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A TAXONOMIC REVIEW OF *MATSUMURELLA* ISHIHARA (HEMIPTERA: CICADELLIDAE: DELTOCEPHALINAE) FROM CHINA

YALIN ZHANG AND WU DAI

Key Laboratory of Plant Protection Resources and Pest Management, Ministry of Education, Entomological Museum, Northwest Sci-Tech University of Agriculture and Forestry, Yangling, Shaanxi 712100, China (e-mail: yalinzh@nwsuaf.edu.cn; daiwu@nwsuaf.edu.cn)

Abstract.—The nine species of the genus *Matsumurella* Ishihara from China are reviewed and illustrations of genitalia are provided. Among them, two **new species**, ***M. protrudea*** and ***M. parallela***, are described bringing the number of species in the world to twelve. A key is given to Chinese species.

Key Words: Homoptera, Cicadellidae, Deltocephalinae, *Matsumurella*, new species, China

The leafhopper genus *Matsumurella* (Deltocephalinae: Athysanini) was established by Ishihara (1953) for two species from Japan, *M. kogotensis* (Matsumura,1914), the type species, and *M. praesul* (Horvath,1899). Later, Ishihara (1958) proposed an unnecessary replacement name (*Shonenus*), for *Matsumurella,* [preoccupied by *Matsumuraiella* Enderlein, 1906 (Psocoptera)]. Emeljanov (1962) described one new species *M. phaea* and tranfered *M. praestans* (Jacobi, 1943) to the genus from *Allygus.* Anufriev (1971) placed *M. praestans* (Jacobi, 1943) in synonymy with *M. praesul* (Horvath, 1899) and described two new species (*M. curticauda* and *M. longicauda*) from China and one (*M. phaeicola*) from Japan. Later, *M. expansa* Emeljanov, 1972, and *M. minor* Emeljanov, 1977, were described from Mongolia. Recently, Cai and Wang (2002) described two new species *M. rurcata* and *M. singularis* from China.

This paper is a taxonomic review of the genus *Matsumurella* Ishihara in China. All twelve species of the genus are listed, and a key is given to the nine Chinese species (two new).

Type specimens and other materials examined are deposited in the Institute of Zoology, Chinese Academy of Sciences (IZCAS), Entomological Museum of Northwest Sci-Tech University of Agriculture and Forestry (NWSUAF), Shanghai Entomological Museum (SEM), and Nankai University (NKU), Tianjin.

Matsumurella Ishihara

Matsumurella Ishihara 1953a: 200. Type species: *Jassus kogotensis* Matsumura, 1914, by original designation.

Shonenus Ishihara 1958: 232. Unnecessary replacement name for *Matsumurella* Ishihara 1953

Description.—Body elongate, robust. Head including eyes narrower than pronotum. Crown longer medially than next to eyes, shorter than width between eyes; anterior margin roundly produced anteriorly in dorsal view; disc somewhat flat. Transition of vertex and frontoclypeus rounded. Eyes fairly large; ocellus situated on frontal margin of crown next to corresponding eye, separated from eye by distance equal to its diameter. Clypellus similar in width

throughout length. Pronotum with anterior margin roundly produced and posterior margin slightly concave. Scutellum almost 1½ times length of head, with transverse suture curved and depressed. Forewing elongate with a few extra cross veins; appendix wide.

Male pygofer side tapering to a caudal projection, dorsoposterior margin with several macrosetae. Subgenital plate with several macrosatae laterally. Connective Y-shaped, shaft short and robust, arms well developed. Paramere with basal half wide and narrowing to middle, apical half narrow, lateral lobe absent or weakly developed. Aedeagus with basal apodeme well developed, shaft elongate, compressed dorsoventrally, curved dorsally with one or two pair of apical appendages; phallotreme subapical or distad from penis apex.

Distribution.—China, Japan, Korea, Mongolia and Russia (Amur, Maritime Territory, Kurile Islands).

World Checklist of the Genus *Matsumurella* Ishihara

M. curticauda Anufriev 1971. China.
M. expansa Emeljanov 1972. China, Mongolia.
M. kogotensis (Matsumura 1914). Japan.
M. longicauda Anufriev 1971. China.
M. minor Emeljanov 1977. China, Mongolia.
M. parallela Zhang and Dai, n. sp. China.
M. phaea Emeljanov 1962. Russia (Amur, Maritime Territory).
M. phaeicola Anufriev 1971. Japan.
M. praesul (Horvath 1899). China, Japan, Korea, Russia (Maritime Territory, Kurile Islands).
M. protrudea Zhang and Dai, n. sp. China.
M. rurcata Cai and Wang 2002. China.
M. singularis Cai and Wang 2002. China.

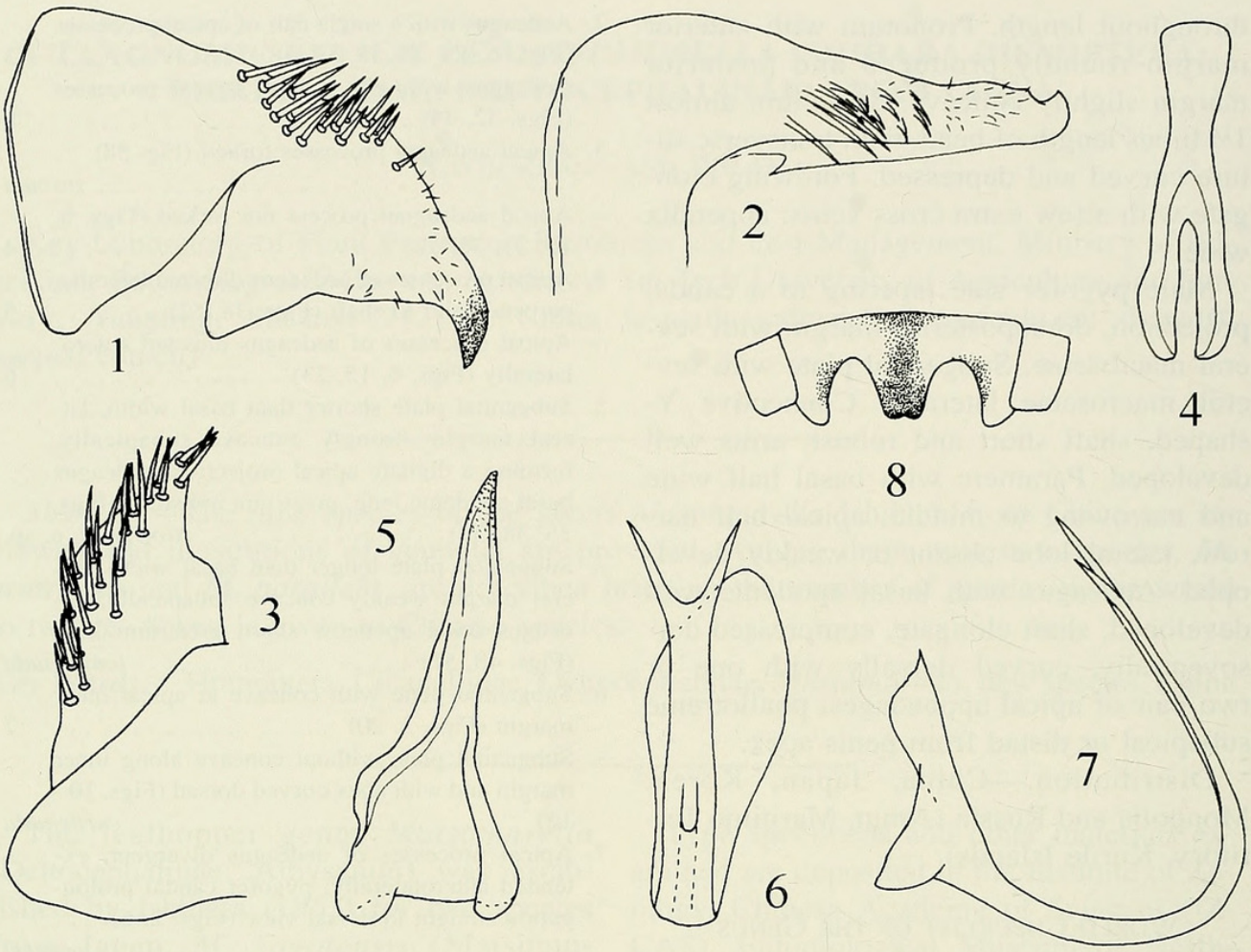
Key to Species from China (♂)

1. Aedeagus with a single apical process (Fig. 65) . . . . . *singularis*
– Aedeagus with one or two pair of apical processes (Figs. 6, 15, 23, 32, 38, 44, 52, 58) . . 2
2. Aedeagus with a single pair of apical processes (Figs. 6, 15, 23, 38, 52, 58) 3
– Aedeagus with two pair of apical processes (Figs. 32, 44) 8
3. Apical aedeagal processes forked (Fig. 58) . . . . . *rurcata*
– Apical aedeagual process not forked (Figs. 6, 15, 23, 38, 52) 4
4. Apical processes of aedeagus directed laterally, perpendicular to shaft (Figs. 38, 52) 5
– Apical processes of aedeagus directed anterolaterally (Figs. 6, 15, 23) 6
5. Subgenital plate shorter than basal width, lateral margin strongly concave subapically, forming a digitate apical projection; aedeagus basal apodeme long, preatrium indistinct (Figs. 35, 38, 39) . . . . . *protrudea*, n. sp.
– Subgenital plate longer than basal width, lateral margin weakly concave subapically; aedeagus basal apodeme short, preatrium long (Figs. 48, 51) . . . . . *longicauda*
6. Subgenital plate with concave at apical inner margin (Figs. 3, 20) 7
– Subgenital plate without concave along inner margin and with apex curved dorsad (Figs. 10–12) . . . . . *curticauda*
7. Apical processes of aedeagus divergent, extended anterolaterally; pygofer caudal prolongation straight in dorsal view (Figs. 2, 6) . . . . . *praesul*
– Apical processes of aedeagus nearly parallel, extended apically; pygofer caudal prolongation waved apically in dorsal view (Figs. 19, 23) . . . . . *expansa*
8. Subgenital plate with lateral margin concave subapically, protruded at apex; aedeagus with subapical processes moderately long, terminating distad of aedeagal base in lateral view (Figs. 29, 33) . . . . . *parallela*, n. sp.
– Subgenital plate with lateral margin produced lobelike subapically; aedeagus with subapical processes long terminating near aedeagal base in lateral view (Figs. 40, 45) . . . . . *minor*

Matsumurella praesul (Horvath) (Figs. 1–8)

Jassus praesul Horvath 1899: 370; Matsumura 1914: 206.

Matsumurella praesul: Ishihara 1953b: 41; Metcalf 1967: 1004–1005; Anufriev 1971: 515; Nast 1972: 369; Anufriev 1979a: 165; Lee 1979: 463, plate 37, fig. 186a, b, figs. 402–403, 404 (1–2); Anufriev & Emeljanov 1988: 205, plate 140, fig. 1, plate 141, figs. 1–7.



Figs. 1–8. *Matsumurella praesul*. 1, Male pygofer side, lateral view. 2, Male pygofer side, dorsal view. 3, Genital valve and subgenital plate, ventral view. 4, Connective. 5, Paramere, dorsal view. 6, Aedeagus, dorsal view. 7, Aedeagus, lateral view. 8, Female abdominal sternum VII, ventral view.

Shonenus praesul: Vilbaste 1968: 143, plate 115, figs. 1–8.

Allygus praestans Jacobi 1943a: 29; Anufriev 1971: 515, figs. 22–23; Anufriev 1979a: 165.

Matsumurella praestans: Emelyanov 1962: 162, fig. 19; Metcalf 1967: 983; Anufriev 1971: 515, figs. 22–23; Nast 1972: 369.

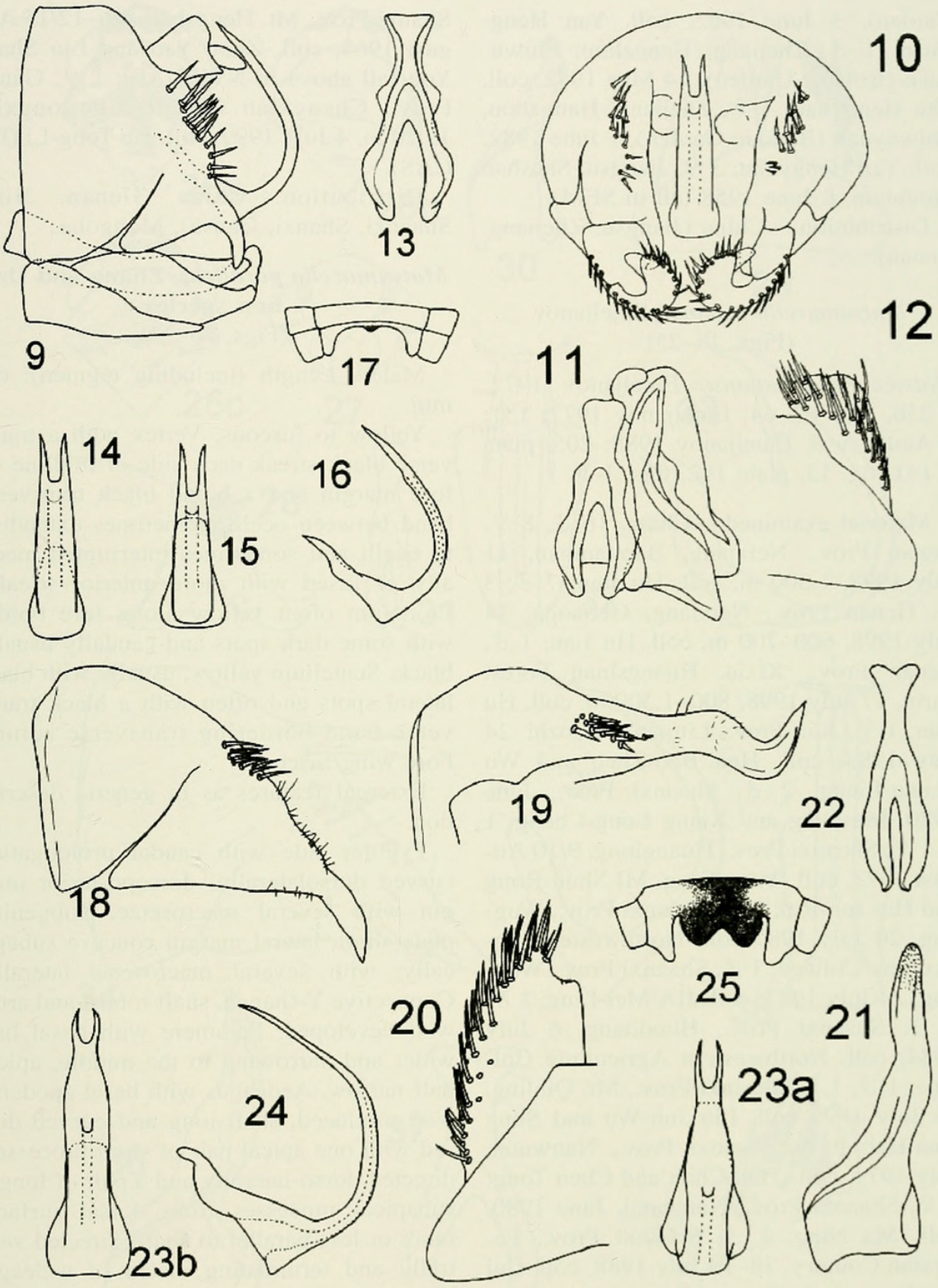
Material examined.—China, 1♂, Jilin Prov., 10 June 1940 (IZCAS); 1♂, 8♀, Jilin Prov., Linjiang, Hongtushan Forest Farm, 31 July 1983, coll. Wu Zheng-Liang and Hua Bao-Zhen (NWSUAF); 2 ♂,3 ♀, Jilin Prov., Linjing, Naozhi, 22–24 July 1983, coll. Wu Zheng-Liang and Hua Bao-Zhen (NWSUAF); 4 ♂, 4 ♀, Jilin Prov., Linjiang, Dongxiaoshan Forest Farm, 3 July 1983 coll. Wu Zheng-Liang and Hua Bao-Zhen (NWSUAF); 1 ♀, Heilongjiang Prov., Yuying, 21 August 1978, coll. Fang San-Yang (NWSUAF); 1 ♂, Heilongjiang Prov., Dailing, 390 m, 24 July 1957, He Zhong (IZCAS); 1 ♀, Heilongjiang Prov., Dailing, 390 m, 6 August 1963, coll. Bai Jiu-Wei (IZCAS); 1 ♂, Heilongjiang Prov., Yichun, Wuyingkou, 24 July 1980, coll. Zheng (NKU); 1 ♂, Heilongjiang Prov., Bolitongtun, 29 July 1980, coll. Wang (NKU).

Distribution.—China (Heilongjiang, Jilin), Japan, Korea, Rossia (Maritime Territory, Kurile Islands).

Matsumurella curticauda Anufriev
(Figs. 9–17)

Matsumurella curticauda Anufriev 1971: 512, figs. 5–9; Cai and Shen 2002: 274.

Material examined.—China: 2 ♂, 1 ♀, Zhejiang, Hangzhou, Zhiwuyuan (Botanic



Figs. 9–25. 9–17, *Matsumurella curticauda* (reproduced from Anufriev 1971). 9, Male pygofer, lateral view. 10, Male pygofer, caudal view. 11, Genital valve, subgenital plate, paramere and connective, dorsal view. 12, Genital valve and subgenital plate, ventral view. 13, Connective. 14, Aedeagus, caudal view. 15, Aedeagus, dorsal view. 16, Aedeagus, lateral view. 17, Female abdominal sternum VII, ventral view. 18–25, *M. expansa.* 18, Male pygofer side, lateral view. 19, Male pygofer side, dorsal view. 20, Genital valve and subgenital plate, ventral view. 21, Paramere, dorsal view. 22, Connective. 23a, Aedeagus dorsal view. 23b, Aedeagus, caudal view. 24, Aedeagus, lateral view. 25, Female abdominal sternum VII, ventral view.

Garden), 3 June 1982, coll. Yan Heng-Yuan; 1 ♂, Zhejiang, Hangzhou, Zhiwuyuan (Botanic Garden), 24 May 1982, coll. Yan Hengyuan; 1 ♀, Zhejiang, Hangzhou, Zhiwuyuan (Botanic Garden), 1 June 1982, coll. Yan Hengyuan; 3 ♀, Jiangsu, Sheshan Mountain, 8 June 1958 (all in SEM).

Distribution.—China (Jiangsu, Zhejiang, Henan).

Matsumurella expansa Emeljanov
(Figs. 18–25)

Matsumurella expansa Emeljanov 1972: 236, figs. 63–64; Emeljanov 1977: 151; Anufriev & Emeljanov 1988: 205, plate 141, fig. 13, plate 142, figs. 1–5.

Material examined.—China, 16 ♂, 8 ♀, Henan Prov., Neixiang, Baotianman, 11 July 1998, 1,300 m, coll. Hu Jian; 7 ♂, 3 ♀, Henan Prov., Neixiang, Getiaopa, 14 July 1998, 600–700 m, coll. Hu Jian; 1 ♂, Henan Prov., Xixia, Huangshian Forest Farm, 17 July 1998, 800–1,300 m, coll. Hu Jian; 1 ♀, Jilin Prov., Linjiang, Naozhi, 24 July 1983, coll. Hua Bao-Zhen and Wu Zheng-Liang; 2 ♂, Shaanxi Prov., June 1980, Ma Ning and Xiang Long-Cheng; 1 ♂,1 ♀, Shaanxi Prov., Huanglong, 9/10 August 1973, coll. Yuan Feng, MI Shun-Rong and Hui Jun-Rui; 1 ♂, Shaanxi Prov., Wugong, 20 July 1987 coll. Northwestern Agriculture College; 1 ♂, Shaanxi Prov., Wugong, 24 July 1987, coll. JIA Mei-Ling; 1 ♂, 2 ♀, Shaanxi Prov., Huoditang, 6 July 1984, coll. Northwestern Agriculture College; 1 ♂, 1 ♀, Shaanxi Prov., Mt. Qinling, 24 July 1995 coll. Liu Jun-Wu and Song Hua-Hai; 3 ♂, Shaanxi Prov., Nanwutai, July 1979, coll. Tian Chou and Chen Tong; 1 ♀, Shaanxi Prov., Nanwutai, June 1980, coll. Ma Ning; 1 ♂, Shaanxi Prov., Fengxian Country, 18–19 July 1988, coll. Cui Jun-Feng; 1 ♂, Shaanxi Prov., Yanan, June 1980, coll. Ma Ning and Xiang Long-Cheng; 1 ♀, Shaanxi Prov., Mt. Taibeishan, Haopingsi, 1,165 m, 19/22 July 1956, coll. Zhou Yao; 1 ♂, Shaanxi Prov., June 1980, coll. Ma Ning and Xiang Long-Cheng; 1 ♀, Shanxi Prov., Mt. Hengshan, 4/6–12/15 August 1964, coll. Zhou Yao and Liu Shao-You (all above in NWSUAF); 1 ♀, Gansu Prov., Chengxian Country, Feilongxia, 1,020 m, 4 July 1999, coll. He Tong-Li (IZ-CAS).

Distribution.—China (Henan, Jilin, Shaanxi, Shanxi, Gansu), Mongolia.

***Matsumurella parallela*, Zhang and Dai, new species**
(Figs. 26–33)

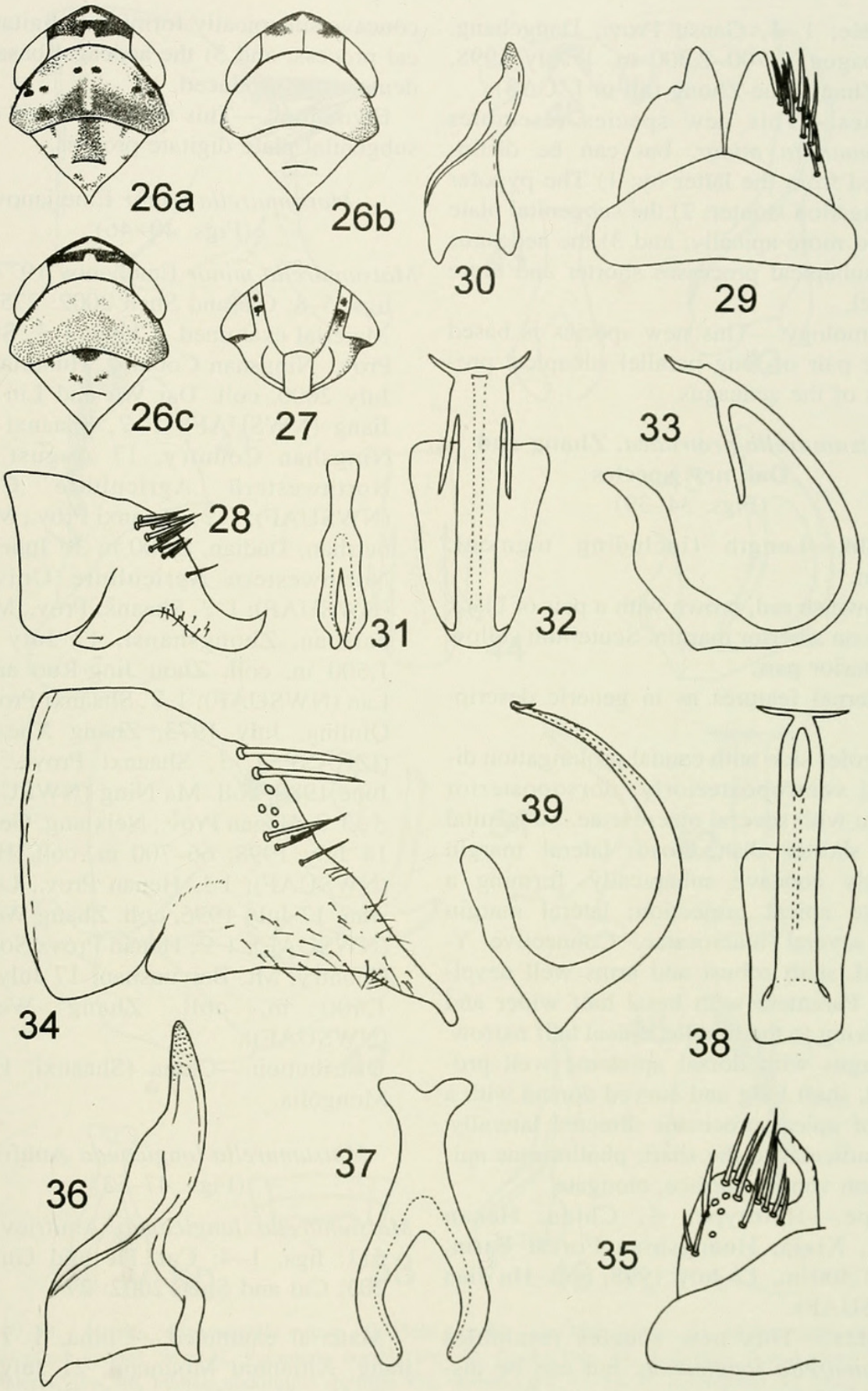
Male.—Length (including tegmen): 6.5 mm.

Yellow to fuscous. Vertex with a transverse black streak each side of midline on fore margin and a broad black transverse band between ocelli, sometimes extending to ocelli and sometimes interrupted medially or fused with more anterior streaks. Pronotum often yellow along fore border with some dark spots and caudally usually black. Scutellum yellow, usually with black lateral spots and often with a black transverse band bordering transverse suture. Fore wing fuscous.

External features as in generic description.

Pygofer side with caudal prolongation curved dorsolaterally; dorsoposterior margin with several macrosetae. Subgenital plate short, lateral margin concave subapically, with several macrosetae laterally. Connective Y-shaped, shaft robust and arms well developed. Paramere with basal half wider and narrowing to the middle, apical half narrow. Aedeagus with basal apodeme well produced, shaft long and curved dorsad with one apical pair of short processes, directed dorso-laterally and a pair of longer subapical processes from dorsal surface, more or less parallel to shaft, directed ventrally and terminating distad of aedeagal base in lateral view; phallotreme apical on ventral surface, short.

Types.—Holotype: ♂, China, Gansu Prov., Wenxian, Qiujiaba, 2,000–2,100 m 1 July 1998, coll. Yao Jian. Paratypes: China, 1 ♂, same data as holotype, coll. Yang



Figs. 26–39. 26–33, *Matsumurella parallela.* 26, Head and thorax, dorsal view. 27, Face. 28, Male pygofer side, lateral view. 29, Male genital valve and subgenital plates (left plate setae omitted), ventral view. 30, Paramere, dorsal view. 31, Connective. 32, Aedeagus, dorsal view. 33, Aedeagus, lateral view. 34–39, *M. protrudea.* 34, Male pygofer side, lateral view. 35, Male genital valve and subgenital plate, ventral view. 36, Paramere, dorsal view. 37, Connective. 38, Aedeagus, dorsal view. 39, Aedeagus, lateral view.

Xing-Ke; 1 ♂, Gansu Prov., Dangchang, Dahebagou, 1,700–2,300 m, 1 July 1998, coll. Zhang Xue-Zhong (all in IZCAS).

Notes.—This new species resembles *Matsumurella minor,* but can be distinguished from the latter by: 1) The pygofer prolongation stouter; 2) the subgenital plate tapered more apically; and 3) the aedeagus with subapical processes shorter and more parallel.

Etymology.—This new species is based on the pair of long parallel subapical processes of the aedeagus.

Matsumurella protrudea, Zhang and Dai, new species

(Figs. 34–39)

Male.—Length (including tegmen): 6.1mm.

Brownish red, crown with a pair of black marks on anterior margin. Scutellum yellow on anterior part.

External features as in generic description.

Pygofer side with caudal prolongation directed ventroposteriorly; dorsoposterior margin with several macrosetae. Subgenital plate shorter than broad, lateral margin strongly concave subapically, forming a digitate apical projection; lateral margin with several macrosatae. Connective Y-shaped, shaft robust and arms well developed. Paramere with basal half wider and narrowing to the middle, apical half narrow. Aedeagus with dorsal apodeme well produced, shaft long and curved dorsad with a pair of apical processes directed laterally, perpendicular to the shaft; phallotreme apically on ventral surface, elongate.

Type.—Holotype: ♂, China, Henan Prov., Xixia, Huangshian Forest Farm, 800–1,300 m, 17 July 1998, coll. Hu Jian (NWSUAF).

Notes.—This new species resembles *Matsumurella longicauda,* but can be distinguished from the latter by: 1) The pygofer caudal prolongation straighter and directed posteroventrally; 2) the subgenital plate shorter with lateral margin strongly concave subapically forming a digitate apical process; and 3) the aedeagal basal apodeme more produced.

Etymology.—This name is based on the subgenital plate digitate process.

Matsumurella minor Emeljanov

(Figs. 40–46)

Matsumurella minor Emeljanov 1977: 151, figs. 5–8; Cai and Shen 2002: 275.

Material examined.–China, 1 ♂, Shaanxi Prov., Ningshan Country, Huoditang, 22 July 2000, coll. Dai Wu and Liu Zhen-Jiang (NWSUAF); 1 ♀, Shaanxi Prov., Ningshan Country, 17 August 1984, Northwestern Agriculture College (NWSUAF); 1 ♀, Shaanxi Prov., Mt. Taibaishan, Dadian, 2,300 m 30 June 1987, Northwestern Agriculture University (NWSUAF); 1 ♀, Shaanxi Prov., Mt. Taibaishan, Zhongshansi, 17 July 1982, 1,500 m, coll. Zhou Jing-Ruo and Liu Lan (NWSUAF); 1 ♀, Shaanxi Prov., Mt. Qinling, July 1973, Zhang Xue-Zhong (IZCAS); 1 ♂, Shaanxi Prov., Yanan, June 1980, coll. Ma Ning (NWSUAF); 2 ♂, 3 ♀, Henan Prov., Neixiang, Getiaopa, 14 July 1998, 66–700 m, coll. Hu Jian (NWSUAF); 1♂, Henan Prov., Longyuwan, 17 July 1996, coll. Zhang Wen-Zhu (NWSUAF); 1 ♀, Henan Prov., Songxian Country, Mt. Baiyunshan, 17 July 1996, 1,400 m, coll. Zhang Wen-Zhu (NWSUAF);.

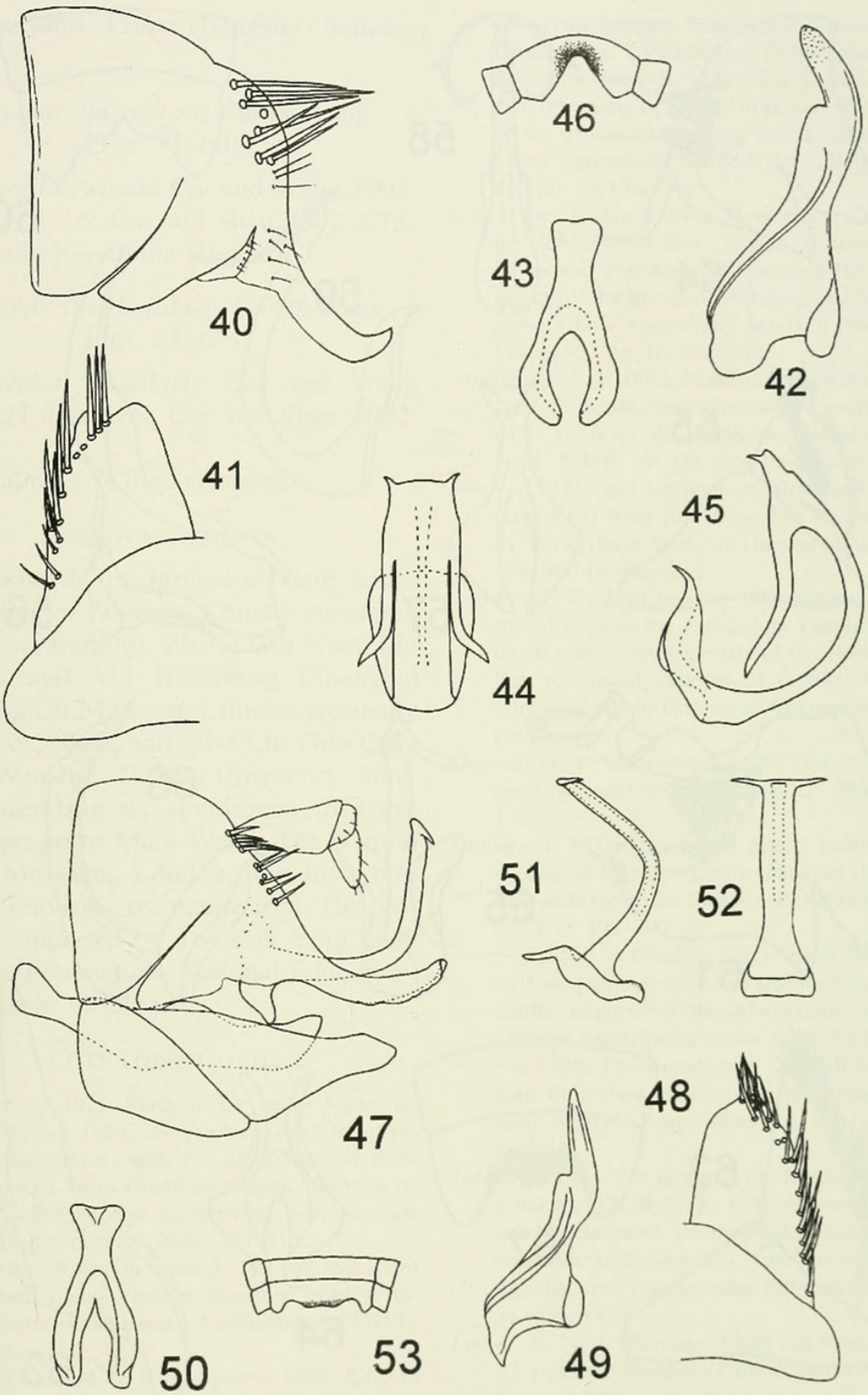
Distribution.—China (Shaanxi, Henan), Mongolia.

Matsumurella longicauda Anufriev

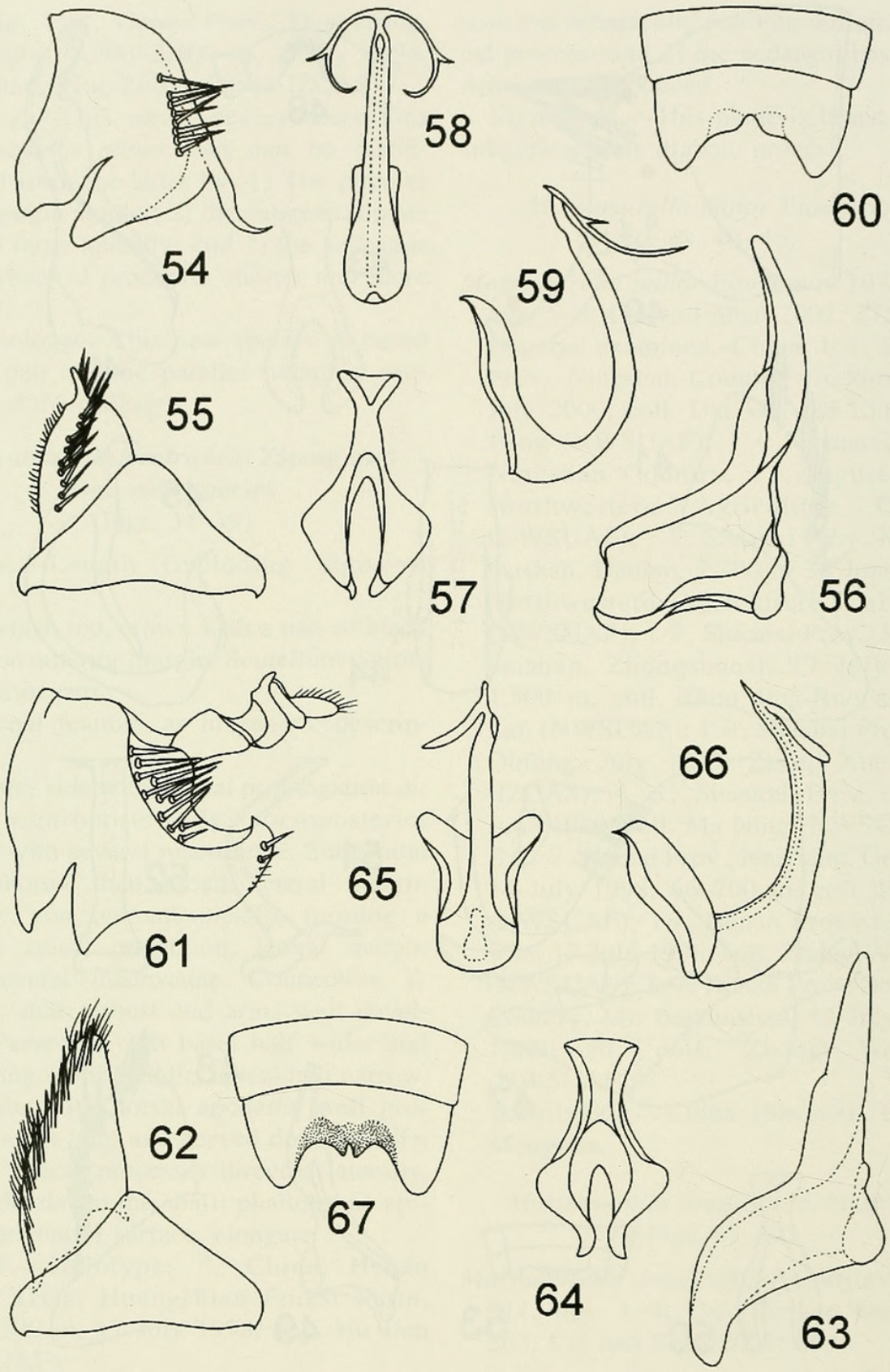
(Figs. 47–53)

Matsumurella longicauda Anufriev 1971: 511, figs. 1–4; Cai, He and Gu 2001: 203; Cai and Shen 2002: 274.

Material examined.—China, 1 ♀, Zhejiang, Xitianmu Mountain, 21 July 1981, coll. Yan Heng-Yuan; 1 ♂, Zhejiang, Mt. Tianmushan, 22 July 1981, coll. Yan Heng-Yuan; 1 ♂, Zhejiang, Hangzhou, 21 May 1983, coll. Zheng Jian-Zhong (all in SEM).



Figs. 40–53. 40–46, *Matsumurella minor*. 40, Male pygofer side, lateral view. 41, Male genital valve and subgenital plate, ventral view. 42, Paramere, dorsal view. 43, Connective. 44, Aedeagus, dorsal view. 45, Aedeagus, lateral view. 46, Female abdominal sternum VII, ventral view. 47–53, *M. longicauda*. 47, Male pygofer (genital capsule), lateral view. 48, Male genital valve and subgenital plate, ventral view. 49, Paramere, dorsal view. 50, Connective. 51, Aedeagus, lateral view. 52, Aedeagus, dorsal view. 53, Female abdominal sternum VII, ventral view.



Figs. 54–67. 54–60, *Matsumurella rurcata* (reproduced from Cai and Wang 2002). 54, Male pygofer side, lateral view. 55, Male genital valve and subgenital plate, ventral view. 56, Paramere, dorsal view. 57, Connective. 58, Aedeagus, dorsal view. 59, Aedeagus, lateral view. 60, Female abdominal sternum VII, ventral view. 61–67, *M. singularis* (reproduced from Cai and Wang 2002). 61, Male pygofer side, lateral view. 62, Male genital valve and subgenital plate, ventral view. 63, Paramere, dorsal view. 64, Connective. 65, Aedeagus, dorsal view. 66, Aedeagus, lateral view. 67, Female abdominal sternum VII, ventral view.

Distribution.—China (Jiangsu, Zhejiang, Henan).

Matsumurella rurcata Cai et Wang
(Figs. 54–60)

Matsumurella rurcata Cai and Wang 2002: 22, figs. 9–16; Cai and Shen 2002: 275.
Distribution.—China (Henan).

Matsumurella singularis Cai et Wang
(Figs. 61–67)

Matsumurella singularis Cai and Wang 2002: 21,figs. 1–8; Cai and Shen 2002: 275.
Distribution.—China (Henan).

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Literature Cited

Anufriev, G. A. 1971. Study of the genus *Matsumurella* Ishihara 1953, (Homoptera, Auchenorrhyncha, Cicadellidae) with the description of three new species from China and Japan. Bulletin de l'Academie Polonaise des Sciences. Serie des Sciences Biologiques 19(7&8): 511–516.

———. 1979a. Notes on some A. Jacobi's species of auchenorrhynchous insects described from North-East China (Homoptera). Reichenbachia 17(19): 163–170.

Anufriev, G. A. and A. F. Emeljanov. 1988. Keys to the Identification of Insects of the Soviet Far East, Vol. 2. Homoptera & Heteroptera. Nauka, Leningrad, Russia, 972 pp. [in Russian].

Cai, P., J. He, and X. Gu. 2001. Cicadellidae, pp. 185–218. *In* Wu, H. and Ch. Pan., eds. Insects of Tianmushan National Nature Reserve. Science Press, Beijing, China, 764 pp. [in Chinese].

Cai, P. and J. Wang. 2002. Two new species of *Matsumurella* Ishihara from Henan Province, China (Homoptera: Cicadellidae: Deltocephalinae), pp. 21–24. *In* Shen, X. and Y. Zhao, eds. The Fauna and Taxonomy of Insects in Henan, Vol. 5. Insects of the Mountains Taihang and Tongbai Regions. China Agricultural Sci-Tech Press, Beijing, China, 453 pp. [in Chinese].

Cai, P. and X. Shen. 2002. Homoptera: Cicadellidae, pp. 269–279. *In* Shen, X. and Y. Zhao, eds. The Fauna and Taxonomy of Insects in Henan, Vol. 5. Insects of the Mountains Taihang and Tongbai Regions. China Agricultural Sci-Tech Press, Beijing, China. 453 pp. [in Chinese].

Emeljanov, A. F. 1962. Materials on taxonomy of Palaearctic leafhoppers (Auchenorrhyncha, Euscelinae). Trudy Zoologicheskogo Instituta Akademii Nauk, USSR, 30: 156–184 [in Russian].

———. 1972. New leafhoppers (Homoptera, Auchenorrhyncha) from the Mongolian People's Republic. Nasekomye Mongolii [Insects of Mongolia] 1: 199–260 [in Russian].

———. 1977. Leaf-hoppers (Homoptera, Auchenorrhyncha) from the Mongolian People's Republic based mainly on materials of the Soviet-Mongolian zoological expeditions (1967–1969). Nasekomye Mongolii [Insects of Mongolia] 5: 96–195 [in Russian].

Horvath G. 1899. Hémiptères de l'ile de Yesso (Japon). Természetrajzi Füzetek 22: 365–374, figs. 1–2.

Ishihara, T. 1953a. Some new genera including a new species of Japanese Deltocephalidae (Hemiptera). Transactions of the Shikoku Entomological Society 3(8): 192–200

———. 1953b. A tentative check list of the superfamily Cicadelloidea of Japan (Homoptera). The Scientific Reports of the Matsuyama Agricultural College, Matsuyama, Japan 11: 1–72,17 pls.

———. 1958. The superfamily Cicadelloidea of Niigata Prefecture, North Honshu, Japan (Hemiptera). Kontyû, Tokyo, Japan 26: 225–232 [in Japanese].

Jacobi, A. 1943. Zur Kenntnis der Insekten von Mandschukuo. 12. Beitrag. Eine Homopterenfaunula der Mandschurei. (Homoptera: Fulgoroidea, Cercopoidea, and Jassoidea). Arbeiten über Morphologische und Taxonmische Entomologie 10: 21–31, figs. 1–10.

Lee, C. E. 1979. Illustrated Flora and Fauna of Korea. 23. Insecta 7. Samhwa Publishing Co. Ltd. Seoul., Korea, 1,070 pp. [in Korean].

Matsumura, S. 1914. Die Jassinen und einige neue Acocephalinen Japans. Journal of the College of Agriculture, Tohoku Imperial University, Sapporo, Japan 5: 165–240, figs. 1–12.

Metcalf, Z. P. 1967. General Catalogue of the Homoptera. Fascicle 6 Cicadellidae. Part 10, Sections I, II, III, Euscelidae. Agricultural Research Service,

United States Department of Agriculture, Washington, D.C., 2,695 pp.

Nast, J. 1972. Palaearctic Auchenorrhyncha (Homoptera): An Annotated Check List. Institute of Zoology, Polish Academy of Sciences, Polish Scientific Publisher, Warsaw, 550 pp.

Vilbaste, J. 1968. Über die Zikadenfauna des Primorje Gebietes. Tallin, Estonia, 180 pp. [in Russian].