



A contribution to the Cicadidae fauna of Vietnam (Hemiptera: Auchenorrhyncha), with one new species and twenty new records

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Abstract

According to previous reports, the number of cicada species known from Vietnam is 131; these represent 45 genera. *Neotanna yunnanensis* Lei et Chou, 1997 and *Neotanna sinensis* Ouchi, 1938 are transferred to *Tanna* Distant, 1905 to become *Tanna yunnanensis* (Lei et Chou, 1997) **comb. nov.** and *Tanna sinensis* (Ouchi, 1938) **comb. nov.**, *Proretinata vemaculata* Chou & Yao, 1986 is transferred to *Angamiana* Distant, 1890 to become *Angamiana vemacula* (Chou et Yao, 1986) **comb. nov.**. Twenty additional species are here recorded for the fauna of Vietnam for the first time: *Scolopita lusiplex* Chou et Lei, 1997, *Hea fasciata* Distant, 1906, *Hea yunnanensis* Chou et Yao, 1995, *Katoa chlorotica* Chou et Lu, 1997, *Mogannia effecta* Distant, 1892, *Nipponosemia guangxiensis* Chou et Wang, 1993, *Ambragaeanana ambra* Chou et Yao, 1985, *Balinta tenebricosa* (Distant, 1888), *Gaeana cheni* Chou et Yao, 1985, *Gaeana hainanensis* Chou et Yao, 1985, *Sulphogaeana dolicha* Lei, 1997, *Paratalainga yunnanensis* Chou et Lei, 1992, *Formotosena seebohmi* (Distant, 1904), *Angamiana vemacula* (Chou et Yao, 1986), *Pomponia backanensis* **sp. nov.**, *Purana guttularis* (Walker, 1858), *Tanna yunnanensis* (Lei et Chou, 1997), *Tanna sinensis* (Ouchi, 1938), *Euterpnosia ruida* Lei et Chou, 1997, *Inthaxara flexa* Lei et Li, 1996, and *Sinosemia shirakii* Matsumura, 1927. One of these, *Katoa chlorotica*, is the first representative of the subfamily Tettigadinae and the tribe Tibicini for Vietnam. One new species, *Pomponia backanensis* sp. nov., is described and a key to species of Vietnamese *Pomponia* is provided.

Key words: Homoptera, Auchenorrhyncha, distribution, morphology, taxonomy

Introduction

Vietnam is one of the world's hot spots of biodiversity, reflected in its great diversity of landscapes and ecosystems, partly depending on the long and diversely structured coastline and the wide range of latitudes and altitudes of the country. There are differences in lake and river shores, tropical rainforest, monsoonal savannah, and sub-alpine scrubland, and two important river deltas located in both the north and south provide extensive wetland habitats.

All three subfamilies of Cicadidae, the Cicadinae, Cicadettinae, and Tettigadinae, are now known to be represented in Vietnam, the Tettigadinae being recorded here for the first time. The Cicadinae, with 116 species, are more dominant than the Cicadettinae, with 14 species, typical for the cicada fauna of the Oriental region.

Research on the faunistics and biogeography of the Cicadidae of Vietnam is at an early stage. According to Lee (2008), the recorded number of species is 111, including a *Pomponia* species which is yet to be described (Pham, 2004). Following a detailed review of Vietnamese cicadas since 2003 by the first author, a number of new records for species previously unrecorded from Vietnam were discovered in addition to a new

species of *Pomponia*, described below. In this paper we attempt to provide a better understanding of the Vietnamese cicada fauna, which has been poorly studied for many years.

Materials and methods

Material and collecting. Specimens were collected by netting and light trapping (usually from 6 to 11 pm) at the localities indicated in table 1 and figure 1.

Previously collected specimens were included in our evaluations. Specimens are deposited at the Department of Insect Systematics of the Institute of Ecology and Biological Resources, Hanoi. They are mounted on pins and dried, and are numbered with cross-reference to a book of field notes.

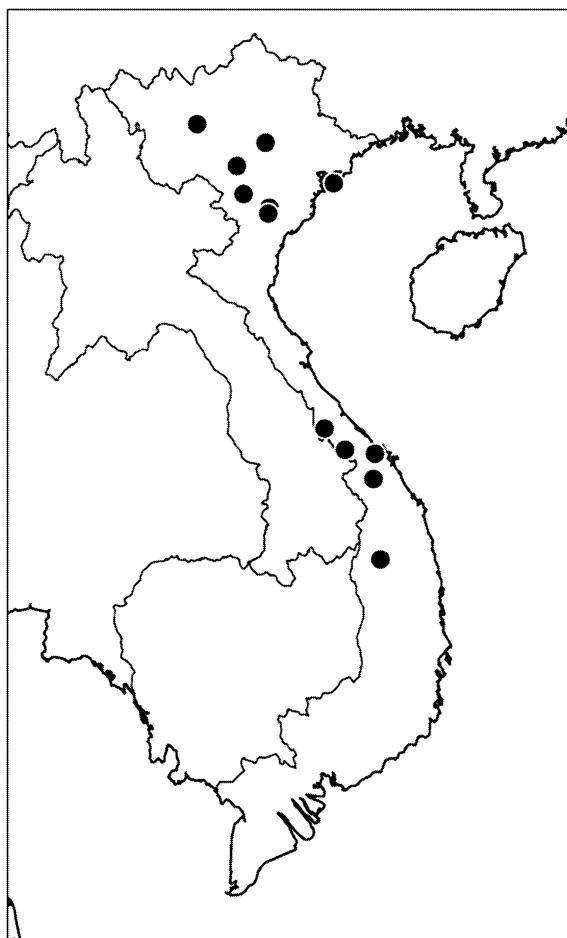


FIGURE 1. Map of the local collecting specimens.

Classification. The family and tribal classification of this study is based mainly on that of Moulds (2005). Genus and species names, as well as synonymies, follow the catalogues of Metcalf (1963a, b, and c) and Duffels & van der Laan (1985).

Specimens examined are listed by provinces (given in bold). Abbreviations are as follows: NP (National Park), NR (Natural Reserve), O (Oriental region), P (Palearctic region), I (Indochina), VN (Vietnam), SCN (South China).

The map showing the collecting localities for this study was created using the software CFF (Barbier & Rasmont, 2000).

TABLE 1: Collecting localities.

Commune, NP, and NR	District	Province
Ba Be NP	Ba Be	Bac Kan (North Vietnam)
Cat Ba NP	Cat Hai	Hai Phong (North Vietnam)
Cuc Phuong NP	Nho Quan	Ninh Binh (North Vietnam)
Xuan Son NP	Thanh Son	Phu Tho (North Vietnam)
Tam Dao NP	Tam Dao	Vinh Phuc (North Vietnam)
Che Tao	Mu Cang Chai	Yen Bai (North Vietnam)
Hang Kia-Pa Co NR	Mai Chau	Hoa Binh (North Vietnam)
Dakrong NR	Dakrong	Quang Tri (Central Vietnam)
Huc Nghi	Dakrong	Quang Tri (Central Vietnam)
Bach Ma NP	Bach Ma	Thua Thien-Hue (Central Vietnam)
Aroang	Aluoi	Thua Thien-Hue (Central Vietnam)
Chaval	Nam Giang	Quang Nam (South Vietnam)
Ngoc Linh NR	Dak Glei	Kon Tum (South Vietnam)

New records for Vietnam**Family Cicadidae Latrielle****Subfamily Cicadettinae Buckton****Tribe Cicadettini****Genus *Scolopita* Chou et Lei, 1997**

Scolopita Chou et Lei, 1997. *The Cicadidae of China*. Tianze Eldoneio, Hong Kong, 1997: 66.

Type species: *Melampsalta mokanshanensis* Ouchi, 1938, Shanghai Sci. Inst. Jour. (Sect. III) 4 : 109.

According to Chou *et al.*, 1997, this genus with the following characteristics: head including the eyes as wide as or slightly wider than base of mesonotum. Abdomen longer than head and thorax together; tympanal coverings absent. Postclypeus with median longitudinal sulci and lateral transverse sulci. M +CU1 of tegmen as long as below margin of base cell. Uncus slender, a small hook with below end margin; the lateral processes of pseudophallobase slightly expand at the end.

This genus differs from all the others of Cicadettini in the following characteristics: base of uncus almost as wide as its apex; phallus bow-shaped; the lateral processes of pseudophallobase expand near its end. This genus resembles *Rhodopsalta* Dugdale in body shape. but their uncus and pseudophallobase are different in shape.

***Scolopita lusiplex* Chou et Lei, 1997**

Scolopita lusiplex Chou et Lei, 1997. *The Cicadidae of China*. Tianze Eldoneio, Hong Kong, 1997: 69.

Material examined. Hai Phong: 3 male, Cat Ba NP, 150m, 17.vii.2003, coll. Pham Hong Thai.

Distribution: Vietnam (Hai Phong), China (Chou *et al.*, 1997).

Tribe Taphurini**Genus *Hea* Distant, 1906**

Hea Distant, 1906, Entomologist, 39: 121.

Type species: *Hea fasciata* Distant, 1906, Entomologist 39: 122.

***Hea fasciata* Distant, 1906**

Hea fasciata Distant, 1906, Entomologist 39: 122.

Material examined. Quang Nam: 1male, Chaval, Song Thanh NR, Nam Giang, 400m, 29.iv.2005, coll. Pham Hong Thai.

Distribution. Vietnam (Quang Nam prov.), China (Chou *et al.*, 1997)

***Hea yunnanensis* Chou et Yao, 1995**

Hea yunnanensis Chou et Yao, 1995. Entomotax. XVII(s): 202–203.

Material examined. Vinh Phuc: 1male, Tam Dao NP, 900–1200m, v.2003

Distribution. Vietnam (Vinh Phuc prov.), China (Chou *et al.*, 1997)

Subfamily Tettigadinae**Tribe Tibicinini****Genus *Katoa* Ouchi, 1938**

Katoa Ouchi, 1938, Shanghai. Sci. Inst. Jour (Sect. III) 4: 102.

Lisu Liu, 1940, Harvard. Uni. Mus. Compar. Zool. Bul. 87: 105.

Type species: *Katoa tenmokuensis* Ouchi, 1938, Shanghai Sci. Inst. Jour. (Sect. III) 4 : 103.

According to Moulds (2005), subfamily Tettigadinae includes tribes Platypediini Kato, Tettigadini Distant, and Tibicinini. The latter tribe is characterized as follows: forewing veins CuP and 1A not fused; hind wing veins RP and M free at base; distance between supra-antennal plate and eye about equal to length of antennal plate; uncus exceedingly long and non-retractable within pygofer; aedeagus with ventrobasal pocket present, aedeagus with apical part of theca bearing pair of leaf-like lateral lobes and a non-retractable tubular vesica; male opercula with distinctive S-shape, lateral margins deeply concave, distal margins not reaching distal margins of tympanal cavities, basally not extending beyond meracantha. Genus *Katoa* Ouchi, 1938 belongs to the tribe Tibicinini based on the above characteristics. Therefore in this paper genus *Katoa* is transferred to Tettigadinae.

***Katoa chlorotica* Chou et Lu, 1997**

Katoa chlorotica Chou et Lu, 1997. *The Cicadidae of China*. Tianze Eldoneio, Hong Kong, 1997: 94.

Material examined. Thua Thien-Hue: 1male, ARoang, Aluoi, 660m, 4.v.2005, coll. Pham Hong Thai;

Quang Nam: 1male, Chaval, Song Thanh NR, 350m, 27.iv.2005, coll. Pham Hong Thai; 5male, 3female, Chaval, Song Thanh NR, 350m, 29.iv.2005, coll. Pham Hong Thai.

Distribution: Vietnam (Thua Thien-Hue, Quang Nam provinces), China (Chou *et al.*, 1997)

Subfamily Cicadinae

Tribe Moganniini

Genus *Mogannia* Amyot & Serville, 1843

Mogannia Amyot & Serville, 1843, Hem. : 467.

Cephaloxys Signoret, 1874, Ann. Soc. Ent. Fr. : 294.

Type species: *Cicada conica* Germar, 1830, Tnon's Arch. II., 2: 39.

Mogannia effecta Distant, 1892

Mogannia effecta Distant, 1892, Ann. Mag. Nat. Hist., (6) 9: 316.

Material examined. Vinh Phuc: 2 male, Tam Dao NP, 900m, 15.vii.2001, coll. Hoang Vu Tru

Distribution. Vietnam (Vinh Phuc prov.), China, India, Nepal, Indonesia (Malcalf, 1963b, Duffels and van der Laan, 1985)

Genus *Nipponosemia* Kato, 1925

Nipponosemia Kato, 1925, Taiwan Nat. Hist. Soc. Trans., 15: 55.

Type species: *Abroma terminalis* Matsumura, 1913, Thous. Ins. Jep. Add., I: 82.

Nipponosemia guangxiensis Chou et Wang, 1993

Nipponosemia guangxiensis Chou et Wang, 1993. Entomotax. XV (2): 84–85.

Material examined. Vinh Phuc: 2male, Tam Dao NP, 1000m, 17.v.2004, coll. Hoang Vu Tru.

Distribution. Vietnam (Vinh Phuc prov.), China (Chou *et al.*, 1997)

Tribe Gaeanini

Gaeanini Schmidt, 1919, Stett. Ent Zeit. 80: 366.

Gaeanaria Distant, 1905a, Ann. Mag. Nat. Hist. (7)15: 383.

Type genus: *Gaeana* Amyot & Serville, 1843, Hist., Hem: 463

Genus *Ambragaeana* Chou et Yao, 1985

Ambragaeana Chou et Yao, 1985, Entomotax, VII (2): 126.

Type species: *Ambragaeana ambra* Chou et Yao, 1985.

***Ambragaeana ambra* Chou et Yao, 1985**

Ambragaeana ambra Chou et Yao, 1985, Entomotax. VII (2): 126.

Material examined. Kon Tum: 1male, Ngoc Linh NR, 1700m, 19.iv.2004, coll. Bui Xuan Phuong.

Distribution. Vietnam (Kon Tum prov.), China (Chou *et al.*, 1997)

Genus *Balinta* Distant, 1905

Balinta Distant, 1905a, Ann. Mag. Nat. Hist., (7) 15: 383.

Type species: *Cicada octonotata* Westwood, 1842, Ann. Mag. Nat. Hist., (1), 9: 121.

***Balinta tenebricosa* (Distant, 1888)**

Gaeana tenebricosa Distant, 1888, Ann. Mus. Civ. Gen. 26: 454.

Balinta tenebricosa: Distant, 1906, Fn. Brit. Ind. Rhynch. 3: 149.

Material examined. Ninh Binh: 1female, Cuc Phuong NP, 250m, 25.v.2005, coll. Pham Hong Thai.

Distribution. Vietnam (Ninh Binh prov.), Laos, Myanmar (Metcalf, 1963b), China (Chou *et al.*, 1997)

Genus *Gaeana* Amyot & Serville, 1843

Gaeana Amyot & Serville, 1843, Hist., Hem: 463.

Type species: *Cicada maculata* Drury, 1773, Illustr. Nat. Hist. 2: 68.

***Gaeana cheni* Chou et Yao, 1985**

Gaeana cheni Chou et Yao, 1985, Entomotax. VII (2): 129.

Material examined. Quang Tri: 5male, 3female, Huc Nghi, Dakrong, 250–350m, 6.v.2005, coll. Pham Hong Thai; **Thua Thien-Hue:** 1female, Bach Ma NP, 1300m, 24.iii.2001, Hoang Vu Tru; Aroang, Aluoi, 600–700m, 4.v.2005, coll. Pham Hong Thai.

Distribution. Vietnam (Quang Tri and Thua Thien-Hue provinces), China (Chou *et al.*, 1997)

***Gaeana hainanensis* Chou et Yao, 1985**

Gaeana hainanensis Chou et Yao, 1985, Entomotax. VII (2): 128.

Material examined. Quang Tri: 1male, 1female, Dakrong NR, 450m, 2.vi.2004, coll. Tran Thieu Du.

Distribution. Vietnam (Quang Tri prov.), China (Chou *et al.*, 1997)

Genus *Sulphogaeana* Chou et Yao, 1985

Sulphogaeana Chou et Yao, 1985, Entomotax., VII (2): 125.

Type species: *Cicada sulphurea* Hope, Royles Illustr. Bot. Himal, Introd. Lix, t. x.

***Sulphogaeana dolicha* Lei, 1997**

Sulphogaeana dolicha Lei, 1997, Acta. Zootax. 22(1): 72–74.

Material examined. Kon Tum: 1male, 1female: Ngoc Linh NR, 1700m, 19.iv.2004, coll. Bui Xuan Phuong.

Distribution. Vietnam (Kon Tum prov.), China (Chou *et al.*, 1997)

Tribe Talaingini

Talaingini Schmidt, 1919, Stett. Ent. Zeit., 80: 366.

Type genus: *Talainga* Distant, 1890, Ann. Mag. Nat. Hist. (6)5: 166.

Genus *Paratalainga* He, 1984

Type species: *Paratalainga reticulata* He, 1984, 4: 221–228.

***Paratalainga yunnanensis* Chou et Lei, 1992**

Paratalainga yunnanensis Chou et Lei, 1992, Entomotax. XIV (3): 174.

Material examined. Kon Tum: 1male, Ngoc Linh NR, 1700m, 19.iv.2004, coll. Bui Xuan Phuong.

Distribution. Vietnam (Kon Tum prov.), China (Chou *et al.*, 1997)

Tribe Polyneurini**Genus *Formotosena* Kato, 1925**

Formotosena Kato, 1925, Trans. Nat. Hist. Soc. Taiwan, 15: 59.

Type species: *Tosena seebohmi* Distant, 1904, Ann. Mag. Nat. Hist., (7) 14: 301.

***Formotosena seebohmi* (Distant, 1904)**

Tosena seebohmi Distant, 1904, Ann. Mag. Nat. Hist. (7)14: 301.

Formotosena seebohmi: Kato, 1925, Trans. Nat. Hist. Soc. 15., (77): 60.

Material examined. Vinh Phuc: 3male, 2female, Tam Dao NP, 1500m, 15.v.2004, coll. Hoang Vu Tru; **Thua Thien-Hue:** 4male, 1female, Bach Ma NP, 1300m, 8.vi.2002, coll. Hoang Vu Tru; **Hoa Binh:** 1male, Hang Kia-Pa Co NR, 1000m, 28.iv.2002, coll. Ta Huy Thinh.

Distribution. Vietnam (Vinh Phuc, Hoa Binh, and Thua Thien-Hue provinces), China, Taiwan, Japan (Metcalf, 1963b)

Genus *Angamiana* Distant, 1890

Angamiana Distant, 1890b: 234. Type species: *Angamiana aetherea* Distant, 1890 (Distant 1890b) (Continental India).

Proretinata Chou et Yao, 1986, Entomotax., VIII(3): 189. Type species: *Proretinata vemacula* Chou et Yao, 1986, Entomotax., VIII (3): 190.

***Angamiana vemacula* (Chou et Yao, 1986) comb. nov.**

Proretinata vemacula Chou et Yao, 1986, Entomotax. VIII(3): 190.

Material examined. Yen Bai: 3male, 1female, Mu Cang Chai, 1000m, viii.2003, coll. Tran Thieu Du.

Distribution. Vietnam (Yen Bai prov.), China (Chou *et al.*, 1997).

Remarks. In 1997, after curiously confirming this genus and its species (op. cit.: 163–166), Chou and his collaborators synonymized *Proretinata* with *Angamiana* (op. cit., 166). In 2005, Boulard, agreed with this unusual action, but he considered the “*ex-Proretinata*” species as varieties of *A. floridula* Distant, 1904. However, after we checked figs and description of male genitalia of three species of *Proretinata* in Chou et Yao, 1986 and Chou *et al.*, 1997, it is very clear that these are distinct species, according to the male genitalia structures, such as shape of the pygofer and uncus lobe. In this paper we transfer those species into the genus *Angamiana*, i.e., *Angamiana vemaculata* (Chou & Yao, 1986), *Angamiana yunnanensis* (Chou & Yao, 1986), *Angamiana fuscata* (Chou & Yao, 1986).

Tribe Pomponiini**Genus *Pomponia* Stål, 1866**

Pomponia Stal, 1866, Hem. Afr. IV, 6.

Type species: *Dundubia linearis* Walker, 1850, List Hom., 1: 48.

The genus *Pomponia* is mainly distributed through the Oriental Region and contains 37 species (Boulard, 2005b; Chou *et al.*, 1997; Duffels and van der Laan, 1985; Metcalf, 1963b, Sanborn *et al.*, 2007). This genus comprises a very heterogeneous group of species (Duffels and Hayashi, 2006). Among them, species of the *Pomponia linearis* group defined by Duffels & Hayashi (2006) share the following characters: a broad pale transverse band across the postclypeus; acute lateral pygofer lobes; a trapezoidal uncus with medial incision suggesting the fusion of two short, broad lobes; and a pair of claspers, each with two spines, protruding from below the uncus.

Four described species occur in Vietnam: *Pomponia linearis* (Walker, 1850), *Pomponia piceata* Distant, 1905, *Pomponia lactea* (Distant, 1887), and *Pomponia orientalis* (Distant, 1912). Below we present a key to species of genus *Pomponia* from Vietnam, and describe a new species belonging to this species group.

Key to species of genus *Pomponia* from Vietnam

- 1(2) Opercula in male with outer margins sinuate and obliquely directed inwardly, apices narrowly rounded, inner margins widely separated *P. orientalis*
- 2(1) Opercula in male with the outer margins rounded 3
- 3(4) Body very large, length \geq 35mm; uncus lobe with two spines..... 5
- 4(3) Body smaller, length $<$ 30mm; uncus lobe with one spine..... *P. lactea*
- 5(6) Posterior margin of opercula transverse; exterior margin of uncus lobe with small spine, interior margin with larger than spine..... *P. linearis*
- 6(5) Posterior margin of opercula acute 7
- 7(8) Exterior lobe of uncus with large spine, interior margin with smaller than spine..... *P. piceata*
- 8(7) Exterior and interior margin of uncus lobe with pair of spines the same length..... *P. backanensis* **sp.nov.**

***Pomponia backanensis* sp. nov. (Fig. 2)**

Diagnosis. *Pomponia backanensis* closely resembles *Pomponia linearis* (Walker, 1850) and *Pomponia piceata* Distant, 1905 in the following characteristics: shapes of forewing apical cells; shape of dentate lateral margin of pronotal collar; shape of timbal cover; shape and coloration of abdomen; sharp pointed upper lobes of pygofer. The new species is distinguishable from all other species of the *P. linearis* species group by the different structure of the uncus of the male genitalia on which the two spines of each clasper are nearly equal in length, and in the shape of the male opercula which has the outer margin very narrowly bordered with black.

Description: Body covered with short golden hairs.

Head: triangular; fuscous with irregular greenish and brownish markings; postclypeus prominent swollen at middle; ventral part of head yellow with transverse stripe connecting both eyes through anterior frontoclypeus, and fuscous or black marking on posterior frontoclypeus; dorsal part of head with more or less distinct brown to dark brown median mark enclosing ocelli, and brown to dark brown fascia along posterior margin of head; postclypeus ochraceous with pale transverse fascia; anteclypeus yellowish; rostrum yellow with black-brown tip, almost extending to hind margin of sternite II.

Pronotum: fuscous with irregular greenish and brownish markings, and sparsely covered with white pollinosity; pronotal collar curved with greenish, dark brown fascia along anterior margins of these large brown pronotal marks; anterolateral margins of pronotal collar with acute small tooth, pair of triangular spots adjacent to surrounding fissure in front of lateral mesonotum.

Mesonotum: fuscous with irregular greenish and brownish markings, and sparsely covered with white pollinosity; middle fascia brown; a pair of very narrow bifurcate brown stripes, between submedian and lateral sigilla, extending from anterior mesonotal margin to one-third or one-fourth of mesonotum length; wide lateral fasciae brown to deep brown, reaching from anterior to posterior mesonotal margin.

Wings: slightly tinged with pale brown; areas along 1st, 2nd, and 3rd cross veins, basal segment of vein M1 and radial crossvein r, infuscated; widely spread or roundish infuscation on each apical portion of veins RA2, RP, M1, M2, M3, M4, and CuA1, forming a series along subapical margin of forewing.

Operculum: greenish olivaceous with various fuscous markings and sparsely covered with white pubescence; male opercula with outer margin very narrowly margined with black.

Abdomen: castaneous or dark ochreous, with caudal margin of each segment narrowly black; male abdomen mostly ochreous, sparsely covered with white pollinosity.

Male genitalia: pygofer oval in ventral view; basal pygofer lobes (Fig. 2c) large and oblique; distal shoulder developed into sharply pointed lobes; uncus (Fig. 2c, d) trapezoidal; claspers (Fig. 2d) with two spines protruding from below uncus, medial spine straight and equal in length to lateral spine.

Measurements: body length: 36.8–37.5mm; fore wing length: 45.6–46.8mm; head width: 9.8–10.2mm; head length at midline: 2.4–2.8mm; pronotum width: 12.1–12.4mm; pronotum length at midline: 5–5.2mm; mesonotum length (including cruciform elevation): 7.8–8.1mm; distance between eyes: 5.4–5.6mm; abdomen length: 20.1–21.7mm.

Holotype: male, Ba Be NP, Bac Kan, 200–400m, 6.vii.2002, coll. Hoang Vu Tru.

- Paratypes: 1 male, Ba Be NP, Bac Kan, 200–400m, 6.vii.2002, coll. Hoang Vu Tru; 2 male, Tam Dao NP, Vinh Phuc, 900m, 3.vii.2003, Hoang Vu Tru; 1 male, Dai Dinh, Vinh Phuc, 500m, 8.v.2004. The types are deposited in the collection of the Department of Insect Systematics, Institute of Ecology and Biological Resources, Hanoi, Vietnam.

Etymology. The species is named after the Bac Kan province where the type locality is situated.

Distribution. Vietnam (Bac Kan and Vinh Phuc provinces)

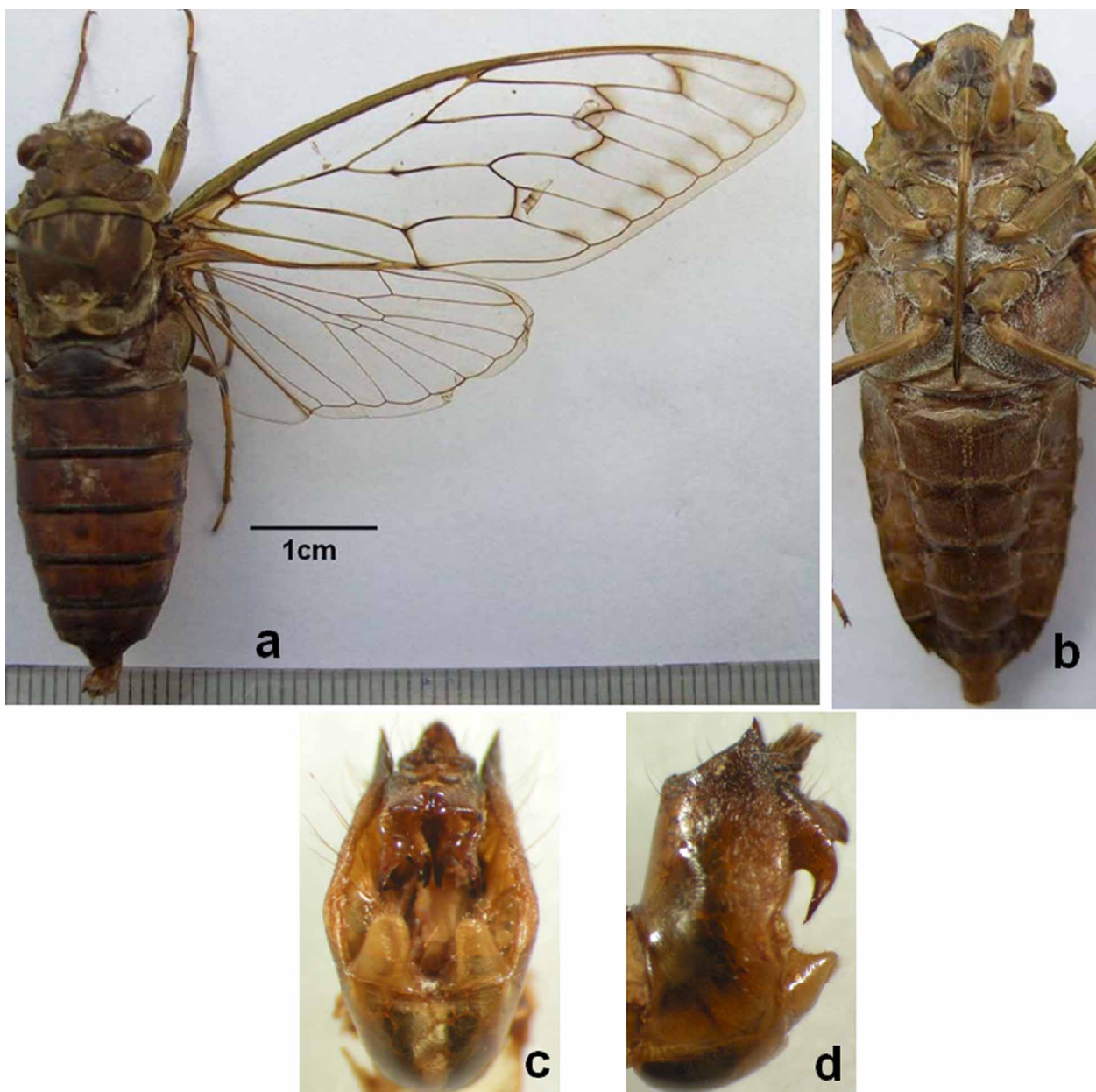


FIGURE 2. *Pomponia backanensis* sp. nov., a, dorsal view of male; b, ventral view of male; c, male genitalia in ventral view; d, male genitalia in lateral view.

Tribe Cicadini

Subtribe Leptosaltriina

Leptosaltrini Chen, 1946, *Insecta Sinensium* 1: 12.

Leptosaltraria Moulton, 1923, *J. Fed. Mal. Sta. Mus.*, 11(2): 117.

Leptosaltriaria Kato, 1932, *Mongr. Cicad.*, 145, 160, 297.

Type genus: *Leptosaltria* Stal, 1866, *Berlin. Ent. Ztschr.* 10: 151–172.

Genus *Purana* Distant, 1905

Purana Distant, 1905, Ann. Mag. Nat. Hist., (7) XV. 60.

Type species: *Dundubia tigrina* Walker, 1850, List Hom. i: 69.

***Purana guttularis* (Walker, 1858)**

Cicada guttularis Walker, 1858, List Hom. Suppl. 29.

Purana guttularis: Distant, 1906, Fn. Brit. Ind., Rhynch., 3: 93.

Leptopsaltria guttularis: Stal, 1866;

Material examined. Hai Phong: 1male, Cat Ba, 200m, 17.vii.2003, coll. Pham Hong Thai.

Distribuiton. Vietnam (Hai Phong), China, India, Siam, Borneo, Sarawak, Java, Myanmar, Philippine, Brunei (Metcalf, 1963a)

Genus *Tanna* Distant, 1905

Tanna Distant, 1905, Ann. Mag. Nat. Hist., (7), 15: 61. Type species: *Pomponia japonensis* Distant, 1892 (Japan).

Neotanna Kato, 1927: Trans. Nat. Hist. Soc. Formosa, 17: 26. Type species: *Tanna viridis* Kato, 1925 (Formosa).

Remarks. According to Chou *et al.*, 1997, *Neotanna* is distinguishable from *Tanna* and *Leptopsaltria* in having the lateral surface of the male 3rd abdominal segment with a pair of tubercle-like projections. However, *Neotanna* was synonymized with *Tanna* by Hayashi (1978). And Lee and Hayashi (2004) showed that *Tanna* species have the lateral surface of the male 3rd and sometimes 4th abdominal sterna with a tubercle-like projection protruding laterally or posterolaterally. Therefore presence or absence of a pair of small protuberances on the male 4th abdominal sternum does not distinguish these taxa. We follow Hayashi (1978) in treating *Neotanna* as a junior synonym of *Tanna*. Therefore, *Neotanna yunnanensis* Lei et Chou, 1997 and *Neotanna sinensis* Ouchi, 1938 are here transferred to *Tanna* Distant, 1905 to become *Tanna yunnanensis* (Lei et Chou, 1997) comb. nov. and *Tanna sinensis* (Ouchi, 1938) comb. nov.

***Tanna yunnanensis* (Lei et Chou, 1997) comb. nov.**

Neotanna yunnanensis Lei et Chou, 1997. *The Cicadidae of China*. Tianze Eldoneio, Hong Kong: 225–226.

Material examined. Ninh Binh: 1male, Cuc Phuong NP, 250m, 25.v.2005, coll. Pham Hong Thai.

Distribution. Vietnam (Ninh Binh prov.), China (Chou *et al.*, 1997)

***Tanna sinensis* (Ouchi, 1938) comb. nov.**

Neotanna sinensis Ouchi, 1938, Journi. Shanghai Soc. Ins., (II) 4, 87.

Neotanna abdominalis Kato, 1938

Material examined. Ninh Binh: 1male, Cuc Phuong NP, 250m, 25.v.2005, coll. Pham Hong Thai.

Distribution. Vietnam (Ninh Binh prov.), China (Metcalf, 1963a)

Subtribe Cicadaria**Genus *Euterpnosia* Matsumura, 1917**

Euterpnosia Matsumura, 1917, Trans. Sapporo. Nat. Hist. Soc. VI (3): 202.

Type species: *Euterpnosia chibensis* Matsumura, 1917, Trans. Sapporo. Nat. Hist. Soc. VI (3): 203.

***Euterpnosia ruida* Lei et Chou, 1997**

Euterpnosia ruida Lei et Chou, 1997. *The Cicadidae of China*. Tianze Eldoneio, Hong Kong: 201–202.

Material examined. Thua Thien-Hue: 1male, ARoang, Aluoi, 700m, 3.v.2005, coll. Pham Hong Thai

Distribution: Vietnam (Thua Thien-Hue prov.), China (Chou *et al.*, 1997)

Genus *Inthaxara* Distant, 1913

Inthaxara Distant, 1913, Ann. Mag. Nat. Hist. 12: 557.

Type species: *Inthaxara rex* Distant, 1913, Ann. Mag. Nat. Hist. 12: 558.

***Inthaxara flexa* Lei et Li, 1996**

Inthaxara flexa Lei et Li, 1996, 39(4): 410-411.

Material examined. Phu Tho: 2male, Xuan Son NP, 400m, 12.vi.2004, coll. Pham Hong Thai.

Distribution. Vietnam (Phu Tho prov.), China (Chou *et al.*, 1997)

Tribe Dundubiini

Dundubiini Schmidt, 1912, Stett. Ent. Zeit., 73: 64.

Dundubiaria Distant, 1905, Ann. Mag. Nat. Hist., (7) 15: 58.

Platylomiini China, 1964, Bull. Zool. Nomencl., 21 (2): 158.

Type genus. *Dundubia* Amyot and Serville, 1843, Hem.,: 470.

Genus *Sinosemia* Matsumura, 1927

Sinosemia Matsumura, 1927, Ins. Matsumurana 2:55.

Type species: *Sinosemia shirakii* Matsumura, 1927, Ins. Matsumurana 2: 55.

***Sinosemia shirakii* Matsumura, 1927**

Sinosemia shirakii Matsumura, 1927. Ins. Matsumurana 2: 55.

Material examnied. Quang Tri: 2male, Huc Nghi, Dakrong, 6.v.2005, 250–350m, coll. Pham Hong Thai

Distribution: Vietnam (Quang Tri prov.), China, Japan (Chou *et al.*, 1997)

TABLE 2. Summary of the Vietnamese Cicadidae, with their biogeographical ranges.

Subfamily	Tribe	Subtribe	Genus	Species	Biogeographic										
Cicadinae	Platypleurini		<i>Platypleura</i>	<i>Platypleura kaempferi</i> (Fabricius, 1794)	O/P										
				<i>Platypleura nigrosignata</i> Distant, 1913	VN										
				<i>Platypleura ciliaris</i> (Linnaeus, 1758)	O										
				<i>Platypleura hilpa</i> Walker, 1850	O										
				<i>Platypleura coelebs</i> Stål, 1863	O										
				<i>Platypleura harmandi</i> Distant, 1905	VN										
				<i>Platypleura mira</i> Distant, 1904	O										
				<i>Platypleura badia</i> Distant, 1888	O										
				Cryptotympanini			<i>Oxypleura</i>	<i>Oxypleura calypso</i> Kirby, 1888	O/A						
								<i>Pycna</i>	<i>Pycna indochinensis</i> Distant, 1913	VN					
									<i>Chremistica</i>	<i>Chremistica viridis</i> (Fabricius, 1803)	O				
										<i>Salvazana</i>	<i>Salvazana mirabilis</i> Distant, 1913	O			
											<i>Cryptotympana</i>	<i>Cryptotympana aquila</i> (Walker, 1850)	O		
												<i>Cryptotympana recta</i> (Walker, 1850)	O		
	<i>Cryptotympana nitidula</i> Hayashi, 1987	VN													
	<i>Cryptotympana atrata</i> (Fabricius, 1775)	O/P													
	<i>Cryptotympana mandarina</i> Distant, 1891	O													
	<i>Cryptotympana holsti</i> Distant, 1904	O													
	Polyneurini			<i>Polyneura</i>	<i>Polyneura ducalis</i> Westwood, 1842	O/P									
					<i>Angamiana</i>	<i>Angamiana floridula</i> Distant, 1904	O								
						<i>Angamiana vemacula</i> (Chou et Yao, 1986)	O								
						<i>Formotosena</i>	<i>Formotosena seebohmi</i> (Distant, 1904)	O							
							Gaeanini	Gaeanina	<i>Gaeana</i>	<i>Gaeana vitalisi</i> Distant, 1913	VN				
										<i>Gaeana maculata</i> (Drury, 1773)	O				
										<i>Gaeana annamensis</i> Distant, 1913	I				
										<i>Gaeana sultana</i> Distant, 1913	I				
										<i>Gaeana laosensis</i> Distant, 1917	I				
	<i>Gaeana vestita</i> Distant, 1905	I													
	<i>Gaeana cheni</i> Chou et Yao, 1985	VN-SCN													
	<i>Gaeana hainanensis</i> Chou et Yao, 1985	VN-SCN													
				<i>Balinta</i>	<i>Balinta pulchella</i> Distant, 1913	VN									
					<i>Balinta delinenda</i> (Distant, 1888)	O									
					<i>Balinta tenebricosa</i> (Distant, 1888)	O									
<i>Ambragaena</i>					<i>Ambragaena ambra</i> Chou et Yao, 1985	O									
					<i>Sulphogaeana</i>	<i>Sulphogaeana dolicha</i> Lei, 1997	O								
						Becquartinina		<i>Becquartina</i>	<i>Becquartina electa</i> (Jacobi, 1902)	O					
									<i>Becquartina bleuzeni</i> Boulard, 2005	O					
									Talaingini			<i>Talainga</i>	<i>Talainga binghami</i> Distant, 1890	O	
													<i>Paratalainga</i>	<i>Paratalainga distanti</i> (Jacobi, 1902)	O
														<i>Paratalainga yunnanensis</i> Chou et Lei, 1992	VN-SCN
	Cicadini	Cicadina	<i>Terpnosia</i>	<i>Terpnosia posidonia</i> Jacobi, 1902										VN-SCN	
				<i>Terpnosia chapana</i> Distant, 1917										VN	
<i>Terpnosia ransonneti</i> (Distant, 1888)				O											

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TABLE 2. (continued)

Subfamily	Tribe	Subtribe	Genus	Species	Biogeographic
				<i>Terpnosia rustica</i> Distant, 1917	VN
				<i>Terpnosia mesonotalis</i> Distant, 1917	VN
				<i>Terpnosia clio</i> (Walker, 1850)	O
				<i>Terpnosia mawi</i> Distant, 1909	VN-SCN
				<i>Terpnosia majuscula</i> Distant, 1917	I
			<i>Euterpnosia</i>	<i>Euterpnosia crowfooti</i> (Distant, 1912)	O
				<i>Euterpnosia madhava</i> (Distant, 1881)	O
				<i>Euterpnosia ruida</i> Lei et Chou, 1997	VN-SCN
			<i>Pomponia</i>	<i>Pomponia linearis</i> (Walker, 1850)	O
				<i>Pomponia piceata</i> Distant, 1905	VN-SCN
				<i>Pomponia backanensis</i> sp.n.	VN
				<i>Pomponia lactea</i> (Distant, 1887)	O
				<i>Pomponia orientalis</i> (Distant, 1912)	O
			<i>Purana</i>	<i>Purana pigmentata</i> Distant, 1905	O
				<i>Purana samia</i> (Walker, 1850)	O
				<i>Purana dimidia</i> Chou and Lei, 1997	VN-SCN
				<i>Purana guttularis</i> (Walker, 1858)	O
			<i>Tanna</i>	<i>Tanna yunnanensis</i> (Lei et Chou, 1997)	VN-SCN
				<i>Tanna sinensis</i> (Ouchi, 1938)	O
		Cosmopsaltriina	<i>Gudaba</i>	<i>Gudaba apicata</i> Distant, 1906	VN
			<i>Leptopsaltria</i>	<i>Leptopsaltria phra</i> Distant, 1913	VN
			<i>Sinosemia</i>	<i>Sinosemia shirakii</i> Matsumura, 1927	O/P
			<i>Inthaxara</i>	<i>Inthaxara rex</i> Distant, 1913	I
				<i>Inthaxara flexa</i> Lei et Li, 1996	VN-SCN
			<i>Meimuna</i>	<i>Meimuna tripurasura</i> (Distant, 1881)	O
				<i>Meimuna subviridissima</i> Distant, 1913	O
				<i>Meimuna microdon</i> (Walker, 1850)	O
				<i>Meimuna infuscata</i> Lei and Beuk, 1997	VN-SCN
				<i>Meimuna durga</i> (Distant, 1881)	I
				<i>Meimuna raxa</i> Distant, 1913	O
			<i>Khimbya</i>	<i>Khimbya sita</i> (Distant, 1881)	O
		Dundubiina	<i>Haphsa</i>	<i>Haphsa nana</i> Distant, 1913	VN
				<i>Haphsa fratercula</i> Distant, 1917	VN
				<i>Haphsa opercularis</i> Distant, 1917	VN-SCN
				<i>Haphsa conformis</i> Distant, 1917	VN
				<i>Haphsa scitula</i> (Distant, 1888)	O
				<i>Haphsa bindusara</i> (Distant, 1881)	O
				<i>Haphsa crassa</i> Distant, 1905	VN-SCN
			<i>Rustia</i>	<i>Rustia dentivitta</i> (Walker, 1862)	O
			<i>Sinapsaltria</i>	<i>Sinapsaltria annamensis</i> Kato, 1940	VN
			<i>Macrosemia</i>	<i>Macrosemia divergens</i> (Distant, 1917)	I
				<i>Macrosemia assamensis</i> (Distant, 1905)	O
				<i>Macrosemia diana</i> (Distant, 1905)	O
				<i>Macrosemia saturata</i> (Walker, 1858)	O/P
				<i>Macrosemia pieli</i> (Kato, 1938)	O

continued next page.

TABLE 2. (continued)

Subfamily	Tribe	Subtribe	Genus	Species	Biogeographic
				<i>Macrosemia tonkiniana</i> (Jacobi, 1905)	O
			<i>Megapomponia</i>	<i>Megapomponia intermedia</i> (Distant, 1905)	O
			<i>Platylomia</i>	<i>Platylomia malickyi</i> Beuk, 1998	O
				<i>Platylomia bocki</i> (Distant, 1882)	O
				<i>Platylomia operculata</i> Distant, 1913	O
			<i>Dundubia</i>	<i>Dundubia oopaga</i> (Distant, 1881)	O
				<i>Dundubia sinbyudaw</i> Beuk, 1996	O
				<i>Dundubia spiculata</i> Noualhier, 1896	O
				<i>Dundubia terpsichore</i> (Walker, 1850)	O
				<i>Dundubia hainanensis</i> (Distant, 1901)	O
				<i>Dundubia feae</i> (Distant, 1892)	O
				<i>Dundubia nagarasingna</i> Distant, 1881	O
				<i>Dundubia hastata</i> (Moulton, 1923)	O
				<i>Tosena melanoptera</i> (White, 1846)	O
		Tosenina	<i>Tosena</i>	<i>Tosena splendida</i> Distant, 1878	O
				<i>Tosena paviei</i> (Noualhier, 1896)	O
			<i>Ayuthia</i>	<i>Ayuthia spectabile</i> Distant, 1919	O
	Moganniini		<i>Mogannia</i>	<i>Mogannia cyanea</i> Walker, 1858	O
				<i>Mogannia hebes</i> (Walker, 1858)	O
				<i>Mogannia caesar</i> Jacobi, 1902	O
				<i>Mogannia conica</i> (Germar, 1830)	O
				<i>Mogannia aliena</i> Distant, 1920	VN
				<i>Mogannia saucia</i> Noualhier, 1896	O
				<i>Mogannia obliqua</i> Walker, 1858	O
				<i>Mogannia viridis</i> (Signoret, 1847)	O
				<i>Mogannia funebris</i> Stål, 1865	O
				<i>Mogannia effecta</i> Distant, 1892	O
			<i>Nipponosemia</i>	<i>Nipponosemia guangxiensis</i> Chou et W., 1993	VN-SCN
Cicadettinae	Taphurini		<i>Abroma</i>	<i>Abroma reducta</i> (Jacobi, 1902)	O
			<i>Lemuriana</i>	<i>Lemuriana apicalis</i> (Germar, 1830)	O
			<i>Hea</i>	<i>Hea fasciata</i> Distant, 1906	O
				<i>Hea yunnanensis</i> Chou et Yao, 1995	VN-SCN
	Cicadettini		<i>Scolopita</i>	<i>Scolopita lusiplex</i> Chou et Lei, 1997	VN-SCN
	Huechysini		<i>Huechys</i>	<i>Huechys sanguinea</i> (de Geer, 1773)	O
				<i>Huechys beata</i> Chou et al., 1997	O
				<i>Huechys tonkinensis</i> Distant, 1917	VN
			<i>Scieroptera</i>	<i>Scieroptera splendidula</i> (Fabricius, 1775)	O
				<i>Scieroptera formosana</i> Schmidt, 1918	O
				<i>Scieroptera sumatrana</i> Schmidt, 1918	O
				<i>Scieroptera delineata</i> Distant, 1917	I
				<i>Scieroptera orientalis</i> Schmidt, 1918	VN-SCN
				<i>Scieroptera crocea</i> (Guérin-Ménéville, 1838)	O
Tettigadinae	Tibicinini		<i>Katoa</i>	<i>Katoa chlorotiea</i> Chou et Lu, 1997	VN-SCN

Comments on the Cicadidae fauna of Vietnam

The above additions now increase the known Cicadidae fauna of Vietnam to 131 species (table 2). Following Moulds (2005), these species belong to the Cicadettinae (14 species from 3 tribes and 6 genera), Tettigadinae (1 species) and Cicadinae (116 species from 7 tribes and 39 genera). The relative representation of 10.69 % Cicadettinae and 0.76% Tettigadinae versus 88.55 % Cicadinae in Vietnam is typical for the Oriental region. Three species of Cicadettinae are new for Vietnam: *Scolopita lusiplex* Chou et Lei, *Hea fasciata* Distant, and *Hea yunnanensis* Chou et Yao. One species of Tettigadinae is new for Vietnam: *Katoa chlorotica* Cou et Lu. Seventeen species of Cicadinae are new for Vietnam: *Mogannia effecta* Distant, *Nipponosemia guangxiensis* Chou et Wang, *Ambragaean ambra* Chou et Yao, *Balinta tenebricosa* (Distant), *Gaeana cheni* Chou et Yao, *Gaeana hainanensis* Chou et Yao, *Sulphogaeana dolicha* Lei, *Paratalainga yunnanensis* Chou et Lei, *Formotosena seebohmi* (Distant), *Angamiana vemacula* (Chou et Yao), *Pomponia backanensis* sp. n., *Purana guttularis* (Walker), *Tanna yunnanensis* (Let et Chou), *Tanna sinensis* (Ouchi), *Euterpnosia ruida* Lei et Chou, *Inthaxara flexa* Lei et Li, and *Sinosemia shirakii* Matsumura.

Among the 131 species found in Vietnam, ninety seven species are widely distributed over the Oriental region, and six have even broader distributions: *Platypleura kaempferi* (Fabricius), *Cryptotympana atrata* (Fabricius), *Polyneura ducalis* Westwood, *Sinosemia shirakii* Matsumura, and *Macrosemia saturata* (Walker) are found across the Oriental and Palaearctic regions, and *Oxypleura calypso* Kirby across the Oriental and Australian regions. Nine species are widely distributed over the Indochina region (including three countries: Vietnam, Laos, and Cambodia): *Gaeana annamensis* Distant, *Gaeana sultana* Distant, *Gaeana laosensis* Distant, *Gaeana vestita* Distant, *Terpnosia majuscula* Distant, *Inthaxara rex* Distant, *Meimuna raxa* Distant, *Macrosemia divergens* (Distant), and *Scieroptera delineate* Distant. A further 17 species have been reported previously only from southern China (all new to Vietnam).

There are 18 species known only from Vietnam, (13.7%): *Platypleura nigrosignata* Distant, *Platypleura harmandi* Distant, *Pycna indochinensis* Distant, *Cryptotympana nitidula* Hayashi, *Gaeana vitalisi* Distant, *Balinta pulchella* Distant, *Terpnosia chapana* Distant, *Terpnosia rustica* Distant, *Terpnosia mesonotalis* Distant, *Pomponia backanensis* sp.n., *Gudaba apicata* Distant, 1906, *Leptopsaltria phra* Distant, *Haphsa nana* Distant, *Haphsa fratercula* Distant, *Haphsa conformis* Distant, *Sinapsaltria annamensis* Kato, *Mogannia aliena* Distant and *Huechys tonkinensis* Distant, but with the current sparse collecting of the area, the extent of endemism of these species is difficult to estimate. Our collecting has revealed one species new to science, *Pomponia backanensis* sp.nov., whose known distribution is presently limited to Vietnam (Bac Kan and Vinh Phuc provinces).

The Vietnamese cicada species inhabit various environments, mainly tropical rain forests below the canopy layer of medium or high trees where large and colorful cicadas such as *Salvazana mirabilis* and *Angamiana vemacula* gather. Cicadas that are small in size mainly inhabit virgin forests adjacent to rain forest such as *Mogannia conica* and *Huechys sanguinea*. Our research shows that most species of cicadas in Vietnam inhabit virgin forests as preserved in National Parks and Natural Reserves.

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