

A NEW SPECIES OF *ERETIS* (LEPIDOPTERA: HESPERIIDAE) FROM KENYA, UGANDA AND RWANDA

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Abstract- *Eretis artorius* sp.nov. is described as new from Kakamega Forest, western Kenya, and other specimens are reported from Uganda and Rwanda. It is compared with other species of the genus that co-occur or are likely to co-occur within this range. Living and pinned adults are illustrated. The male genitalia are illustrated and compared with those of *Eretis vaga* Evans and *E. rotundimacula* Evans.

Key words: Hesperioidea, Pyrginae, Celaenorrhini, Kakamega Forest, *Eretis artorius* sp. nov., *Eretis vaga*, *E. herewardi*, *E. rotundimacula*, *E. melania*, *E. mitiana*, *E. cameroni*, *E. lugens*, *Justicia flava*, abdominal ventral hair fringe.

The genus *Eretis* Mabille, 1891 was described with *E. melania* Mabille, 1891 as the type species and only member of the genus. In his overview of all the African HesperIIDae, Holland (1896) placed six species in the genus, one of which is now considered a junior synonym of *E. melania* and two of which were subsequently removed to *Sarangesa*. Aurivillius (1925) did not accept the genus but included all the species in the genus *Sarangesa* Moore.

Evans (1937) did accept the genus, stating that it “differs from *Sarangesa* only in the irregular wing outline, but the genitalia indicate a natural group”. *Eretis* is now placed in the tribe Celaenorrhini of the subfamily Pyrginae (Warren *et al.* 2009; Cock & Congdon 2011b). Evans included ten species, five of which he described in his book. Later he raised *E. djaelaelae mixta* Evans, 1937 to species rank (Evans 1951), making 11 species of *Eretis*. He further recognized that “many species are difficult to determine without examination of the genitalia” (Evans 1937).

One of the species listed by Evans (1937) was *E. rotundimacula* Mabille & Boulet 1916, which is an invalid infrasubspecific name according to the present Code of Zoological Nomenclature and therefore takes the authorship of Evans, 1937. He also included the taxon *E. herewardi* Riley, 1921 as a *Zambian* subspecies of *E. rotundimacula*. Whether or not *E. rotundimacula* and *E. herewardi* are the same species, two subspecies of a single species, or two distinct species remains to be seen, but *herewardi* is certainly senior to the validation of the name *rotundimacula* by Evans in 1937.

An *Eretis* from Kenya has been listed as *Eretis rotundimacula herewardi* (Larsen 1991), as *E. herewardi herewardi* (Ackery *et al.* 1995), or as *E. herewardi* (Collins 2004). However, neither of these taxa, in whatever combination, is actually known from Kenya. The species referred to is an undescribed species that is described below.

Eretis artorius Larsen & Cock, sp. nov.

(Figs. 1, 2a & 2b (left), 3)

Diagnosis. Forewing: male 13.4-15.0 mm, average of 9 = 14.3 mm, one exceptionally small male 12.3 mm (not included in average); female 14.4-15.4 mm, average of 3 = 15.0 mm – usually smaller than *E. herewardi* and *E. rotundimacula*. The

upperside ground-colour is warmer brown than most members of the genus. The wing shape is even more irregular than usual. The forewing always has a hyaline costal spot and an almost perfectly rounded spot in space 2. The dark markings on the underside are modest. This combination of features is usually sufficient for identification on its own.

The outer side of the forelegs and the underside of the head are dull white, not brilliantly white as in some members of the genus. The hind tibia of *artorius* are fringed, i.e. there are long hairs along its length, rather than bunched into a pencil from the top.

The wing shape is as in other members the genus but even more irregular than usual. The margin of the forewing bulges outward in spaces 2 and 3, continuing straight or even slightly concave to the apex. The brown colour has a scattering of white scales, mainly visible under magnification. The forewing has three irregular, subapical spots in addition to the costal spot above the end of the cell. There is a tiny spot in space 3. The spot in space 2 is round and usually quite large – ironically more circular in shape than usual in *E. [herewardi] rotundimacula*. There may be a small upper cell spot as well as one or two spots in 1b below the spot in space 2, especially in the females.

The black markings comprise a large, well-defined quadrate spot across the cell just before its end, which in one specimen incorporates a narrow upper cell spot near its distal margin. There is another black patch bordered by the end of the cell and the subapical spots, not reaching the costa and extending to vein 4, not encircling the hyaline spot in space 3. Well beyond the subapical spots is another black patch, separated from margin except at the very apex. This continues as a diffuse band to the tornus, very variable in extent and not as dark. Below the defined black spot in the cell is a somewhat diffuse dark patch covering the middle of spaces 2 and 1b, again not as black. Close to the base of space 1b is a firm black streak, at least twice as tall as it is wide.

The hindwing has the same overall colour and texture as the forewing with dark sub-basal blotching. There is a somewhat diffuse discal band, though often almost complete from vein 8 to vein 1b. There is a rather large dark apical patch, weakly continued along the margin as discrete spots, and some small spots may be present between these and the discal band.

The underside has a more grey tone than the upperside. Only



Fig. 1. Top: The holotype of *Eretis artorius* from Kakamega, Kenya (recto and verso); Below: A female paratype also from Kakamega (recto and verso).

the darkest upperside markings are fully visible and are mostly reduced in size.

The female hardly differs from the male. The presence of an upper cell-spot and one or two spots in 1b is more frequent. The tone of forewing is slightly lighter and the darkest markings somewhat less accentuated.

Similar species. *E. artorius* is sympatric with six rather similar species. These have been confused with each other as well as with the new species, and many literature references may be wrong. Evans placed the few specimens of *E. artorius* in the Natural History Museum (BNHM), London, amongst the series of *E. vaga*. As noted above, the forewing costa always has a hyaline costal spot and there is an almost perfectly rounded spot in space 2. Some additional characters for discrimination between *artorius* and the five sympatric species are given below. Although occasional worn specimens can probably not be identified by wing markings, the male genitalia are always quite clear.

Eretis vaga Evans is the species with which confusion is most likely, since its forewing may be distorted in an almost similar manner. The upperside ground-colour is more grey in tone, lacking the warmer tinge of brown. The hyaline spotting is reduced; the spot in space 2 is usually small, taller than it is wide, and never rounded. The large dark area in spaces 2 and 1b below the quadrate cell-spot is usually much reduced. The black patch reaching the apex is usually reduced or absent. The genitalia are very different (see fig. 2).

Eretis melania Mabille has a light bar closing the forewing cell, immediately edging the black, quadrate cell-spot. The forewing is more regular. The ground-colour is more greyish

without the brown tone.

Eretis mitiana Evans in both sexes has a clear overlay of blueish scales on the upperside, sometimes not that obvious in worn specimens, though still clear under magnification.

Eretis cameroni Evans males have brilliant white forelegs. The black spotting of the hindwing upperside, and especially the underside, is larger and much more prominent. The forewing spot in 2 is always small and never rounded. Usually only one or two defined subapical spots are present.

Eretis lugens Rogenhofer also has brilliant white forelegs and is generally more blackish than any other species. The forewing spot in space 2 is usually well developed in the female and there is a costal spot. The dark underside has a chestnut tinge.

Eretis h. herewardi or *E. h. rotundimacula* have not yet been shown to be sympatric with *E. artorius*. Males have white forelegs as *lugens*. Both sexes usually have a reddish patch at the end of the underside forewing cell. There is never a hyaline costal spot on the forewing. The wing shape is much more regular. The genitalia are very different (see fig. 2).

Of these species, *E. vaga* seems closest to *E. artorius*. They are the only two to share all the following characters: legs that are not brilliant white, very irregular wing margins, undersides without trace of red markings, lack of lateral processes along the uncus in the male genitalia, and valves with longer distal processes than usual in the genus.

Male genitalia (Fig. 2a & 2b, left). The various species of *Eretis* are often well differentiated by the male genitalia and fall into several different groups. Both *E. herewardi rotundimacula* and *E. h. herewardi* have genitalia that are closely related to

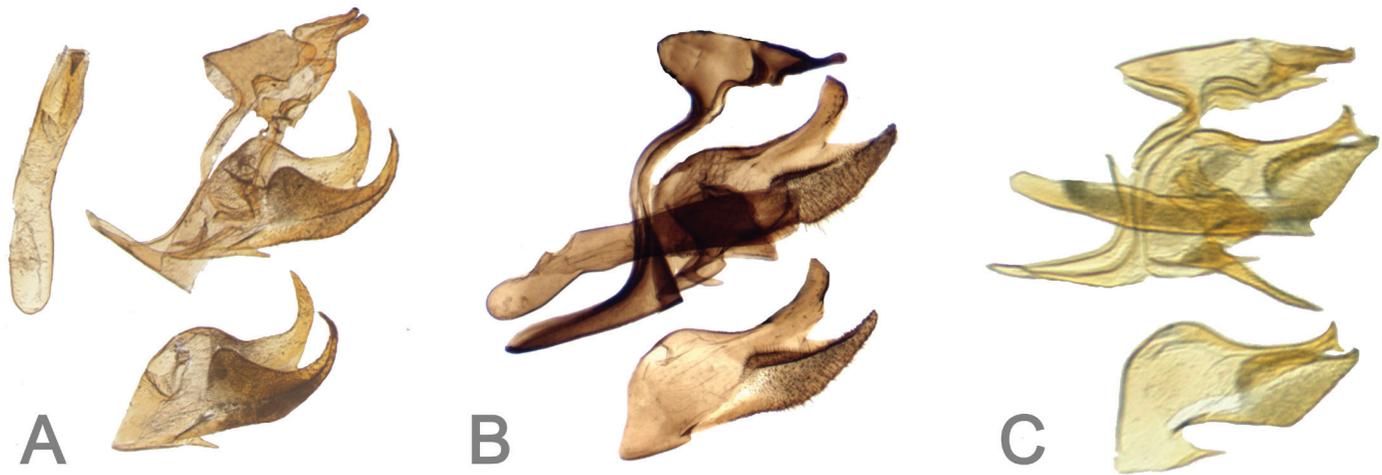


Fig. 2a. The male genitalia of three *Eretis* species in lateral view: A) *Eretis artorius* (SCC 573 ABRI: Uganda, Bwindi). B) *Eretis vaga* (Royal Africa Museum MRAC H.40 DRC, Paulis (now Isiro)). C) *Eretis rotundimacula* (1728 HEC: Zambia, High Plateau).

those of *E. djaelaelae* (Wallengren); the genitalia of *E. artorius* differ very strongly. The chief characteristic is the valve with two long, recurved processes, both ending in a point directed straight up. The valve has a poorly developed ventral/basal lobe that, as usual in the genus, ends in a sharp posteriorly-facing thorn. The uncus/tegumen is short with a small, narrow bifid tip and is without the lateral processes that are found in many species. There are just two chitinized, rounded triangles on the tegumen, which widens strongly in comparison with the narrow uncus. *E. artorius* has no posteriorly-pointing central process from the furca (see *E. h. rotundimacula* for the largest of such structures, to which Riley (1921) drew attention; the preparations are from the Hope Entomological Collections (HEC), University of Oxford Museum).

The genitalia of its probably closest relative, *E. vaga*, differ considerably. The valve also has two well-developed processes but these are shorter and less recurved. However, as already pointed out by Evans (1937) in his description the “uncus ends in two widely separated in-curving horns”, very different from the two narrow, smaller, barely separate uncus tip of *E. artorius*. The small ventral/basal lobe is present, but not posteriorly pointed. The penis is larger and longer. However, *E. vaga* does have a small fragile posteriorly-facing process from the furca (just visible in Figs. 2a and 2b).

The valves of all other known species have much shorter valve processes as in the *E. h. rotundimacula* figured. The furca of the latter has an exceptionally long, posteriorly sloping extension. *E. h. rotundimacula* also has a fully developed basal/ventral lobe and the uncus is flanked by lateral processes.

The genitalia from a Kakamega paratype (Fig. 2b) do not differ from a Ugandan male from Bwindi (Fig. 2a).

Type material. Male holotype: Kenya, Kakamega Dist., Kakamega Forest, D257 at Ikuywa Stream, 18.vi.1991, photo 91.9.34, M.J.W. Cock (ex coll. T.B. Larsen) (NHM).

Paratypes: All from Kenya: Kakamega Forest: 24♂♂, 10♀♀ (14♂♂, 6♀♀ ABRI; 2♂♂, 1♀ coll. M.J.W. Cock; 3♂♂, 1♀ NHM; 5♂♂, 2♀♀ NMK); Yala River [=Kakamega], ♂ (NHM); Kakamega, 2♂♂ (coll. J. Morrall); Mau Forest, 2♂♂, 2♀♀

(ABRI); Nandi Hills, 2♂♂ (coll. J. Stewart).

Etymology. The species is given the Latin version of Cock’s cat, Arthur, who like *E. artorius* is small, dark mottled brown and black, irregular around the edges, has no tail, and two large round eyes. Larsen considers this to be a case of English eccentricity. Arthur is a very nice neutered female cat with a male name – a tongue-in-cheek comment on the value of gender agreement in scientific names.

Distribution, habitats, and habits. We have only included Kenyan material as types, though we have no doubt whatever that material from the neighboring countries of Uganda and Rwanda is the same species (also supported by the Uganda male genitalia being identical). It will certainly occur also in northwestern Tanzania and in parts of the Democratic Republic of Congo; one Rwanda specimen was collected in the Bugoie Forest just a few kilometres from the DRC border and a specimen from the Impenetrable Forest in Uganda is also not far from the DRC. This is a typical example of a species endemic to the Albertine Rift, though rather few of such species reach western Kenya.

Most available material of the species is from Kakamega Forest in Kenya, the easternmost outpost of the main African rainforest zone, and almost the last surviving substantial such habitat in Kenya, but there are records also from the Nandi Hills and the Mau Forest. The species is clearly limited to submontane rainforest habitats in reasonable condition, though flying mainly in somewhat open areas within or adjacent to the forest. The edges of the many roads and paths inside Kakamega Forest are typical places. Cock found the species on most of his numerous visits to the forest and found it to be fairly common (Cock & Congdon 2011b). They fly about quickly, usually rather low down, often settling with wings flat on green leaves and freely come to small flowers for nectaring. Unfortunately no ovipositing was observed nor any caterpillars found. However, all known host-plants for the genus are Acanthaceae.

Study of museum collections gives the impression that the species is quite rare anywhere but in Kakamega. The dearth of Kakamega material from before the 1980s suggests that it may have become more common since then. Larsen (1991) traced

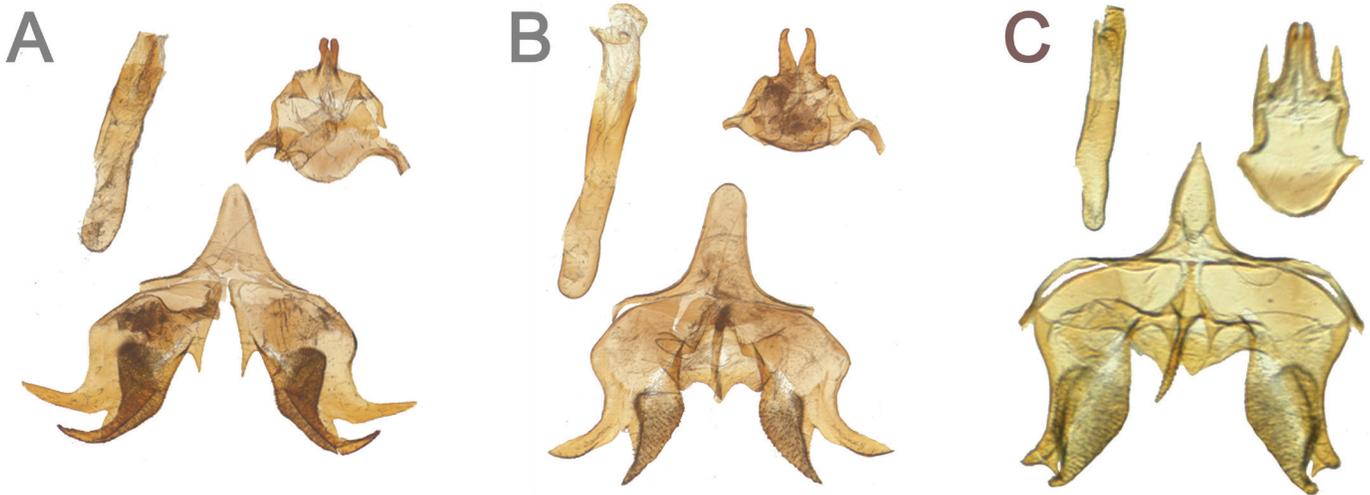


Fig 2b. The male genitalia of three *Eretis* species in dorsal or ventral view (flattened): A) *Eretis artorius* paratype (NHM: Kenya, Kakamega Dist., Kakamega Forest, D257 at Ikuywa Stream, 19.viii.1989, M.J.W. Cock (BMNH genitalia 32022). B) *Eretis vaga* (NHM: Kenya, Kakamega For., ex coll. M.J.W. Cock) (BMNH genitalia 32023). C) *Eretis rotundimacula* (1734 HEC: Zambia, High Plateau).

just a few in the NHM and none in the National Museums of Kenya (NMK), although Cock subsequently deposited a pair. The NHM has very few from Kenya or elsewhere, but a small series was recently taken in the Nyungwe Forest, an important conservation area in Rwanda (ABRI). In Uganda it is known from the Kigezi area and the Impenetrable Forest at Bwindi. However, about 90% of all specimens seen are from Kenya (mostly Kakamega).

DISCUSSION

While studying *E. artorius* we found that males of some *Eretis* spp. have a ventral hair fringe on the first abdominal segment, which has not been reported before. Thus, in *E. artorius*, ventrally on the abdomen, there is a transverse fringe of pale brown hairs, 1.2-1.5 mm long, directed downwards and posteriorly, arising from the first visible sternite of the abdomen. The anterior portion of the abdomen is concave ventrally, apart from a slight ventral ridge – the fringe of hairs probably normally rests here. The last visible sternite of the thorax and the concave area of the abdomen are covered with weakly iridescent blue scales. The feature seems to vary from species to species. It is present in most species, but absent in, for example, *E. mitiana*. It is sometimes linked with blue scales, but these are lacking in, for example, *E. vaga*. This character seems worth further study as work on the genus continues.

Larsen is currently working on a monograph of the African HesperIIDae and decided to publish new species as the project progressed, not least those with multiple authors, in order to avoid the book being overloaded with new descriptions and to allow time for more feedback and information on new taxa to come to light before the monograph is published. *Gorgyra stewarti* has already been described (Larsen 2010). Other descriptions will follow. Cock will continue his project of documenting the early stages of African HesperIIDae in full colour (Cock 2010, Cock & Congdon 2011a, 2011b). This will, as before, be done in full consultation with Larsen.

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Fig. 3. Two males of *Eretis artorius* feeding on *Justicia flava* (Acanthaceae) in Kakamega Forest. It is quite unusual to see either sex sitting with the wings folded as in the picture, which fortuitously is the actual holotype.

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