

On the *Hysteropterum* species of NE Africa (Hom., Issidae)

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The taxonomy of the *Hysteropterum* species of NE Africa is discussed. The genus *Kovacsiana* Syn. is synonymized with *Hysteropterum*. The following new species and forms are described: *H. abyssinicum serratum* ssp.n., *H. menelaos* sp.n., *H. priamos* sp.n., *H. melichari viduum* spp.n. and *H. concaviceps* sp.n.

The genus *Hysteropterum* A.S. consists of numerous species inhabiting the arid and semi-arid zone from Southern Europe and Northern Africa to Central Asia. Most species live on lower vegetation in various steppe biotopes, some also on bushes and deciduous trees. A few species also occur in southern Central Europe. Although the genus possesses some adaptability to arid conditions, penetration into Africa south of the Sahara has met with difficulties. Nevertheless, a southward radiation did happen, apparently during the pluvial period, when the climate in Africa was cooler and more humid than today. Whether radiation into larger areas was successful is not known; survival, at any rate, has only been possible in the mountain areas of East Africa and possibly also in the warm temperate steppe areas of South Africa. No species are known from the hot and humid forest regions of Africa, adaptation to this environment having apparently been impossible.

Up to now, the following species have been described from the Ethiopian Region: *H. katonae* Mel. (= *moschi* Mel.), *H. melichari* Schmidt and *H. kivuense* Syn. from the mountain areas of East Africa and *H. marginale* Wk. and *H. ecarinatum* Syn. from Southern Africa. The generic position of the two last-named species is uncertain, however. Moreover, *Kovacsiana abyssinica* Syn. proved to belong to *Hysteropterum*.

The fact that the East African species are restricted to ± isolated mountain areas causes difficulties in their taxonomy. For species with a low capacity for movement, like the *Hysteropterum* species, isolation has increased the evolu-

tion of geographical races and sibling species. Consequently, a study of large series of specimens from various parts of East Africa is needed to elucidate the taxonomic position of different populations. The present study is based on material collected during my field trips to NE Africa in 1961–1963.

Key to the *Hysteropterum* species of NE Africa

- 1 (2) Lateral frontal keels joined to the median keel below the upper margin of face *abyssinicum*
- 2 (1) Lateral frontal keels joined to median keel in the upper margin of face 3
- 3 (8) Penis with a pair of short ventral processes . . 4
- 4 (5) Vertex $2.75 - 2.86 \times$ as broad as long. Frons distinctly broader than long at middle. Ventral appendages of penis (Fig. 3 e) claw-like, recurved ventrad *katonae*
- 5 (4) Vertex $2.12 - 2.25 \times$ as broad as long. Frons about as broad as long at middle. Ventral appendages of penis different 6
- 6 (7) Anal tube (♂) in dorsal aspect remarkably broad, its apical margin trilobate (Fig. 3 a–b). Apical margin of stylus (Fig. 3 c) with a deep and narrow notch below apophysis . . *priamos*
- 7 (6) Anal tube (♂) narrow. Apical margin of stylus only shallowly insinuated below apophysis (Fig. 2 e) *menelaos*
- 8 (3) Penis without ventral processes 9
- 9 (10) Vertex strongly concave; upper lateral corners of frons sharply triangular (Fig. 5 e). Penis robust, its basal portion straight, the apical portion strongly recurved dorsal . . *concaviceps*
- 10 (9) Vertex shallowly concave. Upper lateral corners of frons rectangular. Penis slenderer, U-shaped *melichari*

1. *H. abyssinicum* (Syn.)

Kovacsiana abyssinica SYNAVE 1956, p. 12–14.
SYNAVE based his genus *Kovacsiana* mainly on

the cephalic structure: Frons provided with a transverse ridge above the level of the lower margin of the eyes, besides the usual median and lateral keels. But study of a larger amount of material revealed that this ridge is not a true keel but only a transverse elevation, interrupted at the middle by the median carina. This elevation is distinct in some specimens, but faint or almost absent in others. Such an elevation is also found in some *Hysteropterum* species, e.g. in *bicornutum* Kusun. and *montanum* Fb. The only difference between *Kovacsiana* and *Hysteropterum* is that the lateral frontal keels meet the median ridge a little below the upper margin of the frons in the former, while they meet it right in the upper margin in the latter. The difference is too slight to warrant generic status for *Kovacsiana*, especially since the frontal carination is very variable in *Hysteropterum*. In fact, *K. abyssinica* is very similar to the Pontomediterranean *Hysteropterum maculipes* Mel. (shape and pattern of frons, etc.) and is undoubtedly a derivative of the *maculipes* stock. Consequently, *Kovacsiana* is here regarded as a synonym of *Hysteropterum*.

H. abyssinicum is a common species in Eritrea, Ethiopia and SW Arabia, occurring especially in arid steppe-like biotopes. The species is variable in the length and shape of the apical aedeagal appendages. The variability is apparently connected with racial evolution. The appendages are long and provided with several teeth in the isolated populations of Eritrea (Fig. 1 d - e). These populations undoubtedly represent a separate geographical subspecies, here named *abyssinicum serratum* ssp.n. A considerable variability is also found in the southern populations in Ethiopia and SW Arabia (Fig. 1 g - f, Fig. 2 a - d). Separation of different races is in some cases probable, although the variability found within a single population (e.g. the Langanno population) is noteworthy. In the absence of effective isolation, continuous breeding between the various populations has been possible, making taxonomical delimitation of the races difficult. Large series of specimens

will have to be studied from all areas to establish whether — according to the 75 % rule — a further splitting into subspecies is possible.

Material studied:

H. abyssinicum abyssinicum (Syn.)

Ethiopia:

1. The Alamata population.

The aedeagal processes (Fig. 1 g) resemble those ssp. *serratum*, but are shorter and thicker and provide with fewer teeth.

Alamata, 3 exx, 1. VI. 1963, Linnavuori. Alamata a high mountain locality in northern Ethiopia.

2. The Dessie population.

The aedeagal processes (Fig. 1 f) of peculiar shape.

Dessie-Karakore, 1 ex, 1. VI. 1963, Linnavuori. Alamata a mountain locality in northern Ethiopia.

3. The Langanno population.

The aedeagal processes shown in Fig. 2 a - b.

Lake Langanno, several, 6. - 7. VI. 1963, Linnavuori. A dry steppe-like biotope in central Ethiopia.

Females have also been found from the following localities: Agheressalam, 8. VI. 1963; Bellesta forest, 13. 14. VI. 1963; Harrar, 22. - 23. VI. 1963 and Wond 8. VI. 1963, Linnavuori.

Yemen

Jebel Jelal, above Nakil Isla, 9600 - 10000 ft., 1 (aedeagal appendages in Fig. 2 c), 8. III. 1938 a; Jebel Masnah, SW of Ma'bar, 8400 ft., 1 ♀, 9. III. 1938. Scott & Britton.

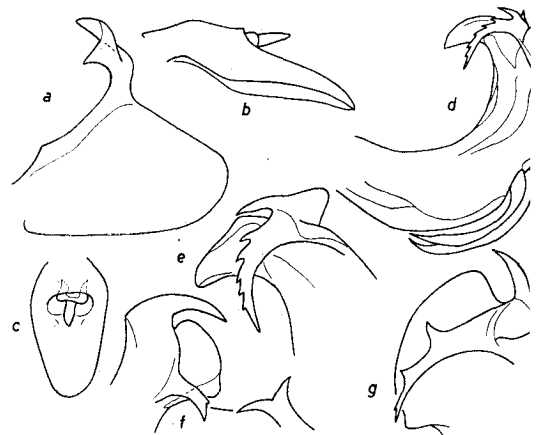


Fig. 1. *Hysteropterum abyssinicum* (Syn.): a stylus; b anal tube (♂); c dentate apical process of penis (Alamata population); d penis from side; e apical process of same; f apical process of same (Dessie population); g dentate apical process of penis (Langanno population). — *H. abyssinicum serratum* ssp.n.: d penis from side; e apical process of same. — Orig.

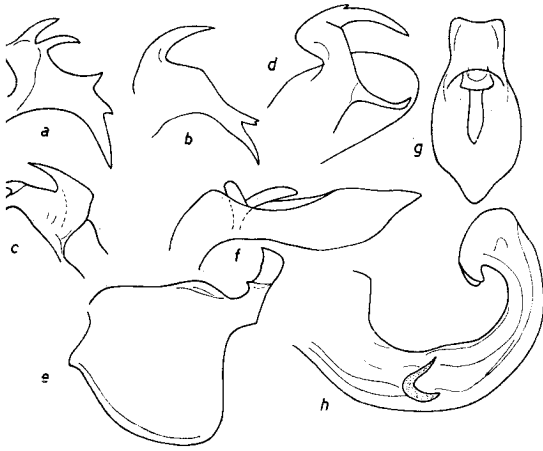


fig. 2. *Hysteropterum abyssinicum* (Syn.): dentate apical rocess of penis a - b (Langanno population), c (Yemen population), d (Jebel Harir population). — *H. menelaos* n.n.: e stylus; f - g anal tube (♂); h penis. — Orig.

South Yemen

Jebel Harir, 5200 ft., 1 ♂ (aedeagal appendages in fig. 2 d), 20. X. 1937 and Jebel Jihaf, 2 ♀♀, 7000 ft., . X. 1937, Scott & Britton.

H. abyssinicum serratum ssp.n.

Aedeagalprocesses as in Fig. 1 d - e. No ariability was found within the collection tudied.

Material studied: Eritrea, Asmara, 1 ♂, type and some aratypes, 31. V. 1963 and Addi Caieh, many paratypes, 1. V. 1963, Linnavuori, my collection. Swept from dry ountain steppes.

2. *H. katonae* Mel.

Recognized by the characters mentioned in e key. Penis (Fig. 3 e) with claw-like ventral ppendages, recurved ventrad.

Range: SE Sudan, East Africa.

Material studied: Sudan, Equatoria, Imatong Mts., ear Gilo, many, 18. - 24. III. 1963. In under growth f the *Podocarpus* zone.

3. *H. menelaos* sp.n.

Length 3.5 - 4.5 mm. Yellow-brown, with bundant dark brown irroration. Entire face ith dense, uncontrasted, minute fuscous irroration. Vertex densely irrorated with dark brown

and also provided with some larger dark spots. Pronotum with numerous roundish small dark spots. Scutellum with faint brown spotting. Elytra with dense fuscous irroration; a larger fuscous spot sometimes present near commissural margin in clavus; veins pale. Venter with sparse round dark spots. Genital segment partly embrowned. Legs with dark brown markings.

Small, resembling *H. katonae* in general appearance. Frons elongate, about as broad as long at middle (22:23 - 23:22), slightly narrowing upwardly, median and lateral keels distinct, surface between keels longitudinally rugose, upper margin of frons shallowly concave. Vertex concave, $2.12 - 2.25 \times$ as broad as long. Pronotum medially concave. Scutellum with two faint median keels, diverging caudad. Venation of elytra as in *H. katonae*. Flying wings reduced. Hind tibiae usually with 3 lateral spines, the uppermost spine absent in the Amba Alagi population, very small in the Asmara population. Male genitalia in Fig. 2 e - h. Anal tube narrow in both sexes. Apical margin of stylus only shallowly insinuated below apophysis. Penis slender, provided with two thin semicircularly curved ventral appendages, recurved dorsad.

Material studied: Eritrea, Asmara, 1 paratype, 31. V. 1963. Ethiopia, Amba Alagi, 2 paratypes, 31. V. 1963 and Mai Chew, 1 ♂, type and several paratypes, 1. VI. 1963, Linnavuori. Types in my collection. Common in the *Erica* zone, about 3000 m. above sea level, in the high mountains of Amba Alagi and Mai Chew.

Very close to *H. katonae*. The latter is bigger, however, length 4.5 - 5 mm., the frons is $1.08 - 1.12 \times$ as broad as long as the middle, the vertex is shorter and broader, $2.75 - 2.86 \times$ as broad as long, and the hind tibiae are provided with two lateral spines.

4. *H. priamos* sp.n.

Length 4.25 - 4.75 mm. As the preceding, but larger and considerably darker. Lateral keels of frons weaker. Hind tibiae with two lateral spines. Male genitalia (Fig. 3 a - d): Anal tube broad, its apical margin in dorsal aspect

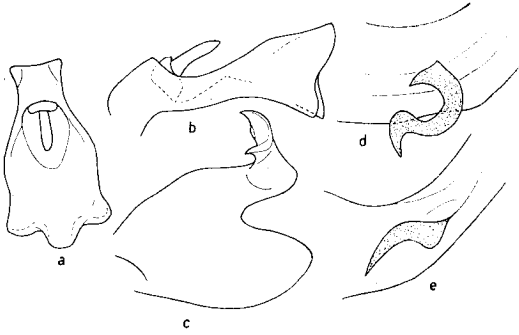


Fig. 3. *Hysteropterum priamos* sp.n.: a - b anal tube (♂); c stylus; d ventral appendage of penis. — *H. katonae* Mel.: e same. — Orig.

trilobate. Apical margin of stylus deeply insinuated below apophysis. Ventral appendages of penis incarsate, recurved ventrad.

Material studied: Ethiopia, Agheressalaam, 1 ♂, type and 1 ♀ paratype, 8. VI. 1963, Linnavuori. From high mountain meadows, alt. about 2900 m.

5. *H. melichari* Schmidt

A widespread species, with clear race formation. The male genitalia (Fig. 4 and Fig. 5 a - c) are similar in all races, distinguished from each other in the colour pattern and size, and to some extent also in the shape of the frons.

H. melichari melichari Schmidt

Length 3 - 4 mm. Greyish ochraceous, with developed dark irroration and spotting. Elytra with a trend to development of a large pale transverse spot, extending from middle of clavus to corium. Frons slightly narrower than in the other races, keels distinct.

Range: Eritrea and northern Ethiopia.

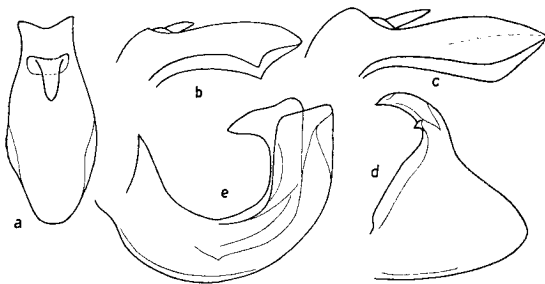


Fig. 4. *Hysteropterum melichari* Schmidt (Mai Chew population): a - b anal tube (♂); d stylus; e penis; c anal tube (♂) from side of a specimen from Keren-Asmara. — Orig.

Material studied: Asmara, 1 ♂, type and 7 ♀ paratypes XII. 1907, Kristensen and Ghinda, 1 ♂, coll. Schmidt in Mus. Warsaw. Keren-Asmara, 1 ex. 23. - 24. V. 1963 Linnavuori.

The Mai Chew population.

As the preceding, but paler: Elytra yellow-brown with scutellar and commissural margins of clavus embrowned, otherwise with only traces of dark pattern Face greenish ochraceous, with only indistinct dark markings. Frons somewhat broader, keels faint. Anal tube (Fig. 4 a - b) in profile with a triangular subapical expansion in ventral margin.

Possibly a valid subspecies.

Material studied: Ethiopia, Mai Chew, 1 ♂, 1. VI 1963, Linnavuori. Together with *H. menelaos* in the *Erica* zone.

H. melichari viduum ssp.n.

Length 4 mm. Uniformly stramineous, with out any dark markings. Frons relatively broad keels rather faint.

Material studied: Sudan, Blue Nile, Ingessan: Mts., 1 ♀, type and several paratypes, 17. - 22. XI. 1962, Linnavuori, in my collection.

H. melichari kivuense Syn., comb.n.

Hysteropterum kivuense SYNAVE 1957 a, p. 4 - 5

Length 5 - 5.5 mm. Colouring variable Usually dark, with abundant dark pattern. In the palest specimens, dark markings greatly reduced; upper part of frons with two small dark spots, lateral angles of scutellum black elytra with brownish markings in scutellar and commissural margins of clavus and with a few spots elsewhere also. Frons rather narrow, keel distinct.

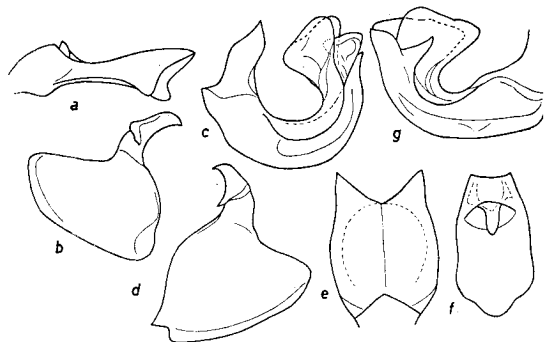


Fig. 5. *Hysteropterum melichari viduum* ssp.n.: a anal tube (♂); b stylus; c penis. — *H. concaviceps* sp.n.: d stylus e face; f anal tube (♂); g penis. — Orig.

Range: East Africa (Kivu), SE Sudan, SW Ethiopia.

Material studied: Sudan, Equatoria, Imatong Mts., Kateri-Gilo, many, 18. – 24. III. 1963; Lotti forest, Everal, 14. – 17. III. 1963, Linnavuori. Ethiopia, Belletera forest, some, 13. – 14. VI. 1963, Linnavuori. In humid forest biotopes.

6. *H. concaviceps* sp.n.

Length 3.5 – 4.5 mm. Greyish ochraceous. Face with dense fuscous irroration, a transverse immaculate fascia below eyes, upper lateral angles blackish. Vertex with arcuate fuscous regular mark in anterior margin, lateral margins with a blackish dot. Pronotum laterally with blackish irroration. Scutellum with a round dark spot in either basal angle, in the middle a triangular brown spot, interrupted by the pale median keel. Elytra with dense dark irroration, paler, \pm immaculate areas present along claval commissure, above lateral hump and along costal margin; apical margin marked with alternating fuscous and pale squarish spots, veins mainly concolorous. Anterior and middle femora and tibiae with broad dark rings.

Vertex about $2.8 \times$ as broad as long, strongly concave, apical margin straight. Frons (Fig. 5 e) about as broad as long at middle, smoothly broadening downwardly, flattish, median keel sharp, lateral keels rather indistinct, upper margin strongly concave, upper lateral angles sharply triangular (rectangular in *melichari*). Pronotum concave. Scutellum with a faint median keel. Venation of elytra much as in *melichari*. Flying wings reduced, ligulate. Hind tibiae with two lateral spines. Male genitalia (Fig. 5 d, f – g) much as in *melichari*, but penis considerably robuster. Anal tube ($\text{\textcircled{f}}$) narrow, parallel-sided.

Material studied: Sudan, Kassala, Erkowit, 1 $\text{\textcircled{m}}$, type and some paratypes, 5. – 10. VII. 1961, Linnavuori, my collection. From scanty herbaceous mountain vegetation in dry localities.

Very similar to *H. melichari* (possibly only an extreme race of *melichari*), but differing in the shape of the head and the robuster penis.

References

- CHMIDT, E. 1910. Die Issinen des Stettiner Museums. — Stett. Ent. Zeitschr. 71, 146 – 220.
- LYNNE, H. 1956. Contribution a l'Etude des Issidae Africains. — Bull. Inst. Royal Sci. Nat. Belgique 32, 1 – 22.
- 1957 a. Issidae (Homoptera-Fulgoroidea). — Inst. Parcs Nat. du Congo Belge. Expl. Parc Nat. Albert 90 (1), 1 – 6.
- 1957 b. Issidae (Homoptera-Fulgoroidea). — Inst. Parcs Nat. du Congo Belge. Expl. Parc Nat. de l'Upemba 43, 1 – 78.

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