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African Pyrgotidae (Diptera)

Collected by Willi Richter, Erwin Lindner, and Others

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With 15 Figures

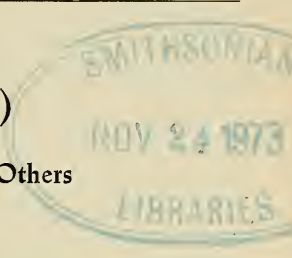
The African Pyrgotidae are greatly in need of modern systematic work. The considerable intraspecific variability in color, size, and development of bristles, together with frequently well-developed sexual dimorphism and scarcity of adequate representation of both sexes in collections, has tended to retard the taxonomy of the group. The work of ENDERLEIN (1942) has given us a plethora of genera and many inadequately described species. The papers of HENDEL (1914, 1934) presented more conservative generic concepts, but the species descriptions omit important details, those of the 1934 paper consisting of only a few characters in keys. The key to the African genera by ACZÉL (1958) provides a good basis for generic distinctions, but it too is vitiated by too great reliance upon small differences in bristling and inability to place some of the published genera. My work on American Pyrgotidae has shown that details of the structure of the female postabdomen, with its great variety of specialization for oviposition in the abdomen of adult beetles, can be expected to show the way to a firm generic classification and better species distinction. Such data for Pyrgotidae from the Old World are almost wholly lacking.

As brought out below, it is not at present feasible to make specific determinations in several genera. In some of the smaller, more distinct genera it can be done. It is hoped that the present contribution will be at least a small step toward a better understanding of this still very poorly known fauna.

All material herein reported upon has been returned to the entomological collection of the Staatliches Museum für Naturkunde in Stuttgart. I am grateful to Dr. Erwin LINDNER for the opportunity of examining the material and am happy to dedicate one of the new species to the late Willi RICHTER, who collected the specimens upon which its description is based.

Adapsilia (Eupyrgota) latipennis (Walker)

This subgeneric assignment was first proposed (STEYSKAL and EL-BIALY, 1968) in recording the species from Gebel Elba, in the southeastern corner of Egypt. I have also seen the type from Sierra Leone, and specimens from Uganda, northern Nigeria, and Congo (see below).



At rubric 45 of his generic key, ENDERLEIN (1942: 105) distinguished 5 genera which appear to form a closely related group: *Adapsilia* Waga, *Eupyrgota* Coquillett, *Euthioza* Enderlein, *Peltodasia* Enderlein, and *Trichopeltia* Enderlein. The type-species of *Euthioza*, from Malagasy, has been referred by HENNIG (1961) to *Tephritopyrgota*, *Trichopeltia* is from southern Asia, and the remaining 3 genera include African species. I have found that the characters used to distinguish the taxa in this group are subject to so much variation from species to species that it would seem that HENDEL (1933) correctly placed *Eupyrgota* as a subgenus of *Adapsilia*. Thorough examination of the female abdomen of the species of this group will do much toward improving the classification.

The female postabdomen of *A. latipennis* is shown in fig. 4. The pair of heavy black hooks and patches of short stout spinules at the lower apex are similar to structures seen in the type-species of *Eupyrgota*.

An egg from the abdomen from which the postabdominal preparation was made is shown in fig. 5; it is colorless and glabrous, with a small structure like a tack-head at the micropyle.

The coloration of the face of both sexes seems characteristic; it is largely yellowish, with the mesal side of each antennal groove blackish, which color does not extend up the sides of the median facial carina except in its upper $\frac{1}{6}$, close to the antennal bases, leaving the largest part of the carina rather pale yellowish.

Republic of the Congo (Kivu, Lwiro, XI—XII. 1966, Dr. JILLY leg., 3 females).

Genera *Campylocera* Macquart, *Clemaxia* Enderlein,
and *Dicrostira* Enderlein

These genera need extensive research, including type examination. Although 24 species of *Campylocera* have been described from Africa, the only key is by HENDEL (1914), which includes only 10 species from Africa and one from the Philippines. The genus *Clemaxia* includes 6 species and *Dicrostira* 1 species, all from Africa. ACZÉL (1958) considered *Clemaxia* a subgenus of *Campylocera*, and thought that *Dicrostira* might be also. My examination of material in this congeries leads me to believe that *Clemaxia* and *Dicrostira* may deserve better than subgeneric ranking, but much more must be known about the species involved before a decision can be made.

Congopyrgota ethiopica, n. sp.

Female. Very similar to *C. hyalipennis* Aczél (1958: 41), the only previously known species of its genus. The only differences from *C. hyalipennis* that I can discern are as follows.

Mostly reddish brown, only posterior part of ocellar triangle (bearing postocellar bristles), pair of oblique stripes from upper part of eyes to neck, subocular spot (as in *C. hyalipennis*), and narrow postscutellar roll blackish; abdomen without infuscation; humerus, notopleuron, and pleura testaceous.

Wing 6.1—6.8 mm long, 2.33 times as long as wide; *tp* more sinuate than in *C. hyalipennis* and almost at right angles to longitudinal axis of wing; apical part

from short distance beyond level of *tp*, especially anteriorly, faintly infuscated (similar to condition shown in ACZÉL's figure of the wing of *C. hyalipennis*).

Postabdomen as in figure 10, ovipositor sheath with lateral outlines nearly parallel in middle portion.

Male. Unknown.

Holotype and one paratype, Ethiopia (Bahar-Dar, June-Juli 1969, SCHÄUFFELE leg.).

The *Prohypotyphla* complex

An obviously closely related group of taxa is keyed in ACZÉL (1958: 38) and VANSCHUYTBROECK (1963: 13) as follows:

- a. *Oc*, *pvt*, *prsut*, and *st* absent, *vte* reduced *Lygiohypotyphla* Enderlein
 — These bristles present *Prohypotyphla* Hendel
 b. 2nd vein with short appendage subgenus *Hypotyphlina* Enderlein
 — 2nd vein without appendage subgenus *Prohypotyphla* s. s.

A few specimens belonging to the typical subgenus of *Prohypotyphla* are among the material examined. Because that taxon consists of 9 species described with very few characters in a key only; 1 well-described species by ACZÉL (1958), but without details of the female postabdomen; and 8 more species described by VANSCHUYTBROECK (1963) with little mention of structural characters or comparison with other species and without a key, it will not be possible to make specific determinations until careful examination of types yields additional details of structure.

I doubt that *Lygiohypotyphla* should have generic rank, because some of the species apparently have bristles stated to be absent in the typespecies, *L. nigripennis* (Hendel), described only in a key. For the present, I am accepting ACZÉL's classification and am offering the following key to the species of *Lygiohypotyphla*, based largely upon descriptions.

Preliminary key to species of *Lygiohypotyphla* Enderlein

- 1 (2) Wing tinged with dark brown *L. nigripennis* (Hendel)
 2 (1) Wing largely hyaline.
 3 (4) 2nd vein with appendage; brown spot in apical part of 2nd vein; scutellum whitish, with 1 pair of *sc*. *L. saegeri* Vanschuytbroeck
 4 (3) 2nd vein without appendage.
 5 (8) 2 pairs of *sc*.
 6 (7) "La brunissure des ailes nimbe les nervures longitudinales et un peu plus densément les transverses" (figure shows only *tp* in dark seam and rather narrow dark costal margin from point opposite *tp* to a little beyond end of 3rd vein); abdomen with brown spots *L. hyalipennis* Vanschuytbroeck
 7 (6) "La partie rembrunie (des ailes) se limite à l'espace entre la costale et la seconde nervure longitudinale; brunissure également sur les transverses et à base des nervures 2 et 3"; abdomen with "taches brunes sur la membrane marginale du male" *L. ruwenzoriensis* Vanschuytbroeck
 8 (5) 1 pair of *sc*; wing (fig. 1) hyaline, with apical browning along 2nd and 3rd veins, *ta* and *tp* at most very lightly seamed; scutellum and preabdomen black; postabdomen yellowish, with dark tip *L. bicolor*, n. sp.

Lygiohypotyphla bicolor, n. sp.

Female. Color of body largely yellowish; apical $\frac{2}{3}$ of 3rd antennal segment, scutellum, and preabdominal terga (except narrowest basal part of compound basal tergum) blackish; frontal triangle brownish; tibiae and tarsi brownish, t_3 quite dark; apex of ovipositor sheath piceous.

Head smooth and shining, only medifrons dull; front at vertex 0.44 of total width of head, a little broader anteriorly; cheek 0.45 as high as eye; parafacial at narrowest point slightly broader than width of 3rd antennal segment; 1 large *vti*, 0 or 1 small *vte*, 1 weak *fo*, 1 small latericline *poc*, 0 *oc*.

Thorax shining; 0 *h*, 0 *dc*, 1 scapular, 2 *ntpl* (anterior bristle half as long as posterior), 1 *sa*, 2 *pa*, 1 apical *sc*, 1 *mspl*, 1 *ptpl*; 3–4 small lateral prosternal setae; several discal hairs on scutellum; pectus with 2 pairs of bristles.

Legs with femora approximately 0.2 as thick as long; without long or strong bristles or hairs, except 1 rather long, hairlike bristle near base of lower side of f_1 and 2 or 3 very small dorsal preapical bristles on f_3 .

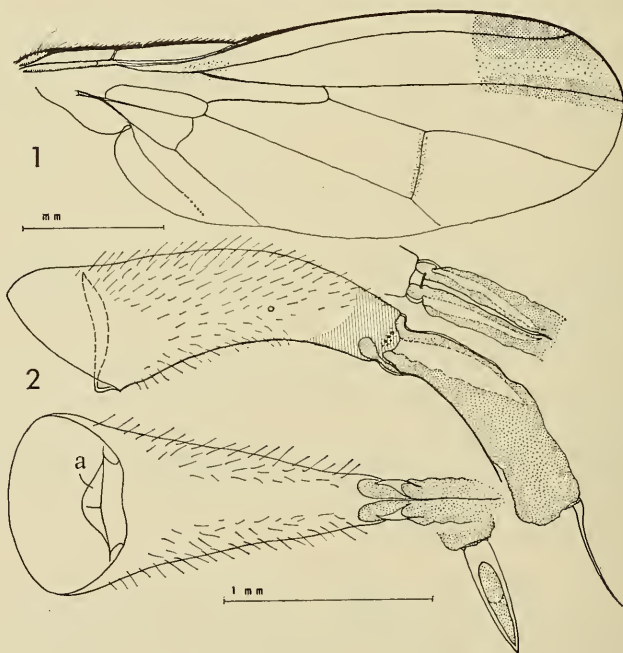


Fig. 1, 2: *Lygiohypotyphla bicolor*, n. sp. 1, wing; 2, female postabdomen, profile, partial dorsal view, ventral view, and ventral view of ovipositor. a, ovipositubal apodeme.

Wing as in fig. 1, hyaline except for brown marks shown; base of 3rd vein dorsally with 3–5 small, short setae.

Abdomen as in fig. 2; ovipositor ensiform, very thin dorsoventrally.

Length of body 6.5–7.2 mm, of wing 4.5–5.5 mm.

Male. Not known.

Holotype, Tanzania (Makoa, [river on west flank of Mt. Kilimandjaro], 22.–23.

II. 1952, D. O. Afrika Exp.); 1 paratype (ibid., 8. II. 1959, E. LINDNER leg.).

If *L. bicolor* should be referred to *Prohypotyphla* s. s., it would run to *P. distans* Hendel (key, 1934: 149), differing therefrom in lacking *oc* and in the front being more than 1.5 times as wide as an eye (instead of 1.3); it differs from *P. luteola* ACZÉL (1958: 47) in lacking *oc* and in its blackish scutellum with only 1 pair of bristles; and it differs from all of the species described by VANSCHUYTBROECK (1963: 31–42) in its single pair of *sc*.

Genus *Metropina* Enderlein

The genus was founded upon the sole species *M. temporalis* Enderlein. VANSCHUYTBROECK has described a second species, and I find a third among the present material. These may be separated as follows:

Key to Species of *Metropina* Enderlein

- 1 (2) Body wholly yellowish to reddish, only apex of 3rd antennal segment a little infuscated; postabdomen (fig. 9) as long as head and thorax together; 1 *h*, 3+1 pairs of *dc* *M. temporalis* Enderlein
- 2 (1) Body partly blackish; postabdomen much shorter.
- 3 (4) Lower apex of anal cell acute, ca. 30°; abdomen (male) black, posterior tergal margins with red-brown spot; 1 *h*, 2 pairs of *dc* *M. nigra* Vanschuytbroeck
- 4 (3) Lower apex of anal cell (fig. 6) nearly 90°, not extended; preabdomen (female) with terga broadly blackish laterally, yellowish medially; postabdomen yellowish (fig. 7); 0 *h*, 3–1 pairs of *dc* *M. richteri*, n. sp.

Metropina temporalis Enderlein

The species was described from Bismarckburg, Togo. The single specimen at hand agrees well with ENDERLEIN's description and is the 2nd recorded specimen; its anal cell is shown in fig. 8 and postabdomen in profile in fig. 9.

Tanzania (Makoa [river on west flank of Mt. Kilimandjaro], 21. II. 1959, E. LINDNER leg., light trap, 1 female).

Metropina richteri, n. sp.

Female. Very similar to *M. temporalis* Enderlein.

Body largely yellowish, only following parts pitchy black: apex of 3rd antennal segment, metanotum (excluding lateral calli), preabdominal terga (except more or less distinct median longitudinal stripe and most of tergum 6). Scutellum basilaterally brownish; tibiae and tarsi slightly browned; upper back of head in one specimen with pair of diffuse brownish areas. Chaetotaxy differing from that of *M. temporalis* only in lacking *h*. Wing hyaline; marginal cell pale yellowish; apex of marginal cell beyond stump vein and tip of submarginal cell along costa and about tip of 3rd vein a little brownish; faint brownish seaming along *ta* and *tp*, the latter nearly connected with stump on 2nd vein by a light brownish band; stump of 2nd vein bifurcate or (in darkest specimen) consisting of group of 3 short stump veins and a small cell; very short rudiments of stump veins appear in a couple of instances on distal side of *tp*;

vein closing anal cell (fig. 6) more sinuate than in *M. temporalis*. Postabdomen (fig. 7) approximately equal in length to thorax alone, less upturned than in *M. temporalis*, apical setae straight.

Length of body 6.9–7.2 mm, of wing 4.6–6.0 mm.

Male. Not known.

Holotype and 1 paratype, Ethiopia (Sidamo, Jrga-Alem [= Yrgalem], $38^{\circ} 23' E$, $6^{\circ} 45' N$, 4.–12. II. 1960, W. RICHTER leg.); 1 paratype Ethiopia (Jlubabor, Gore, 2007 m, $35^{\circ} 31' E$, $8^{\circ} 8' N$, 8.–18. XI. 1959, RICHTER and SCHÄUFFELE leg.).

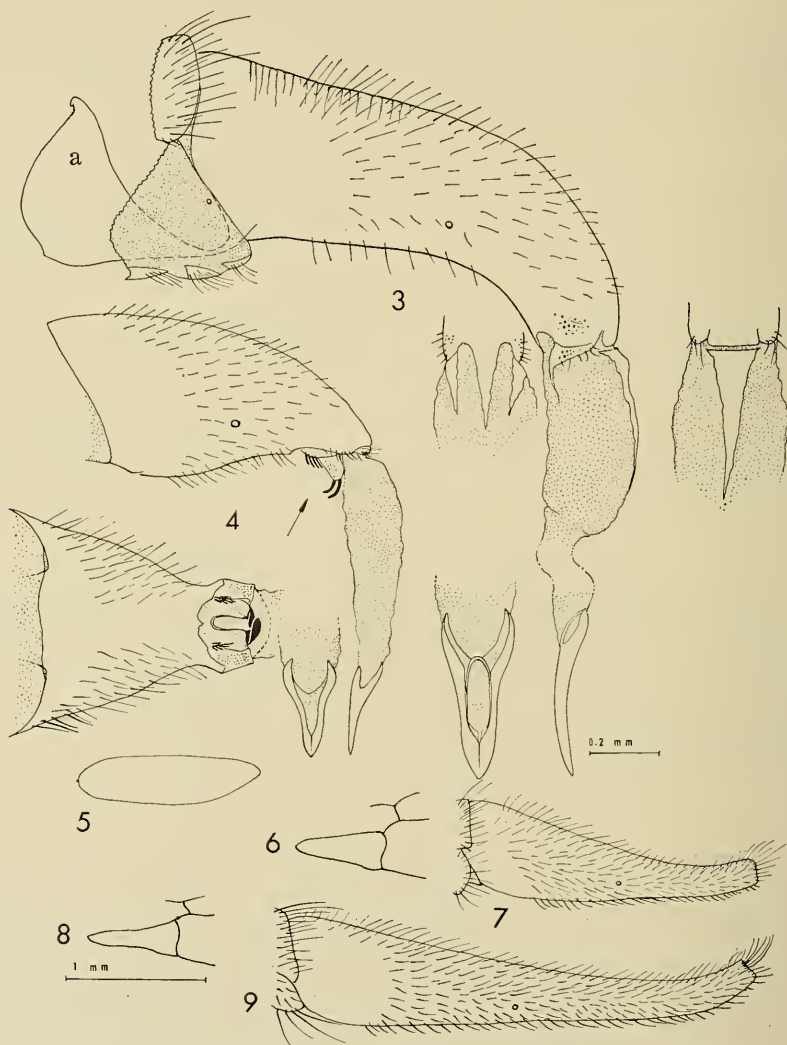


Fig. 3–9. Details of female Pyrgotidae. 3, *Tephritocampylocera abyssinica* Hennig. Profile and partial dorsal and ventral views of postabdomen and (at larger scale) ventral view of ovipositor; 4, *Adapsilia latipennis* (Walker). Profile and ventral view (in direction of arrow) of postabdomen and ventral view of ovipositor; 5, idem. Egg; 6, *Metropina richteri*, n. sp. Anal cell and vicinity (wing); 7, idem. Profile of postabdomen; 8, *Metropina temporalis* Enderlein. Anal cell and vicinity (wing); 9, idem. Profile of postabdomen.

It seems hardly possible that *M. richteri* could be the female of *M. nigra* Vanschuylbroeck because of the differences cited in the above key. Because the genus *Metropina* is quite distinct from other genera and because so few specimens of the species are available, it does not seem advisable at this time to dissect the post-abdomen.

Tephritocampylocera abessinica Hennig

The specimens cited below agree well with the description and figure of the wing of *T. abessinica* Hennig (1937). The female postabdomen of one of these specimens is shown in fig. 3. The long, tapering appendages are quite flexible and are withdrawn at rest into the cone along with the membranous tubular structure and the arrowhead-like true ovipositor. One of the specimens has no setae at the base of the 3rd wing vein, one of them has 3, and the others have 2.

Ethiopia (SW, Konso, prov. Gamu Gofa, 1610 m, 37° 23' E, 5° 16' N, 19.—29. III. 1960, W. RICHTER leg., 4 males, 2 females).

Genus *Tephritohypotyphla* Vanschuylbroeck

This genus was credited to "ACZÉL in litt.", but since the descriptions both of the genus and of its type-species *T. biseta* are not at all in the style of ACZÉL, who died 5 years earlier, the author should be cited as VANSCHUYTBROECK (1963: 26). The genus was also cited as „gen. nov.“ by VANSCHUYTBROECK (1965: 397).

Except for the presence of a few small setae on the upper surface of the base of the 3rd vein of the wing, the description is that of *Tephritocampylocera* Hendel. The specimens of *Tephritocampylocera abessinica* cited above usually have 2 or 3 such setae. My experience with American Pyrgotidae also leads me to believe that much reliance should not be placed upon this character.

I would not hesitate to place *Tephritohypotyphla* as a synonym of *Tephritocampylocera* were it not that the figure of the female postabdomen of *Tephritohypotyphla biseta* seems to show a strong apicoventral hook, which is not present in *Tephritocampylocera abessinica* (fig. 3). There is the possibility that VANSCHUYTBROECK was mistaken concerning the extent of the costa, and that it may actually extend at least weakly to the 4th vein, in which case the genus may fall to *Tephritopyrgota*, some species of which are known to possess a single apicoventral post-abdominal hook (cf. HENNIG, 1961).

Genus *Tephritopyrgota* Hendel

HENNIG (1961) has described 17 species of this genus from Malagasy, with a key to them and 2 previously described species. Another 15 species are known from continental Africa, only 5 of which have been keyed (HENDEL, 1914). Until extensive research upon the types of the species has been done, determinations of African material in this genus will not be reliable. See also the note above concerning *Tephritohypotyphla*.

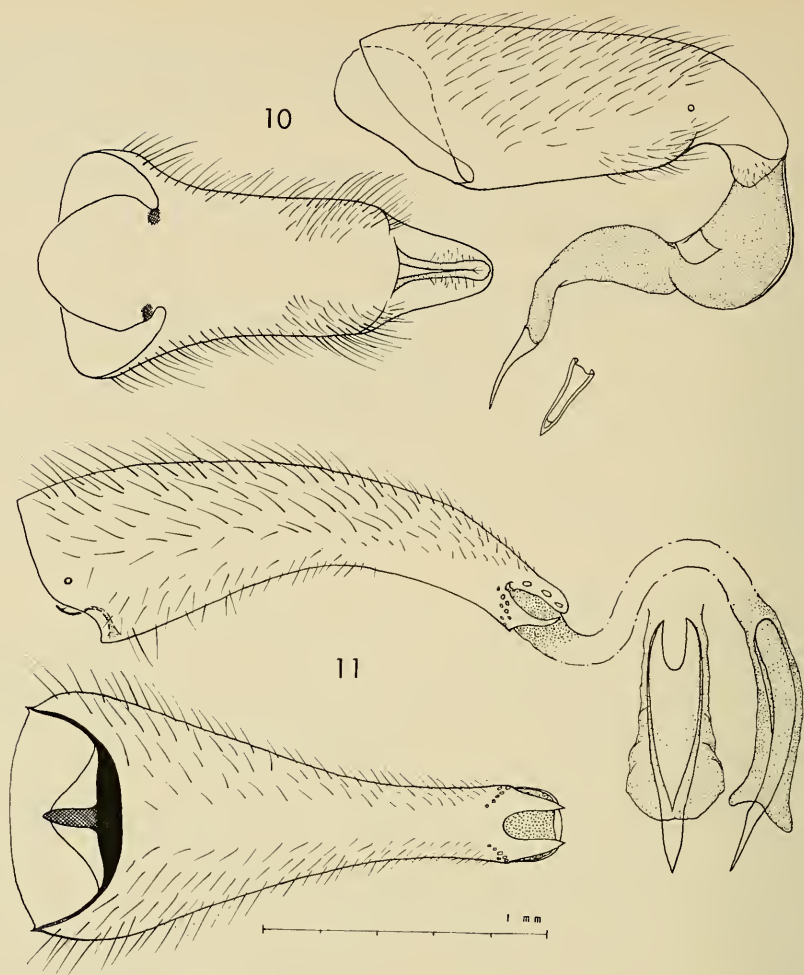


Fig. 10—11. Details of female Pyrgotidae. 10, *Congopyrgota ethiopica*, n. sp., profile and ventral views of postabdomen, with dorsal view of ovipositor; 11, *Toxopyrgota inclinata* Hendel, profile and ventral views of postabdomen, with ventral view of ovipositor.

Toxopyrgota inclinata Hendel

No record seems to have been made of this species since its description from a single teneral female specimen from New Moshi, Mt. Kilimandjaro, 800 m, by HENDEL (1917; not 1912 and 1913, as cited by VANSCHUYTBROECK, 1963: 7, which actually refers to a Muscid). The present material is in good condition and shows that all of the parts described by HENDEL as brown are black in well-developed specimens. The flies are rather brightly bicolored, with the mesoscutum mostly shining black, but the humerus, notopleuron, lateral thirds of the transverse suture, and rather broad entire hind margin yellowish. The scutellum is yellowish with a median triangular black mark with broad base and narrow tip occupying a little less than the space between the single pair of scutellar bristles. The head of both sexes as-

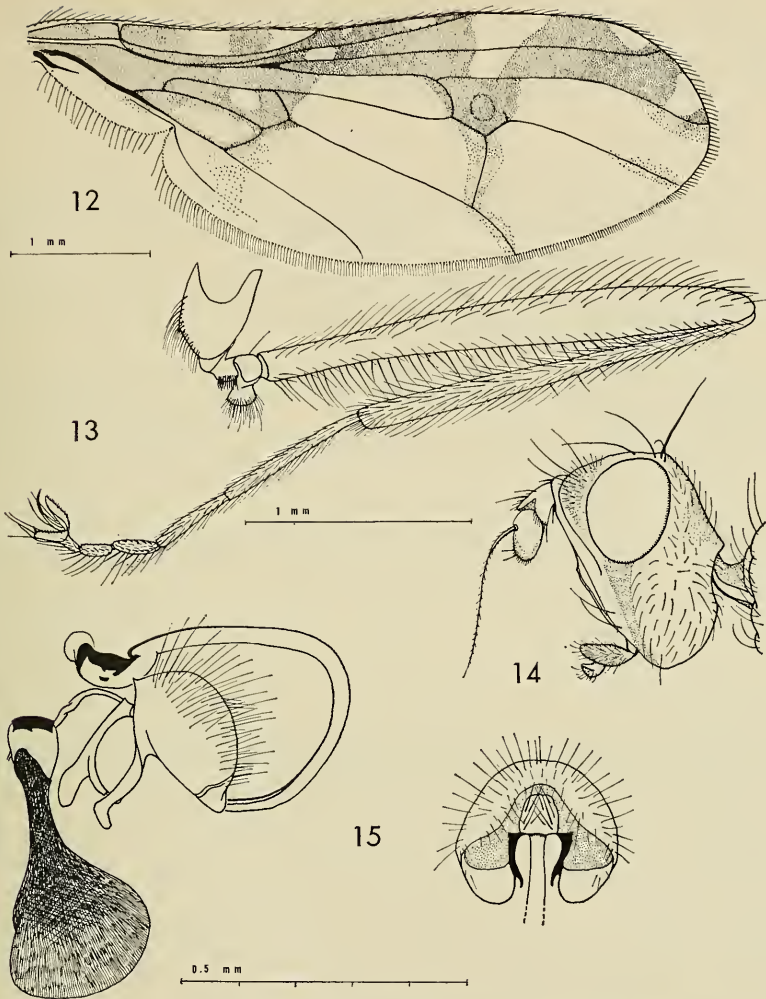


Fig. 12—15. *Toxopyrgota inclinata* Hendel. 12, wing; 13, male right, hind leg, posterior, view 14 profile of head; 15, male postabdomen, profile including sperm pump, and posterior view of epandrium.

sumes a considerably different appearance (fig. 14) from that shown by HENDEL, and 3 or 4 lower frontoorbitals as well as a number of small hairs are usually present. The dorsal margin of the 3rd antennal segment usually bears 1—3 small setae. The wing pattern is rather variable, from nearly identical with that of HENDEL's figure to the condition shown in figure 1, including a few additional whitish spots, one of which is usually conspicuous in the middle of the dark area at the base of the 1st posterior cell as indicated by a broken line.

The hind legs of the male (fig. 13) show a remarkable development of the trochanter, consisting in a dense basimesal patch of bristles and a broad ventral process bearing a tuft of bristly hairs. The andrium is as shown in figure 15; it is largely covered in repose by the expanded 5th tergum.

The female postabdomen (fig. 11) is downcurved and tapering with concave lateral outlines; an ovipositunguis is absent and basal apodeme poorly developed.

Ethiopia (Bahar-Dar, Juni-Juli 1969, SCHÄUFFELE leg.), 4 ♂♂, 1 ♀.

The female postabdomen of Pyrgotidae

Because of the high degree of specialization for depositing eggs in the abdominal cavity of adult scarabaeid beetles, the postabdomen of the females of the Pyrgotidae seems to offer better indications of relationships than does that of the males. The male postabdomen greatly resembles those of Platystomatidae and Tephritidae, with relatively little difference from species to species.

In work on the American Pyrgotidae now in progress I have found much variety in the structures usually preserved withdrawn into the more or less conical ovipositor sheath, sometimes with a shriveled membranous tube protruding, and only rarely with the true ovipositor, an aculeus in the shape of an arrowhead or lance-tip, exposed.

The drawings included herewith were made from postabdomens severed from the preabdomen and macerated in boiling NaOH solution. The ovipositor was extended, sometimes with a certain amount of difficulty, and the whole supported in water for drawing. Each preparation has been placed in glycerine in a microvial attached through a silicone stopper to the pin holding the specimen from which it was taken.

The ovipositor sheath of the conical, tubular, or infundibuliform type found in the Pyrgotidae, Tephritidae, and Agromyzidae, seems to have no anatomical term available. The term oviscape or oviscapt has been used in a very broad sense. This type of ovipositor sheath, with the basal part of the postabdomen consisting of the 7th tergum and sternum fused into a continuous structure, I propose to call the *ovipositubus*. A ventral apodeme (figs. 2 and 3, a) may be turned upward to almost fill the lumen of the ovipositubus; this may be termed *ovipositubal apodeme* (*apodeme ovipositubale*). It apparently serves as a piston when pulled caudad by muscular action to force the contents of the ovipositubus outward. The true ovipositor is a quite small, sharply pointed, sagittiform piercer at the end of a very soft, but tough tube. I propose to call this latter structure, which is apparently composed mostly of intersegmental membrane, the *tubillus*. At the base of the tubillus are structures apparently derived from the 8th tergum and sternum. In the species figured, the 8th tergum seems to be represented by a slender, flexible, cuneate strip; the sternum, which is sometimes more closely associated with the ovipositubus, is apparently divided in figs. 2 and 3 to form a pair of more or less pointed thin plates, between which the apex of the 7th sternum extends, sometimes for a considerable distance. In fig. 4, the 8th sternum is quite complex, consisting of 2 heavy, black, clawlike structures, more or less underlain by softer sclerotic tissue bearing 2 groups of short, heavy spines and more or less connected laterally with flexible plates bearing what seem to be sensory pits. These clawlike structures may be termed *ovipositungues*, singular *ovipositunguis*. In *Pyrgota* and a few other genera, there is only a single median *ovipositunguis*. In some other genera, there are further specializations in this region, including a condition wherein the 8th urite is apparently not at all sclerotized.

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