellow on inner surface; 3rd segment strongly upturned, slender, shorter than 2nd segment, dark brown on outer surface, pale yellow on inner surface. Thorax and tegula grayish yellow dorsally. Fore and mid-tibia with rough scales ventrally, dark brown all around; hind tibia yellowish white dorsally, with rough scales ventrally. Forewing ground color pale grayish-orange, scattered with yellowish-brown scales, slightly dilated distally; costa gently arched in basal 1/3, nearly straight medially, then oblique from beyond 1/5; apex obtuse; termen slightly oblique, sparsely with dark-brown scales along margin; fringe dark brown; venation (Fig. 4D) with R_1 arising from near middle of discal cell; R_2 from near upper corner of cell; distance between R_1 and R_2 at base about three times length than that of R_2 and R_3 ; R_3 free; R_4 and R_5 stalked for about basal 1/2; R_5 reaching termen; M_2 remote from M_1 at base and closer to M_3 ; M_3 free; CuA_1 and CuA_2 slightly stalked at base, arising from near lower corner of discal cell; $A1+A2$ well-developed; cell closed. Hindwing pale grayish orange, scattered with dark yellowish-brown scales, more distally; apex sharply produced; fringe concolorous with ground color; venation with M_2 well-developed; M_3 and CuA_1 stalked for basal half; CuA_2 arising from near 2/3 of discal cell; cell weakly closed. Abdomen (Fig. 5E): Spinous zones absent on dorsal surface; abdominal segment VII forming a specially modified, Y-shaped structure with a dark brown, long hair-pencils, as long as segment VIII; segment VIII large, emarginate at middle on caudal margin.

Male genitalia (Figs 5A-D): Basal lobes of uncus small, ovate. Median process of gnathos broad basally and gently arched beyond half, sharply pointed apically. Costal bar connecting tegumen and valva broad, not angled medially. Valva with characteristically modified, with distinctly developed median expansion on ventral margin; cucullus with specifically broadened rice paddle-like distal part and with a long, specialized linear comb-like row along ventral margin, from median expansion of valva to broadened distal part. Juxta small, concaved on caudal margin, with weakly sclerotized, semi-ovate latero-caudal lobes. Vinculum broad, rounded apically. Saccus rounded anteriorly. Aedeagus slender, slightly bent medially, sharply produced apically.

Female genitalia (Fig. 5F): Abdominal sternite VIII with pouches at both sides. Antrum cup-

shaped, membranous. Ductus bursae narrow long, about twice of corpus bursae; ductus seminalis arising from near distal end. Corpus bursae large, ovate; signum elliptical, with dense conic spines.

Distribution: Uganda, DR Congo.

Etymology: The species name is derived from the type locality, Mpanga Forest, Mpigi, Uganda.

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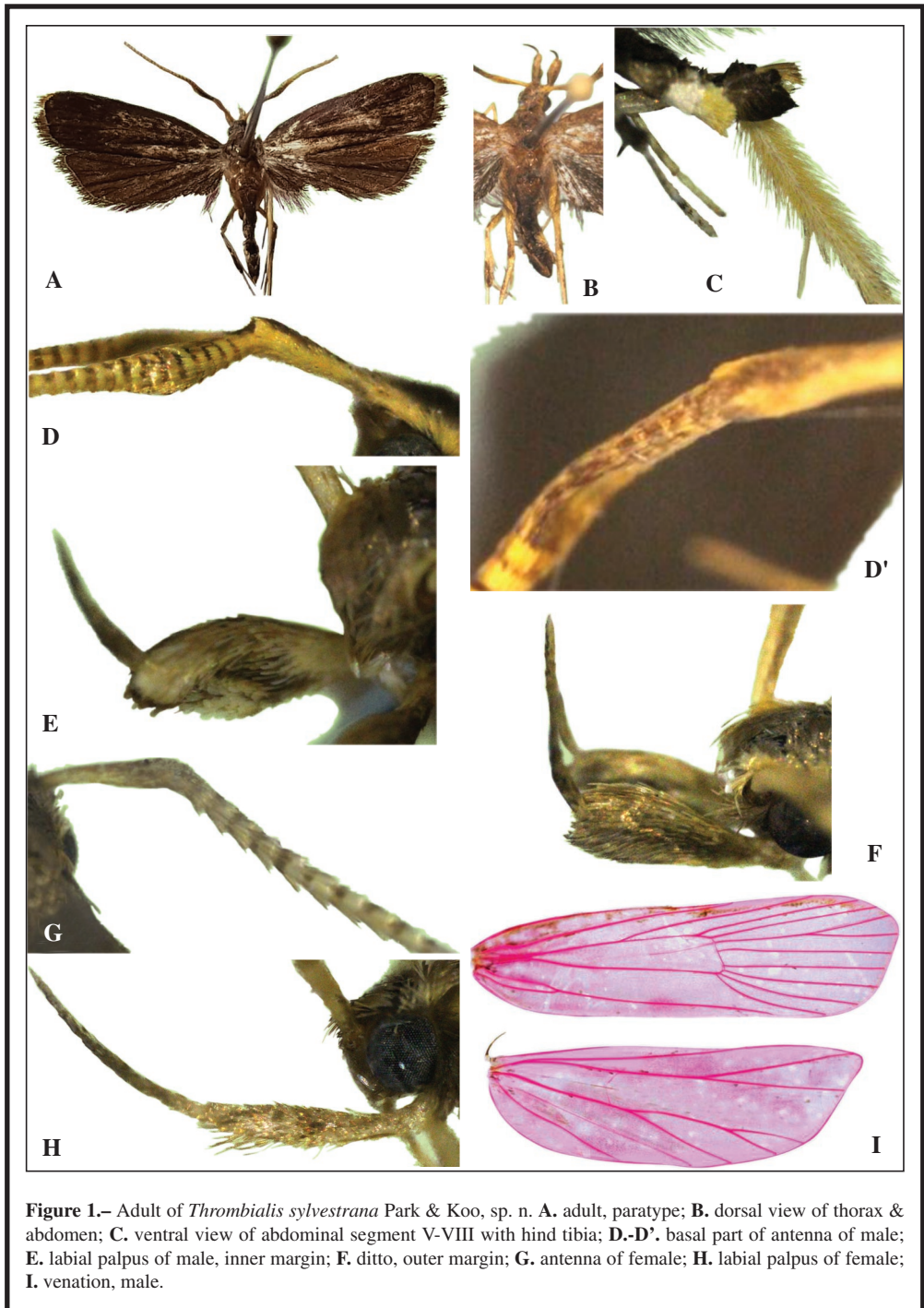


Figure 1.— Adult of *Thrombialis sylvestrana* Park & Koo, sp. n. **A.** adult, paratype; **B.** dorsal view of thorax & abdomen; **C.** ventral view of abdominal segment V-VIII with hind tibia; **D.-D'.** basal part of antenna of male; **E.** labial palpus of male, inner margin; **F.** ditto, outer margin; **G.** antenna of female; **H.** labial palpus of female; **I.** venation, male.

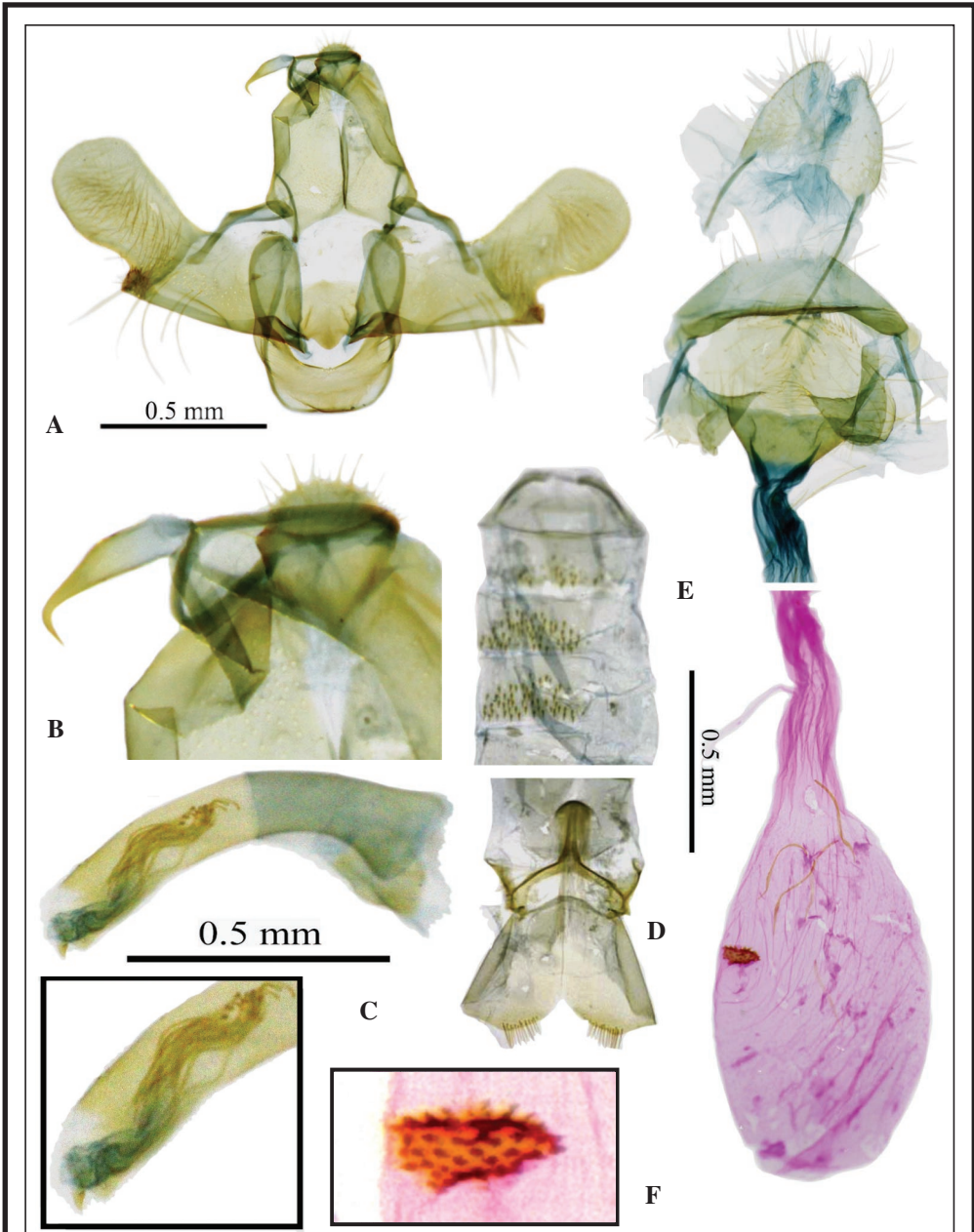
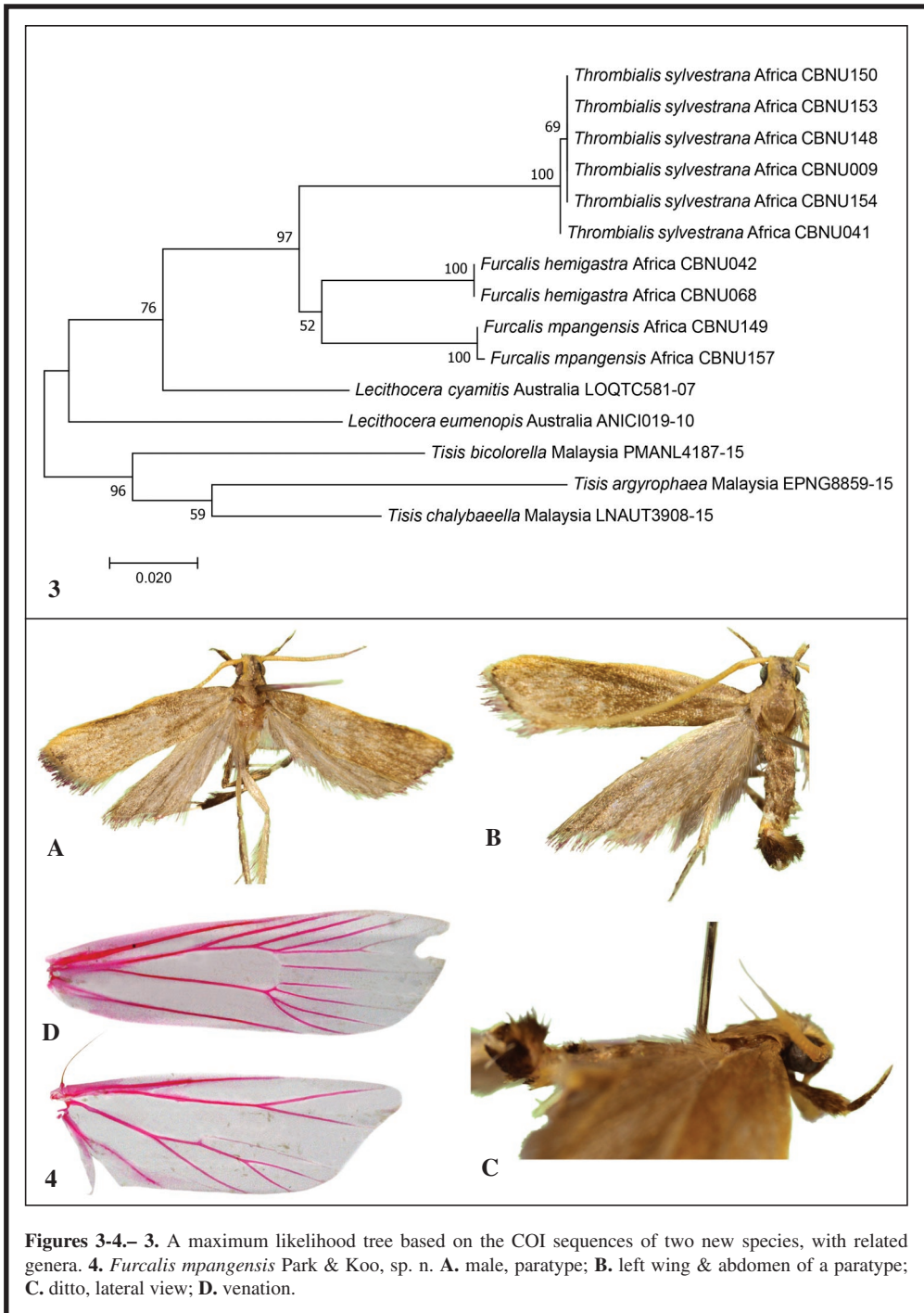


Figure 2.– Genitalia of *Thrombialis sylvestrana* Park & Koo, sp. n. **A.** male genitalia, paratype, gen. slide no. CIS-7132; **B.** ditto, close-up basal lobes of uncus and gnathos; **C.** aedeagus of other paratype, gen. Slide no CIS-7297; **D.** abdomen, with segments VII-VIII; **E.** female genitalia, gen. slide no. CIS-7321; **F.** ductus bursae and corpus bursae, with close-up signum, gen. slide no. CIS-7433.



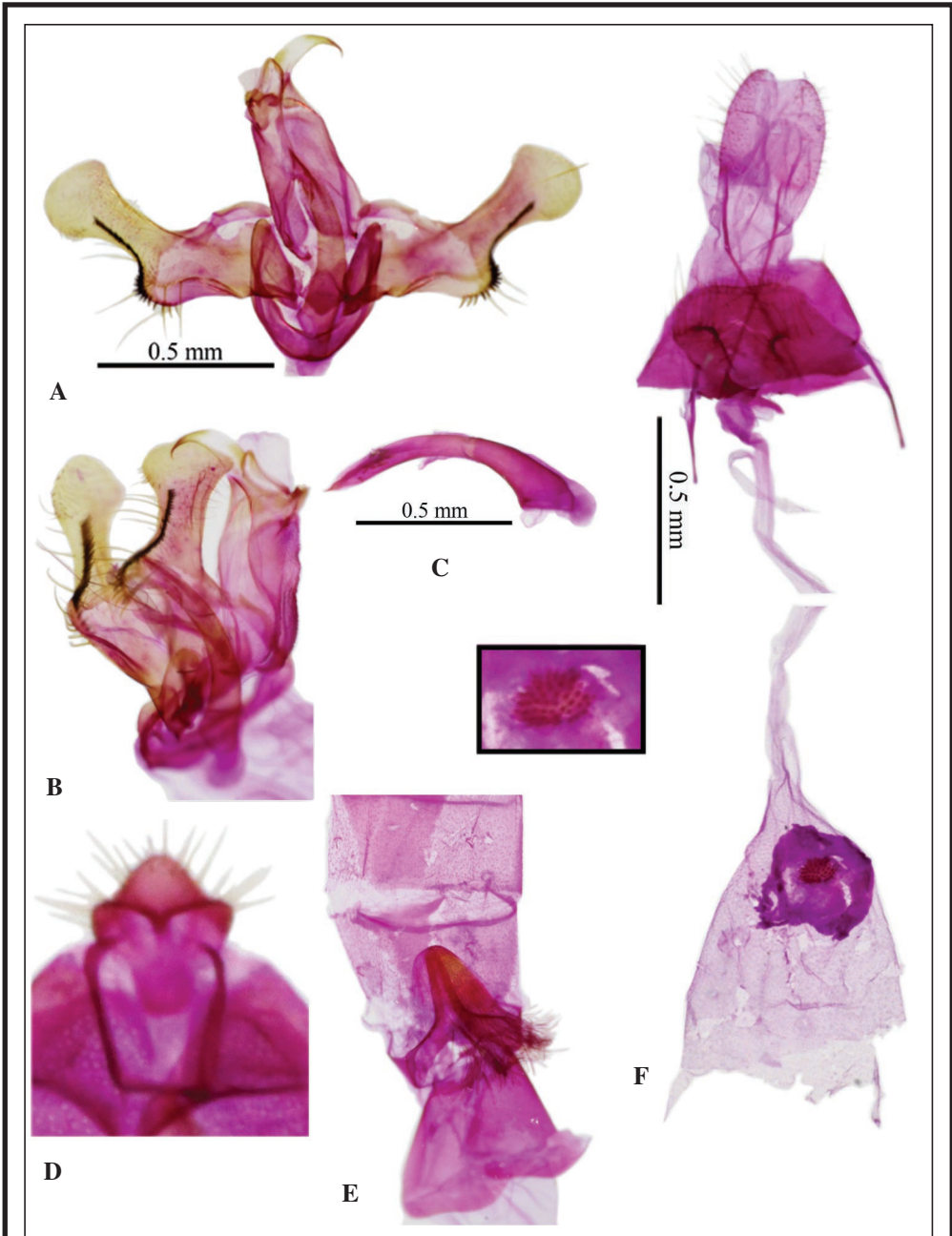


Figure 5.— Genitalia of *Furcalis mpangensis* Park & Koo, sp. n. **A.** male genitalia, paratype, gen. slide no. CIS-7425; **B.** ditto, lateral view; **C.** ditto, aedeagus; **D.** close-up basal lobes of uncus, dorsal view, gen. slide no. CIS-7429; **E.** abdominal segments VII-VIII; **F.** female genitalia, with close-up signum, gen. slide no. CIS-7428.