

***Cicadulina (Idyia) fijiensis* Linnavuori (Hemiptera: Cicadellidae: Deltocephalinae: Macrostelini), a new leafhopper record for China**

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Abstract: *Cicadulina (Idyia) fijiensis* Linnavuori, formally known only from the Pacific and Nepal, is reported for the first time from China. New intraspecific variation in the male genitalia of this species and *C. bipunctata* (Melichar) is discussed, including the similarity of a population of the latter species to the Pacific *C. bimaculata* (Evans). Figures and a key to separate the two Chinese species are provided.

Zusammenfassung: *Cicadulina (Idyia) fijiensis* Linnavuori, bisher nur aus dem pazifischen Raum und aus Nepal bekannt, wird hier erstmals für China angegeben. Neue intraspezifische Variabilität in den männlichen Genitalien der Art und von *C. bipunctata* (Melichar) werden diskutiert, einschließlich der Ähnlichkeiten einer Population dieser Art mit der pazifischen Art *C. bimaculata* (Evans). Abbildungen und ein Schlüssel zur Trennung der beiden chinesischen Arten werden vorgestellt.

Key words: new record, China, taxonomy, *Cicadulina*.

1. Introduction

The leafhopper genus *Cicadulina* China, the most important vector of plant pathogens on maize and sugarcane, was reviewed by Webb (1987b). Twenty-two species have been described including *C. fijiensis* Linnavuori from the Pacific and Nepal and *C. bipunctata* (Melichar) from China (Taiwan). In the current paper, both of these species are recorded from mainland China for the first time. New intraspecific variation in the male genitalia of both species is discussed, including similarities of a population of *C. bipunctata* to the Pacific *C. bimaculata* (Evans). A key to the two species in China is provided together with figures for their separation.

Cicadulina belongs to the Deltocephalinae tribe Macrostelini, currently also including *Balclutha*, *Macrosteles*, *Nesoclutha*, *Sonronius*, *Yamatotettix* from China, all having two subapical cells in the forewings and *Cicadulina*, together with *Balclutha* and *Nesoclutha*, with three, rather than four, apical cells in the hindwings. *Cicadulina* differs from these and other genera of this tribe in having a dorsal pygofer process. Also, generally, the apex of the ovipositor in females is dark.

2. Key to subgenera and species of *Cicadulina* from China

1. Pygofer with short processes without subapical spines; aedeagal shaft apically acute in lateral view, with pair of long baso-lateral processes. *Cicadulina (Idyia)* *fijiensis*
- Pygofer with long processes with subapical spines; aedeagal shaft apically rounded in lateral view, with short dorso-basal processes. *Cicadulina (Cicadulina)* *bipunctata*

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3. *Cicadulina (Cicadulina) bipunctata* (Melichar)

(Figs. 1, 2, A-B)

Gnathodus bipunctata Melichar, 1904: 47

Cicadula bipunctella Matsumura, 1914: 173 (Taiwan)

Cicadulina bipunctata (Melichar), Webb 1987a: 236; Webb, 1987b: 694, figs. 70–77

For full synonymy see Webb (1987b: 683).

Diagnosis

Male genitalia with pygofer short, rounded posteriorly, with processes elongate, exceeding posterior margin, subapically with 1-3 spines. Aedeagal shaft compressed dorsoventrally, apex broadly rounded in lateral view, with two or more short dorso-basal processes and sometimes one or two ventral processes; gonophore apical on ventral margin, elongate.

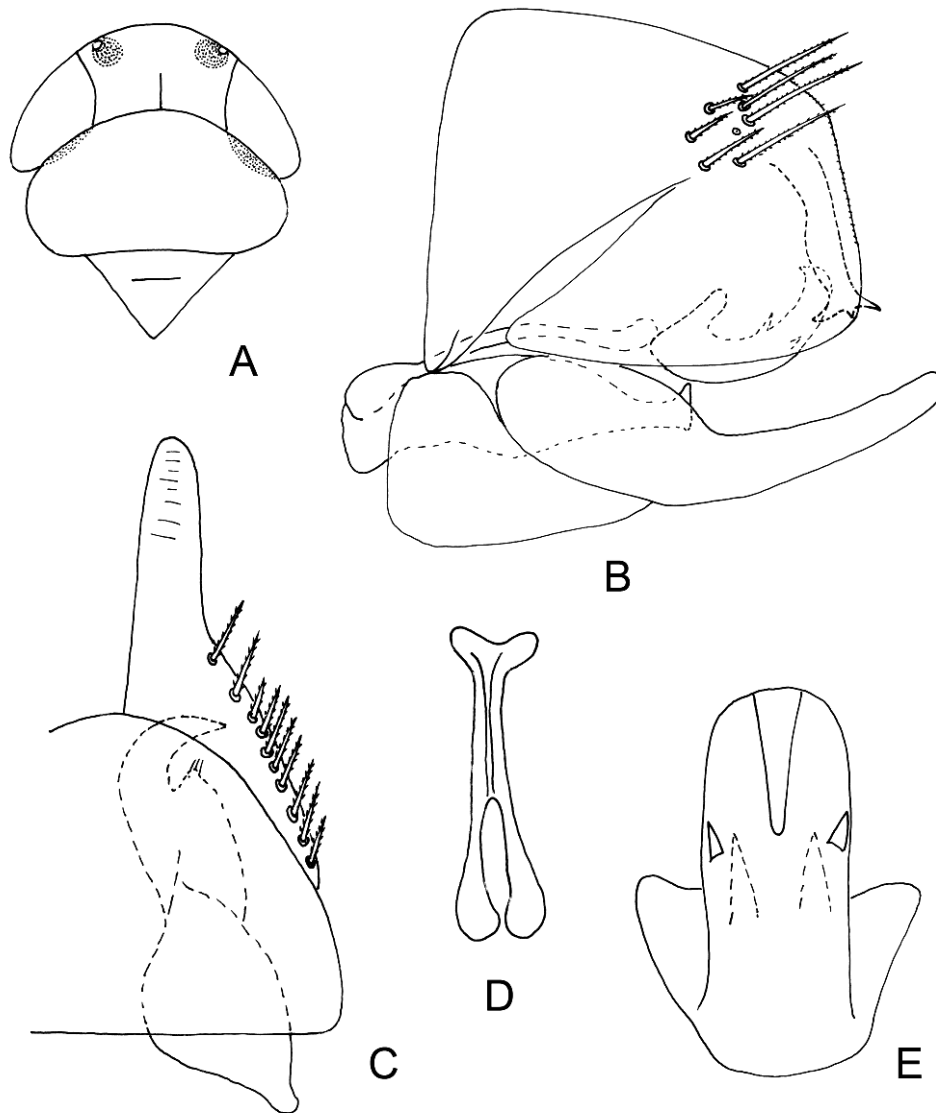


Fig. 1: *Cicadulina (Cicadulina) bipunctata* (Melichar): A head and thorax, dorsal view; B male genital capsule, lateral view; C valve, subgenital plate and style, ventral view; D connective, ventral view; E aedeagus, ventral view.

Material examined

China: 2 males, 2 females, Fujian Prov., Zhangzhou County, 12.viii.2006, Coll., Yang Meixia; 1 male, 3 females, Guangdong Prov., Shenzhen City, 18.iv.1983, Coll. Zhang Yalin; 2 females, Guangxi Autonomous Region, 9.xii.2001, Coll. He Zhiqiang; 15 males, 23 females, Hainan Prov., Xinglong County, 23~29.iv.1983, Coll. Zhang Yalin; 1 males, 1 females, Yunnan Prov., Menglun County, 8.viii.1982, Coll. Zhou Jingruo; 2 males, Yunnan Prov., Menglun County, 26.vii.2005, 750m, Coll. Lu Lin; 3 males, 2 females, Shaanxi Prov., Yangpingguan County, 4.x.1980, Coll. Ma Ning.

Distribution

China (Fujian, Guangdong, Guangxi, Hainan, Yunnan, Shaanxi, Taiwan Prov.), Northeast Africa, Africa, India, Japan, Southern Pacific, Australia.

Remarks

This species is distinguished mainly by the hook-like apex of the pygofer processes. The variation in the subapical spines of the pygofer processes in Chinese specimens is shown in Fig. 2, A-B.

The status of a series of specimens from Yunnan Prov., Menglun County, 8.viii.1982, Coll. Zhou Jingruo (Fig. 1) is uncertain. Their pygofer process is more similar to the figures given of *bimaculata* (Evans) by Webb (1987a, b) but this author was unsure of the status of this species as distinct from *bipunctata*. *C. bimaculata* is known only from Eastern Australia, New Caledonia and Vanuatu. Whether the variation observed in the Chinese population represents intraspecific variation or not for *bipunctata* requires further study, possibly with DNA studies.

4. *Cicadulina (Idyia) fijiensis* Linnavuori, n. rec. to China

(Figs 2C-H, 3)

Cicadulina (Idyia) fijiensis Linnavuori (1960: 59); Ruppel (1965: 418); Webb (1987b: 708, figs. 139–141).

Diagnosis

Male genitalia: Pygofer short, appendage vestigial, tapered to apex, mostly not exceeding posterior margin of pygofer. Aedeagal shaft cylindrical with some teeth on dorsal and ventral surface, number and position variable; aedeagal base expanded laterally with a pair of long basal processes laterally, apex of processes with two to three subapical spines; gonopore apical, short.

Material examined

China; 1 male, Zhejiang Prov., Mt. Wuyanling, 29.vii.2005, 800m, Coll. Duan Yani; 2 males, 2 females, Fujian Prov., Zhangpu County, 8.viii.2005, Coll. Yang Meixia; 1 male, 1 female, Jiangxi Prov., Mt. Jinggang, 9.viii.2004, Coll. Wei Cong; 1 male, 1 female, Hunan Prov., Mt. Heng, 8.viii.1985, Coll. Zhang Yalin (light trapped).

Distribution

China (Zhejiang, Fujian, Jiangxi, Hunan Prov.), Nepal, S. & E. Pacific.

Remarks

Cicadulina (Idyia) fijiensis from China shows slight differences compared to specimens figured from Fiji by Webb (1987b), i.e., the pygofer processes sometimes extend beyond the posterior margin, the aedeagal base is broader in lateral view and the shaft sometimes has teeth or spines (Figs 2 F, G, 3 F) including a pair of subapical teeth on the dorsal margin in one of the specimens from Zhejiang Province. However, this variation is considered to be of one species and is consistent with the variation found in the aedeagal base and number of teeth on the aedeagal shaft in some species of the nominate subgenus as mentioned by Webb (1987a).

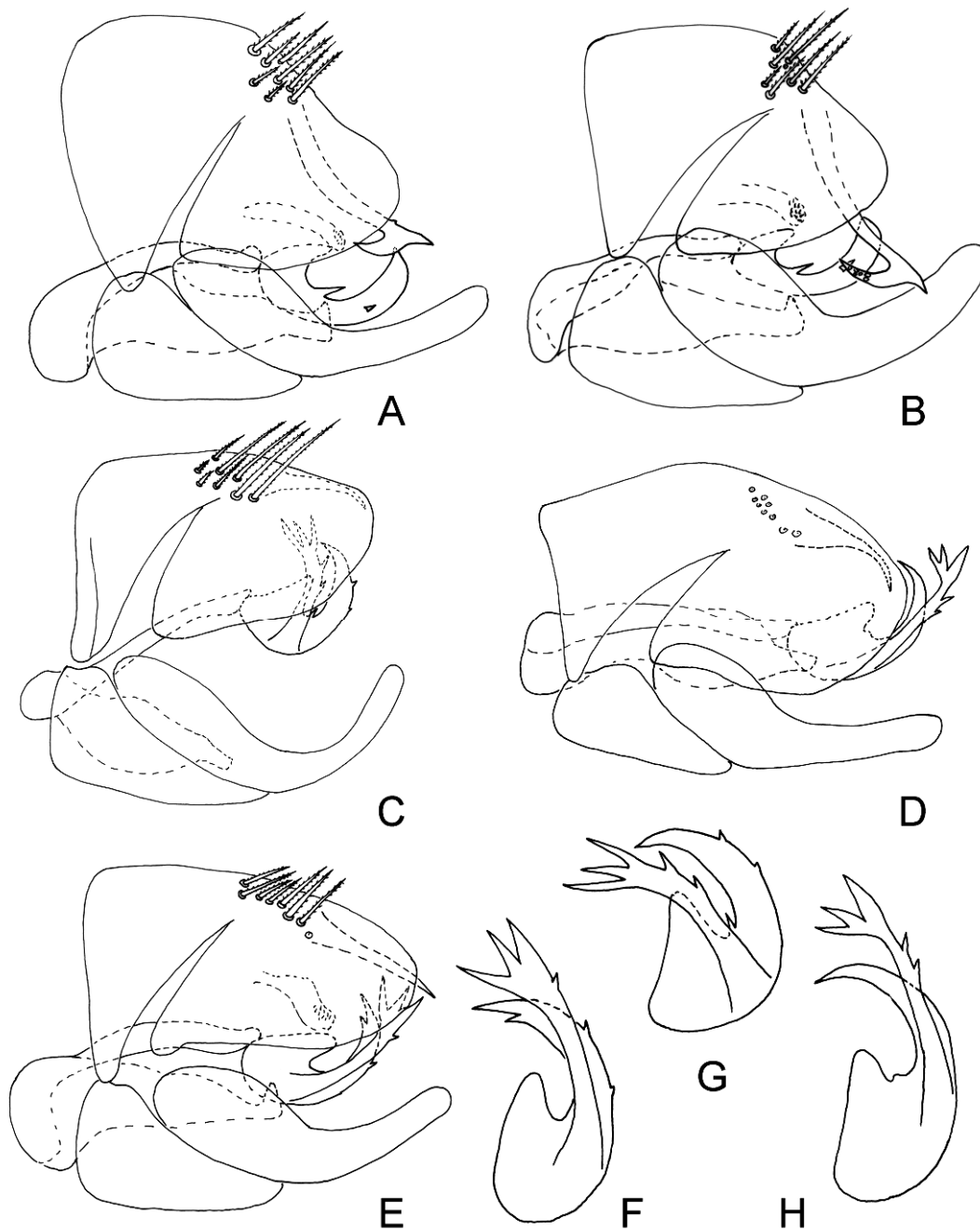


Fig. 2: A-B *Cicadulina (Cicadulina) bipunctata* (Melichar), male genital capsule, lateral view; C-H *Cicadulina (Idyia) fijiensis* Linnavuori, C-E pygofer, lateral view, showing variation in dorsal process; F-H aedeagus, lateral view, showing variation in shaft and basal process.

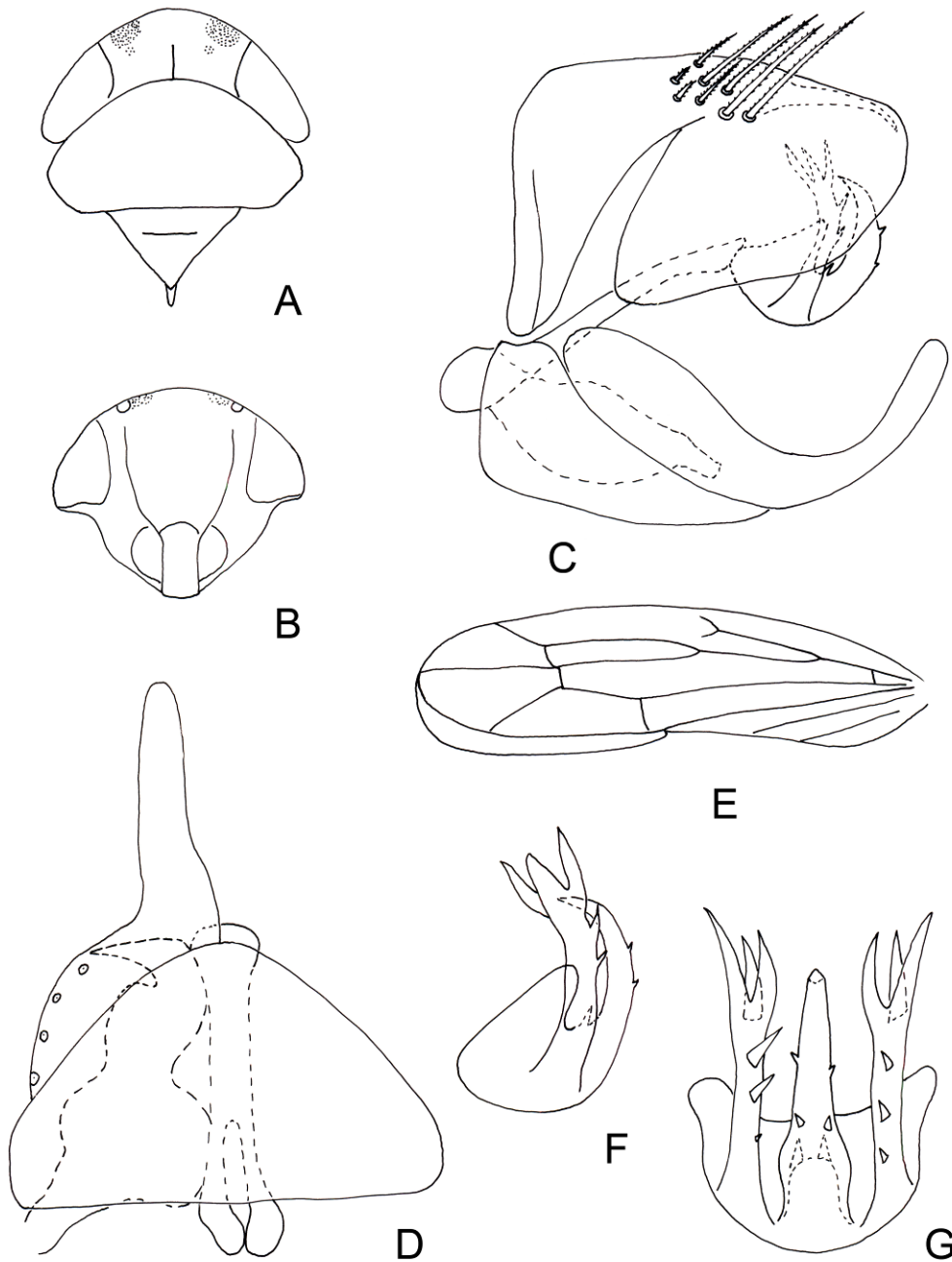


Fig. 3: *Cicadulina (Idyia) fijiensis* Linnavuori, A head and thorax, dorsal view; B face; C male genital capsule, lateral view; D valve, subgenital plate, style and connective, ventral view; E Forewing; F aedeagus, lateral view; G aedeagus, ventral view.

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References

- Linnavuori, R.E. (1960): Cicadellidae (Homoptera, Auchenorrhyncha) of Fiji. – *Acta Entomologica Fennica* 15: 1–71.
- Matsumura, S. (1914): Die Jassinen und einige neue Acocephalinen Japans. – *Journal of the College of Agriculture, Tohoku Imperial University, Sapporo* 5: 165–240.
- Melichar, L. (1904): Neue Homopteren aus Süd-Schoa, Gala und Somal-Ländern. – *Verhandlungen der Kaiserlich-Königlichen Zoologisch-botanischen Gesellschaft in Wien* 54: 25–48.
- Ruppel, R.F. (1965): A review of the genus *Cicadulina* (Hemiptera, Cicadellidae). – *Publications of the Museum of Michigan State University, Biological Series* 2(8): 385–428.
- Webb, M.D. (1987a): Distribution and male genitalic variation in *Cicadulina bipunctata* and *C. bimaculata* (Homoptera, Cicadellidae). – In: Wilson, M.R. & Nault, L.R. (eds.): *Proceedings of 2nd International Workshop on Leafhoppers and Planthoppers of Economic Importance*, Brigham Young University, Provo, Utah, USA, 28th July–1st August 1986 (London), CAB International Institute of Entomology: 235–240.
- Webb, M.D. (1987b): Species recognition in *Cicadulina* leafhoppers (Hemiptera: Cicadellidae), vectors of pathogens of Gramineae. – *Bulletin of Entomological Research* 77: 683–712.