Afrotropical Flower Flies (Diptera: Syrphidae) A taxonomical Conspectus [Part II - Key to supraspecific groups]

> Henri G. Dirickx (Geneva, Switzerland)

Marc De Meyer (Tervuen, Belgium)

Axel Ssymank (Bonn, Germany)

F. Christian Thompson (Washington, USA)

Nota Bena: This manuscript is made available to specialists with the understanding that they probably credit the source when they use the information contain herewithin. The work will be published in our series MYIA as volume 14.

1.	Postpronotum bare (Fig). Head posteriorly strongly convex and closely appressed to thorax so that postpronotum is partly or entirely hidden. Male abdomen with tergum 5 visible in dorsal view and varying in form of a subquate or subtriangular to
	short transverse sclerite (Figs)
2.	Antenna with terminal stylus (Figs)
3.	Vein R 4+5 moderately to strongly sinuate (Figs)
	Vein R 4+5 straight or nearly so, not sinuate (Figs)
4.	Face produced into a long anteriorly porrect snout, without tubercle (Fig.); costa and vein R 4+5 ending well posterior apex of wing. Arista bare; eye bare; thorax with weak to strong bristles
	anterior to apex of wing
5.	Arista plumose or pectinate, with pile (rays) at least twice as long as basal diameter of arista (Figs); thorax with bristles; scutellum with a shallow to deep medial excavation. Eye pilose
	Arista bare; body without bristles; scutellum convex, without medial excavation
6.	Postmetacoxal bridge narrow but complete (Fig.). Antenna elongate, with scape and usually also basoflagellomere more than 2.5 times as long as wide (Fig.). Anepisternum with anterior flatten portion pilose. Vein R 4+5 often with a appendix into cell R 4+5 (Fig.). Cell R1 open. Eye bare. 71
***	microdontines go out here. Need to check antennal characters, eye pilose
	Postmetacoxal bridge absent (Figs). Antenna usually short; scape usually at most twice as long as wide; basoflagellomere usually rounded or oval. Anterior anepisternum pilose or bare. Vein R 4+5 usually without a appendix into cell R 4+57
7.	Eye pilose

14.

Scutellum with conspicuous dentis (teeth) on posterior margin; eye in dorsolateral view with two dark and three more distinct

	white pile fasciae
15. 	Terga 1-5 completely fused, at least laterally Afroparagus Terga 1-2 only fused completely
16.	Abdomen parallel-sided (Fig. 90) to oval, never distinctly petiolate
17 . 	Laterotergum pilose, at least with a patch of long pile dorsally; postpronotum and/or anterior anepisternum pilose; metepisternum pilose; scutum usually with a well-develop collar of longer pile on anterior margin Allobaccha Laterotergum, anterior anepisternum, metepisternum all bare; scutum without pile collar Pseudodorus
***	With a postmetacoxal bridge
18.	Face and scutellum entirely black in background color. Abdomen without marginal sulcus. Metasternum bare. Eye bare 31
***	Check Pelloloma on abdominal marginal sulcus
	Face or scutellum or both at least partly yellow or yellowish brown in background color, both never entirely black. If in doubt, eye pilose. Abdomen, metasternum, and eye variable.
19.	Antenna short, shorter than head; basoflagellomere at most twice as long as broad; scape and pedicel not longer than board
20.	Metafemur and metatibia without pile brushs; eye densely long pilose; scape and pedicel subequal; abdomen strongly convex dorsally, strongly margined; vein R4+5 sinuate, looped into cell R4+5; calypter bare
	sparsely and short pilose; scape about 3 times as long as pedicel; abdomen not convex nor with margnal sulcus; vein R4+5

	straight; calypter pilose on ventral lobe Afrosyrphus
21.	Calypter with lower lobe pilose, especially on posteromedial portion (Fig.); metacoxa with a tuft of strong pile at posteromedial apical angle
21.	Anterior anepisternum pilose at least posterodorsally (Figs); wing margin with a series of minute closely spaced black maculae on posterior margin (Fig. 39)
22	Metasternum pilose; metepisternum pilose ventrad to spiracel
23.	Abdomen without marginal sulcus
24.	Metapleuron bare ventrad to spiracle; metasternum variable. Vein R 4+5 straight or sinuate. Size and shape variable
	Metapleuron with a tuft of fine pile ventrad to spiracle; metasternum pilose. Large species with broad flattened abdomens with distinct marginal sulcus
25 . 	Mesonotum anteriorly with a distinct collar of longer and denser pile; vein R4+5 sinuate, distinctly looped into cell R4+5
26 . 	Eye densely pilose; metacoxa with tuft of strong pile at posteromedial apical angle Betasyrphus Eye bare; metacoxal without such a pile tuft
27 . 	Metasternum pilose; wing densely microtrichose on apical 1/3; scutum dark laterally; male metacoxa simple Eupeodes Metasternum bare; wing extensively bare, with only sparse scattered microtrichia on apical 1/3
27a 	Scutum with well-defined bright yellow lateral vitta, extending from postpronotum to scutellum; male metacoxa with ventral spine-like process
	simple

	to scutellum
29.	Face with broad black vitta; subsctellar fringe well-developed except on medial 1/3; male genitalia small, with tergum 9 at most 1/2 as wide as abdomen; female 5th tergum with distinct yellow maculae which are isolated from lateral margins
	Face yellow; subscutellar fringe absent; male genitalia large and globose, with tergum 9 as wide as abdomen; female 5th tergum either without yellow maculae or yellow maculae broadly reach lateral margin
30.	Subscutellar fringe complete, densely; male holoptic; male genitalia small, inconspicuous, with tergum 9 at most 1/2 as wide as abdomen; female face without carina (widespread, but not St. Helena)
	Subscutellar fringe absent; male dichoptic; male genitalia large and globose, with tergum 9 as wide as abdomen; female face with a distinct median carina extending from antenna to tubercle (St. Helena only)
31.	Metepisternum with some fine subappressed pile; katepisternum with pile patches broadly separated posteriorly, joined anteriorly (Fig. 42). Metacoxa with tuft of pile at posteromedial apical angle (as in fig. 48)
	Metepisternum bare; katepisternal pile patches broadly separated throughout (as in fig. 45) 32
32.	Metacoxal with tuft of pile at posteromedial apical angle (as in fig. 48); metafemur swollen, usually about 3 times as broad as tibia. Metasternum entire
	Hind coxa without posteromedial apical pile tuft; metafemur simple, not swollen, about as broad as tibia33
33.	Metasternum greatly reduced, with deep posterior incision laterally so that sclerotized portion consists of a median diamond-shaped area with a narrow anterior and lateral strips (Fig. 46). Face not produced below, with small tubercle
	Metasternum entire (Fig. 47). Face almost straight with strong tubercle, slightly produced forward ventrally
34.	Cell R1 petiolate. Metafemur with apicoventral spur. <i>Milesia</i> Cell R1 open, without petiole

35.	Metafemur with a anterobasal patch of short dense black setulae; vein R4+5 sinuate, distinctly looped into cell R4+5
	Metafemur without patch of setulae; vein R4+5 straight or rarely with a gentle curve, not strongly nor distinctly looped into cell R4+5
	this is a switch back to the Eristalines for those who miss e them on the nature of the sinuate R 4+5 vein
36.	Vein M1 perpendicular or recessive in respects to vein R 4+5 (figs.); eye frequently with pattern; abdomen short, oval; legs simple
	Vein M1 processive in respects to vein R 4+5; eye always unicolorous; abdomen elongate, parallel sided; metafemur slightly swollen, with black apicoventral spines; male femur may have ventral spurs
37 .	Metafemur simple, without such apicoventral projections, may have a low apicoventral carina
38.	Metafemur with a single apicoventral spur; metasternum without ventral membraneous band; vein R4+5 angulate over cell R4+5, usually with a spur into cell R4+5
39.	Katepimeron pilose; metafemoral apicolateral plate notched to form a large spur and a small triangular tooth
40.	Wing almost bare on basal 2/3, very sparsely microtrichose on apical 1/3; scutellum without ventral pile fringe; metepisternum with a patch of fine pile; metafemur greatly enlarged, with an anteroventral spinose carina on apical 1/3
	Wing entirely microtrichose or with just moderate bare areas on basally, densely and uniformly microtrichose on apical 1/3; metepisternum bare; metafemur not as such
41.	Metasternum bare; anterior anepisternum bare Orthoneura

*** poecilophthalma runs here

	Metasternum pilose; anterior anepisternum pilose; 42
42	Cell R 4+5 divided by a crossvein between veins R 4+5 and M 1; katepisternum bare
43	Metafemur with apicoventral triangular plate on anterior face (Fig.); anepimeron with triangular area pilose; vein R4+5 sinuate; apical portion of vein M without external spurs
	Metafemur only slightly swollen, without ventral plate; anepimeron with triangular area bare; vein R4+5 straight or sinuate; apical portion of vein M with usually with external spurs
44	Pedicel greatly elongate, about 5 times as long as basoflagellomere
45	Vein M1 (apical crossvein) without spur at point of angulation; occiput greatly expanded and tumid
	Vein M1 with a spur at point of medial angulation; occiput only slightly expanded
46.	Face with medial and 2 lateral tubercles; posterior anepimeror and katepimeron pilose; notopleuron enlarged and produced posteriorly; cell R1 closed and petiolate; male holoptic; veir M2 absent
	Face with only a medial tubercle; poterior anepimeron and katepimeron bare; notopleuron simple, not enlarged; cell R1 open, without petiole; male dichoptic; vein M2 present
47 .	Frontal prominence absent or much shorter than scape Sphiximorpha Frontal prominence present, at least as long as scape 48
48 .	Vein R4+5 with a spur into cell R4+5; abdomen not petiolate. Vein R4+5 without a spur; abdomen petiolate Monoceromyia
49. 	Cell R1 petiolate, closed before reaching wing margin 59 Cell R1 open to wing margin
50.	Vein M1 recessive anteriorly (Fig.). Anepisternum with anterior flattened portion pilose

**	Switch back for the Eumerines
	Vein M1 usually processive anteriorly (Figs). If slightly recessive, then cell R2+3 petiolate. Anepisternum bare anteriorly
51	Metasternum bare. Scutellum with apical flatten rim
	"Mallota" aptero
52	Metacoxa with long ventral "spurs;" scutellum with an apical flatten rim
	riecacoxa wichout spars, seateriam wichout apiear rim
53	Metafemur swollen, with a large apicoventral triangular plate without distinct anterobasal setulae (Fig.); metasternum with a basal membraneous seam. Male holoptic, face carinate (Fig.). Female face concave
***	switch back for the tropidines
	Metafemur without apicoventral plate, with anterobasal patch of short dense black setulae; metasternum without a seam. Male holoptic or dichoptic, face tuberculate. Female face tuberculate or straight
54	Eye pilose. Katepimeron bare Mallot
	Eye bare
55 	Katepimeron bare
56	Metabasitarsis without specialized pile; male dichoptic; vein R4+5 only slightly sinuate
	Metabasitarsis with globuliferous pile basoventrally; male holoptic; vein R4+5 strongly sinuate
57	Scutum with pale pollinose vittae; male genitalis never greatly enlarged (Widespread Old World tropics)
	Scutum without pollinose vittae; male genitalia usually greatly enlarged (Madagascar only) Vadonimyi
58 	Wing entirely microtrichose Lejopa Wing partly bare on basal 1/3 Mallota
59 	Anepimeron with dorsomedial (triangular) portion bare 60 Anepimeron with dorsomedial portion pilose 60

60	Wing densely and uniformly microtrichose on apical half. Small (about 7 mm), metallic green flies
	Wing bare or sparsely microtrichose; not metallic flies, larger (more than 10 mm)
61	Metafemur thickened, distinctly arcuate; metatibia strongly compressed and carinate on basoventral 1/3; eye bare or very finely pilose dorsally, with pili no longer than ommatidial diameter; male metatrochanter with ventral patch of short stiff black setulae
	Metafemur at most very slightly thickened, not arcuate; metatibia not carinate nor compressed ventrally; eye usually densely pilose, with pili much longer than ommatidial diameter; male metatrochanter simple62
62	Eye punctate
63 	Katepimeron bare
64	Eye pilose; meron bare posteroventrally, without pile anterior or ventral to metathoracic spiracle; arista pilose; wing bare; male holoptic
65	Arista bare; wing microtrichose on apical half; precallar depression bare or with at most a few pili mesially; male holoptic
	Arista pilose, with short to moderately long pili; wing at least bare apicoposteriorly; precallar depression with many stiff pili posteriorly
66	Front with strongly rugose area dorsal to antenna; male holoptic
67 	Eye pilose
68	Male metafemur slender, with apicolateral ventral spur near apex;
	Male metafemur enlarged, with basolateral tubercle
69	Metatibia not compressed nor carinate; wing bare apically
	Metatibia compressed and carinate on basoventral 1/3; wing

	usually microtrichose on apical 1/3 or more
70	Metafemur greatly swollen; cell R1 bulbous apically; of dichoptic
71. 	Vein R4+5 without an appendix
72.	Basoflagellomere greatly elongate, 4 or more times longer than scape, narrow, 6 or more times longer than broad; scutellum unarmed
73 . 	Abdomen petiolate; 2nd segment elongate, narrower medially than basally or apically
74.	Scutum and scutellum joined at blunt angle of approximately 120 degrees; scutellum with posterior corner developed into massig pointed cones [Madagascar only]
75 . 	Scutellum rounded apically or with simple spines or concial projections [Widespread]
76.	Basoflagellomere covered with long pile in male; arista reduced, short, thick style; scape long
**	Male Ceratrichomyia behara Seguy will key to Ptilobactrum; female has a normal arista, normal (bare) basoflagellomere, but scape is long as in Ptilobactrum.
77 .	Male holoptic

Notes on key:

The critical point that workers should note is that this is an identification key to the distinctive groups of adult flower flies. These groups may be genera, subgenera or just species groups. Their inclusion within the key does implied a particular taxonomic rank. For example, the group Pogonosyrphus is included, where as Hippa (1990) only recognized this as the arnoldi species group. A position we accept.

The first 6 couplets breaks the syrphids into more or less higher

- #1 separates out the Syrphinae (minus pipizines)
- #2 separates out the cerioidines
- #3 separates out the eristalines plus those other groups (some eumerines & milesiines) which have R4+5 sinuate; there is a switch back at couplet #50 for the eumerines.
- #4 separates out the volucellines. In north temperate areas, such as the Holarctic as well as the North Neotropics, this couplet would also take out the sericomyines and a few rhingiines (Cheilosia groups). But as far as I (FCT) am aware there are none of these groups in the Afrotropics.
- #5 separates out the Microdontines. The postmetacoxal bridge is the best character, but it is a difficult one for beginners to use. So, I (FCT) have used the antennal character first. Also, I (FCT) need to check to see whether there are microdontines in the Afrotropics with pilose eyes, and what are the associated characters with those Afrotropical microdontines which have short antennae.

Instead of the standard couplet (my former #6) which I (FCT) used in previous Nearctic (Vockeroth & Thompson 1987), Palaearctic (Thompson & Rotheray 1998) and Neotropical (Thompson 1999) keys to separate the Rhingini, Brachyopini from the higher Milesiini, I just separate them individually. So, given that the Afrotropical fauna has so few rhingines and brachyopines, this works well.

To do:

We need to score all "Baccha" species for facial color, thoracic pile patterns (especially postpronotal pile (I (FCT) don't think any Afrotropical species has postpronotal pile but there are a few Oriental species which do).

Eye pile needs to be check for all Eumerus, Chrysogaster and microdontines (see above).

Eye pile needs to be check for all Afrotropical Mallota. I have keyed the genus both ways, but ...

Sinuate vein R4+5. the status of *Tropidia*, *Milesia*, etc., needs to be check. Along with this character, the metafemoral basoventral setal patch also needs to be checked.

Borrows:

- I (FCT) also need to get Megodon stuckenbergi (HT) and some material of Hovamicrodon silvester.
- I (FCT) do not know NOW what Microdontine groups should be recognized as genera, etc., but as an IDENTIFICATION key, those groups which are distinctive, I feel they should be included, if only with "quotes" around there names (=paraphyletic or causing paraphyletic parents).

Wants:

We (USNM) need to get vouchers of Meromacroides and Afrotropical Lejops.

New genera

- 1) Dick Vockeroth's new melanostomine genus. Dick told me years ago that Melanostoma infuscatum Becker represented a new genus as it did not have the typical reduced metasternum of Melanostoma and the male genitalia was also distinctive.
- 2) Years ago, Mario Bezzi admitted that his "Senaspis" apophysata do not properly belong to that genus and needed its own genus. Dick and I agreed.
- 3) Dick Vockeroth when we (FCT & Vockeroth) worked out the World Eristalines (sensu stricto) came to slightly different conclusion on what warranted generic rank. He felt that the Afrotropical species of Eristalis (Eoseristalis), such as plumipes Bezzi, deserved generic rank.

ALL of these three should be addressed as they do represent morphologically distinctive groups.

- 4) then there is "Xylota" hancocki, the only Afrotropical xylotine (sensu stricto) which has a pilose metasternum. I (FCT) am not happy with Hippa's (1978, 1985, 1985a) treatment of Hovaxylota Keiser. At best it should be ranked as a subgenus of Xylota, but when one looks at the aedeagii of the included species, one wonders whether the group is even monophyletic. So, the question is whether we should give a name to this atypic species or not. Future research will undoubted show that it is a distinctive group. Then the question of rank will remain.
- 5) Likewise, "Mallota" aptera Bezzi is atypical and distinctive from the other Afrotropical "Mallota." But then again Afrotropical "Mallota" are quite different from the Palaearctic type-species of Mallota (Syrphus fuciformis Fabricius). So should we simply go ahead and name a new group for aptera, knowning eventually when Mallota, sensu lato, is revised, this group will be recognized?
- 6) As I (FCT) indicated in my recent Microdontine paper, at least "Pseudomicrodon" illucens Bezzi is quite different from the true Pseudomicrodon, which is a restricted Neotropical endemic. So, should we name it? Or wait until Menno Remeer does it?