version: Thursday, 10 June 2021

Key to Palaearctic *Rivellia* Robineau-Desvoidy, 1830 (Diptera, Platystomatidae)

by Andrew Whittington

The Key is largely based on the distinctive wing patterns present in this genus of signal flies, notwithstanding that there are other diagnostic characters. At this stage of revision of the genus, it is not yet possible to use those other diagnostic characters to their full extent until type materials have been carefully examined.

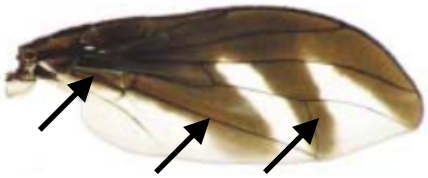
1. Anterior margin of wing entirely brown from wing base to apex of M_1 ..... **2**

\- Anterior margin of wing at some point hyaline and lacking brown pigment **3**

2. Brown mark on wing membrane without lobes of brown pigment reaching the posterior margin; cell *bm* mostly hyaline ..... ***R. harai* Byun et Suh, 1998**
Korea [endemic]

Rivellia harai Byun et Suh, 1998

\- Brown mark on wing membrane with 2 distinct lobes of brown pigment reaching the posterior margin midway through cell m_4 and at apex of vein M_4; cell *bm* mostly brown pigmented..... ***R. tridentata* Byun et Suh, 1998**
Korea [endemic]



Rivellia tridentata Byun et Suh, 1998

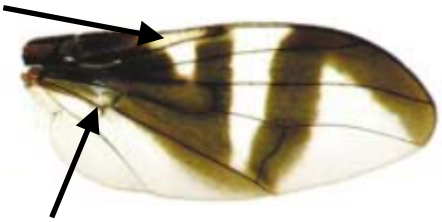
3. Transverse brown bands on wing membrane broad, noticeably wider than length of crossvein *r-m* **4**

\- Wing membrane either entirely lacking transverse pigmented bands, or, if present, then one or more transverse brown band is narrow, equal to or less than length of crossvein *r-m* **6**

4. Costal cell (*sc*) almost entirely pigmented brown, only a faint pale mark present in basal third of pterostigma .... ***R. mandschurica* Hennig, 1945**
Mandschuria, China; Korea, Russian Far East

Rivellia mandschurica Hennig, 1945

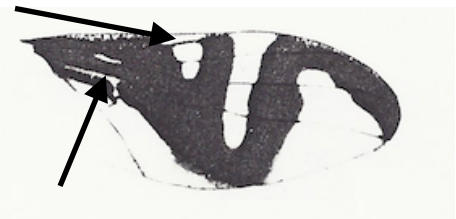
\- Subcostal cell (*sc*) almost entirely hyaline, only a small apical brown mark present in pterostigma **5**



5. Basal median cell (*bm*) with at most an irregular apical hyaline mark[1] .... ***R. alini* Enderlein, 1937**
Mandschuria, China; Korea, Japan, Russian Far East

Rivellia alini Enderlein, 1937

\- Basal median cell (*bm*) with a longitudinal hyaline bar running along length of cell *bm* for longer than length of crossvein *bm-m*[1] ..... ***R. sphenisca* Hendel, 1933**
China [endemic]



Rivellia sphenisca Hendel, 1933

[1] Hennig (1945) commented that *R. alini* Enderlein, 1937 may be synonymous with *R. sphenisca* Hendel, 1933 and, given the close similarity between the wing patterns types need to be examined; genitalia need to be compared.

6. Wings with distinct brown transverse bands **7**

- Wings without brown transverse bands **20**

7. Apex of wing marked by a large brown isolated spot covering apical third of cells r_{2+3} and r_{4+5} .... ***R. syngenesiae*** **(Fabricius, 1781)**
widespread Europe and Russia

- Apex of wing marked by a narrow apical marginal brown band, either isolated and narrow (length of *r-m* or narrower), or if broader, then joined to discal median transverse brown band..... **8**

8. Apical marginal brown band broadly joined to discal median transverse brown band in male such that most of apex of r_{2+3} and r_{4+5} are filled with brown; less so in females such that apical third of r_{2+3} and r_{4+5} are filled with brown .... ***R. hispanica*** **Lyneborg, 1969**
Spain [endemic]

- Sexual dimorphism not observed, apical marginal brown band narrowly meeting origin of discal median transverse brown band, or isolated at apex..... **9**

9. Wing membrane hyaline excepting narrow apical spot across apex of R_{4+5} touching M_1 but not quite touching R_{2+3} **10**

- Other brown pigmented marks present on wing membrane in addition to the narrow marginal band at apex of wing **11**

10. Brown apical margin of the wing is weakly margined; first flagellomere apically pointed, brown; anepisternum with white-grey pruinescence .... ***R. apicalis*** **Hendel, 1934**
Mandschuria, China; Korea, Japan

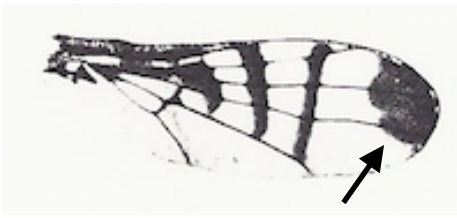
- Brown apical margin of the wing is sharp, almost linearly delimited; first flagellomere apically rounded, red-brown; anepisternum for the most part shining..... ..... ***R. cladis*** **Hendel, 1914**
China, Japan, Russian Far East

11. In addition to narrow apical marginal band at apex of wing, the costal and subcostal cells are at least partially pigmented brown ..... ***R. depicta*** **Hennig, 1945**
Mandschuria, China; Korea, Russian Far East

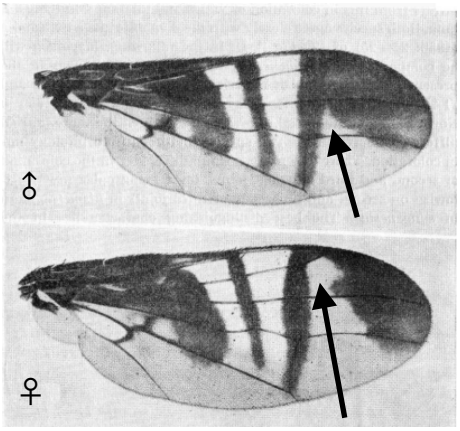
- Narrow marginal band at apex of wing either continuous to wing base or there are two or three transverse bands across the wing membrane..... **12**

12. Narrow marginal band continuous from wing base to wing apex, sometimes weakly interrupted by hyaline at apex of R_1; no transverse bands .... ***R. marginalis*** **Hendel, 1931**
Egypt [endemic]

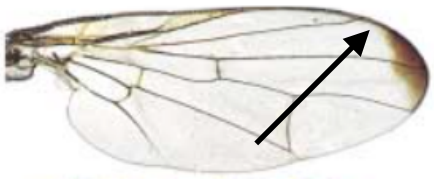
- Wing membrane with two or three brown pigmented transverse bands **13**



Rivellia syngenesiae (Fabricius, 1781)

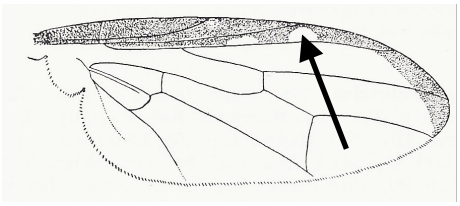


Rivellia hispanica Lyneborg, 1969



Rivellia apicalis Hendel, 1934

Rivellia depicta Hennig, 1945



Rivellia marginalis Hendel, 1931

13. Wing membrane with two brown pigmented transverse bands **14**

- Wing membrane with three brown pigmented transverse bands, two of which sometimes meet apically **16**

14. Narrow marginal band at apex of wing not joined to the brown transverse band cross *dm-m*..... ..... ***R. charbinensis*** **Enderlein, 1937**
China, FE Russia

- Narrow marginal band at apex of wing joined to the brown transverse band cross *dm-m* **15**

15. Brown pigmented markings faint and weakly demarcated along the distal edges; legs almost entirely yellow brown except dark brown hind tibia..... ***R. parilis*** **Frey, 1964**
Korea [endemic]

- Brown pigmented markings distinct and strongly demarcated at the edges; legs entirely dark brown .... ***R. longialata*** **Byun et Suh, 1998**
Korea [endemic]

16. Basal most transverse brown pigmented marking weakly developed as a small brown spot from apex of *sc* extending a little beyond *RS*, basad to which costa cell is hyaline; basal half of *br* is brown; small isolated spot present between origin of discal median transverse brown band and apical marginal brown band .... ***R. basalaroides*** **Hendel, 1933**
China [endemic]

- Three distinct transverse bands present **17**

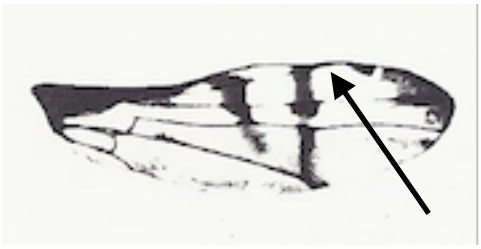
Note: *R. scutellaris* Hendel, 1933 from China should fit near here, but the types have not been examined and the description (that lacks illustration) is inconclusive. The head and thorax are red-yellow, sternopleurite, scutellum margin and apex of abdomen glossy black. Transverse brown bands parallel (not-converging). As in *R. basalaroides* Hendel, 1933 there is a small brown spot from apex of sc extending a little beyond *RS*.

17. Subcostal wing cell (*sc*) pigmented brown as far as apex of subcostal vein (*Sc*) **18**

- Subcostal wing cell (*sc*) un-pigmented for the most part, excepting a small brown basal mark just beyond humeral crossvein (*h*) **19**

18. Base of basal-radial cell (br) hyaline or at most faintly suffused with pigment ..... ***R. flavipes*** **Hara 1994**
Japan, Russian Far East

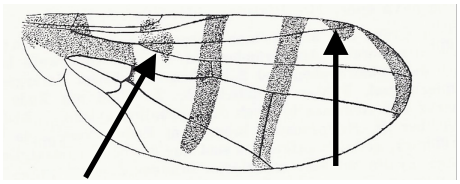
- Base of basal-radial cell (br) pigmented brown .... ***R. nigricans*** **(Matsumura, 1916)**
Japan [endemic]



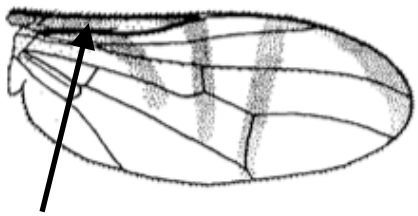
Rivellia charbinensis Enderlein, 1937

Rivellia parilis Frey, 1964

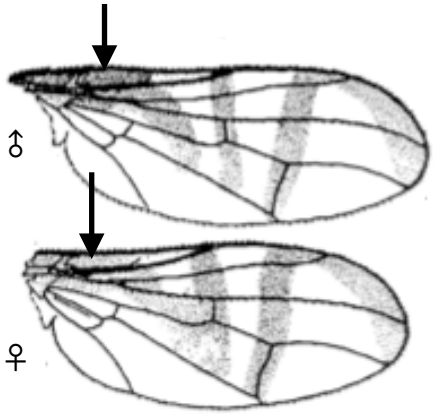
Rivellia longialata Byun et Suh, 1998



Rivellia basalaroides Hendel, 1933



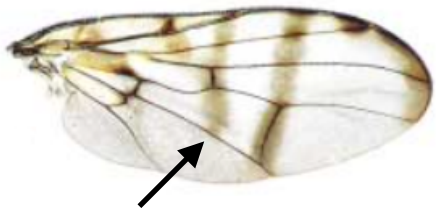
Rivellia flavipes Hara 1994



Rivellia nigricans (Matsumura, 1916)

19. Basal most of three transverse brown bands angled forward and joined to apex of second transverse brown band **20**

- All three transverse brown bands free to the apex, not joined to another transverse brown band..... **21**



Rivellia nigroapicalis Byun et Suh, 1998

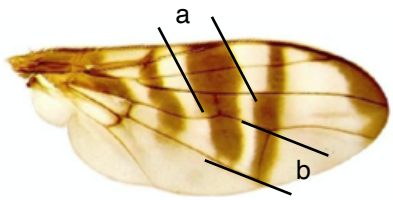
20. Apex of second transverse brown band touching M_4; dorsocentral seta present (Byun and Han 2004) .... ***R. nigroapicalis*** **Byun et Suh, 1998**
Korea [endemic]

- Apex of second transverse brown band extending beyond M_4 and bent toward apex of vein *CuA+CuP*; dorsocentral seta absent (Byun and Han 2004)..... ..... ***R. cestoventris*** **Byun et Suh, 1998**
Korea [endemic]

Rivellia cestoventris Byun et Suh, 1998

21. Two basal most transverse brown bands proclinate **22**

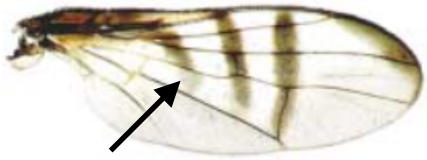
- Two basal most transverse brown bands reclinate, or, if more or less perpendicular to costal cell, then third band reclinate **24**



Rivellia israelica Bodner et Freidberg, 2016

22. Second (middle) transverse brown band narrower than length or crossvein *dm-m*..... **23**

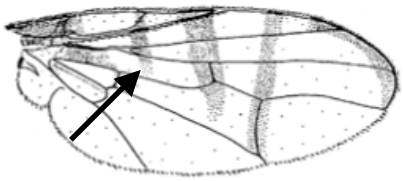
- At the widest point (a), second (middle) transverse brown band equal to or wider than length or crossvein *dm-m* (b)..... ..... ***R. israelica*** **Bodner et Freidberg, 2016**
Israel [endemic]



Rivellia asiatica Hennig, 1945

23. Basal most transverse brown band terminating in *dm* .... ***R. asiatica*** **Hennig, 1945**
Mandschuria, China; Korea, Siberia

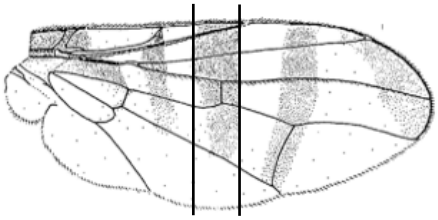
- Basal most transverse brown band short, terminating in *br*.... ..... ***R. itoi*** **Hara, 1992**
Japan



Rivellia itoi Hara, 1992

24. Second (middle) transverse brown band narrow, approximately equal to length of *r-m*; third band more or less perpendicular to costal cell and *dm-m*..... **25**

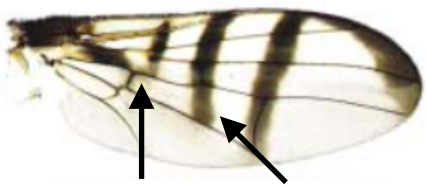
- Second transverse brown band broad, approximately equal to length of *r-m*; third band reclinate .... ***R. yaeyamaensis*** **Hara, 1989**
Japan [endemic]



Rivellia yaeyamaensis Hara, 1989

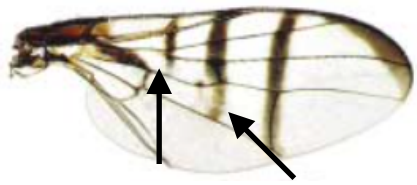
[couplet 25 is on next page]

25. Basal most transverse brown band terminating in *dm* at M_4 and faintly joined by a right angle to brown mark in *br* .... ***R. basilaris*** **(Wiedemann, 1830)**
Indonesia (Sumatra); Indonesia (Ambon), Japan, Korea, Taiwan, Philippines (Luzon), Samoa, Sri Lanka



Rivellia basilaris (Wiedemann, 1830)

- Basal most transverse brown band short, terminating in *dm* but fading away before reaching M_4 but isolated from brown mark in *br* ..... ***R. flaviventris*** **Hendel 1914**
Singapore; Northeast China, Indonesia (Java, Celebes, and Ambon), Japan, Korea, Philippines, Mindanao, Nepal, Palawan, Samar, Taiwan.

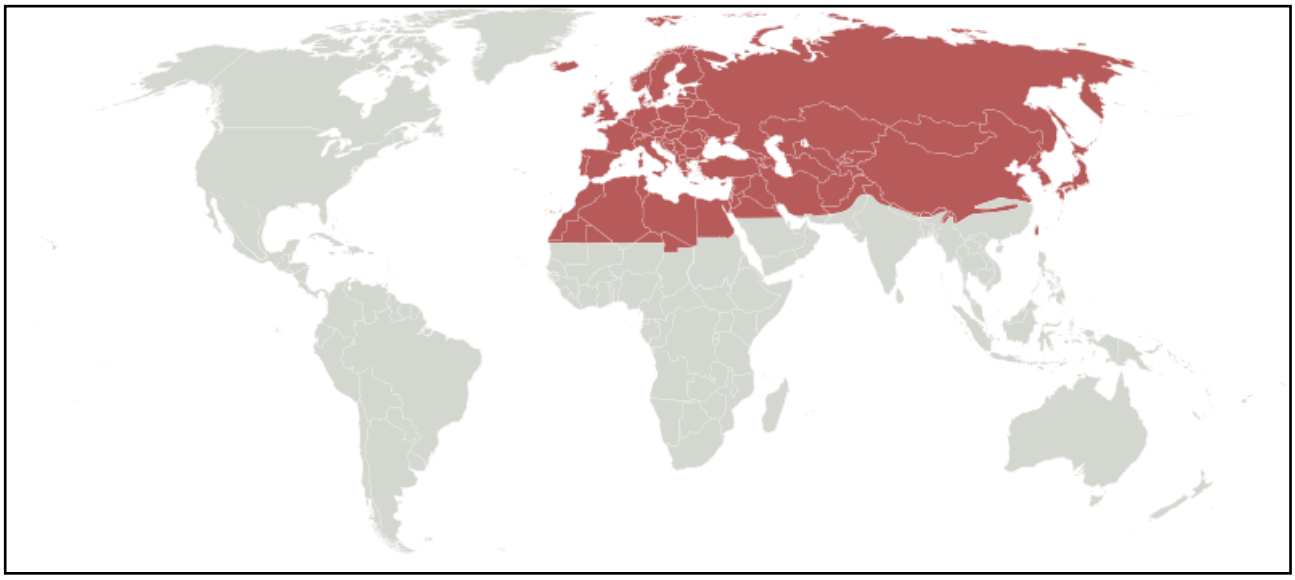


Rivellia flaviventris Hendel 1914

A Checklist and key for the genus *Rivellia* (Diptera, Platystomatidae) from the Palaearctic

Andrew Whittington & Igor Nekrep

Current valid names and authorities are in bold font; geographic locations are in alphabetical order with the exception that the country of the type location (TL) is listed first followed by a semi-colon. Where range extends beyond the Palaearctic region, those geographic locations are included. Where species are endemic, only the country of the type location is given. Synonyms are presented in normal font and indented below the valid name to which it is junior.



Palaearctic Region
(source: Creative Commons - *Ecozones*)

R. alini **Enderlein, 1937**
TL - Mandschuria, China; Korea, Japan, Russian Far East.

R. apicalis **Hendel, 1934**
TL - Mandschuria, China; Korea, Japan.

***R. asiatica* Hennig, 1945**
TL - Mandschuria, China; Korea, Siberia.

***R. basalaroides* Hendel, 1933**
TL - China

***R. basilaris* (Wiedemann, 1830)**
R. perspicillaris Bezzi,1928
TL - Indonesia (Sumatra); Indonesia (Ambon), Japan, Korea, Taiwan, Philippines (Luzon), Samoa, Sri Lanka.

***R. cestoventris* Byun et Suh, 2001**
TL - Korea

***R. charbinensis* Enderlein, 1937**
TL - China; FE Russia

***R. cladis* Hendel, 1914**
TL - China; Japan, Russian Far East.

***R. depicta* Hennig, 1945**
TL - Mandschuria, China; Korea, Russian Far East.

***R. flavipes* Hara 1994**
TL - Japan, Russian Far East.

***R. flaviventris* Hendel 1914**
TL - Singapore; Northeast China, Indonesia (Java, Celebes, and Ambon), Japan, Korea, Philippines, Mindanao, Nepal, Palawan, Samar, Taiwan.

***R. harai* Byun et Suh, 1998**
TL - Korea

***R. hispanica* Lyneborg, 1969**
TL - Spain

***R. israelica* Bodner et Freidberg, 2016**
TL - Israel

***R. itoi* Hara, 1992**
TL - Japan

***R. longialata* Byun et Suh, 1998**
TL - Korea

***R. mandschurica* Hennig, 1945**
TL - Mandschuria, China; Korea, Russian Far East.

***R. marginalis* Hendel, 1931**
TL - Egypt

***R. nigricans* (Matsumura, 1916)**
R. hashiba (Shinji, 1939); *syn* Hara (1994)
R. basilaris, Ito 1947 (*nec* Wiedemann, 1830)
R*. basilaris*, Steyskal 1977 (*nec* Wiedemann, 1830) (*partim*)
TL - Japan

***R. nigroapicalis* Byun et Suh, 2001**
TL - Korea

***R. parilis* Frey, 1964**
TL - Korea

***R. scutellaris* Hendel, 1933**
TL - China

***R. sphenisca* Hendel, 1933**
TL - China

***R. syngenesiae* (Fabricius, 1781)**
R. juncorum (Fallén, 1820)
R. herbarum Robineau-Desvoidy, 1830
TL - Germany; widespread Europe and Russia

***R. tridentata* Byun et Suh, 1998**
TL - Korea

***R. yaeyamaensis* Hara, 1989**
TL - Japan

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Credits:
Wing sketches: van der Wulp (1898), Hendel (1914) and Namba (1956), Lyneborg (1969) & Hara (1992).

Acknowledgments
We gratefully acknowledge Ho-Yeon Han's assistance with literature and for providing permission to use the high resolution images of wings from his 2004 paper.