

THE MACROLEPIDOPTERA FAUNA OF ACACIA IN THE KENYAN RIFT VALLEY (PART 2 - DESCRIPTION OF NEW SPECIES)

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Abstract - Six new species of Lepidoptera bred from Acacia in the Kenyan Rift Valley are described, and a further six illustrated, with taxonomic notes.

Keywords: Lepidoptera, larvae, *Acacia*, Kenya, Rift Valley, Naivasha, Elmenteita, Bogoria, Baringo

The collecting methods and details of the sites are given in Agassiz and Harper (2009).

Abbreviations used:

NMK National Museums of Kenya, Nairobi
BMNH The Natural History Museum, London
DJLA David Agassiz private collection

GEOMETRIDAE

Chiasmia velia Agassiz new sp. (Fig. 1, 16-19)

Description of adult (Fig. 1): Wingspan 20-22mm. Head pale buff, labial palpus pale buff, segment 2 of similar length to segment 3, antenna of male bipectinate, female simple, pale buff. Thorax and abdomen pale buff. Forewing pale buff with a dusting of fuscous scales, dark fuscous marks on costa at ¼ and 2/3, fuscous discal spot and a straight pale fuscous subterminal band. Hindwing much as forewing with discal spot and subterminal band. Underside of all wings with discal spots and dark subterminal bands.

Male genitalia (Fig. 16): Uncus horns well developed, gnathos with heavily sclerotized apex, valva with straight costa, ventral process tapered to a point and slightly curved, sacculus about twice width of valva with a blunt tip. Aedeagus (Fig 17) with about 20 spines on outside and vesica containing a stout cornutus with a small lateral spike.

Octavals (Fig. 19): large, deeply emarginate in between.

Female genitalia (Fig. 18): Apophyses anteriores about half length of apophyses posteriores, a pair of sclerotized veined plates behind ostium; short cylindrical ostial chamber followed by sclerotized restriction, then widening to strongly sclerotized ridged ductus; corpus bursae elongate with a large stellate signum.

Diagnosis: differs from other *Chiasmia* spp. in the deeply indented and characteristic octavals of the male.

Life history: The larvae were beaten from *Acacia tortilis* and *A. reficiens*, or found asinquilines in galls of *A. seyal*.

Distribution: Known only from Lake Bogoria, Kenya.

Material examined: holotype ♀ labelled: Kenya: Rift Valley| L. Bogoria 1000m| 0° 40' N, 36° 5' E| l. on *Acacia tortilis*| em. 8.xii.2004| D.J.L. Agassiz (deposited in NMK) Paratypes: same locality data, ♂ l. in gall of *A. seyal*, em. 17.xi.2004, DJLA Slide No. 977, ♀ l. on *A. reficiens*, em. 23.xii.2004, DJLA Slide No. 968, ♀ l. on *A. tortilis*, em. 22.xi.2004, DJLA Slide No. 974.

Etymology: Named after Mrs Velia Carn, camp manager for all the expeditions.

Chiasmia baringensis Agassiz new sp. (Fig. 2, 20-22)

Description of adult (Fig. 2): Wingspan 22mm. Head pale brown, labial palpus short and pointed, mixed brown and whitish; antenna ♂ bipectinate, ♀ simple, pale fuscous. Thorax banded pale and darker brown. Forewing ground colour ochreous-white strigulate dark fuscous, and indistinct submedian fascia, postmedian area paler, a dark brown subapical spot on costa and a partial subterminal band tapering towards apex. Hindwing pale whitish-ochreous, distinct discal spot and angled fuscous subterminal band.

Male genitalia (Fig. 20) Uncus with strong horns, gnathos conical, valva with costa almost straight, no dorsal projection, sacculus twice width of valva with

a pointed projection. Aedeagus (Fig. 21) having vesica with a strong cornutus bearing many serrations on the outer edge, a smaller cornutus opposite also with a serrated edge, a third set of serrations near base of first.

Octavals (Fig. 23) large, deeply emarginate in between.

Female genitalia (Fig. 22): Ostium cup-shaped with slight constriction below opening, flanked by pockets on each side, ductus weakly sclerotized and ridged, corpus bursae ovate with a large stellate signum.

Diagnosis: differs from other *Chiasmia* spp. in the strong cornutus and deeply indented octavals of the male.

Life history: Larvae were beaten from *Acacia tortilis*.

Distribution: Known only from the Baringo District in the Rift Valley province of Kenya.

Material examined: holotype ♂ labelled: Kenya: Rift Valley| Baringo Dist. 1000m| 0° 30' N, 36° 05' E| l. on *Acacia tortilis*| em. 6.ix.2006| D.J.L. Agassiz; DJLA Slide No. 987 (deposited in NMK); paratype ♀ same locality data, em. 8.ix.2006; DJLA Slide No. 990 (deposited in BMNH).

Etymology: After the Baringo District where the species was found.

Xylopteryx inquilina Agassiz new sp. (Fig. 3-4, 24-26)

Description of adult (Figs. 3,4): Wingspan 24-28mm. Head pale fuscous, labial palpus clothed with hairs, antenna irregularly ringed whitish & fuscous. Thorax pale fuscous sometimes mixed whitish. Forewing ground color usually whitish, costa with fine dark fuscous strigulation, a broad median fascia, wider at costa and indented on outer edge, varying from strong dark fuscous to nearly obsolete, discal spot usually distinct; terminal cilia dark-tipped. Hindwing pale fuscous with a broad dark fuscous subterminal band. Underside of all wings with blackish subterminal band. Legs banded dark fuscous and whitish. The markings of the forewing are very variable.

Male genitalia (Figs. 24) Uncus conical, gnathos slightly narrowed before apex, valva with a conspicuous flap on the inner side of divided apex, sacculus pronouncedly asymmetrical, the left prong almost as long as valva, right prong one quarter of its length; saccus rounded. Aedeagus (Fig. 25) narrower towards base, conical tip preceded by a deep emargination with a spine on the apical side.

Female genitalia (Fig. 26). Ovipositor long and flattened, ostial plate with an emargination on the anterior edge, apophyses posteriores about twice length of apophyses anteriores; ductus bursae strongly sclerotized, corpus bursae nearly spherical with a large stellate signum.

Diagnosis: differs from other *Xylopteryx* spp. especially in the distinctively shaped aedeagus.

The tympanal organs of the species are characteristically shaped on a trapezoidal sclerotized plate with two curved projections at the posterior end.

Life history: Larvae were found in pseudogalls of *Acacia seyal* presumably as inquilines, hence the name of the species; one was beaten from *Acacia reficiens*.

Distribution: Known only from the type locality, Lake Bogoria, Kenya

Material examined: holotype ♂ labelled: Kenya: Rift Valley| L. Bogoria 1000m| 0° 40' N, 36° 5' E| l. on *Acacia reficiens*| em. 21.xi.2004 (deposited in NMK); paratypes, all bred from pseudogalls on *Acacia seyal*, same locality data, ♂ em. 12.xi.2004, ♂ em. 21.xi.2004, ♀ em. 24.xi.2004, DJLA Slide No. 986. Also ♂ (slightly deformed) same locality em. 5.xii.2005, DJLA Slide No. 943.

NOTODONTIDAE

Stenostaura harperi Agassiz **new sp.**
(Fig. 5, 13, 14, 27-29)**Description of adult** (Fig. 5)

Wingspan: 22 – 28mm, females slightly larger than males. Head dark fuscous mixed pale ochreous, antenna pale fuscous, in male bipectinate, in female clothed with short hairs; thorax dark fuscous irrorate whitish. Forewing fuscous more or less suffused whitish, a pair of irregular black crosslines at 1/3 and 2/3, often obsolete, sometimes a paler blotch before the first and after the second of these, a row of black dots along termen. Hindwing in male whitish, in female pale fuscous. Abdomen pale brown.

Male genitalia (Figs.27): uncus bilobed, valva rudimentary, sacculus long and curved with bifurcate tip. Aedeagus (Fig. 28) stout, tapered at each end with a sclerotized bar along dorsum in apical half and a small dentate cornutus. Eighth abdominal segment with a sclerotized plate almost in the form of a square.

Female genitalia (Fig. 29): Ovipositor very short, ostium wide and cup-shaped, ductus bursae short, corpus bursae ovate with a signum consisting of a base plate with three strong cornuti.

Larva (Figs. 13,14): When full fed about 25mm. Head green with two reddish vertical elliptical eye-like markings, further dark reddish markings laterally, body waxy green with an oblique white dash on each segment, sometimes edged anteriorly with red, narrow white broken line along dorsum, lateral lines white and red. True legs green with reddish tips. The pupa was described by Townsend (1945).

Diagnosis: differs from *S. impedita* in the more evenly coloured forewing and distinctive genitalia as figured.

Life history: The larva feeds on leaves of various species of *Acacia*. It has been bred from *A. xanthophloea*, *A. abyssinica* and *A. tortilis*. They have been found in April, August and November giving adult moths about a month later. Wild caught adults have been taken in April & June; probably exists as a larva whenever leaves are available. According to Townsend, the pupa is subterranean.

Distribution: Kenya. Probably endemic to this country.

Material examined: holotype: ♂ bred Nakuru| A.L.H. Townsend, 19.ix.1943. In NMK, marked with red circled holotype label. paratypes: ; [Eldama] Ravine Nov. 1930, 6♂♂, 2♀♀ bred Nakuru, A.L.H.Townsend dated April 1937, 11 May 1940, 28.iii.1941, 18.ix.1943 (3), 20.ix.1943, 29.vii.1948, (NMK). 2 specimens Nakuru, bred Townsend 18.ix.1943, 1 Nakuru bred Townsend 27.xi.1944 (BMNH). Also: bred Nakuru, A.L.H. Townsend dated: 18.iii.1941, 26.iii.1941, 19.ix.1943, 12.viii.1948 1♂, 1♀ Ologasailie, Kajiado, Kenya – Carcasson Apr. 1960 Prepⁿ WBM 194♂, Thaikuru, Kitui, Kenya, Miss Blencoe Apr. 1960 Prepⁿ WBM 188♀, Machuene, Machakos, 19.6.1958 B.T.Pearsons (BMNH); 4♂ 2♀ Kenya, Rift Valley, Lake Bogoria 0° 21' N, 36° 21' E, viii.2007, D.J.L. Agassiz.; 1♂ same locality xi.2006; 1♂ 1♀ Baringo Dist. I. on *Acacia tortilis* viii.2007; 1♀ Lake Naivasha, I. on *Acacia xanthophloea* xi. 2003 (DJLA),

Comments: This species is similar to *S.impeditus* Walker, but in the collections of BMNH, specimens had already been recognised as distinct by the late E.P. Wiltshire. The larva was described by Townsend (1945) but erroneously assigned to *Chiasmia subcurvaria*. A correct description of the larva of *C. subcurvaria* is given by Krüger (2001).

Etymology: The species named after Dr. David Harper who has led the project in the Kenyan Rift Valley.

NOCTUIDAE

Meganola jacobii Agassiz **new sp.**
(Fig. 6, 30-32)

Description of adult (Fig. 6): Wingspan 19-25mm. Head mixed fuscous & whitish, labial palpus concolorous with head; antenna in male bipectinate, in female simple, faintly ringed pale fuscous and whitish. Forewing pale grayish fuscous, a broad median fascia usually darker than ground colour, bounded by black antemedian line on the inside and a sinuate black line on the outer edge, two silver-grey patches of raised scales within fascia close to costa. Hindwing pale fuscous. Abdomen pale fuscous.

Male genitalia (Figs. 30): Uncus long and slender, a small point at apex, tegumen narrow, valva slender, sclerotized along costa, sacculus forming a blunt hook. Aedeagus (Fig. 31) slender with a single curved blunt cornutus.

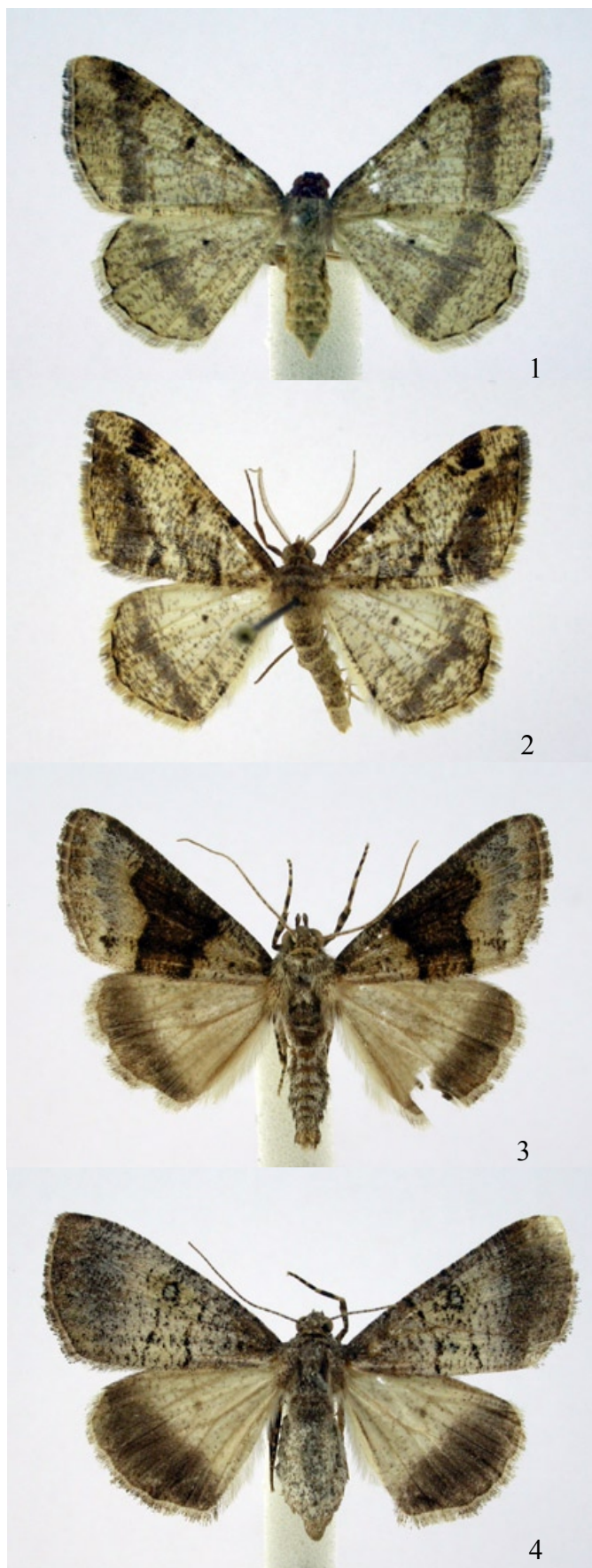


Fig. 1-4: 1. *Chiasmia velia* sp. n. ♀; 2. *Chiasmia baringensis* sp. n. ♂; 3. *Xylopteryx inquilina* sp. n. ♂; 4. *Xylopteryx inquilina* sp. n. ♀

Female genitalia (Fig. 32): Ostial chamber broad, sclerotized, steadily narrowing then developing into a membranous bulb; ductus bursae short and narrow, corpus bursae ovate, signum comprising a weakly scobinate ridge.

Diagnosis: differs from other *Meganola* spp. in its large size, uniform ground colour, almost straight antemedian line, and in the shape of the sacculus in the male genitalia.

Life history: Larvae were beaten from *Acacia xanthophloea*.

Distribution: Kenyan Rift Valley between Naivasha and Nakuru; specimens of a similar taxon occur near Mt. Elgon but these have not been examined.

Material examined: holotype ♀ labeled: Morenden Estate [Nr Naivasha | Mr & Mrs Ligon | colder flock 735-835 | [and a red circled] holotype [label] (NMK). Paratypes: ♂ Nakuru bred A. Townsend 28.ii.1949, ♂ Nakuru bred A. Townsend 3.iii.1942, [Eldama] Ravine xi.1928 A. Townsend (BMNH) – all with yellow circled paratype labels. Additional non-paratypes: 1 ♀ L. Naivasha, 1900m, 0° 47' S, 36° 24' E. l. on *A. xanthophloea* em. 18.xi.2003, D.J.L. Agassiz, 1 ♂ Soysambu, 1800m, 0° 24' S, 36° 14' E, 1 ♂ 2 ♀ Naivasha, 1 ♀ Gilgil, 2100m, 0° 32' S, 36° 22' E (DJLA), and a series from Uganda and Kakamega (NMK).

Etymology: The species is named after James Njoroge, who contributed much to the expeditions.

***Meganola reubeni* Agassiz new sp.**
(Fig. 7, 15, 33-35)

Description of adult (Fig. 7): Wingspan 15-23mm. Head whitish mixed fuscous, labial palpus densely clothed with scales, segment 2 much longer than segments 1 & 3; antenna bipectinate in male, simple in female, pale fuscous. Thorax and tegulae whitish mixed fuscous. Forewing base much suffused dark fuscous, an irregular submedian cross line forming the inner edge of a dark median fascia, broader at costa, a sinuate postmedian cross line, terminal half of wing pale greyish fuscous, very indistinct spots along termen, two lines of fuscous scales in terminal cilia. Hindwing pale grayish fuscous. Abdomen pale grayish fuscous.

Male genitalia (Figs. 33): Uncus long, extended to a point. Valva fairly narrow, sclerotized along costa which is gently concave, with an outward pointing process towards base, termen rounded, saccus triangular. Aedeagus (Fig. 34) bent near base, otherwise simple; vesica with one large pointed cornutus.

Female genitalia (Fig. 35): Ovipositor short, apophyses posteriores shorter than papillae anales, apophyses anteriores rudimentary. Ostium with sclerotized lip, antrum with a bulge on the right hand side, ductus long and membranous, corpus bursae elongate, signum consisting of a sharp point arising from a small sclerotized plate, a weakly scobinate band along whole length of corpus bursae extending into ductus.

Diagnosis: differs from other *Meganola* spp. in the contrast between the pale postmedian area of the forewing and dark antemedian area, and in the shape of the sacculus in the male genitalia.

Larva (Fig. 15): When full fed, about 15mm in length. Head black, thoracic segments with patterned orange above, body blackish with whitish dorsal area from segments, also whitish and orange ventrally; a subdorsal and lateral series of raised spots bearing black hairs.

Life history: The larva has been found on flowers and leaves of various *Acacia* species (*A. gerrardii*, *A. tortilis*) and in pseudogalls, presumably as an inquiline, of *A. seyal*.

Distribution: Recorded from the Kenyan Rift Valley from Lake Elmenteita to Lake Bogoria; also from Uganda, Ethiopia & Tanzania.

Material examined: holotype ♂ labelled: [Nakuru bred] A. Townsend | viii.1936 | [a red circled] holotype [label] (NMK).

Paratypes: ♂ Nakuru bred A. Townsend, 6.7-1939; ♀ Nakuru bred A. Townsend Sep. 1941; ♀ Nakuru bred A. Townsend 24.i.1945; ♀ [Eldama] Ravine bred *A. xanthophloea* xi.1938 (NMK); 1 ♂, W.Suk.Kacheiba, viii.1961, T.H.Edelston & J.Abraham, BM 1961-697, and a yellow circled paratype label (BMNH); 2 ♀, Soysambu, 1800m, 0° 24' S, 36° 14' E, 1 on *Acacia gerrardii*, em. v. 2005, D.J.L. Agassiz; 2 ♂, Marigat 1000m, 0° 28' N, 35° 58' E, 1. on *Acacia tortilis*, em. 8/10.xii.2006, D.J.L. Agassiz, (DJLA) each with a yellow circled paratype label. Also: 1 ♀ Tanganyika: Old Shinyange, 8.vi. 1952, E. Burtt at light; 1 ♀ Dire Daoua, Abyssinia May 1935 (H.Uhlenhuth) (BMNH); 8 ♀ Marigat, 1. on *A. tortilis*, 4 ♂ 5 ♀ Lake Bogoria 1. on *A. tortilis*; 1 ♂ 1 ♀ Lake Bogoria, 1. on *A. seyal*; 3 ♂ 5 ♀ Baringo Dist. 1. on *A. tortilis*; 4 ♂ 2 ♀ Logumgum, 1. on *A. tortilis* (DJLA).

Etymology: The species is named after Reuben Ngeti, who gave much assistance during the expeditions.

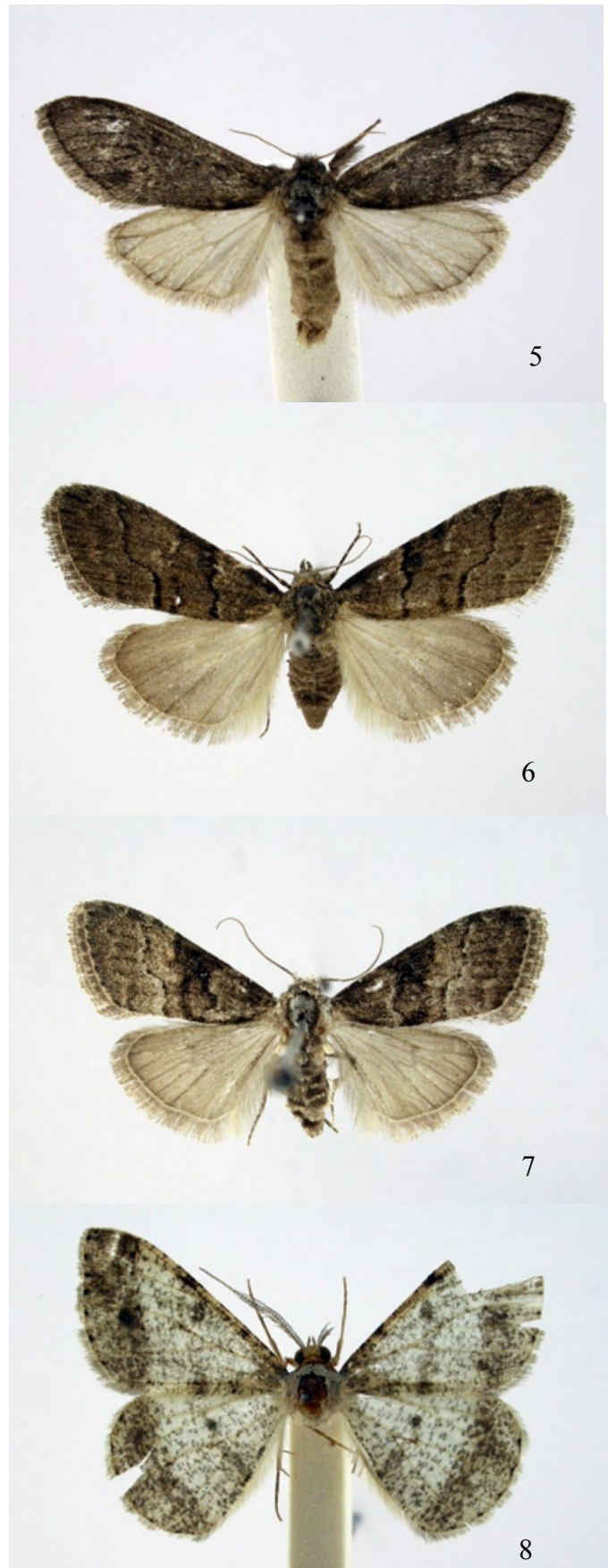


Fig. 5-8: 5. *Stenostaura harperi* sp. n. ♀; 6. *Meganola jacobii* sp. n. ♀; 7. *Meganola reubeni* sp. n. ♀; 8. *Isturgia* sp. A ♂



Fig. 9-12: 9. *Casama* sp. B ♂; 10. Lymantriidae sp. C ♂; 11. Lymantriidae sp. D ♀; 12. Lymantriidae sp. E ♀



Fig. 13-15: Larvae collected on Acacia. 13. *Stenostaura harperi* sp. n.; 14. *S. harperi* sp. n.; 15. *M. reubeni* sp. n.

OTHER SPECIES

The following species which appear to be undescribed were also bred, but since there is only one specimen of each, they are not named until further material becomes available. In case others should encounter them, they are illustrated with brief notes:

Isturgia sp. A (Figs. 8, 35, 36, 37) (Geometridae) wingspan 26mm, a single male bred from *Acacia xanthophloea* from Naivasha.

nr. Casama sp. B (Fig. 9) (Lymantriidae) wingspan 32mm, similar to *C. hemippa* but with much broader wings. A single male bred from *A. drepanolobium* from Lake Naivasha.

Lymantriidae sp. C (Fig. 10) wingspan 23mm, a single female

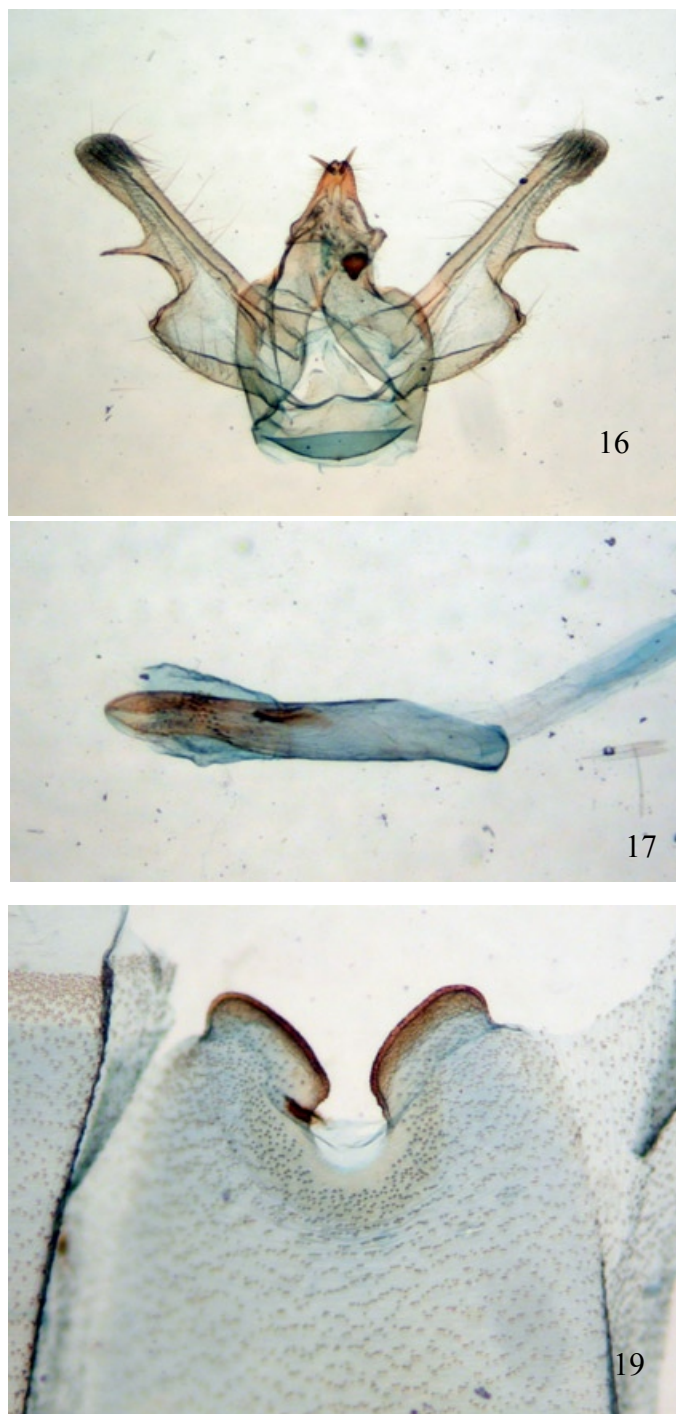


Fig. 16-19. Genitalia of *Chiasmia velia* sp. n.: 16. male genitalia; 17. aedeagus; 18. female genitalia; 19. octavals

bred from *A. tortilis* from Lake Bogoria.

Lymantriidae sp. D (Fig. 11) wingspan 23mm, apparently related to *Euproctis*. A single female bred from *A. tortilis* from the Baringo district.

Lymantriidae sp. E (Fig. 12) wingspan 27mm, apparently related to *Euproctis*. A single female bred from *A. tortilis* from Lake Bogoria.

nr. Prionofrontia sp. F (Figs 39-40) (Noctuidae) wingspan 22mm, the forewings are blackish, but very worn. The genitalia are illustrated. A single male bred from *A. tortilis* from Lake Bogoria.



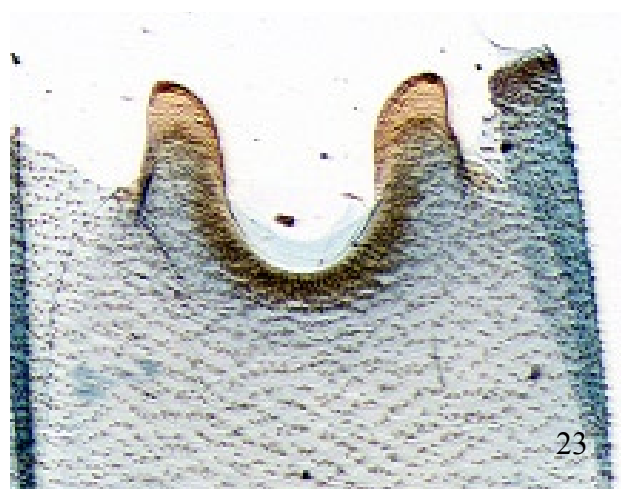
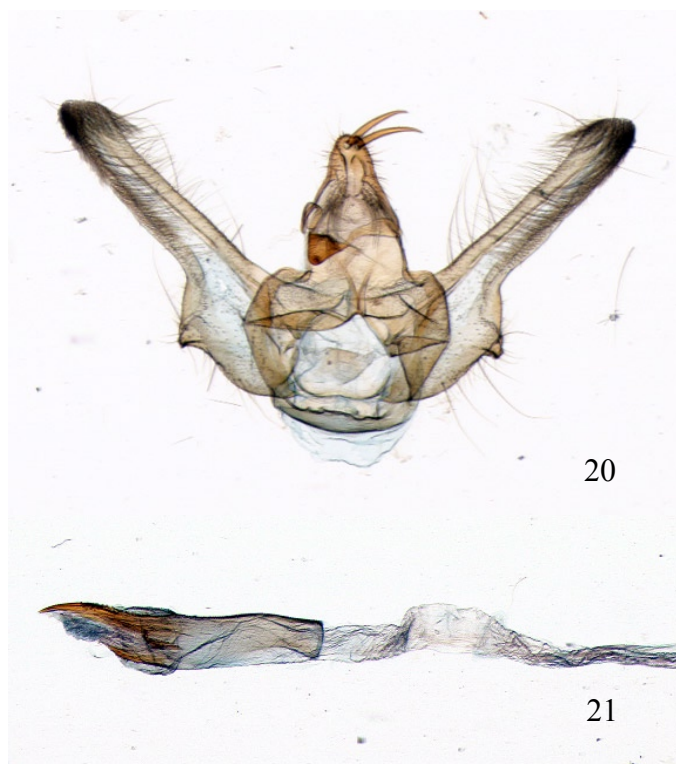
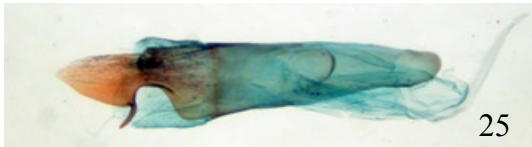


Fig. 20-23. Genitalia of *Chiasmia baringensis* sp. n.: 20. male genitalia; 21. aedeagus; 22. female genitalia; 23. octavals





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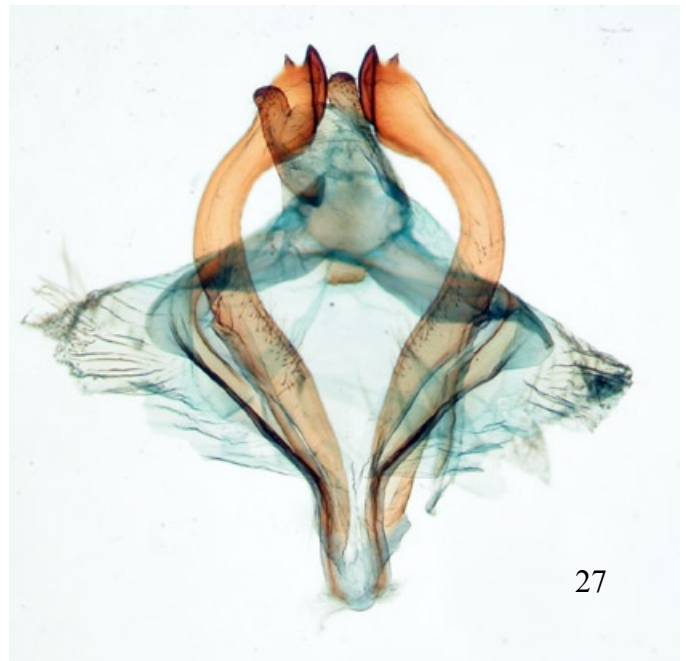


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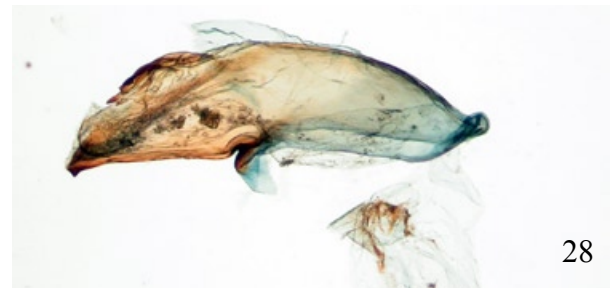


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Fig. 24-26: Genitalia of *Xylopteryx inquilina* sp. n.:
24. male genitalia; 25. aedeagus; 26. female genitalia



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Fig. 27-29: Genitalia of *Stenostaura harperi* sp. n. : 27.
male genitalia; 28. aedeagus; 29. female genitalia

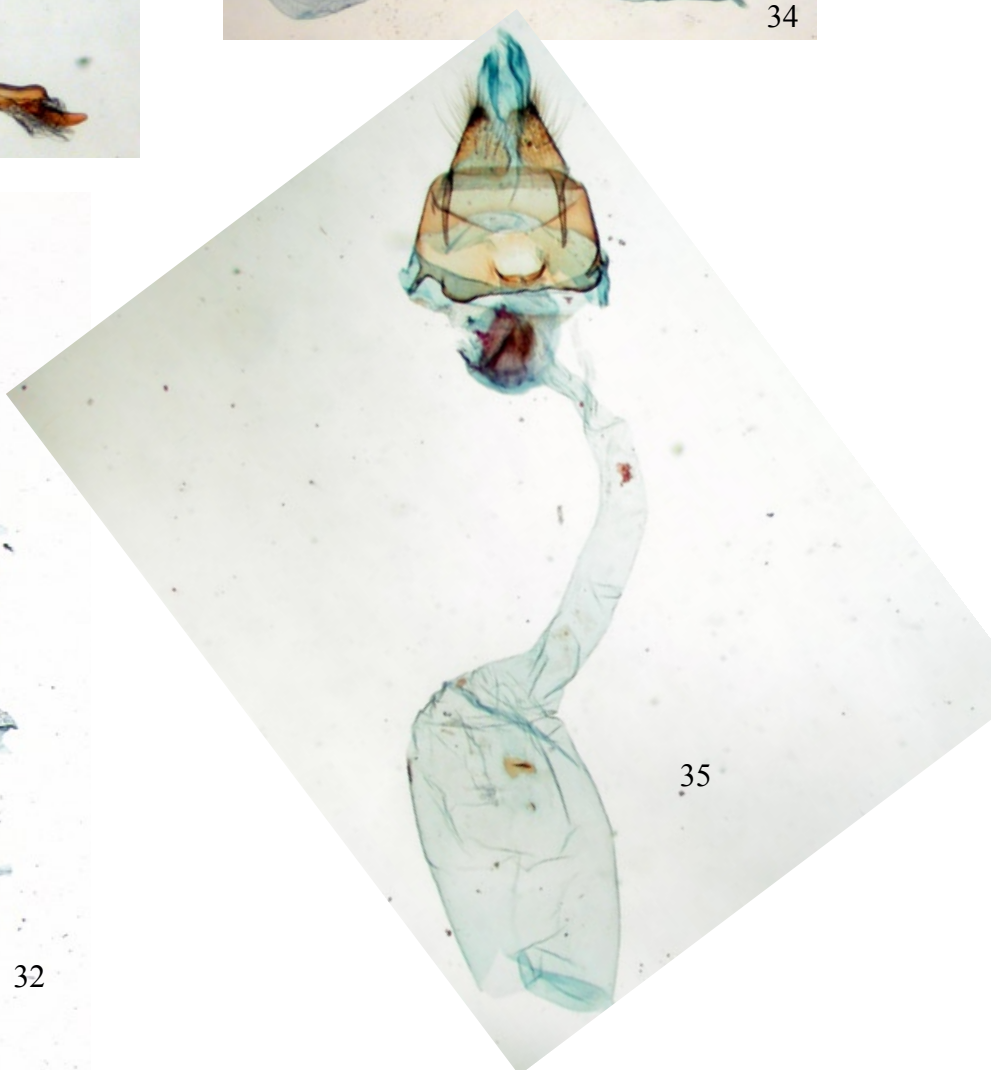
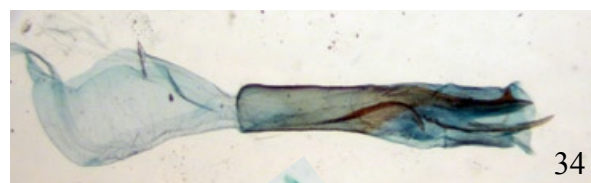
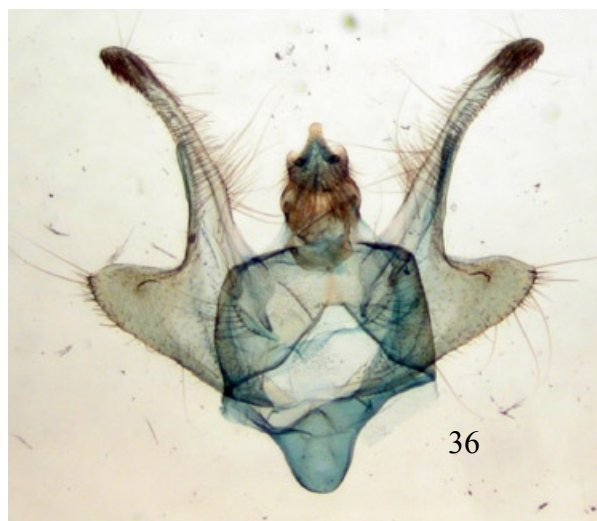
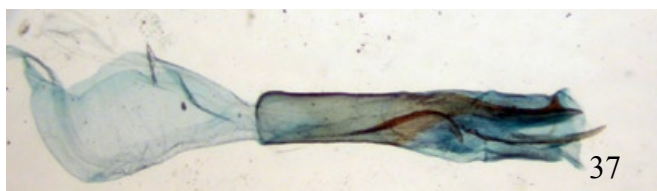


Fig. 30-32. Genitalia of *Meganola jacobii* sp. n.: 30. male genitalia; 31. aedeagus; 32. female genitalia

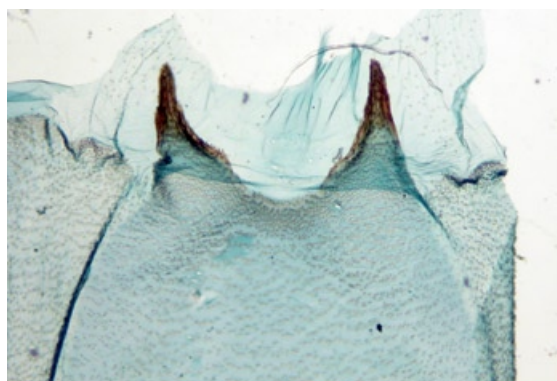
Fig. 33-35. Genitalia of *Meganola reubeni* sp. n.: 33. male genitalia; 34. aedeagus; 35. female



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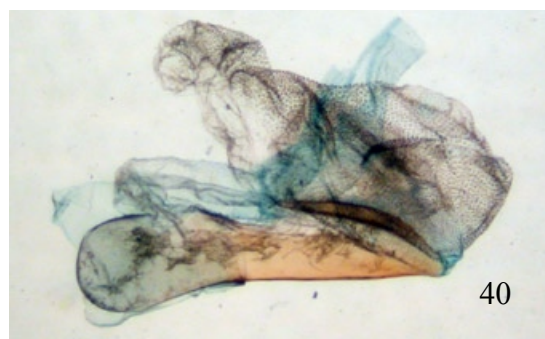
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Fig. 36-37: Genitalia of *Isturgia* sp. A: 36. male genitalia; 37. aedeagusFig. 38. octavals of *Isturgia* sp. A

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Fig. 39-40 Genitalia of *Prionofrontia* sp. F: 39. male genitalia; 40. aedeagus

ACKNOWLEDGEMENTS

To identify species across such a wide spectrum of families, in a region whose insect fauna is poorly known, is not an easy task. Thanks are due to specialists who have given advice, especially Martin Honey, Tony Galsworthy, Torben Larsen, Axel Hausmann, Hermann Hacker, Martin Krüger & Ugo Dall'Asta. Also, to colleagues at the National Museums of Kenya where holotypes are deposited.

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