A revised key to European species of the genus *Lonchaea* Fallen.

Key to the European genera

1. Poststigmatal setae present on anterior marginal area of the anepisternum directly above and slightly posterior to the anterior thoracic spiracle…… DASIOPINAE …… ***Dasiops*** Rondani
- Poststigmatal setae absent …… LONCHAEINAE ……. 2

2. Lunule bare, antennal flagellomere at most not much longer than it is deep ……. EAROMYINAE ……. 3
- Lunule setulose, antennal postpedicel usually significantly longer than it is deep. ……. LONCHAEINI …….. 5
3. Scutellum entirely bare apart from the 4 marginal setae .....…. ***Proteromyia*** McAlpine
- Scutellum with additional setulae on margin between the 4 strong setae …….. 4

4. Margin of scutellum with setulae anterior to the lateral setae. Proepimeron with several setulae. Anterodorsal setae of the anepisternum weak or absent. Genae and parafacials wide. Calypteres with whitish margins and fringes ……. ***Chaetolonchaea*** Czerny
- Margin of scutellum bare anterior to the lateral setae, genae of normal width (except in a few cold adapted *Earomyia*), eyes usually bare or short pilose. Male terminalia; surstyli never with prensisetae, body colour black to metallic, eyes bare to short pilose, Legs; t1 black to yellow. Cerci small, upright square or triangular extending posteriorly from the shell of the epandrium. Phallus usually a simple tube, without ornamentation. Body colour metallic green-blue to black, arista usually bare. ……. ***Earomyia*** Zetterstedt and ***Lamprolonchaea*** Bezzi *

5. Katepisternum with two strong setae. Male genitalia; surstylus with an organised row of prensisetae located either on the inner surface or on a basal plate, otherwise inner surface bare of setae, ventral margin usually simple.....***Silba*** Macquart

- Katepisternum almost always with only 1 distinct strong seta. Male genitalia; surstylus without an organized row of prensisetae as above, inner surface always bearing setae or setulae, ventral margin often corrugated, extended or modified into spines or processes, ... ***Lonchaea*** Fallén

Lonchaea Fallén

The key is primarily intended for the identification of males whose identity can be confirmed by examination of the male terminalia. The key can also be used to a certain extent to determine females - but there are some species groups such as the *L. mallochi* group it is not yet possible to satisfactorily determine the females.

Measurements of wing length and postpedicel are approximate and may vary slightly between individuals. Chaetotaxy also varies to a certain extent and individuals may be encountered which differ slightly from the descriptions provided here.

1. *Eyes*; distinctly hairy, setulae longer than width of an ommatidium ……..… 2
– *Eyes*; bare or practically bare ...…….…….... 9

2. *Anterior genal setae*: forming a single row along mouth margin (Fig. H) ……... 3
– *Anterior genal setae*: in multiple rows or widely spread. (Fig. G) …… 4

3. *Legs;* tarsomeres brownish yellow. *Wing;* Intercostal section (Fig. P) greatly exceeding maximum width of costal cell, costa bare. *Proepimeron;* with 4-5 setulae. *Male terminalia* (Fig. 1) Surstylus projecting ventrally beyond shell of epandrium for most of its length, inner surface stoutly spinose, phallus bi-segmented, distiphallus slightly sinuous and ~equal in length to basiphallus. *Female aculeus,* apical segment without very long setae situated half way along dorsal surface. …….. ***hirticeps*** Zetterstedt
– *Legs;* all tarsomeres black. *Wing;* Intercostal section of wing ~ 0.5x maximum width of costal cell, costa usually bearing numerous small black spinules. *Proepimeron;* usually with >5 setulae. *Male terminalia;* Surstylus projecting posteriorly beyond shell of epandrium as a finger-like process, phallus bi-segmented, distiphallus almost straight and longer than basiphallus (Fig.2). *Female aculeus*, apical segment with a pair of very long setae situated half way along dorsal surface. ……..…… ***corusca*** Czerny

4. *Legs;* all tarsomeres entirely black dorsally and ventrally …. … (*fraxina* species group) …….…… 5
– *Legs;* at least some tarsomeres yellow or brown (Fig. M) (*check carefully under t1 of hind leg*) 8

5. *Male terminalia;* Surstylus; inner surface with a distinct row of strong setulae parallel to the ventral margin (Figs. 3, 4) 6
– Male *terminalia;* Surstylus; inner surface with scattered setulae (Figs. 5, 6) 7

6. *Male terminalia;* Surstylus; inner surface with strong setulae forming a single row of ~ 6, a small spiculate rounded process lying anterior to these (Fig. 3). Both sexes - *Proepimeron*; usually with 2 setae. *Scutellum;* disc bare. *Wing;* intercostal space length to depth ratio ~3:1 ..... ***angelina*** MacGowan
– *Male terminalia;* Surstylus; inner surface with a double or triple row of 14- 20 strong setulae, no spiculate anterior process (Fig. 4). Both sexes - *Proepimeron;* usually with > 3 setae. *Scutellum;* disc usually setulose. *Wing;* intercostal space length to depth ratio in range of 4-6:1 .....***fraxina*** MacGowan & Rotheray.

7. *Male terminalia;* Surstylus; inner surface with only a few scattered setulae, no anterior setulose raised area. *Phallus*, basal section distinctly broader than apical section (Fig.5). Both sexes - *Proepimeron*; with 1 or occasionally 2/3 setae. *Wing;* Intercostal section length to depth ratio in range of 2.8-3.3:1 ..... ***iona*** MacGowan.
– *Male terminalia*; Surstylus; inner surface with 20-30 scattered setulae, a finely setulose raised area lying anterior to these (Fig. 6). *Phallus*, basal section only slightly wider than apical section (Fig.). Both sexes - *Proepimeron*; with 1 or occasionally 2 setae. *Wing;* Intercostal section length to depth ratio 2 :1. *Eyes*: can be bare (see couplet 13). .....***spicata*** MacGowan.

8. *Legs;* only t1 orange-yellow ventrally (Fig. M). *Proepimeron*: ~20 setulae. *Notopleural depression*; setulose. *Postpedicel*; length to depth ratio 1.7: 1. *Wing*; length 3.8mm. Face and parafacials intensely silvery-grey. *Male terminalia*: *Surstylus* extending posteriorly as two rounded processes. *Phallus*, basiphallus narrowing from base to apex. (Fig.7)…….. ***albigena*** Collin
* *Lonchaea mamaevi* Kovalev, 1973 fits in here - it has lighter brownish pollinose genae (Russian far east).

– *Legs;* Usually t1-3 yellow, t4 dusky, t5 black. *Proepimeron*: ~ 6 setulae. *Notopleural depression*; bare. *Wing;* length 3.0mm. *Postpedicel*; length to depth ratio 1.6: 1. *Male terminalia, Surstylus* hardly extending posteriorly from shell of epandrium. *Phallus*; basiphallus parallel sided (Fig. 8). …….. ***nitens*** (Bigot)

9. *Anterior genal setae:* multiserial (Fig. G) …….……...…….... 10
– *Anterior genal setae*: forming a single row along mouth margin (Fig. H) …….. … 18

10. *Proepimeron*: usually only 1 seta. (Fig. K) …….…….. 11
– *Proepimeron*: with a few well developed setae / setulae (Fig. J) …… (*patens* species-group) ..…… 15

11. Males - *Legs:* Hind femora without long anterodorsal setae. *Male terminalia*: cerci not greatly elongated (widespread species) …… 12
– Males - Legs: Hind femora with several long anterodorsal setae on apical half. *Male terminalia*: cerci elongated, >2x height of epandrium (Figs. 11 & 12) (Mediterranean area only) ……..…. 14

12. *Legs:* t1 orange-yellow or brownish – yellow in contrast to dark apical segments. *Anterior genal setulae*; partly multiserial. *Postpedicel*; entirely black, length to depth ratio 2.0-2.4:1. *Wing*; length 3.5mm. *Calypteres*, smoky-grey. *Male terminalia*; *Cerci* diamond- shaped, *Epandrium* with a median bulge, *Surstylus*; protruding ventrally, inner surface covered with dense short setae. *Phallus;* small, not segmented, a simple J-shape (Fig. 9) ……..…….. ***tarsata*** Fallén
– *Legs:* completely black. *Male terminalia*: Phallus bi-segmented. (Figs. 6, 10). *Postpedicel*; length to depth ~2.0:1. …….. 13

13. *Male terminalia*: *Surstylus;* projecting posteriorly from shell of epandrium as a pointed triangular process, ventral margin partly serrate. *Phallus*; basiphallus rather straight, distiphallus only slightly recurved apically (Fig. 10). *Proepimeron*; usually with 2 setae. (AGS can also be considered uniserial) ……
…… s***telviana*** MacGowan
– *Male terminalia*: *Surstylus;* projecting posteriorly from shell of epandrium as a rounded process, numerous strong setulae extending beyond the ventral margin. *Phallus*; basiphallus obviously curved, distiphallus more substantially recurved apically (Fig.6). *Proepimeron*; with 1 or occasionally 2 setae. *Eyes*; occasionally setulose (see couplet 7 above) ..... ***spicata*** MacGowan.

14. Males: *Legs;* Anterior leg with t1 longer than tibia. Hind tibia with small ventral swelling covered in short, dense setulae on basal third, Mid tibia without a fringe of long posterior setae. *Male terminalia;* surstylus contained within shell of epandrium, *Phallus;* bi-segmented, basiphallus and distiphallus long and sinuous (Fig. 11)……..… ***longitarsis*** MacGowan (Israel)
– Males: *Legs;* Anterior leg with t1 of normal length. Hind tibia without small ventral swelling Mid tibiae apically with a fringe of long posterior setulae. *Male terminalia*; surstylus projecting ventrally from shell of epandrium as a broad rounded lobe. *Phallus;* only partially bi-segmented, basiphallus and distiphallus relatively broad, not sinuous (Fig. 12) …… ***setifemora*** MacGowan (Spain, S. France)

15. *Legs;* Tarsomeres almost entirely dark, at most t1 of hind leg brownish ventrally (Fig M). *Proepimeron*; 1 well developed seta and a few weaker setulae. *Scutellum*; a few setulae present on disc. *Male terminalia; Surstylus* extending ventrally from shell of epandrium as a large spiculate lobe. *Phallus* with 2 serrated lateral processes (Fig. 13) ……. ***hyalipennis*** Zetterstedt
- *Legs;* Tarsomeres obviously yellow/ orange. *Male terminalia*: not as above ……. 16

16. *Scutellum*; setulae present on margin anterior to lateral setae (Fig. D). ……..……. 17
– *Scutellum*; without setulae on margin anterior to lateral setae (Fig F). *Proepimeron*; with ~4 setulae. Orbital plates: with several setulae. Legs: t1+2 yellowish, t1 of fore tarsi strongly darkened and ventral fringe of setulae dark. *Male terminalia;* phallus; distiphallus strongly curved apically (Fig. 14). Wing length 4.1mm ……..… ***vagans*** Kovalev

17. *Proepimeron*; with up to 7 setulae. *Legs;* t1 and t2 yellow. t1 of fore tarsi with ventral fringe of setulae golden. *Anterior genal setae*; obviously multiserial. Orbital plates; with several setulae *Male terminalia;* Cerci; almost as large as epandrium. *Phallus*; distiphallus almost straight (Fig. 15).
…… . . ***patens*** Collin
– *Proepimeron*; with ~12 setulae. *Legs;* only t1 yellow. *Anterior genal setae;* only partly multiserial. *Orbital plates;* with 1 setula, this more than 0.5x as long as orbital seta. *Male terminalia*; Cerci; much smaller than

epandrium, *Phallus*; distiphallus sinuous (Fig.16). *Frons*; male densely covered in long black setulae ~0.75x length of orbital seta …….. ***germanica*** MacGowan

18. *Legs;* Tarsomeres entirely black ……...……...….... 19
– *Legs;* Tarsomeres partly pale or brownish**, *check ventral surface of t1 of hind leg!*** (Fig. M) ….. 31

19 *Calypteres*; fringe pale .....…… ……..…….…… 20
– *Calypteres;* fringe darkened. *(**check for post-stigmatical setae! These species can be confused with *Dasiops spp.***) . .. …… 29

20 *Katepisternum*; several setulae located posterior to the strong seta. *Antennae; postpedicel*; entirely black, 2x as long as deep. *Male terminalia*; *Phallus*, basiphallus broad, slightly shorter than distiphallus, distiphallus, a broad slightly bent tube with a slightly flared apex (Fig.22) ……... ***chorea*** (Fabricius)
– *Katepisternum*; no setulae posterior to the strong seta, *Male terminalia*; not as above ……. 21

21. *Male terminalia;* epandrium ≥2x as high as wide (Figs. 17&18) ……..… 22
– *Male terminalia;* epandrium <2x higher than wide (Figs. 19&20) ……. 23

22. Larger species *Wing*; length 4.5mm, membrane can be yellowish anteriorly and basally. *Male terminalia;* epandrium: 2.5x as high as broad with a long, slender anterior projection. *Phallus;* distiphallus 3.5x length of basiphallus (Fig. 17). *Antennal postpedicel*; obscurely orange on inner medial base, ratio of length to depth 1.6 – 1.9:1. *Lunule;* base colour dull orange brown. …… ***carpathica*** Kovalev
– Smaller species *Wing*; length 3.25mm, *Male terminalia;* epandrium, height 3.5x its width, without a long anterior projection. *Phallus*; distiphallus < 2.5x as long as basiphallus (Fig. 18). *Antennal postpedicel*; black, ratio of length to depth 1.5 – 2.0: 1. *Lunule;* base colour black. ……. ….. ***contraria*** **Czerny**

23. *Male terminalia*; *Surstylus*; with a postero-ventral process which extends well beyond margins of epandrium (Fig. 2 & 19) …… 24
– *Male terminalia* (Fig.); Surstylus; without projecting postero-ventral processes. ……. 25

24. *Proepimeron*; >1 seta. *Orbital plate*; setulae present in addition to orbital seta (Fig L). *Antennal postpedicel*: ~ 1.8x longer than deep. *Male terminalia; Phallus*; distiphallus tube-like, long and straight (Fig. 2) …… ***corusca*** Czerny (see also couplet 3)
Proepimeron; with 1 seta. *Orbital plate*; without additional setulae. *Antennal postpedicel*: ≥ 1.8x longer than deep. *Male terminalia*; *Phallus*, distiphallus very short, almost square (Fig. 19)
…….. . ***postica*** Collin

25 *Male terminalia*; *Phallus*; bi-segmented, distiphallus large and broad, similar in size to basiphallus. *Surstyli:* inner surface covered in fine setulae, antero-ventral angle with ≥8 strong setae in a loose double row, ventral margin also bearing a marginal row of strong setae (Fig. 20). *Antennal postpedicel*; 1.7x longer than deep, black apart from an obscure orange area at medial base …… ***baechlii*** MacGowan
– *Male terminalia;* Phallus; not segmented - or if so distiphallus long and slender (Figs. 22-25) ……. 26

26 *Male terminalia*; *Surstylus*; with an obvious notch on ventral margin, Phallus; a very simple U-shape. *Scutellum;* setulae usually present on scutellar margin between apical setae (Fig. 23). *Antennae*; *postpedicel*: narrow orange band on medial base. *Wing*; length 2.8mm …….. ***contigua*** Collin
– *Male terminalia:* Surstylus not extending ventrally beyond epandrium, phallus with small teeth or serrations *Scutellum;* usually no setulae on scutellar margin between apical setae, (Figs. 24-25);
…...……..…… 27

27. *Lunule*; ground colour orange- brown. *Male terminalia;* Phallus long and slender with only a few small spicules basally (Fig. 24). *Female terminalia* – apical segment with dorso- basal pair of setulae >0.5x as long as the segment, usually black …….. ***caucasica*** Kovalev.
– *Lunule*; ground colour blackish. *Wing*; length ~3.2mm. Anepisternum, anterior to anterior row of setae brightly polished. *Male terminalia;* Phallus short, broadened at base with obvious serrations along its length (Fig. 25) *Female terminalia* – apical segment with dorso- basal pair of setulae at most 0.5x as long as the segment, often white.…….... ……. . ***limatula*** Collin

28. *Proepimeron;* ≥2 setae. …….. *29*
Proepimeron; with 1 seta. *Katepisternum*; with 1 seta. *Male terminalia*; Phallus; basiphallus relatively narrow, distiphallus either straight or very short ……. 30

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29 *Proepimeron;* with several setae, *Katepisternum*; 1 seta. Wing; costa usually bearing numerous small black spinules. *Male terminalia; Phallus*; distiphallus tube-like, long and straight (Fig. 2) …….. ***corusca*** (bare-eyed form)
Proepimeron; with at most 2 setae. *Katepisternum*; with 1, occasionally 2 setae. *Wing*; costa bare. *Male terminalia; Phallus*; basiphallus broad, distiphallus thinner and shorter, S – shaped (Fig 26)…… ***kapperti*** MacGowan

30 *Orbital plate*; bare apart from the orbital seta. *Antennal postpedicel*; >1.5 x longer than deep. *Wing;* clear, intercostal section (Fig P) less than twice length of cross vein r-m. *Male terminalia;* phallus with distiphallus almost straight, as long as basiphallus. *Female aculeus:* Apical segment with 1 pair of long, strong dorsal setae situated mid-way along the segment (Fig. 27) ……. ***sylvatica*** Belling
– *Orbital plate*; with 1 or more setulae in addition to orbital seta, (can be absent in some females). *Antennal postpedicel*; <1.5x as long as deep. *Wing*; length 3.4mm; light fumose especially in males, intercostal section (Fig P) >2x length of cross vein r-m. *Male terminalia*; phallus; distiphallus sinuous but very short. *Female aculeus:* Apical segment without medial dorsal setulae, longest dorsal setulae situated basally. (Fig. 28) .. …… ***deutschi*** Zetterstedt
(Note: *L. obscuritarsis* will key out here if the dark brown t1 is not noticed)

31 *Palps*: large and long, projecting far beyond front margin of mouth (Fig.29). *Legs;* t1-4 bright yellow, t5 contrasting black. *Calypteres*; fringe yellowish. *Male terminalia*; Phallus bi- segmented (Fig. 29). ……..... ***palposa*** Zetterstedt
– *Palps;* of normal size .....……..….. 32

32 *Calypteres*; fringes white or yellowish ……..……..… 33
– *Calypteres;* fringes brown to black ……. 52

33 *Calypteres;* fringe containing a distinct group of longer setulae. *Legs;* t1-t4 yellow, t5 slightly darkened dorsally. *Antennal postpedicel*; usually broadly orange on medial base. *Male terminalia;* epandrium as wide as high, phallus; bi-segmented, basiphallus rather rectangular, distiphallus shorter than basiphallus (Fig. 30) ……..……..… ***collini*** Hackman
– *Calypteres;* fringes of uniform length ……..……..……... 34

34 *Proepimeron;* with several setae / setulae (Fig. J) … (peregrina sub group).…… 35
– *Proepimeron;* usually only 1 seta (Fig. K) ……..…. 41

35 *Orbital plate*; bare, rarely (*L. palpata*) with 1 or more setula in addition to orbital seta …..… 36
– *Orbital plate*; with ≥1 setula. (Fig. L) ……...…… 39

36 *Antennal postpedicel;* entirely black, ≥2.5x longer than deep. *Proepimeron; w*ith 2-3 setulae. *Wing;* often with spicules present on costal vein. *Scutellum;* a multiserial row of 8-10 setulae between lateral and apical setae, some of these extending slightly onto the disc, ≥2 short setulae between apical setae, no setulae present anterior to the lateral setae. *Male terminalia*: *Epandrium*; wider than high. *Phallus* bi-segmented, distiphallus strongly sinuous (Fig. 32)
(Note: specimens from southern Europe and some females may not have costal spicules or so many marginal scutellar setulae) …… ***bukowskii*** **Czerny**
- *Antennal postpedicel*; orange / rusty on at least medial base …….……. …..37

37. *Anepimeron;* (below wing base) with 1-5 setulae. …….. *38*
Anepimeron; bare. *Antennal postpedicel*: 1.75 - 2.1x as long as deep, rusty colour on ventral medial

margin not extending to half its length. *Legs;* t1 yellow, t2 more or less darkened dorsally especially on the fore legs; t3 – t5 becoming darker. *Male terminalia*; basiphallus very deep and somewhat rectangular, distiphallus; a broad tube ~ as long as basiphallus (Fig. 31) …… ***palpata*** Czerny

38 *Wing;* costal vein usually with several small black spicules. *Antennal postpedicel*; orange rusty colour on medial surface confined to base. *Scutellum*; marginal setulae usually forming an irregular multiserial row, usually >4 setulae between apical setae. *Legs*; t1-3 yellow. *Male terminalia*; Epandrium wider than long. *Phallus*; basiphallus tube – like, distiphallus; as broad as apical part of basiphallus, ~ 0.6x length of basiphallus (Fig. 33) ……..…… ***hackmani*** Kovalev

\- *Wing*; costal vein without spicules. *Antennal postpedicel*; orange rusty colour on ventral medial margin extending more than half way along its length. *Scutellum*; marginal setulae usually forming a uniserial row, <4 setulae between apical setae. Legs*;* t1-2 yellow, t3 -5 dark. *Male terminalia;* Epandrium square shaped. *Phallus*; basiphallus deeper and more rounded in shape, distiphallus; a narrow tube ~ length 0.3x depth of basiphallus (Fig. 34) …….... ***peregrina*** Becker

39 *Scutellum*; margin without additional lateral setae anterior to usual lateral setae *Legs;* t1 yellow on dorsal surface. …….. 40

– *Scutellum*; margin with additional setae anterior to lateral setae *Legs;* t1 darkened dorsally. (Fig M). *Proepimeron*; with numerous thin setulae. *Orbital plate*: with 1+ setulae in addition to the orbital seta. *Antennal postpedicel*; black, 2x as long as deep. *Legs:* tarsi obscurely brown, t1 especially those of hind leg yellowish ventrally. *Male terminalia*; most similar to *L. bukowskii* but basiphallus not bent apically (Fig. 37)…… . ***ragnari*** Hackman

40 *Antennal postpedicel;* usually entirely black as are pedicel and lunule. *Abdomen;* 1st sternite with setulae on at least lateral margins. *Male terminalia*; distiphallus very short. (Fig. 35) …. ***subneatosa*** Kovalev

– *Antennal postpedicel:* usually orange brown on medial base. Lunule and pedicel orange brown? *Abdomen;* 1st sternite bare. Tarsomeres rather brownish. *Orbital plate*; setulae present or absent. *Male terminalia*; phallus rather angular basally. (Fig. 36)…….…….. . ***freyi*** Czerny

41 Large species wing length ≥ 5.0 mm. *Anepimeron*; (below wing bases) with 1 - 2 long setulae. *Legs;* t1 yellow, t2 of hind leg dark yellow with black setulae as a result appearing darkened above, remainder black. Male terminalia; epandrium 2x higher than wide, phallus bi-segmented both parts rather short and wide (Fig. 38) …… ***xylophila*** Kovalev

– Smaller species wing length < 5.0 mm *Anepimeron*; bare. ……. 42

42 *Orbital plate*; ≥1 setulae in addition to the orbital seta (Fig. L)…… 43

– *Orbital plate*; usually bare (occasionally 1 present on one side) ……..……. ... 46

43 *Scutellum;* margin between apical setae bare (occasionally 1 or 2 tiny setulae in this position). *Legs;* t1+2 yellow. *Antennae;* pedicel and medial base of antennal postpedicel orange (sometimes obscurely so); postpedicel 1.15x longer than deep. *Male terminalia*: inner surface of surstylus with a rather angular posterior projection. *Phallus*; distiphallus long, thin and sinuous. (Fig. 39). *Female aculeus* apical section with 2 very long, pale dorso-basal setulae ……..... ***zetterstedti* Becker**

– *Scutellum;* Setulae present between the 2 apical setae. ……..……..….. 44

44 *Antennae*; entirely black. *Parafacials;* (between eye margin and face) almost linear. *Male terminalia;* distiphallus slender and sinuous, without spicules (Fig.40) ……..…….... ***defecta*** McAlpine

– *Antennae*; pedicel and medial base of postpedicel usually conspicuously orange brown. Parafacials*;* broader and widening. ……..… 45

45 *Katepisternum;* several setulae posterior to the strong seta. *Scutellum*; disc bare, marginal setulae multiserial and encroaching on the margin of the disc. *Male terminalia;* distiphallus covered with scale-like spicules. (Fig. 41) ……..…….... ***ipsiphaga*** McAlpine

– *Katepisternum;* without setulae posterior to the strong setae. *Male terminalia*; distiphallus, without spicules, strongly broadened basally. (Fig. 42) ……..…..…. ***seitneri*** Hendel

46. *Antennal postpedicel;* rust-red on medial base. ……..…. 47

– *Antennal postpedicel;* entirely black ……..…….. 48

47. *Antennal postpedicel;* length to depth ratio 2.6:1. *Legs;* t1-3 and often base of t4 clear yellow. *Male terminalia*; epandrium as high as wide, surstylus without greatly serrated ventral margins Phallus; obviously bi-segmented, distiphallus basally with flange-like lateral processes (Fig. 43) …….. ***lateralis*** MacGowan

Antennal postpedicel; length to depth ratio 1.35-1.4 :1, Legs*;* t1-2 and occasionally base of t3 clear yellow. *Male terminalia*; epandrium almost 2x as high as wide, posterior margin slightly angular. Surstylus with serrated ventral margins. Phallus: not or only partially segmented, distiphallus without lateral projections, almost a straight tube with a flared apex. (Fig. 44) ……. ***nitidissima*** Kovalev

48. *Legs;* Tarsomeres entirely pale. *Abdomen:* 1st sternite with a few setulae on margins. Lunule; orange brown. Postpedicel; black, length to depth 1.6: 1. Wing; length 3.2mm. *Male terminalia*; Phallus; distiphallus longer than basiphallus, not broadened significantly at apex. No "ligament" visible. (Fig. 45) …….. ***fugax*** Becker

– *Legs;* At least apical tarsomeres darkened. …….. 49

49. *Male terminalia*; Epandrium ≥2x higher than wide. *Legs*; t1 yellow with remaining segments darkened especially dorsally. Phallus; partly separated, distiphallus as long as basiphallus, markedly broadening towards apex, basal section with an obvious "ligament". (Fig. 47) *Wing;* length 3.2mm. *Postpedicel*; black, length to depth 2.0 : 1. ……***scutellaris*** Rondani

- *Male terminalia*; Epandrium at most 1.5x higher than wide. …….. 50

50 *Legs;* t1 clear yellow *Male terminalia*; Phallus; divided into several apical processes. (Fig. 48) *Katepisternum*; strongly polished blue black on disc. Male frons wider than depth of antennal postpedicel……. ***bruggeri*** Morge

- *Legs;* t1 dull orange or darkened dorsally ……. 51

51. Epandrium, Not higher than wide (0.9:1). *Legs;* entirely black apart from t1 of mid + hind legs which are dull brown ventrally. *Antennal postpedicel;* ~1.7x as long as deep. *Katepisternum:* usually with no setulae posterior to the setae. Scutellum; setulae present between apical setae. *Male terminalia*; phallus bi-segmented, distiphallus straight with apex flared as long as basiphallus (Fig. 21) ……..… ***difficilis*** Hackman

- *Epandrium,* Higher than wide (1:0.7). *Legs;* t1 usually dull orange. *Antennal postpedicel* 1.5-1.75x as long as deep. *Katepisternum*; 1-3 setulae located posterior to the strong seta and sometimes above it. Scutellum; 0 setulae between apical setae. *Male terminalia*; phallus bi-segmented, distiphallus slightly thicker than in *L. difficilis*. (Fig. 46) ……..……. ***krivosheinae*** Kovalev

Dark fringe group

52 *Scutellum*; at least several setulae located on disc ,.……..…..…53

Scutellum; disc bare, in some cases a <u>few</u> setulae may be present just above the level of the marginal setae, …… ……..… 56

53 *Proepimeron*; usually with 1 setula (rarely 2). *Legs;* t1 obscurely brown, others dark. *Orbital plate*; setulae present in addition to orbital seta. *Interfrontal setulae*: almost as long as the orbital seta. *Katepisternum;* Usually no setulae posterior to strong seta. *Antennal postpedicel;* entirely black, 2x as long as wide. *Wing*, intercostal section ~3 x as long as cross vein. *Male terminalia*; Surstylus with a pointed, slightly hooked posterior projection. Phallus; distiphallus sinuous along entire length (c.f *L. helvetica*) (Fig. 49) …… . ***obscuritarsis*** Collin (females can have few setulae on the scutellar disc)

– *Proepimeron*: with more than 1 setula ……..……..……..54

54 *Proepimeron*; with a group of ~12 setulae. Anterior genal setae can be partly multiserial. *Orbital plate;* with 1 or more setulae in addition to the orbital seta. *Wing;* intercostal section ~3x as long as cross vein. *Antennal postpedicel*; ~1.5x as long as deep, entirely black. *Notopleuron*: setulae present in addition to the 2 setae. *Male terminalia*; cerci small and little developed. (Fig. 50) ……. ***germanica*** **M**acGowan

- *Proepimeron*; with usually at most 6 setulae ……..…..…… 55

55 *Proepimeron*; with ~6 setulae. *Scutellum;* usually no setulae on margin anterior to lateral setae. *Male terminalia*; postero-ventral projection of surstylus rounded. Apical section of female aculeus without setulae half way along dorsal surface. (Fig. 51) ……...…… ***stackelbergi*** Czerny

– *Proepimeron*; with usually only 2-3 setulae. *Scutellum;* Setulae present on margin anterior to lateral setae.

Male terminalia; posterior-ventral projection of surstylus pointed. *Legs;* t1 obscurely yellow sometimes darkened above. (Fig. 52). *Aculeus:* apical section with a pair of small setulae half way along dorsal surface. ……. ***albitarsis*** (Zetterstedt)

56 *Legs*; t1-4 yellow, t5 obviously contrasting black. *Orbital plates:* bare apart from the seta. *Proepimeron*: with 1 setula. *Katepisternum*; no setulae posterior to the strong seta. *Postpedicel*; black, length to depth 2.0 : 1. *Wing* : length 4.0mm. *Male terminalia*; club- shaped posterior process of the surstylus almost as large as the cerci. Phallus; remarkably long and slender. (Fig. 53) ……. ***ultima*** Collin

– At least t4+5 darkened on dorsal surface …….....…. 57

57 *Proepimeron*: 1 setula. …… 58

– *Proepimeron*: ≥ 2 setulae. …… (*affinis* group) ……... 70

58 *Legs* at least some tarsomeres clear yellow …… 59

- *Legs;* tarsomeres obscurely yellow/brown. *Interfrontal* setulae; almost as long as the orbital seta. *Male terminalia*; Surstylus with a pointed, slightly hooked posterior projection. *Phallus*; distiphallus sinuous along entire length (c.f *L. helvetica*) (Fig. 49) …… …….. ***obscuritarsis*** Collin (*bare scutellum form)*

59 *Legs:* t1 orange-yellow in contrast to dark apical segments. (See couplet 9*)*……..… ***tarsata*** Fallen

– *Legs;* At least t1+2 orange- yellow …….....…… 60

60 *Orbital plate*; ≥1 setula in addition to orbital seta. *Antennal postpedicel;* 2.5x longer than deep, basal fifth orange on medial base. *Male terminalia*; *Phallus* only partly divided, distiphallus angular, basiphallus large and square (Fig. 54) ……..…… ***absenta*** MacGowan
Orbital plate; bare. ……..…… (*mallochi* group*)* ……. 61

61 *Male terminalia*; *Surstylus* projecting posteriorly from shell of epandrium as a pointed or rounded process …… 62

- *Male terminalia*; *Surstylus* without a posterior process, extending ventrally as a rounded lobe, inner surface covered with strong setae. *Phallus* bi-segmented, distiphallus short and broad. (Fig. 55) *Antennal postpedicel*; 2.5x as long as wide, entirely black. *Scutellum*; usually no setulae between apical setae, usually 2 on each side between the apical and lateral setae. *Legs;* t1+2 and base of t3 yellow, ventral surfaces covered in short black setulae …… ***iberica*** MacGowan

62 *Male terminalia*; *Phallus* not obviously bi- segmented ……..…… 63

- *Male terminalia*; *Phallus* in 2 distinct sections ……..….. 65

63 *Male terminalia*; *Phallus* a simple, thin U-shaped tube. *Surstylus* projecting ventrally from shell of epandrium as a large rounded lobe, projecting posteriorly as a thin recurved process. (Fig. 56) *Antennal postpedicel*; 2.75x as long as deep, entirely black apart from a rather obscure orange area on medial base. *Legs;* t1+ t2 clear yellow, t3-5 becoming darker apically ……. ***vikhrevi*** MacGowan

- *Male terminalia*; *Phallus* broader or more complex …….. 64

64 *Male terminalia*; *Phallus*; spiculate apically and with 2 lateral spiculate projections. Surstyli; projecting ventrally slightly beyond shell of epandrium, margin scalloped, bearing setulae, extending significantly as a pointed postero-ventral process which is almost half the height of the cerci. (Fig. 57) *Antennal postpedicel*; ~2.0x as long as deep, entirely black.
…….. ***bispicata*** MacGowan

- *Male terminalia*; Phallus very short and wide, distiphallus only partly attached to basiphallus, epandrium obviously much higher than wide (Fig. 58) ……. ***gorodkovi*** Kovalev

65. *Male terminalia*; Distiphallus sinuate at base, straight and slender apically (Fig. 59) *Antennal postpedicel*; black, slightly rust red at medial base, 2.6x as long as deep. *Legs;* t1+2 dark rust red, fore tibiae apically, t1 of anterior leg and t1+2 of posterior leg, ventrally densely covered with dark rust red setulae. ……. ***tenuicornis*** Kovalev

- *Male terminalia*; Distiphallus not as above ……. 66

66. *Male terminalia*; Distiphallus distinctly angular (Fig. 60) *Antennal postpedicel,* black, 2x as long as deep. *Legs*; t1 clear yellow, t2 obscurely yellow, other segments black.

…….. ***mallochi*** MacGowan & Rotheray
Male terminalia; Distiphallus sinuous …….. 67

67 *Male terminalia*; Distiphallus as long as or longer than basiphallus (Figs 61 & 62) *Antennal postpedicel; black* …….. 68
- *Male terminalia*; Distiphallus markedly shorter than basiphallus. (Figs 63 – 66) *Antennal postpedicel; orange* on medial base …… 69

68 *Antennal postpedicel*: > 2.5x as long as deep. *Male terminalia*; similar to *L. obscuritarsis* but distiphallus relatively straight on basal half. Surstylus extending ventrally beyond margin of epandrium, internal surface covered in small spicules, the ventral process long and with a recurved tip. (Fig. 62). Legs, t1+2 yellow ……..…. ***helvetica*** *MacGowan*
- *Antennal postpedicel:* length 2.4x depth. *Legs*: t1 yellow, t2 yellow ventrally but darkened dorsally. *Male terminalia*; Cerci rather elongate with a sclerotized club shaped lower portion, long setulae at apex and an upper membranous area. *Surstylus* ventrally with marked serrations on margin, Postero-ventral projection extending as an irregularly shaped triangular process, a small inner process just visible (Fig. 61) …… ***serrata*** MacGowan

69. *Male terminalia*; Surstylus extending posteriorly as a small rounded process, *Phallus*; distiphallus with a rounded basal lobe. *Cerci;* large and rectangular (can be distorted in drying) (Fig. 63). *Antennal postpedicel*: length 2.3x depth, black, medial surface with orange area extending along basal fifth ventrally. *Legs;* dorsally with only t1+2 yellow although mid and hind legs have a bare yellow ventral stripe extending on to t3 and t4. …… ***caledonica*** MacGowan
- *Male terminalia*; Postero-ventral process of surstylus long and pointed, cerci of normal size (Fig. 64) *Antennal postpedicel*: 3x as long as deep, black apart from orange coloration at medial base which extends along half of the ventral surface. *Legs*; Tarsi yellow apart from slight dusky coloration on t4+5. ……. ***tibialis*** MacGowan

70 *Male terminalia;* Surstylus without a large postero-ventral projection (Fig. 65); Phallus bi-segmented, distiphallus without lateral serrations. The following characters can vary: *Legs*; basal tarsomere and t2 yellow (especially on hind leg) *Orbital plate;* bearing setulae. *Postpedicel;* ratio of depth to length 1:1.8-2.2. *Proepimeron:* with 2-3 setae, (one often hair-like). ……..……. ***sorocula*** Hackman

- *Male terminalia*; postero-ventral projection of surstylus large and rounded (Fig. 65). Phallus bi-segmented, distiphallus with lateral serrations (Fig. 66). The following characters can vary:- *Legs*; only basal tarsomere yellow others gradually darkening. *Postpedicel;* ratio of depth to length ~1:2.6. *Proepimeron;* with usually more than 3 setae. Orbital plate; bare apart from the seta ……. ….. ***affinis*** Malloch