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# A review of the genus *Ectropa* Wallengren, 1863 with descriptions of a new genus and six new species (Lepidoptera: Chrysopolomidae)

P. A. Kurshakov & V. V. Zolotuhin

## Summary

The genus *Ectropa* Wallengren, 1863, is revised, and a new species, *E. adam* Kurshakov & Zolotuhin, sp. n., is described. Based on the wing pattern and male genitalia characters, a new genus *Ectropona* Kurshakov & Zolotuhin, gen. n., related to *Ectropa*, is erected here, with *Ectropona dargei* Kurshakov & Zolotuhin, sp. n., as a type-species. Five more new species are also described: *Ectropona dargei* Kurshakov & Zolotuhin, sp. n., *E. larsa* Kurshakov & Zolotuhin, sp. n., *E. kubwa* Kurshakov & Zolotuhin, sp. n., *E. aarviki* Kurshakov & Zolotuhin, sp. n., and *E. revelli* Kurshakov & Zolotuhin, sp. n.. All species and type specimens are figured and distributional data are summarized.

KEY WORDS: Lepidoptera, Chrysopolomidae, *Ectropa*, taxonomy, new genus, new species, Africa.

## Una revisión del género *Ectropa* Wallengren, 1863 con descripción de un nuevo género y seis nuevas especies (Lepidoptera: Chrysopolomidae)

## Resumen

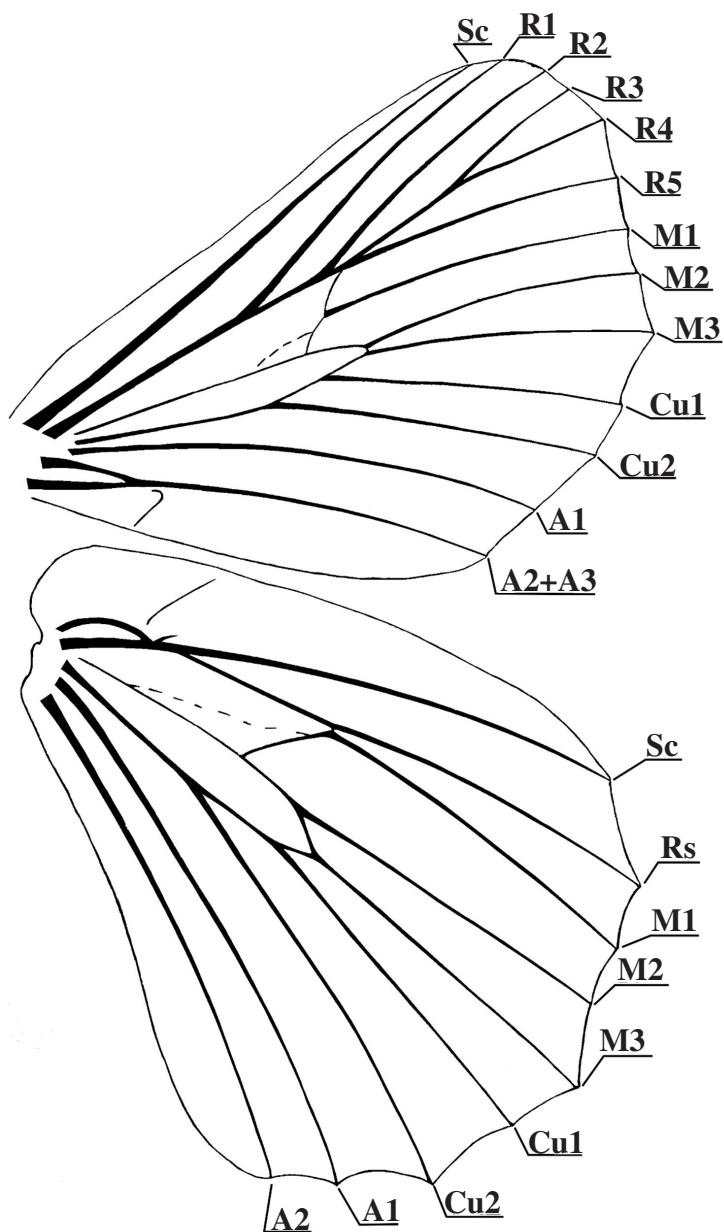
Se revisa el género *Ectropa* Wallengren, 1863 y se describe una nueva especie, *E. adam* Kurshakov & Zolotuhin, sp. n.. Basado sobre el patrón alar y de las características de la genitalia del macho, se erige aquí un nuevo género *Ectropona* Kurshakov & Zolotuhin, gen. n., relativo a *Ectropa*, con *Ectropona dargei* Kurshakov & Zolotuhin, sp. n., como especie tipo. También se describen cinco nuevas especies: *Ectropona dargei* Kurshakov & Zolotuhin, sp. n., *E. larsa* Kurshakov & Zolotuhin, sp. n., *E. kubwa* Kurshakov & Zolotuhin, sp. n., *E. aarviki* Kurshakov & Zolotuhin, sp. n., y *E. revelli* Kurshakov & Zolotuhin, sp. n.. Se figuran todas las especies y las especies tipo y se da un resumen de su distribución.

PALABRAS CLAVE: Lepidoptera, Chrysopolomidae, *Ectropa*, taxonomy, nuevo género, nuevas especies, África.

## Introduction

The small and little-known Afrotropical family Chrysopolomidae includes medium-sized moths with the following characters – in the male genitalia the uncus is slender, and, in many genera, the gnathos is absent and is then replaced functionally by a hemitransstilla or transtilla; the vinculum is narrow; the valva have a wide base and often with a weak sacculus, without any harpe; the juxta is simple, flattened, without specialized processes; sometimes an anellus is present (KUZNETSOV, STEKOLNIKOV, 2001); fore wings often have a prominent discal eye-spot. Some reductions are typical for imagines, and chaetosema, ocelli, haustellum and frenulum are all absent. Reduction of the frenulum leads to a widening of the costal zone of the hind wing and a hardening of the corresponding field in the fore wing (Fig. 17) contrary to the statement of HERING (1937: 16) “Ganz abgesehen davon besitzen die Limacodidae am Hinterflügel das *Frenulum*, das den Chrysopolomidae immer fehlt .... wenn auch die basale Verdickung desselben vorhanden ist. Es ist indessen nicht der Flügel an dieser

Stelle vorgezogen, wie es beispielsweise bei Saturniiden und Lasiocampiden der Fall ist”; moreover, these fields are densely covered with short but strong chaetae (Fig. 1) helping wing coupling and resemble the so-called *spinarea* in the Lasiocampidae introduced by MINET (1994).



**Fig. 1.**– Wing venation of *Ectropa ancilis* Wallengren, male.

The family Chrysopolomidae is closely related to the Limacodidae, but this relationship needs further investigation. It is often considered as merely a subfamily within the Limacodidae based on two autapomorphies - frenulum and gnathos which are absent (EPSTEIN, 1996; EPSTEIN *et al.*, 1998). Generally the male genitalia of the Chrysopolomidae greatly resemble those of the Limacodidae, but such a simple ground plan is known in many basal families. The female genitalia in both families are also similar, with open, disk-shaped papillae anales (ovipositor lobes); but in the Chrysopolomidae, they have distinct lateral processes (EPSTEIN, 1996). This character is also not unique, and is also known in some Tortricidae. EPSTEIN (1996: 85) listed the following possible synapomorphies between chrysopolomids and limacodids: (1) absence of larval crochets (except *Pantoctenia* Felder, 1874); (2) stemma 5 proximate to stemma 4; (3) a hard, oval cocoon; (4) lateral extension of the pupal maxilla; (5) portion of pupal maxilla contiguous with labial palpus; (6) presence of lateral lobes on adult female A8; and (7) pads with sensilla trichodea on the fifth tarsomere in females. However, synapomorphies 1 and 4-7 were not found in some archaic limacodid genera (*Pantoctenia*, *Crothaema* Butler, 1880), and other characters are absent from other genera (EPSTEIN, 1996). These characters, in different combinations, are also typical for certain families of the Zygaenoidea. It is possible that the characters listed above evolved independently in the Chrysopolomidae and Limacodidae, or, alternatively, they were lost in some limacodid genera and therefore not all of them would be considered as synapomorphies between the two groups. More material will need to be studied from the preimaginal stages to reach firm conclusions. Currently both points of view: are chrysopolomids a separate family - or just a subfamily within the Limacodidae? - have no notable contradictions, therefore an argued justification is necessary. The musculature of genitalic appendages was studied to understand their relationships, and a distinct divergence of both branches was found (ZOLOTUHIN *et al.*, in press).

The genitalia apparatus of Chrysopolomidae is completely symmetrical. The aedeagus is not axially spiraled and its muscles are mirror image symmetric. Muscles m6(5) and m7(6) are closed and part of m7(6) is covered by m6(5), whereas in limacodids these pairs are widely separated. In chrysopolomids, the inner valvar muscles are highly specialized, well developed and occupy about 90% of the inner valvar volume. Also, m5(7) is replaced here from base of valva or vinculum to the juxta and only in *Chrysopoloma* Aurivillius, 1895, initially attached to the saccular margin of the valva. The gnathos is reduced in chrysopolomids and is replaced functionally by a strongly modified transtilla separated from the valva. This character is not known in limacodids, but here the transtilla can be partially fused with the gnathos forming a weak bond with valva, as in *Chibaraga banghaasi* (Hering & Hopp, 1927) (SOLOVYEV, 2010). The uncus depressors m1 are weakly developed in chrysopolomids whereas they are prominent in all limacodids, and the presence of a strong m3(2), which is reduced in all Limacodidae, is very typical of the Chrysopolomidae, where it arises from a modified transtilla to the top of the uncus, not to the anteriomedian part of the tegumen, and therefore does not function as an abductor for the valva, but for lowering of the uncus and raising the gnathos-like transtilla.

Thus, morphologically, Chrysopolomidae differ so strongly from Limacodidae that it is reasonable to consider them as a separate family, a point of view followed in the present article.

The family Chrysopolomidae is divided into two subfamilies: the more archaic Ectropinae Hering, 1937 (transtilla gnathos-like) and Chrysopolominae Aurivillius, 1895 (transtilla strongly modified) but this division is not complete, and we find it incorrect in details of generic placement.

The genus *Ectropa* included only two species up to the present, to which a third is added below. In addition, a related genus comprising five hitherto undescribed species is erected.

## Materials and methods

This study is based on material from a number of museums and private collections; their acronyms are as follows:

BMNH: The Natural History Museum, London, U.K.;  
 CLKP: collection of Lars Kühne, Potsdam, Germany;  
 EMEM: entomologisches Museum Dr. Ulf Eitschberger, Marktleuthen, Germany;  
 ISNB: Koninklijk Belgisch Instituut voor Natuurwetenschappen, Bruxelles, Belgique [Institut Royal des Sciences Naturelles de Belgique];  
 MWM: entomologisches Museum Th. Witt, Munich, Germany;  
 NHMO: National History Museum, Oslo, Norway;  
 BMNH: Natural History Museum, London, UK;  
 RMCA: Royal Museum for Central Africa, Tervuren, Belgium;  
 RMS: Riksmuseet Stockholm, Sweden;  
 SMNS: Staatliches Museum für Naturkunde, Stuttgart, Germany;  
 ZMHU: Zoologisches Museum der A. Humboldt Universität, Berlin, Germany;  
 ZSM: Zoologische Staatssammlung des Bayerischen Staates, Munich, Germany.

Additional abbreviations used: TL, type locality; “l”, a new line in the citation of holotype labels. In the labels’ citation we followed the original spelling for geographic names (i.e. French “Tanzanie” instead of English “Tanzania”).

The genitalia preparations illustrated were made using the standard dissecting techniques and mounted in Euparal on glass slides. The preparations were photographed under magnification using a Canon PowerShot A570 and Olympus Camedia C-750 camera with Soligor Adapter Tube for Olympus and Slide Duplicator for Digital 10 dptrs modified for object glasses as well as through binocular eyepieces. All figures in the article were produced by Pavel P. Kurshakov using Corel Photo-Paint X3 from photographs taken partly by himself, also by the junior author as well as by Lars Kühne, Alexey Prozorov, Alexey Solovyev and Dmitry Shovkoon.

#### *Ectropa* Wallengren, 1863

*Wien. ent. Monatschr.*, 7: 141.

Type-species: *Ectropa ancilis* Wallengren, 1863: 141, by monotypy.

*Ectropa* was established in the Limacodidae; it was transferred to the Chrysopolomidae by AURIVILLIUS (1900: 258).

Diagnosis: Small to medium sized species, with wing span 25-38 mm, with short and broad wings (Figs. 2-9). Antennae long, bipectinate in males and shorter piliform in females. Haustellum is completely absent; palpus labiales rather long, 3-segmented, with basal and apical segments small, almost spherical and, segment 2 four times longer than the apical one.

Wing pattern is simple and is represented only by a single dark postmedial fascia, irregularly curved; it is rather concave on the hind wings. Ground colour with scattered innumerable dark scales not grouped into spots or dots. Discal spot is rather vague, often surrounded by darker grey scales. Hind wing with a characteristic incision in Cu field, giving a very special appearance to the moth. Cilia are long, of two layers, often darker than the ground colour.

Venation (after *E. ancilis*) is diagnostic (Fig. 1); forewing with medial stem well developed although much weaker than surrounded veins of R and Cu stems; discal vein is weak; Sc is straight, R1, R2 and R5 are free, R3 is stalked with R4; M1 is free and situated on the upper half of the discal vein; foundations of M2 and M3 are closed but not stalked; CuA1, CuA2 and CuP are free; 1A and 2A are fused in a common branch with distinct basal fork. Hind wings with Sc anastomosing Rs forming short ovoid additional humeral cell about a quarter of the size of the R-Cu one; Rs and M1 are closed in foundations; foundations of M2 and M3 widely separated; CuA1, CuA2 and CuP are free; 1A and 2A are stalked, 3A is completely reduced; discal vein is weak. Pseudoneuria absent in the related genera, is represented here, although as a very short and weak branch. Medial stem is visible in both wings as well as additional M cells. Coupling fields of both wings are covered with microspines producing a zone of fine scobination (*spinarea*).

Fore legs without an epiphysis, with tarsal segment one half the length of the tibia. Hind legs with

two pairs of spurs, the members of each pair being equal in size to each other, the medial pair being 1/3 longer than the apical.

Abdomen pale colored, with caudal parts of each segment darker.

Male genitalia of generalized ground plan (Figs. 21, 23-25): Uncus rather stout, not bifurcate and of pyramidal shape; gnathos reduced, at least partially, and is functionally replaced by a gnathos-like transtilla, a triangular plate with distinct medio-basal apophyses. It is also proposed here that a fusion of the transtilla with the gnathos might have taken place, thus originating a new sclerite. Valva always broad basally with distal half of a slender hook-shape. Juxta large, flattened, without additional processes. Aedeagus tubular, curved in a C-shape with apical spurs; vesica tubular, in some species with one or more cornutus.

Female genitalia (Fig. 22 - only studied for *E. ancilis*): papillae anales are open, disk-shaped with lateral processes about 3 times shorter and much narrower; apophyses anteriores a / longer than posteriores; antevaginal plate presents as a rectangular screen covering ostium; antrum is cylindrical, membranous, more prominent than the ductus bursae with the ductus seminalis in a cranial position; ductus is membranous with cranial widening, corpus bursae is spherical with a vague cranial scobination, not forming a distinct signum.

The genus is seemingly restricted to equatorial and southern Africa (Fig. 33); it avoids arid landscapes. Two species are known from a very few specimens, therefore their distribution is fragmentarily known.

The genus includes three species, one of which is described here as new to science.

#### *Ectropa ancilis* Wallengren, 1863 (Figs 1-4)

*Ectropa ancilis* Wallengren, 1863, *Wien. ent. Monatschr.*, **7**: 141.

TL: "Hab. in Caffraria orientali". Holotype: male (RMS) [examined].

Material: 1 ♂, Holotype, Caffraria, l leg. Wahlenberg (RMS); Natal, Gillits, IX-1915, 1 ♂ (Marley) (RMS); O. Transvaal, White River, 10-XII-1909, 1 ♂ (A. T. Cooke S. V.) (ZMHU); Weenen, Natal, S. Peniston, 2-VII-1966, 1 ♂ (ZMHU); Natal, Weenen, 3 ♂♂ (S. Peniston) (ZMHU); Natal, 1 ♂ (ZMHU); R.S.A., Kwazulu Natal, Weenen G. R., h 950 m, 28° 50' 43" S, 29° 59' 13" E, 13-I-2011, 1 ♂ (P. Ustjuzhanin & V. Kovtunovich) (coll. V. Zolotuhin); South Africa, Limpopo, Soutpansberg, vic. Louis Trichard (Makhado), plantation NE of Hanglip, 22° 59' 30.0" S, 29° 53' 01.0" E, 1510 m, 4-XII-2008, at light, 2 ♂♂ (D. Bartsch) (SMNS); South Africa, Limpopo, Soutpansberg, vic. Trichardtsdal, Lekgalameetse Nat. reserve, Makutsi camp, 830 m, 24° 11' 59.3" S, 30° 20' 20.1" E, 27-XI - 1-XII-2008, at light, 10 ♂♂, 4 ♀♀ (D. Bartsch) (SMNS); South Africa, Limpopo, Soutpansberg, vic. Trichardtsdal, Lekgalameetse Nat-reserve, 24° 10' 00.5" S, 30° 14' 35.7" E, 990 m, 29-XI-2008, 4 ♀♀ (D. Bartsch) (SMNS).

Male (Figs. 2-4): Wing span 25-29 mm and fore wing length 11-14 mm. Wings greyish- to brownish-yellow, with weak reddish tint and with scattered dark grey scales hardly grouped at all. Wing pattern is represented by a dark brown, convex, stretched, W-shaped postmedial fascia, narrow, (rounded in hind wing). Discal spot small and vague, dark grey, cramp-shaped. Abdomen yellow with beige saturation and caudally grouped grey scales.

Sexual dimorphism indistinct, neither in size nor coloration, although females are sometimes paler or darker (Fig. 5); they also have a stouter abdomen and shorter piliform antennae.

Male genitalia (Fig. 21): Tegumen without distinct relief; uncus elongate, pyramidal, strong, apically rounded; transtilla rather large, as an elongated triangle with rounded tip and short basal apophyses. Valva with wide rectangular base angled at the costal margin, and very narrow, almost parallel-sided, saccular lobe resembling a hook, with a very clear boundary between the two parts. Juxta a simple plate. Aedeagus medium sized, as long as valva, slightly bowed; vesica with short cornuti.

Diagnosis: Small sized moths easy distinguishable from other congeners by the wing groundcolour more saturated, postmedial fascia well recognizable as a thin broken line. In male genitalia aedeagus is middle-sized with a single cornutus and juxta is a plate.

Bionomics: Local mountain species, was collected from the altitudes of 830-1510 m in July and September - January; supposedly it is predominantly a winter species (e.g. summer one for the southern hemisphere).

Distribution (Fig. 33): Eastern part of the Republic of South Africa: Natal, Zululand and Transvaal.

*Ectropa alberici* Dufrane, 1945

*Ectropa alberici* Dufrane, 1945, *Bull. Annls Soc. r. ent. Belg.*, **81**: 143.

TL: [DRC] Kivu, Kamituga. HT: male (ISNB) [examined].

Male (Figs 6-8): Wing span 32-38 mm and fore wing length 17-19 mm. Wings of complicated spotted ground colour, with a dominance of grayish-blue colours, with scattered darker single scales mostly at the base of the wing. Wing pattern indistinct, dark grey; a narrow, rather irregular zig-zag postmedial fascia disappearing into the Cu-zone as grayish spots; whitish semilunar spots situated on the tops of Cu veins. Discal spot small, rather rounded, dark grey. Abdomen brownish-grey.

Male genitalia (Figs 24, 25): Uncus pyramidal, strong, apically slightly widened; transtilla rather large, as a flattened screen with a mediocaudal incision and distinct basal apophyses. Valva with wide rectangular bases and very narrow, almost parallel-sided saccular lobes, curved into a hook-shape less than 90°, with a very clear boundary between the two parts. Juxta is lyre-shaped, looking like a reversed arch. Aedeagus is as long as the valva but much thicker, almost straight, with a short but distinct apical spur, and a long, rather cylindrical vesica without cornuti.

Female is unknown.

Diagnosis: The species is diagnosed easily by its larger size and bluish ground colour. Wing pattern is rather reduced but the discal spot is distinct. The male genitalia are very similar to *E. ancilis* but almost twice as large; the transtilla is rather rectangular, not triangular, and the aedeagus is quite distinct. Externally very similar to *E. adam* Kurshakov & Zolotuhin, sp. n., and genitalic preparations are strongly recommended to confirm its identification (see under *E. adam* Kurshakov & Zolotuhin, sp. n.).

Bionomics: The species is on the wing seemingly all the year round and develops several overlapping generations. Moths are restricted to tropical forests.

Distribution (Fig. 33): Democratic Republic of Congo and Ivory Coast.

Material: ♂, holotype, [DRC] "Kamituga I (Kivu), I 12-X-[19]39, I [leg.] Alb. Dufrane" (ISNB); Congo, Uele: Paulis, 10-IV-1956 and 23-IX-1959, 2 ♂♂ (Dr. M. Fontaine leg.) (RMCA); Ivory Coast, Grand Besebi, 12-14-III-1986, 2 ♂♂ (Dr. Politzar leg.) (EMEM); [Ivory Coast] Elfenbeinküste, Daloa, 28-X-1981, 1 ♂ (Dr. Politzar leg.) (EMEM); [Ivory Coast] Elfenbeinküste, San Pedro, 1-4-XII-1977, 1 ♂ (Dr. Politzar leg.) (ZSM).

Taxonomic remarks: The specimens from Ivory Coast are different from the Congolese *Ectropa alberici* by a more intensive yellowish ground colour and smaller size. They are widely separated geographically; but no difference was found in the genitalia between the two populations. Therefore, specimens from Ivory Coast are considered within *E. alberici* so far, but further investigations would be useful to assess their status accurately

### *Ectropa adam* Kurshakov & Zolotuhin, sp. n.

Holotype: ♂, [Tanzania] "Tanganyika mer. I Mt. Rungue [=Rungwe] I 2600 m, 14-XI-[19]63 I leg. G. Heinrich" (ZSM).

Male (Fig. 9): Wing span 32 mm and fore wing length 17 mm. Wings have a complicated spotted ground colour, with a dominance of greyish- or brownish-yellow, with scattered darker grey single scales mostly at the base of the wing and in the anal field. Wing pattern is indistinct, vague, dark grey; the rather irregular narrow zig-zag postmedial fascia vanishes in the Cu-zone into greyish spots; discal spot small, ovoid greyish. Abdomen is brownish-yellow, darker dorsally, with spotted grey pattern.

Male genitalia (Fig. 23): Uncus is pyramidal, strong, apically slightly widened, much stronger than in *E. dargei*; transtilla is rather large, as a elongated triangle with rounded tip and distinct basal



apophyses. Valva have wide rectangular bases with a gradually narrowed saccular lobe, appearing as a hook curved apically less than 90. Juxta is a plate. Aedeagus is as long as the valva but thinner, slightly C-curved, with a distinct apical spur; vesica has ca. four short cornuti joined in a bristle.

Female is unknown.

Diagnosis: The species is very similar to *E. alberici* but more yellowish, and with dark scales sparsely spread; wing pattern vaguer, with dark elements broader. Valva are much wider without the diagnostic sharp boundary between wide and narrow parts.

Bionomics: The single known specimen was taken at 2600 m in mountain forest in mid November. Preimaginal instars are unknown.

Distribution (Fig. 33): Tanzania.

Etymology: Adam - the progenitor of mankind.

### ***Ectropona* Kurshakov & Zolotuhin, gen. n.**

Type-species: *Ectropona dargei* Kurshakov & Zolotuhin, sp. n., here designated.

Diagnosis: Small to medium sized species, with wing span 27-36 mm, with short and broad wings (Figs. 10-20). Antennae long, bipectinate in males and shorter piliform in females. Haustellum is completely absent; palpus labiales rather long, 3-segmented.

Wing pattern is modified in comparison with *Ectropa*, and is represented by a single dark geniculate postmedial fascia in the fore wing; this fascia is slightly concave on the hind wings. Ground colour is of sandy saturation with numerous scattered dark scales not grouped into spots or dots. Discal spot is usually small, sometimes distinct, slightly pointed, with numerous black scales. Under side of the wings with pattern distinct from the upper side, with postmedians widely convex, sometimes W-shaped.

Hind wings have very characteristic, shallow incisions in the Cu field giving a very distinctive appearance. Cilia long, of two layers, often darker than the ground colour.

Abdomen is pale colored, with caudal parts of each segment darker.

Male genitalia are weaker, less modified than in the preceding genus (Figs. 26-31). Uncus rather stout, apically slightly bifurcate; transtilla well developed, as a triangular plate without free apophyses. Valva are always triangular, more membranous than in *Ectropa*; saccular lobe is protruded apically from a very small knot to distinct membranous appendix. Juxta is small, as a plate. Aedeagus is large, strongly curved, with broadly rounded apex; vesica bag-shapes, always with cornuti (single large, or several small joined into a brush).

Strongly modified (geniculate) wing pattern and peculiarities of the male genitalia (the absence of medio-basal apophyses of the transtilla, the valvar shape, the development of the saccular lobe, and the shape of the aedeagus, all of which might be autapomorphies of the genus) are highly diagnostic, and separate this genus from the related *Ectropa* Wallengren, 1863.

The genus is restricted to the coastal zone of Western and Eastern Africa (Fig. 33) and has a widely disjunctive distribution.

The genus includes five species; all are new for the science.

### ***Ectropona dargei* Kurshakov & Zolotuhin, sp. n.**

Holotype: ♂, "TANZANIA | Usambara Mts | Mazumbai, 900 m | Febr. 1987 | [leg.] native collector" (MWM). Paratypes (14 males): Tanzania, Usambara Mts, Mazumbai, 900 m, II-1987, 3 ♂♂ (native collector) (MWM); Tanzania, Rukwa Region, Mbizi Mts., Kalambazite, 1610 m, 08° 18,925' E, 031° 58,698' S, 12-X-2005, 1 ♂ (Ph. Darge leg.) (MWM); Tanzania, Morogoro Region, Mikumi Hospital, 490 m, 07° 24,484' S, 036° 58,666' E, 490 m, 23-X-2005, 1 ♂ (Ph. Darge leg.) (ZSM); Tanzania, Morogoro Distr.: Kitulangalo For. Res., 420-540 m, 27-XI-1992, 1 ♂ (L. Aarvik leg.) (NHMO); the same but 6-XII-1992 and 28-II-1993, 2 ♂♂ (L. Aarvik leg.) (NHMO); Tanzania: Arusha Region, Mt Meru, Campsite 3, 1.680 m, 20-X-2004, S: 03° 14, 864' E, 036° 50,626' N, 2 ♂♂ (Ph.



Darge leg.) (ZSM); Tanzania: Dar-es-Salaam, Minaki, 17-II-1965, 1 ♂ (BMNH); [Tanzania] Amani, Tanganyika, IV-1967, 1 ♂ (G. Pringle leg.) (BMNH); Kenya, Shimoba Tewa, Mombosa, V-1962, 1 ♂ (J. A. Shaw leg.) (BMNH); Kenya, Südküste, Buda Forest, 16-I-1996, ♂ (Dr. Politzar leg.) (ZSM) [strongly damaged and lost hindwings and abdomen].

Male (Figs. 10-14): Wing span 27-29 mm and fore wing length 12-15 mm. Wings pale yellow, with grey or olive-grey tint, with scattered dark grey scales, mostly grouped on anal field of the fore wing. Wing pattern is represented by a narrow dark grey geniculate postmedial fascia (slightly concave in hind wing). Discal spot small, rounded, dark grey. Abdomen brownish-yellow.

Male genitalia (Figs 26-27): Uncus is pyramidal, strong, basally very wide; transtilla is rather large, as a [isosceles] triangle with rounded tops and short basal apophyses. Valva have a wide base and are gradually narrowed into rounded tips which are curved inwards; generally in the shape of triangles. Juxta is a trident plate. Aedeagus is longer than the valva, without distinct apical spur, with long rather voluminous vesica bearing a single huge spine-shaped cornutus.

Female is unknown.

Diagnosis: The species is clearly diagnosed because of its small size, pale ground colour and especially by the geniculate postmedial fasciae. The species resembles *Ectropa ancilis*, but differs in the shape of the postmedial fascia as already mentioned. Also, the species strongly resembles *Ectropona larsa* Kurshakov & Zolotuhin, sp. n., but is larger, with wings shorter, dark scales of grey (not black) colour and a smaller discal dot. In *E. larsa* Kurshakov & Zolotuhin, sp. n., valva are longer, saccular lobe with membranous curved tip, and cornuti are numerous in a brush. From the similar *E. revelli*, it is widely separated geographically. Male genitalia with a single cornutus are highly diagnostic.

Bionomics: Moths were collected in January, February, October-December, on the altitudes of 420-1680 m. In Tanzania, they were collected in the Kitulungalo Reserve (Fig. 32), which is a mosaic of semi-evergreen coastal forest and *Brachystegia* forest. Nothing is known about the preimaginal instars and their hosts.

Distribution (Fig. 33): Tanzania and southern Kenya.

Taxonomic remarks: Specimens of the species display two size groups; with wing span ca. 27 mm and ca. 36 mm respectively. No intermediate forms are known and no differences were found between the genitalia of both forms. Therefore, they are both considered to be within *E. dargei* so far, but finer investigations will decide the question more precisely.

Etymology: The species is named after one of its collectors, Philippe Darge (Clénay, France), a famous French entomologist, especially known for his books on the Saturniidae.

### ***Ectropona larsa* Kurshakov & Zolotuhin, sp. n.**

Holotype: 1 ♂, “Kenya, Western Prov. | Kakamega Forest | IX-2001-X-2002 | ña. 0.21,3 N; 34.51 E | 16-IV-2002 | leg. L. Kühne”, “prim. forest 1600 m | 16-IV-2002 Lichtfalle (1)” “L. Kühne | Dauerpräparat | No. 801” (CLKP). Paratype: Kenya: Kakamega Forest / Rondo Retraet, ca. 1700 m, 5-8-V-1997, 1 ♀ (U. Dall’Asta leg.) (RMCA; abdomen lost).

Male (Fig. 13): Wing span 32 mm and fore wing length 16 mm. Wings are elongated, pale yellow, with a weak grey tint, and with numerous scattered, almost black scales. Wing pattern is represented by a narrow, dark grey, geniculate postmedial fascia (slightly curved in hind wing). Discal spot is large, rather triangular, black. Abdomen is brownish-yellow.

Male genitalia (Fig. 28): Uncus is pyramidal, strong, apically slightly bifid; transtilla is rather large, flattened bulb-shaped with elongated tip rounded apically with short basal apophyses fused with the tegumen. Valva are stretched, almost parallel-sided, continually narrowed to the top; saccular lobe is visible here as membranous curved appendix. Juxta is a plate. Aedeagus is medium sized, curved less than 90 in medial zone, with long rather bag-shaped vesica. Vesica bears a sparse group of short needle-shaped cornuti grouped in a single ovoid brush.

Female (Fig. 16): It is larger, with wing span 36 mm and fore wing length 18 mm. Wings narrower than in males and a bit darker.

Female genitalia were not studied (female abdomen missing).

Diagnosis: The species strongly resembles *E. dargei* Kurshakov & Zolotuhin, sp. n., but smaller, with wings more stretched, especially in Cu-zone, dark scales of wings are black (not grey) and discal dot is much more distinct both in saturation and size; male genitalia are diagnostic as described.

Bionomics: Rare and local species known only from 2 specimens, both in a poor condition. Moths were collected in April and May from the altitudes of 1600-1700 m.

Distribution (Fig. 33): Kenya.

Etymology: The species is named after its collector, Lars Kühne (Potsdam, Germany) for his merit in studying Afrotropic moths; “larsa” has the same meaning as the genitive “larsi” given in Russian transcription.

### ***Ectropona kubwa* Kurshakov & Zolotuhin, sp. n.**

Holotype: 1 ♂, “Tanzania, Morogoro Region, Uluguru n. For. Res., top of Mt. Bondwa, 2120 m, 14-III-1993, leg. L. Aarvik” (NHMO). Male genitalia slide NHMO 2158.

Male (Fig. 20): Wing span 29 mm and fore wing length 14 mm. Wings are short and broad, with outer margin strongly convex; pale pinkish brown, with strong silky tint, with numerous scattered black scales outside submarginal field. Wing pattern is represented by a dark brownish grey geniculate postmedial fascia (strongly angled on R5) widened at the costa. Discal spot is large, round, dark grey. In the hind wing, the postmedial fascia is only weakly curved and weak in the R-zone. Cilia are outlined basally and apically with dark grey scales.

Male genitalia (Fig. 30): Uncus is pyramidal, strong, with apical narrowing beneath a rounded top; transtilla is rather large, flattened, triangular, with rounded tip; it is fused with the tegumen. Valva are short, triangular, basally wide, with broadly rounded apices; saccular lobe is weakly pointed as a ventro-basal protrusion covered with chaetae. Juxta is a plate with medio-caudal short lobes. Aedeagus strong and short, almost straight, longer than valva. Vesica bears a sparse group of short needle-shaped cornuti.

Female is unknown.

Diagnosis: The large species externally looks like *E. aarviki*, but much larger. In male genitalia valvae are short and triangular, aedeagus is strong but short, and vesica bears short needle-shaped cornuti joined in groups.

Bionomics: The only male holotype is known collected in mid March at 2120 m. It was found in a mountain rain forest on one of the peaks of the Uluguru Mts.

Distribution (Fig. 33): Tanzania, Morogoro Region.

Etymology: Kubwa means “large” in Swahili.

### ***Ectropona aarviki* Kurshakov & Zolotuhin, sp. n..**

Holotype: 1 ♂, “Tanzania, Morogoro Region, Kimboza For. Res., 300 m, 22-IX-1992, leg. L. Aarvik” (NHMO). Male genitalia slide NHMO 2157.

Male (Fig. 19): Wing span 23 mm and fore wing length 12 mm. Wings are short and broad, pale beige brown, with a weak silky tint, and very numerous scattered, almost black scales situated on both wings. Wing pattern is represented by a fine dark grey geniculate postmedial fascia, strongly angled on R5 and distinctly widened in R-zone. Discal spot is grey, weak and streak-like. In the hind wing, the postmedial fascia is only weakly curved.

Male genitalia (Fig. 29): Uncus is pyramidal, strong, apically slightly bifurcate with rounded tips; transtilla is rather long and triangular, rounded apically without distinct basal apophyses; it is fused with the tegumen. Valva are short, triangular, wide basally, and curved dorsally in apical quarter, with angled tip, but without any saccular lobe. Costal margin of valva bears a few strong short chaetae. Juxta is a plate with marginal straight keels. Aedeagus strong, almost straight, equal in size with valva. Vesica bears short needle-shaped cornuti joined in a brush which covers its larger surface.

Female is unknown.

Diagnosis: Small-sized species, externally resembles *E. kubwa* but smaller. In male genitalia aedeagus is short, vesica bears numerous needle-shaped cornuti.

Bionomics: The only male holotype that is known was collected in late September at 300 m in Kimboza, a ground-water lowland forest. It is close to the Ulugurus, and the forest must, in the past, have been connected with the forest on the Uluguru Mt (L. Aarvik, pers. comm.).

Distribution (Fig. 33): Tanzania, Morogoro Region.

Etymology: The species is named after collectors of the specimen, Leif Aarvik and his son Helge.

***Ectropona revelli* Kurshakov & Zolotuhin, sp. n.**

Holotype: 1 ♂, Sierra Leone, Bo, 3-VII-1968, R. J. Revell (BMNH).

Male (Fig. 18): Wing span 27 mm and fore wing length 12 mm. Wings are rather more slender than in both the preceding species, silky, pale brownish beige, with regularly spread, almost black scales throughout both wings. Wing pattern is represented by a dark grey geniculate postmedial fascia strongly angled on R5. Discal spot is blackish, distinct, almost bracket-shaped. In the hind wing, the postmedial fascia is almost straight to weakly curved.

Male genitalia (Fig. 31): Uncus is pyramidal, strong, apically slightly bifid with folded tips; transtilla is rather long, flattened, with short basal apophyses fused with tegumen. Valva are stretched, with convex costal margin, gradually narrowed to the tip; sacculus lobe is visible here as sclerotized appendix densely covered with long setae; it is curved dorsally in the preparation, but situated parallel to the cucullar lobe in vivo. Juxta is a plate with long marginal lobes with rounded apici. Aedeagus is boomerang-shaped, medium sized, a bit longer than the valva; curved less than 110° in medial zone, with long rather bag-shaped vesica. Vesica bears a sparse group of rather long needle-shaped cornuti grouped in a single ovoid basal brush on cranial lobe of vesica.

Female is unknown.

Diagnosis. Middle-sized species, externally resembles *E. larsa*, but coloration of scales is not so saturated. In male genitalia valvae are covered by chaetae on sclerotized parts. Aedeagus is very peculiar because it is boomerang-shaped.

Bionomics: The species known only from the male holotype which was collected in early July on a school compound originally cut out of what is locally known as 'farm-bush'. This is secondary forest with some of the original trees remaining, but containing many 'alien' plants in the gardens around (Ray Revell, pers. comm. from 22-II-2012).

Distribution (Fig. 33): Is known only from Sierra Leone.

Etymology: The species is named after its collector, Raymond J. Revell.

The specimens from both genera were studied under this investigation in the University of Guelph for COI. The COI-5P sequences reach 648 bp are given here under permission of BOLD project:

>LBEO2028-11|VZ-VARIA-32|*Ectropona ancillis*|COI-5P

AACCTTATATTTTATTTTGGTATTTGATCAGGTATAATTGGTACATCATTAAGTTTATTAATTC  
GAATAGAATTAGGAAATCCAGGTTTCATTAATTAGAGATGATCAAATTTATAATACTATTGTTAC  
AGCTCATGCTTTTATTATAATTTTTTTTATAGTTATACCAATTATAATTGGAGGATTTGGTAATT  
GATTAGTACCATTAAATATTAGGAGCACCTGATATAGCATTCCCCGAATAAATAATATAAGATT  
TTGATTTTTACCCCATCATTAACCTTTTTAATTTCTAGAAGAATTGTTGAAAATGGAGCAGG  
AACTGGATGAAGTGTATCCTCTTTATCTTCAAATTTAGCTCATAGAGGAAGTTCAATTGA  
TTTAGCTATTTTTCTTTACATCTAGCTGGAATTTTCATCAATTTTAGGAGCTGTAAATTTTATTA  
CAACTATTATTAATATACATCCTAATAATATATCATTTGATCAAATACCATTATTTGTTTGAGCA  
GTAGGTATTACTGCCTTACTTCTTTTATATCATTTACCTGTATTAGCTGGAGCTATTACTATATT  
ATTAACAGATCGAAATTTAAATACATCATTTTTTGACCCTGCAGGAGGAGGAGATCCTATTTT  
ATATCAACATTTATTT

>LIMBC760-11|VZ-VARIA-132|*Ectropona dargei*COI-5P

AACTTTATATTTTATTTTGGGAATTTGATCAGGAATAGTAGGAACATCTTTAAGATTATTAATT  
CGAATAGAAGTACAGGAAATCCAGGATCATTAAATTGGAGATGATCAAATTTATAACTATTGTC  
ACAGCTCATGCTTTTATTATAATTTTATATAGTAATACCTATTATAAATTGGAGGATTTGGAAA  
TTGATTAGTTCCATTAATATTAGGAGCACCTGATATAGCTTTCCCACGAATAAATAACATAAG  
ATTTTGATTTCTACCACCATCATTAACCTTTATTAATTTCTAGAAGAATCGTCGAAAATGGAGC  
AGGAACTGGATGAACAGTTTATCCTCCATTATCTTCTAATATTGCCCATAGAGGAAGATCAGT  
AGATTTAGCTATTTTTCATTACATTTAGCAGGAATTTCTTCAATTTTAGGGGCTGTAAATTTT  
ATTACTACTATTATTAATATACATCCTAACAAATATATCATTTGACCAAATACCATTATTTGTATGA  
GCAGTAGGAATTACTGCTTTACTTCTTCTTTTATCTTTACCAGTATTAGCAGGTGCTATTACTA  
TATTATTAACAGATCGAAACTTAAATACATCTTTTTTTGATCCTGCTGGTGGAGGAGATCCTA  
TTTTATATCAACATTTATTT

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## BIBLIOGRAPHY

- AURIVILLIUS, Ch., 1900.– Diagnosen neuer Lepidopteren aus Afrika.– *Entomologisk Tidskrift*, **20** (4): 233-258.
- EPSTEIN, M. E., 1996.– Revision and phylogeny of the limacodid-group families, with evolutionary studies on slug caterpillars (Lepidoptera: Zygaenoidea).– *Smithsonian Contributions to Zoology*, **582**: 1.–102.
- EPSTEIN, M. E., GEERTSEMA, H., NAUMANN, C. M., TARMANN, G. M., 1998.– 10. The Zygaenoidea.– In P. KRISTENSEN (ed.). *Handbook of Zoology. Arthropoda: Insecta, Part 35*, **4**: 159-175. Walter de Gruyter, Berlin.
- HERING, M., 1937.– Revision der Chrysopolomidae (Lepidoptera).– *Annals of the Transvaal Museum*, **17**: 233-257.
- KUZNETSOV, V. I. & STEKOLNIKOV, A. A., 1981.– Functional morphology of male genitalia and phylogenetic relationship of some archaic suprafamilies of infraorder Papilionomorpha (Lepidoptera: Sesioidea, Cossioidea, Zygaenoidea) in a fauna of the Asiatic part of USSR. Leningrad.– *Proceedings of the Russian Academy of Sciences*, **92**: 38-73 (in Russian).
- KUZNETSOV, V. I. & STEKOLNIKOV, A. A., 2001.– New approaches to the system of Lepidoptera of world fauna (based on the functional morphology of abdomen). St. Petersburg.– *Proceedings of the Russian Academy of Sciences*, **282**: 1-462 (in Russian).
- MINET, J., 1994.– The Bombycoidea: phylogeny and higher classification (Lepidoptera: Glossata).– *Entomologica Scandinavica*, **25**: 63-88.
- SOLOVYEV, A. V., 2010.– Musculature of the male genitalia of *Chibaraga banghaasi* (Hering et Hopp) (Lepidoptera, Limacodidae).– *Proceedings of the Russian Entomological Society*, **80**(2): 49-55.

ZOLOTUHHIN, V. V., KURSHAKOV, P. A., SOLOVYEV, A. V., 2013.— Use of muscle morphology of genitalic appendages of the Chrysopolomidae (Lepidoptera) in the system of the group.— *Zoologicheskij Zhurnal*, **92**: in press. (in Russian).

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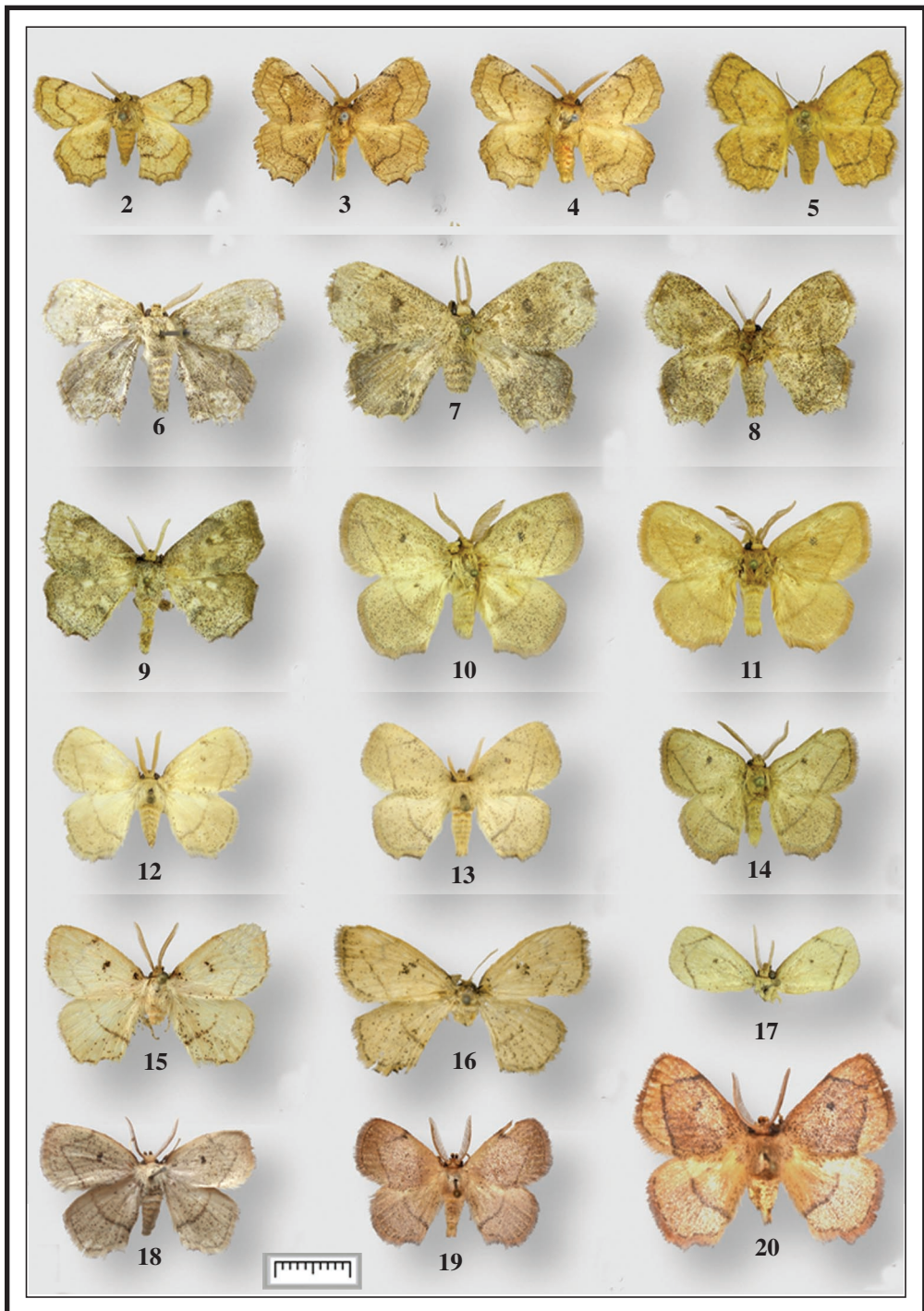
(Recibido para publicación / *Received for publication* 30-X-2012)

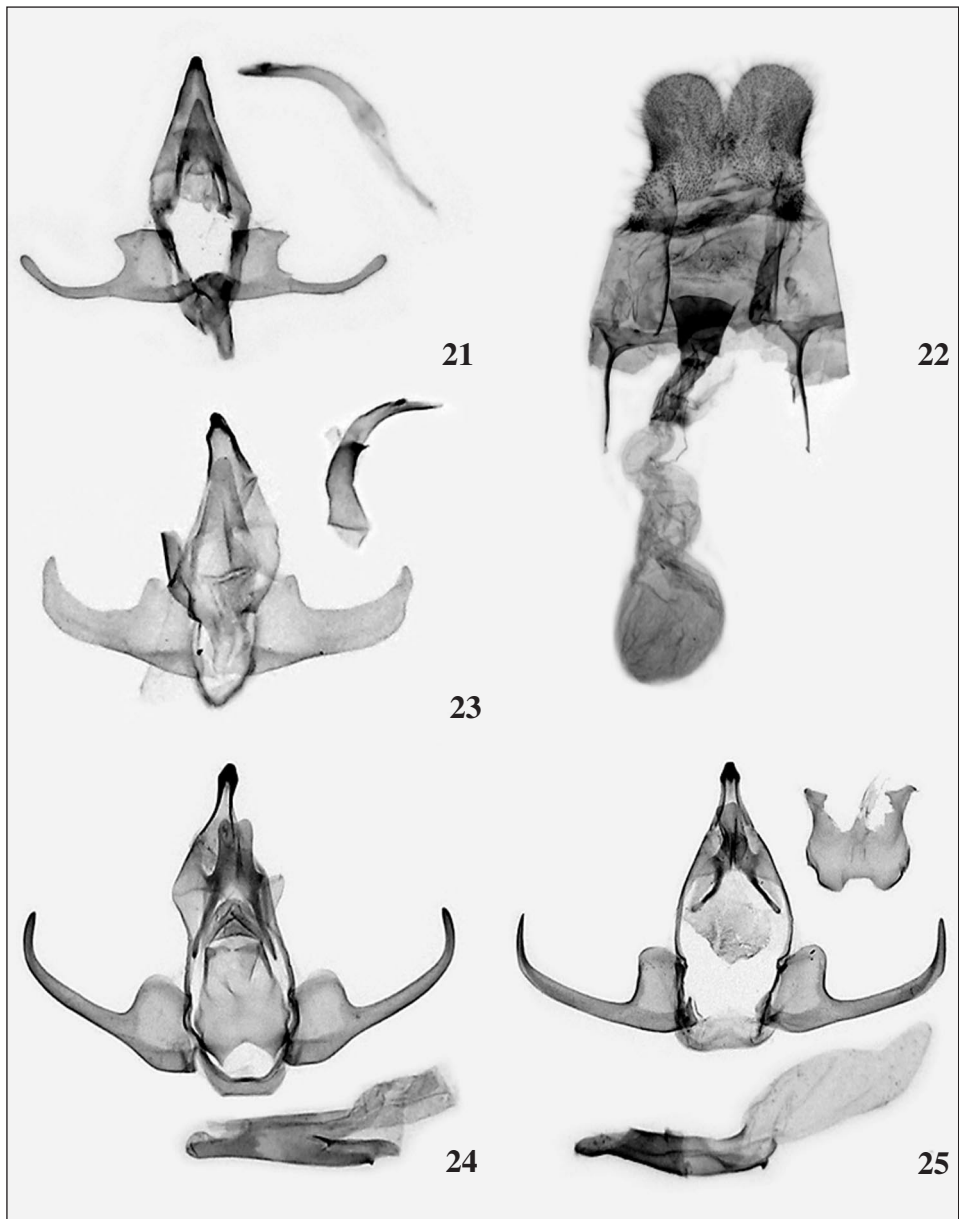
(Revisado y aceptado / *Revised and accepted* 10-I-2013)

(Publicado / *Published* 30-XII-2013)

**Figs. 2-20.**— Adults of *Ectropa* and *Ectropona*. **1.** *Ectropa ancilis* Wallengren, 1863; male holotype, Caffraria (RMS); **2.** *E. ancilis* Wallengren, 1863; male, Weenen, Natal (ZMHU); **3.** *E. ancilis* Wallengren, 1863; male, Weenen, Natal (ZMHU); **4.** *E. ancilis* Wallengren, 1863; female, South Africa, Limpopo, Soutpansberg, vic. Trichardsdal (SMNS); **5.** *E. alberici* Dufrane, 1945; male holotype, [DRC] Kamituga (Kivu) (ISNB); **6.** *E. alberici* Dufrane, 1945; male, Congo, Uele: Paulis (RMCA); **7.** *E. alberici* Dufrane, 1945; male, Ivory Coast, Grand Be-sebi (EMEM); **8.** *E. adam* Kurshakov & Zolotuhin, sp. n.; male holotype, [Tanzania] Tanganyika mer., Mt. Run-gue (ZSM); **9.** *Ectropona dargei* Kurshakov & Zolotuhin, sp. n.; male paratype, Tanzania: Arusha Region, Mt Meru (ZSM); **10.** *E. dargei* Kurshakov & Zolotuhin, sp. n.; male paratype, Tanzania, Morogoro Region, Mikumi Hospital (ZSM). **11.** *E. dargei* Kurshakov & Zolotuhin, sp. n.; male paratype, Tanzania, Usambara Mts, Mazum-bai (MWM); **12.** *E. dargei* Kurshakov & Zolotuhin, sp. n.; male holotype, Tanzania, Usambara Mts, Mazumbai (MWM); **13.** *E. dargei* Kurshakov & Zolotuhin, sp. n.; male paratype, Tanzania: Arusha Region, Mt Meru (ZSM); **14.** *E. larsa* Kurshakov & Zolotuhin, sp. n.; male holotype, Kenya, Western Prov., Kakamega Forest (CLKP); **15.** *E. larsa* Kurshakov & Zolotuhin, sp. n.; female paratype, Kenya: Kakamega Forest / Rondo Retraet (RMCA; abdomen lost); **16.** *E. dargei* Kurshakov & Zolotuhin, sp. n.; male paratype, Südküste Buba Forest (ZSM); **17.** *E. revelli* Kurshakov & Zolotuhin, sp. n.; male holotype, Sierra Leone, Bo (BMNH); **18.** *E. aarviki* Kurshakov & Zolotuhin, sp. n.; male holotype, Tanzania, Morogoro Region, Kimboza For. Res. (NHMO); **19.** *E. kubwa* Kurshakov & Zolotuhin, sp. n.; male holotype, Tanzania, Morogoro Region, Uluguru n. For. Res. (NH-MO). Scale bar 1 cm.

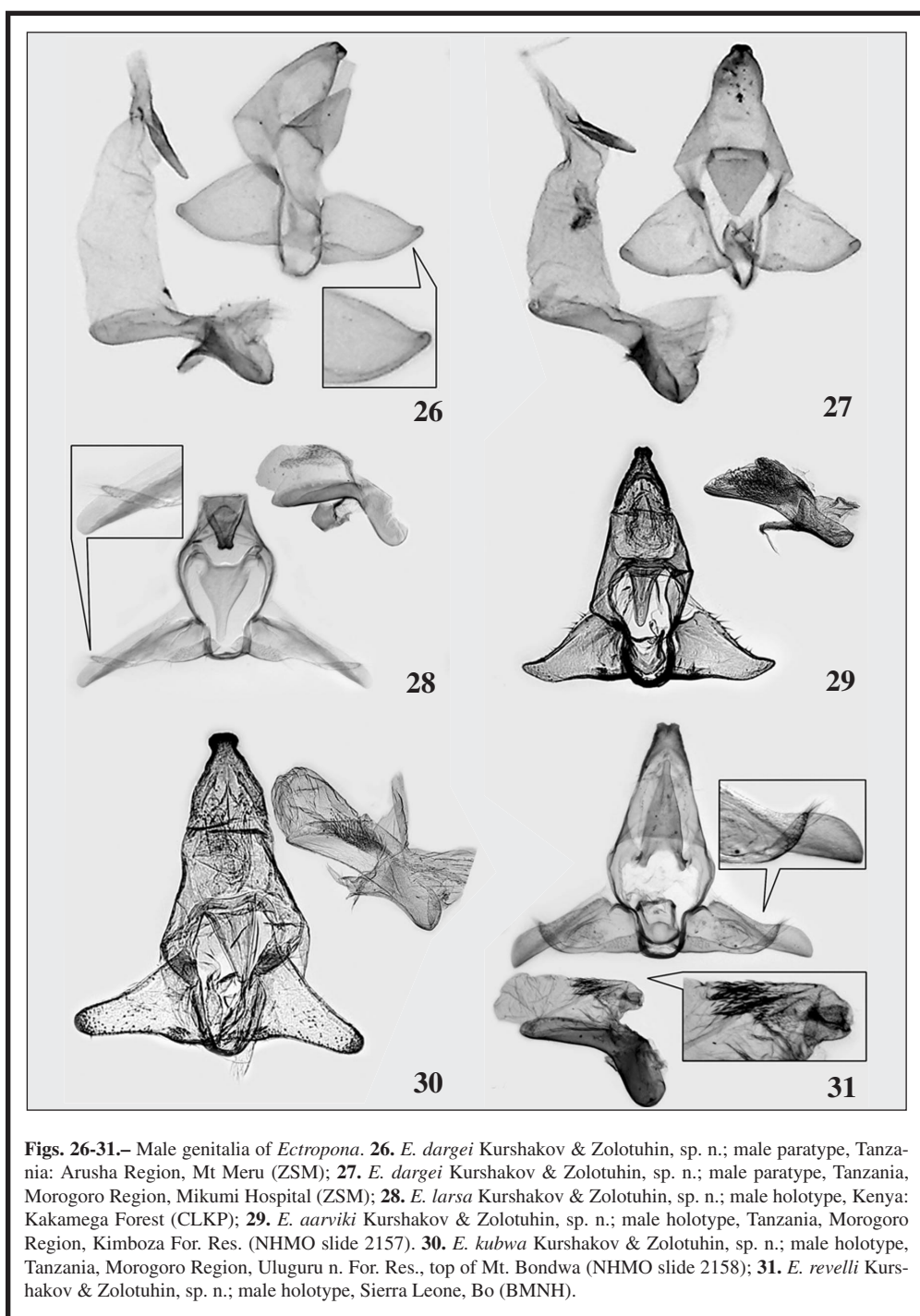






**Figs. 21-25.**— Male genitalia of *Ectropa*. 21. *E. ancilis* Wallengren, 1863; male, Weenen, Natal, S. Peniston (ZMHU); 22. *E. ancilis* Wallengren, 1863; female, South Africa, Limpopo, Soutpansberg, vic. Trichardtsdal (SMNS); 23. *E. adam* Kurshakov & Zolotuhin, sp. n.; male holotype, [Tanzania] Tanganyika mer., Mt. Rungue [=Rungwe] (ZSM); 24. *E. alberici* Dufrane, 1945; male, Ivory Coast, Grand Besebi (EMEM); 25. *E. alberici* Dufrane, 1945; male holotype, [DRC] Kamituga (Kivu) (ISNB).







**Fig. 32.**— Biotope of *Ectropa dargei* Kurshakov & Zolotuhin, sp. n.; in Tanzania: *Brachystegia* forest in Kitulangalo Reserve with Helge Aarvik as one of collectors (photo courtesy L. Aarvik).

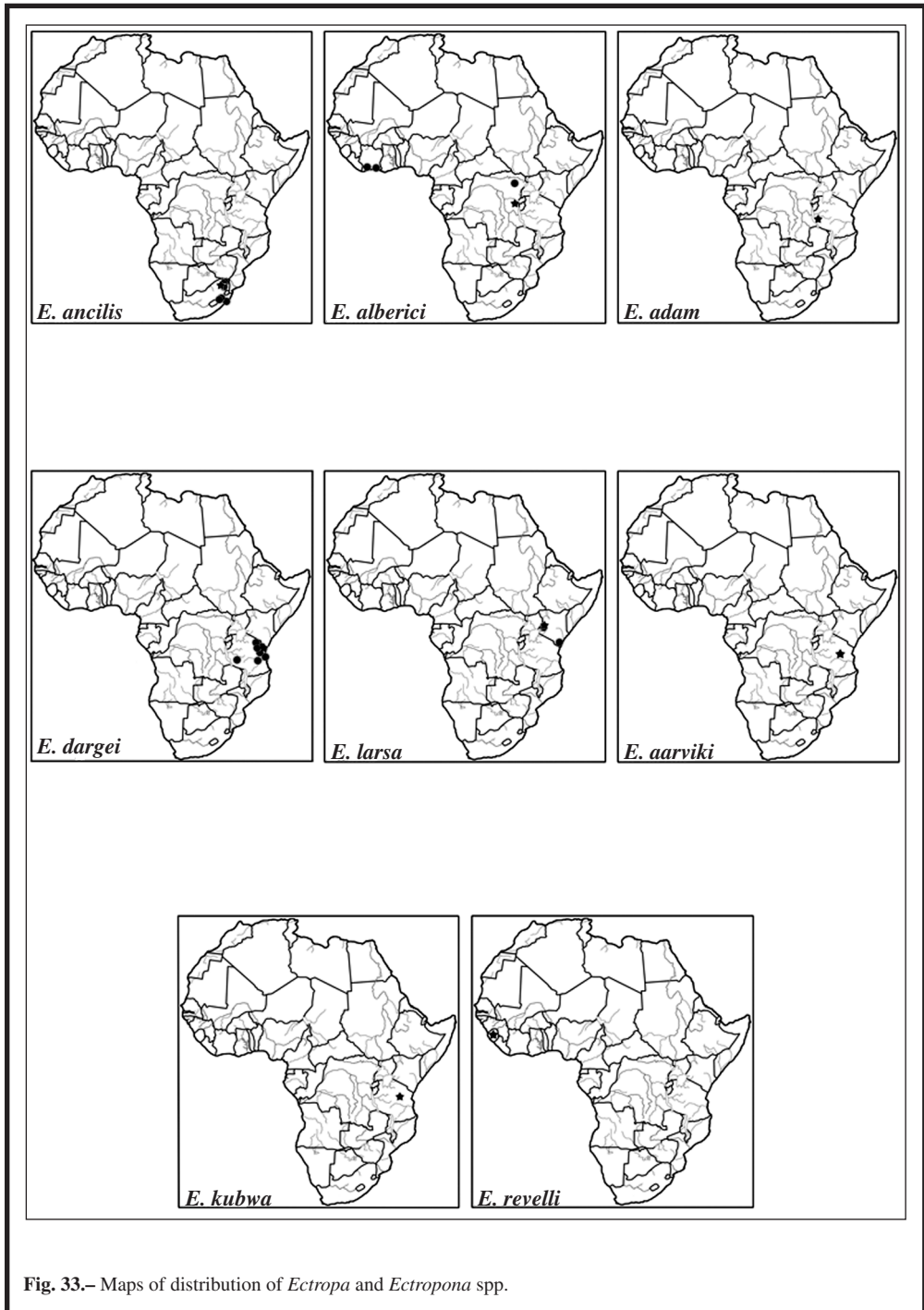


Fig. 33.— Maps of distribution of *Ectropa* and *Ectropona* spp.