

**Supplementary File 1** (modified from Li et al. 2022)

1. Setae in vertex: (0) absent; (1) with setae. [Among Trogiomorpha the vertex with setae in Empheriidae, Archaeatropidae, Psoquillidae, Lepidopsocidae and Trogiidae, Psyllipsocidae, and bare in Prionoglarididae, and Cormopsocidae. This coding is derived from Grimaldi & Engel, 2006, character 3.]
2. Lacinia: (0) with normal lacinia; (1) lacinia reduced, (2) absent. [Most Trogiomorpha with normal lacinia, in *Siamoglaris*, lacinia reduced (Lienhard, 2004, 2011).]
3. Ocelli: (0) present; (1) absent. [Ocelli often absent in Trogiidae and Psoquillidae (Smithers, 1972). This coding is derived from Grimaldi & Engel, 2006, character 10; Casasola González, 2006, character 3, 5.]
4. Ocelli: (0) arranged closely; (1) arranged far apart. [Ocelli arranged far apart in Lepidopsocidae, and arranged closely in other families. (Smithers, 1972). This coding is derived from Grimaldi & Engel, 2006, character 9.]
5. Sensillum on second segment of maxillary palpus: (0) without, (1) with sensillum. [State (1) often occurs in Atropetae (Yoshizawa *et al.*, 2006).]
6. Sensillum on distal segment of maxillary palpus: (0) present; (1) absent. [Forked sensillum present in Lepidopsocidae and Psoquillidae, and present or absent in Trogiidae (Mockford, 1993). This coding is derived from Grimaldi & Engel, 2006, character 6.]
7. Shape of distal segment of maxillary palpus: (0) narrow; (1) broadened. [This coding is derived from Yoshizawa, 2002, character 7.]
8. Setae in antennae: (0) absent, (1) present. [Most genera have the setae in antennae, in *Cormopsocus*, *Siamoglaris*, *Proprioglaris*, *Prospeleketor* with antennae bare.]
9. Forewing: (0) developed, (1) reduced. [The coding of this code is based on Casasola González, 2006, character 36.]

10. Forewing margin:(0) bare; (1) with setae. [This coding is derived from Yoshizawa, 2002, character 21.]
11. Forewing shape: (0) rounded at apex, (1) pointed at apex. [(1) is in Lepidopsocidae that adults when the wings fully developed (Mockford, 2013).]
12. Membranous region of forewing: (0) bare; (1) setae. [Membranous with setae is usually common in the Empheriidae and Archaeatropidae. This coding is derived from Yoshizawa, 2002, character 22.]
13. Shape of Areola Postica: (0) short, (1) long. [Usually the Areola Postica is long in Atropetae, about the half width of the forewing.]
14. Setae on veins of forewing: (0) bare, (1) one row, (2) two rows. [In Cormopsocidae, Prionoglarididae, Lepidopsocidae and Trogiidae forewing veins without setae, in Psyllipsocidae and Psoquillidae with one row of setae, in Empheriidae and Archaeatropidae forewing veins with one or two rows of setae. This coding is derived from Yoshizawa, 2002, character 24, and recoded.]
15. Forewing veins setae: (0) bare, (1) with setae. [This coding is derived from Yoshizawa, 2002, character 24, and recoded.]
16. Forewing veins: (0) complete, (1) reduced. [The forewing veins are usually developed in Empheriidae, Archaeatropidae and Lepidopsocidae, reduced in Trogiidae and some genera of Psoquillidae. This coding is derived from Yoshizawa, 2002, character 36.]
17. Forewing Sc:(0) basal part developed, curve to R; (1) reduce, ended in membranous or in C. [Adults of Trogiidae with wings reduced and lacking venation (Mockford, 1993).]
18. Crossvein between Sc and C: (0) absent, (1) Sc and C connected by crossvein. [In the most genera of Empheriidae and Archaeatropidae, forewing Sc usually bent at distal part and has a short crossvein reaching to wing margin.]

19. Sc ending in distal radial cell: (0) Sc ending before Radial cell or at basal part of Radial cell, (1) Sc ending at distal part of Radial cell or beyond half-length of R cell. [Only a few genera in Atropetae with State (1) (*Prospeleketor*, *Empheropsocus*, *Burmempheria* and *Thylacella*), state (0) are common in Trogiomorpha.]
20. Forewing: (0)  $R_1$  and  $R_s$  connected by a short crossvein; (1)  $R_1$  and  $R_s$  not connected by a short crossvein. [State (1) is for Psoquillidae.]
21. M vein in forewing: (0) 3 branched, (1) 2 branched. [This coding is derived from Huang *et al.*, 2016, character 45.]
22. Length of forewing second section of M and  $M_{1+2}$ : (0)  $M_{1+2}$  shorter than second section of M, (1) almost equal, (2)  $M_{1+2}$  longer than second section of M. [Our text, the outgroups have  $M_{1+2}$  shorter than second section of M.]
23. Forewing Radial cell: (0) present, (1) absent. [State (1) is for Psoquillidae and Trogiidae.]
24. Setae in pterostigma area: (0) absent; (1) present. [This coding is derived from Yoshizawa, 2002, character 25, and make it changed; Casasola González, 2006]
25. Crossvein under pterostigma: (0) present, (1) absent. [This coding is derived from Casasola González, 2006, character 46.]
26. Forewing nodulus: (0) present, (1) absent. [This coding is derived from Yoshizawa, 2002, character 33.]
27. Hind wing shape: (0) rounded at apex, (1) pointed at apex. [State (1) is occurs in Lepidopsocidae.]
28. Hind wing margin setae: (0) bare, (1) with setae. [This coding is derived from Yoshizawa, 2002, character 35.]
29. Hind wing  $M_1$  and  $M_2$ : (0) fused together, (1) not fused. [ $M_1$  and  $M_2$  in hind wing not fused only occurs in *Jerseyempheria*, *Thylacella*, and *Rhyopsocus*]
30. Hind wing A: (0) branched, (1) not branched. [State (0) usually in Prionoglaridetae]

and Psyllipsocetae, (1) is in Atropetae (Yoshizawa *et al.*, 2006).]

31. Tibial spur: (0) 1-2 spurs, (1) 3 spurs, (2) without tibial spur. [Most of the genus with tibial spurs, only in *Propriolaris* and *Trogium* without tibial spur.]
32. Pulvillus: (0) absent; (1) pointed; (2) broad. [This coding is derived from Yoshizawa, 2002, character 41; Casasola González, 2006, character 32, 33.]
33. Pulvillus: (0) absent; (1) present. [State (0) is for Empheriidae and Archaeatropidae (*Propriolaris axioperi erga*, Perrichot, Azar, Neraudeau & Nel., 2003 with thin elongate and wavy pulvillus, and *Empheropsocus* with the pulvillus broad at tip) (Perrichot *et al.*, 2003; Baz & Ortuño, 2001).]
34. Female external valves: (0) broad, (1) long and thin. [This coding is derived from Yoshizawa, 2002, character 66. (1) is regarded as the autapomorphy of Atropetae (Smithers, 1972; Yoshizawa *et al.*, 2006).]
35. Female dorsal valves: (0) developed, (1) reduced or absent. [This coding is derived from Yoshizawa, 2002]
36. Setae in external valves: (0) long; (1) short; (2) bare. [Smithers mentioned that gonapophyses reduced to an elongate, setose external valves (Smithers, 1972).]
37. Anal spine: (0) absent; (1) present. [State (1) is usually in Atropetae and Psyllipsocetae, and absent in Prionoglaridetae (Yoshizawa *et al.*, 2006).]
38. Scales or setae in body and wings: (0) bare, (1) with scales or setae in body and wings. [State (1) in Lepidopsocidae, state (0) for other groups (Mockford, 2005).]
39. Anal vein in forewing: (0) present, (1) absent. [State 1 in *Empheropsocus*, *Longiantennum*, *Parallopsocus*, and *Preempheria*.]