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Newly recorded genera in the planthopper family Tropiduchidae (Hemiptera: Fulgoroidea) from Pakistan with redescription of *Epora montana* Distant

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Abstract

The tropiduchid genera *Epora* Walker and *Zema* Fennah are recorded from Pakistan for the first time and *Epora montana* Distant is redescribed and illustrated.

Key words: Taxonomy, Fulgoroidea, morphology, distribution, genitalia

Introduction

The planthopper family Tropiduchidae, comprising 194 genera and 671 species (Bourgoin 2019), is distributed throughout the world, mainly in the tropics. Some tropiduchid species feed on shrubs and trees while some are crop pests (Wilson *et al*. 1994; O'Brien 2002). The Tropiduchidae in Pakistan remains little known, with only three species recorded so far: *Antabhoga gardineri* Distant, 1912 (Mushtaq 1984), *Ommatissus bimaculatus* Muir, 1931 (Muir, 1931) and *Ommatissus lybicus* de Bergevin, 1930 (Shah *et al*. 2012). Here, two Oriental tropiduchid genera, *Epora* Walker, 1857 and *Zema* Fennah, 1956, are newly recorded from Pakistan. The former, was established for *Epora subtalis* Walker, 1857 from Borneo and later, Distant (1912), added a new species, *Epora montana*, from India. The genus *Zema* was established for *Zema gressitti* Fennah (1956) from China and latter, Wang and Liang (2007) added a further new species from China, *Z. montana,* and redescribed the genus.

Material and methods

Fresh specimens were collected from Pakistan and deposited at the Entomological Museum of Northwest A&F University (NWAFU) and compared to specimens in the Natural History Museum, London (BMNH). Morphological terminologies follow Liang (2008). Morphological characters were observed using Olympus SZX10 stereomicroscope. The genital segments were removed from the examined specimens and macerated in 10% NaOH for 10–12h at room temperature and then placed in water for a few minutes. The genitalia were then transferred to a depression slide filled with glycerin for further study. Photographs of the adults were taken by a Zeiss CCD, AxioCam ICc5. Adobe Photoshop was used for labelling and plate composition of the obtained images.

Taxonomy

Epora Walker, 1857

Epora Walker, 1857: 145. Type species: *Epora subtalis* Walker, 1857 by original designation.

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Distribution: China; India; Indonesia; Malaysia; Philippine; Sri Lanka; Vietnam; Pakistan.

Remarks: This genus has been adequately redescribed by Men *et al*. (2011). It can be distinguished by narrow pronotum with strongly oblique lateral areas; posterior margin of vertex concave; narrow forewing with many oblique transverse veins.

Epora montana Distant, 1912, new record to Pakistan

(Figs 1–17)

Epora montana Distant, 1912: 185.
Epora subtalis Melichar, 1914: 51, junior synonym of *E. subtalis*
Epora montana Distant, 1916: 48, 51.

Redescription Figs (1–17)

Moderately large, body length (from apex of vertex to tip of forewing): male 6.9–7.0 mm (n=2); female 7.1–7.2 mm (n=2).

General color ochraceous; vertex, frons, pronotum, mesonotum and abdomen ochraceous or yellowish; compound eyes and ocelli yellowish; tegmina and veins pale ochraceous; legs ochraceous with spines on hind legs black tipped.

Head in facial view with frons elongate longer in middle than width with rigid median and lateral margins; lateral margins subparallel slightly curved below antennae; frontoclypeal suture distinct slightly incised, slit like processes on anteclypeus; rostrum short, three segmented, not reaching hind coxae; first antennal segment short, ring shaped, second segment subglobose larger than first segment. Head, in dorsal view (incl. eyes), narrower than pronotum, slightly produced in front of eyes; vertex with distinct central longitudinal carina broader at level of base than middle anteriorly arched and thickened; lateral margins parallel and rigid, posterior margin concave, sharply raised; disc slightly incised, median carina not approaching anterior margin. Compound eyes large, oval; ocelli small. Pronotum with two median carina not reaching anterior margins, lateral carina not parallel curved towards anterior margin; short lateral carina on both sides between compound eyes and tegula; anterior margin of pronotum arched, posterior margin notched and excavated; pronotum at level of base wider than vertex. Mesonotum with three distinct carina; median carina straight reaching apical margin, lateral carina arched reaching posterior margin; pro and mesonotum longer in midline than vertex. Front wing hyaline concave in apical margin, posterior margin straight; costal margin with 14-15 obliquely transversely veinlets with apical and sub apical elongate narrow cells. Sc+R vein bifurcate at basal quarter, Cu_1 forking at basal ¼, M vein joining nodal line, claval vein reached middle of clavus; hind wing transparent. Hind leg with 3 lateral tibial spines, spinal formula is 6-5-2.

Male genitalia (Figs 11–15): Pygofer in profile quadrangular. In lateral view, anal segment elongate, tubular not reaching apex of aedeagus; lateroapical angles roundly produced, anal foramen in apical 1/4. Aedeagus long tubular, membranous basally curved, medially narrow slightly wider towards apex; apically with spine like processes directed caudally and two spines like processes laterally (one short and one long) directed towards anal segment. Periandrium short well developed with several processes; single short process arising in middle of aedeagus curving ventromesad bifurcating into two short diverging spine-like branches and 3 long processes directed posteriorly one on left and two on right side of aedeagus. Aedeagus with lobe like process near bent on ventral aspect. Gonostyle symmetrical, longer than wide laterally apically convex; dorsally with triangular process in distal half and with hook-like sclerotized processes directed posteriorly. Corpus connective tubular curved medially.

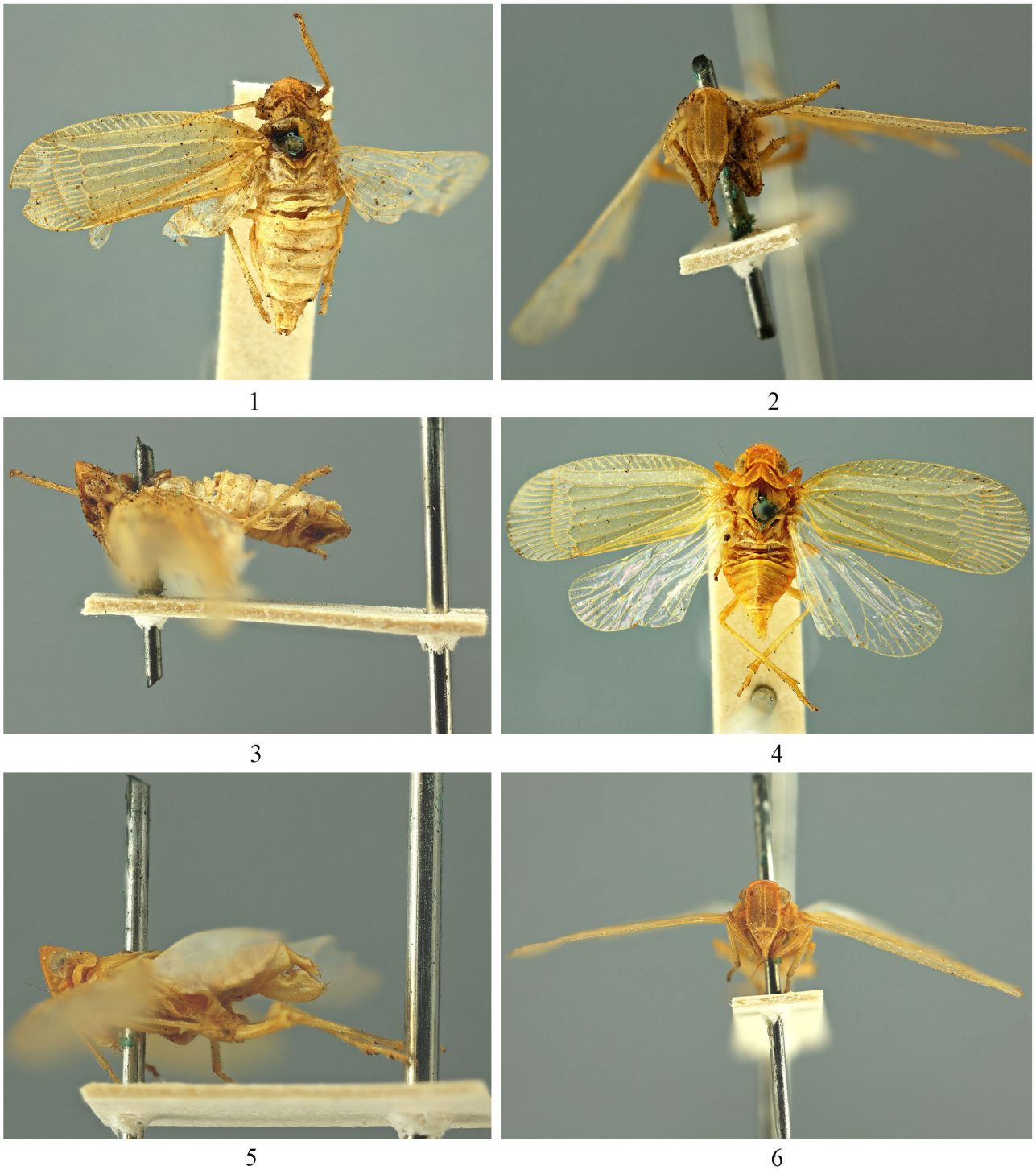
Female genitalia (Figs 16, 17): In lateral view anal segment short, in dorsal view slightly round apically, anal style small and short. First valve (gonophyses VIII) saw like with 6 stout teeth's on dorsal margin; ventrally with few small teeth's. Second valve (gonophyses XI) triangular shape slightly sclerotized basally wider apically joined; third valve (gonoplace) membranous with 6 apical sclerotized stout teeth centrally curved projecting dorsally.

Material examined: 1♀(Syntype), India, Nilgiri Hills, Hampson, Distant Coll. 1911-383, NHMUK 013588135 (BMNH); 1♂, Calcutta, 22.v.1907, Distant Coll. 1911-383, NHMUK 013588136 (BMNH). 2♂♂, 2♀♀, Pakistan, Khyber Pakhtunkhwa Province, Munjai, District Upper Dir 35°9'55.89"N 72°2'48.54"E, 1840m, 19-vi-2018, coll. Kamran Sohail (NWAFU).

Distribution: India, Pakistan (Khyber Pakhtunkhwa)

Remarks: This species was described from an unknown number of specimens (syntypic) with the following

data: “Nilgiri Hills (Hampson)”. The single syntype in BMNH is figured together with an associated male. This species was treated as a junior synonym of *E. subtilis* by Melichar (1914) but Distant (1916) separated them by size and wing venation and recorded *E. montana* as a valid species. Here, we distinguish the two species based on shape of the head, being shorter in *E. montana*, from Borneo (syntypes in BMNH), by its shorter head. This comparison is made with the original figure of *E. subtilis* (Walker, 1857: 146, Pl. 7, Fig. 3) as the syntype in the BMNH and Hope Department, Oxford are without heads.



FIGURES 1–6. *Epora montana* (1–3. Syntype adult female, 1. Dorsal view; 2. Facial view; 3. Lateral view; 4–6. Nontype adult male, 4. Dorsal view; 5. Facial view; 6. Lateral view.

FIGURES 7–17. *Epora montana* (from Pakistan) 7, 8. Adult, dorsal and lateral view; 9. Pronotum and mesonotum, dorsal view 10. Frons, ventral view; 11. Anal segment and aedeagus, lateral view; 12. Aedeagus, dorsal view; 13. The same, ventral view; 14. Anal segment, dorsal view; 15. Genital style, lateral view; 16. Female genitalia, lateral view; 17. The same, dorsal view.

Zema Fennah, 1956

Zema Fennah, 1956: 500. Type species: *Zema gressitti* Fennah, 1956, by original designation; Wang & Liang, 2007: 62.

Zema gressitti Fennah, 1956, new record to Pakistan

(Figs 18–23)

Zema gressitti Fennah, 1956: 502, Fig. 16; Wang & Liang, 2007: 63, Figs 1, 3–11.

Remarks: Wang & Liang (2007) provided a detailed description of this species based on specimens from China.

Material examined: Pakistan, 2♂♂, Punjab Province, Kalar Kahar 32°46′59″ N 72°42′00″ E, 643 m, 4-vii-2017, coll. Hassan Naveed (NWAFU); 2♂♂, 2♀♀, Pakistan, Punjab Province, Jhika Gali, 9.ix.1971, nymph on *Coriaria nepalensis* Wall. (Coriariaceae) (BMNH).

Distribution: China, Nepal, Pakistan (Punjab)

Remarks: This species can be distinguished from the other species of the genus, *Z. montana* Wang & Liang, 2007, from China, by the shorter median carina of vertex (in basal 2/3 rather than throughout length of vertex), asymmetrical periandrium and aedeagal process bifurcate at mid length of aedeagus (rather than distally).

FIGURES 18–24. *Zema gressitti*. 18, 19. Adult, dorsal and lateral view; 20. Vertex, pronotum and mesonotum, dorsal view; 21. Frons, ventral view; 22. Genitalia, lateral view; 23. Anal segment, aedeagus and genital style, lateral view; 24. Pygofer, lateral view.

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