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## REVIEW OF THE THAI SPECIES OF THE GENUS *SPHINCTOMYRMEX* MAYR, 1866 (HYMENOPTERA: FORMICIDAE, DORYLINAЕ), WITH DESCRIPTION OF A NEW SPECIES

W. Jaitrong<sup>1)</sup>, D. Wiwatwitaya<sup>2\*)</sup>, W. Sakchoowong<sup>3)</sup>

1) Thailand Natural History Museum, National Science Museum, Technopolis,  
Khlong 5, Khlong Luang, Pathum Thani, 12120 Thailand. E-mail: polyrhachis@  
yahoo.com

2) Department of Forest Biology, Faculty of Forestry, Kasetsart University,  
Bangkok, 10900 Thailand. \*Corresponding author E-mail: ffordew@ku.ac.th

3) Forest Entomology and Microbiology Group, Department of National Parks,  
Wildlife and Plant Conservation, 61 Phaholyothin Road, Chatuchak, Bangkok,  
10900 Thailand.

The Thai species of the ant genus *Sphinctomyrmex* Mayr, 1866 are revised. *S. furcatus* Emery, 1893 is firstly recorded from Thailand (Saraburi and Trang provinces). *S. siamensis* Jaitrong, **sp. n.** is described from Chiang Mai Province based on worker caste. Both Thai species were collected from soil, under leaf litter. A key to Asian species of *Sphinctomyrmex* is provided.

KEY WORDS: ant, Dorylinae, *Sphinctomyrmex*, new species, fauna, Thailand.

В. Джайтронг, Д. Виватвитая\*, В. Сакчувонг. Обзор муравьев рода *Sphinctomyrmex* Майр, 1866 (Hymenoptera: Formicidae, Dorylinae) из Таиланда с описанием нового вида // Дальневосточный энтомолог. 2016. N 305. С. 1-9.

Дан обзор тайландских видов рода *Sphinctomyrmex* Майр, 1866. Впервые для Тайланда (провинции Сарабури и Транг) приводится *S. furcatus* Emery, 1893. Из провинции Чианг Май по рабочим описан новый вид *S. siamensis* Jaitrong, **sp. n.** Оба тайландских вида собраны на почве среди растительного опада. Приведена определительная таблица азиатских видов рода *Sphinctomyrmex*.

\*Корреспондирующий автор, Департамент лесной биологии, университет Касерсарт, Бангкок, Тайланд.

## INTRODUCTION

The genus *Sphinctomyrmex* Mayr, 1866 was originally described from Brazil by Mayr (1866) with *Sphinctomyrmex stali* Mayr, 1866 as the type species, and assigned to the subfamily Cerapachyinae (Bolton, 2003). Recent molecular phylogenetic study by Brady *et al.* (2014), which showed the monophyly of all the dorylomorph genera, treated the genus as belonging to Dorylinae. Currently 24 valid species names are listed (Antweb, 2015). Most of the members of the genus (17 species) are distributed in the Australasian region (Brown, 1975; Bolton, 1995); three species are found in the Neotropical region (Brazil) (Feitosa *et al.*, 2012); two in tropical Africa (Brown, 1975; Bolton, 1995) and the other two, *Sphinctomyrmex furcatus* (Emery, 1893) and *S. taylori* Forel, 1900, in Asia (India and Myanmar) (Brown, 1975; Bolton, 1995). So far no species of the genus have been recorded from Thailand.

In the course of our examination of *Sphinctomyrmex* specimens collected from Thailand, two species were recognized; one of which is new to science and one is newly recorded in Thailand. In this paper the *Sphinctomyrmex* species from Thailand are revised, with a description of a new species and a key to the Asian species, based on the worker caste.

## MATERIALS AND METHODS

This study is mainly based on the materials deposited in the Ant Museum of Kasetsart University, Thailand, (AMK) and the Natural History Museum of the National Science Museum, Thailand (THNHM). Most morphological observations were made with a ZEISS Discovery.V12 stereoscope. Materials used in this study were compared with the high resolution images of syntypes and paratypes of *Sphinctomyrmex furcatus* Emery, 1893, *S. taylori* Forel, 1900, and all the related forms which were described from Australasian regions (Antweb, 2015).

Multi-focused montage images were produced using Helicon Focus 4.75 Pro from a series of source images taken by a Canon EOS Kiss×4 digital camera attached to a Nikon ECLIPSE E600 microscope. Specimens were measured for the following parts using a micrometer (accurate to 0.01 mm).

The abbreviations used for the measurements and indices are as follows:

HL – Head length. Length of head proper, excluding mandibles, measured in straight line from anterior clypeal margin to mid-point of a line drawn across posterior margin of head.

HW – Head width. Maximum width of head capsule measured in full-face view, excluding compound eyes.

EL – Eye length. Maximum measurable length of eye in profile.

SL – Scape length. Maximum straight length of antennal scape excluding basal constriction and condylar bulb.

WL – Mesosomal length (Weber's legth). Diagonal length of mesosoma in profile, from the point at which pronotum meets cervical shield to posterior margin of metapleuron.

PL – Petiole length measured from anterior margin to posteriormost point of tergite in profile.

PW – Petiole width. Maximum width of petiole in dorsal view.

TL – Total length, roughly measured from anterior margin of head to tip of gaster in stretched specimens.

CI – Cephalic index.  $HW \times 100/HL$ .

SI – Scape index.  $SL \times 100/HW$ .

OI – Ocular index.  $EL \times 100/HW$ .

The general terminology the worker ants follows Hölldobler & Wilson (1990), and Bolton (1994). For the important characters in the genus *Sphinctomyrmex* used in this paper, see Brown (1975) and Feitosa *et al.* (2012).

## SYSTEMATICS

### Family Formicidae

### Subfamily Dorylinae

### Genus *Sphinctomyrmex* Mayr, 1866

#### Key to Asian species of *Sphinctomyrmex* based on worker caste

- 1 Antenna 12-segmented; eyes absent; pygidial apex truncate as seen from above; smaller species (WL 0.89-0.92 mm); gastral segments II, III, and IV nearly equal to one another in width and length (Fig. 7) (Thailand) ..... *S. siamensis* sp. n.
- Antenna 11-segmented; eyes present but small; pygidial apex deeply notched as seen from above; larger species (WL 1.27-1.78 mm); gastral segment II clearly larger than each of segments III and IV in width and length (Fig. 3) ..... 2
- 2 Larger species (WL 1.68-1.78 mm); body deep reddish brown; petiolar node longer than broad (India, Myanmar, and Thailand) ... *S. furcatus* (Emery, 1893)
- Smaller species (WL 1.27 mm); body light reddish brown; petiolar node broader than long (India) ..... *S. taylori* Forel, 1900

***Sphinctomyrmex furcatus* (Emery, 1893)**

Figs 1–4

*Eusphinctus furcatus* Emery, 1893: 275 (syntypes – workers from Myanmar, Palon, Pegu, VIII.IX 1887, L. Fea leg.).

*Sphinctomyrmex furcatus*: Emery, 1895: 457; Bingham, 1903: 25; Brown, 1975: 75; Bolton, 1995: 392.

**MATERIAL. Thailand:** Trang Province, Nayong District, evergreen forest, 16.IV 2000, colony no. WJT160400-1, 5 workers (THNHM-I-00001 to THNHM-I-00005), W. Jaitrong leg.; Saraburi Province, Ched Kod, dry evergreen forest, 4.VII 2003, 1 worker (THNHM-I-00006), S. Hasin leg.

**REDESCRIPTION.** Head in full-face view almost as long as broad, subrectangular, slightly broader posteriorly with side convex and posterior margin feebly concave; posterior corners of head bluntly angular; occipital margin bearing a narrow collar. Eye present, located in a foveola at middle of lateral face of head. Antenna 11-segmented; antennal scape relatively short, reaching midlength of head; II-VI each shorter than broad; XI slightly longer than VII+VIII+IX+X. Frontal carina short, extending 1/3 of head length, fused at posteriormost portion to form a single carina; parafrenal ridge extending posteriorly less than 1/3 of head length. Clypeus narrowly inserted between frontal carinae; median portion of clypeus with a distinct tubercle, anterior clypeal margin strongly concave. Mandible subtriangular, with basal margin rounding into masticatory margin; the latter apparently edentate.

Mesosoma stout and swollen, in profile with almost flat dorsal outline; promesonotal suture and metanotal groove obliterated; mesopleuron clearly demarcated from promesonotum by a deep groove and from metapleuron and lateral face of propodeum by a carina; propodeal junction obtusely angulated; declivity of propodeum shallowly concave, and encircled with a distinct rim.

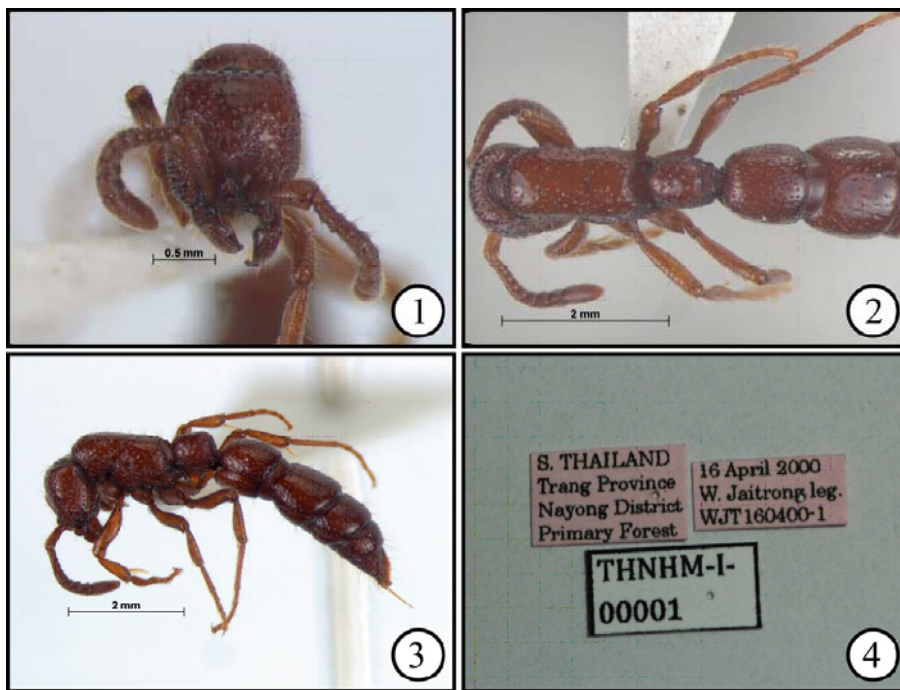
Petiole in profile rectangular and sessile, clearly longer than broad, its dorsal outline straight, anterior and posterior faces vertical; subpetiolar process well developed, subtriangular, its apex truncate and directed downward, anterior margin convex, while posterior margin concave.

Gaster elongate, gastral segments I and II clearly separated by distinct constrictions, segments III, IV, and V separated from each other by deeply impressed, short constrictions; in dorsal view, gastral segment I (abdominal segment III) slightly narrower than gastral segment II, as broad as segment III, and broader than segment IV; segment III larger than IV in width and length; dorsum of pygidium shallowly concave with a row of spines laterally, pygidial apex deeply notched as seen from above.

Head with dense foveolae, foveolar intervals broad, smooth and shiny; antennal scrobe finely superficially reticulate but shiny; dorsum of mesosoma largely smooth and shiny with sparse, very shallow foveolae; lateral faces of pronotum, mesopleuron, metapleuron and propodeum with dense foveolae, foveolar intervals superficially shagreened but shiny; lateral face of petiole reticulate; each gastral segment with generally smooth and shiny.

Pilosity comparatively sparse; dorsum and lateral face of head with sparse standing hairs mixed with sparse short decumbent hairs; dorsa of mesosoma, petiole, gaster with sparse standing hairs; pygidium and hypopygium with dense longer hairs.

Body entirely deep reddish brown.



Figs 1–4. *Sphinctomyrmex furcatus*, non-type worker. 1 – head in full-face view; 2 – body from dorsal view; 3 – body in profile; 4 – labels.

MEASUREMENTS. Non-type worker (n = 6): TL 6.85-6.90 mm, HL 1.12-1.16 mm, HW 1.02-1.09 mm, SL 0.61-0.63 mm, EL 0.03-0.05 mm, WL 1.68-1.78 mm, PL 0.61-0.63 mm, PW 0.58-0.63 mm, CI 91-94, SI 58-61, OI 3-5.

DISTRIBUTION. India, Myanmar (type locality) and Thailand (Saraburi and Trang Provinces, new record).

REMARKS. *Sphinctomyrmex furcatus* is similar to *S. taylori* Forel, 1900 in general appearance as they share the pygidial apex deeply notched (as seen from above), 11-segmented antenna, reddish brown body and swollen mesosoma. However, *S. furcatus* is easily separated from *S. taylori* by the following conditions: body larger (WL 1.68-1.78 mm in *S. furcatus* while WL 1.27 mm in *S. taylori*); petiole longer than broad (broader than long in *S. taylori*); body color darker (deep reddish brown in *S. furcatus* while light reddish brown in *S. taylori*).

***Sphinctomyrmex siamensis* Jaitrong, sp. n.**

Figs 5–8

**MATERIAL.** Holotype – worker (THNHM-I-00007), **Thailand:** Chiang Mai Province, Mae Tang District, secondary forest, 26.IV 2000, W. Jaitrong leg., colony no. WJT00-TH01. Paratypes: 5 workers (THNHM-I-00008, THNHM-I-00009, THNHM-I-00010, THNHM-I-00011, THNHM-I-00012, THNHM), same data as holotype.

**DESCRIPTION** (Holotype and paratypes). Head in full-face view clearly longer than broad, subrectangular, slightly broader anteriorly with side weakly convex and posterior margin concave; posterior corners of head bluntly angular; occipital margin bearing a distinct carina. Eyes absent. Antenna 12-segmented; antennal scape relatively short, not reaching midlength of head; antennal segment II almost as long as broad; III–X each shorter than broad; XII almost as long as VIII+IX+X+XI or slightly longer. Frontal carina short, extending beyond level of posterior margin of torulus, well developed anteriorly and poorly developed posteriorly, curved anterior extension of frontal carinae bearing 2 denticles in front of antennal socket; parafrontal ridge extending posteriorly less than 1/3 of head length. Clypeus narrowly inserted between frontal carinae; median portion of clypeus with a distinct tubercle. Mandible subtriangular, with basal margin rounding into masticatory margin; the latter apparently edentate, but there may be a few small inconspicuous denticles near basal angle.

Mesosoma twice as long as broad, in profile with almost flat dorsal outline or feebly convex; promesonotal suture and metanotal groove obliterated; katapisternum clearly demarcated from anepisternum by a distinct carina; metapleuron demarcated from mesopleuron and lateral face of propodeum by carinae; propodeal junction nearly right-angled; declivity of propodeum shallowly concave and encircled with a thin rim.

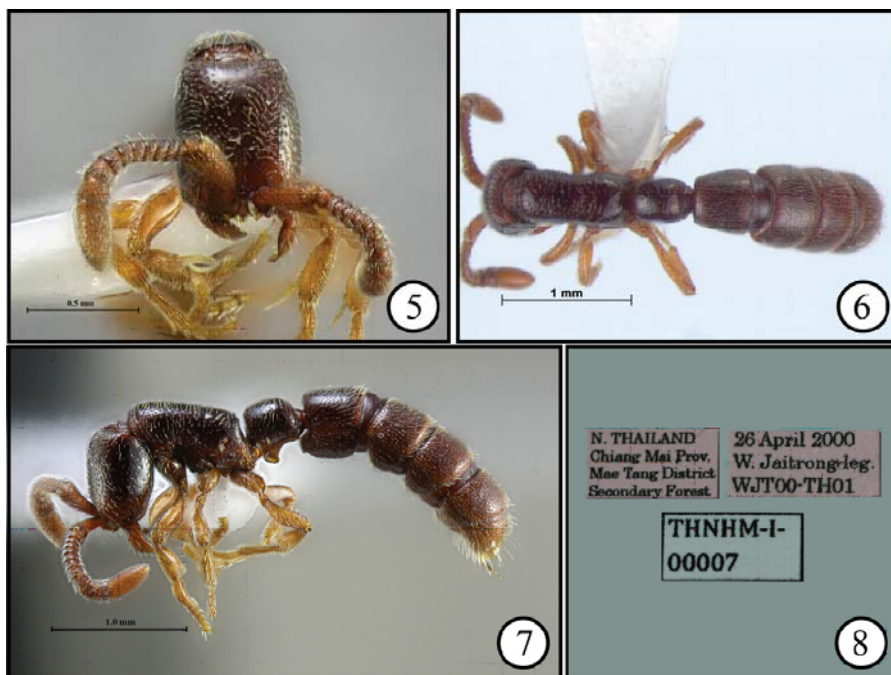
Petiole sessile, slightly longer than broad, its dorsal outline weakly convex, anterior face flat encircled with an indistinct ridge but posterior face slightly convex and tergite clearly demarcated from sternite by a distinct ridge; subpetiolar process well developed, subtriangular with a small window at middle, its apex truncate and directed downward, anterior margin convex, while posterior margin strongly concave.

Gaster elongate, gastral segments I and II clearly separated by distinct constrictions, segments III, IV, and V separated from each other by deeply impressed, short constrictions; in dorsal view, gastral segment I (abdominal segment III) narrower than segments II, III, and IV but slightly broader than petiole; segments II, III, and IV nearly equal to one another in width and length; dorsum of pygidium flat with 1–2 rows of spines laterally, pygidial apex truncate as seen from above.

Dorsum and lateral face of head with dense foveolae, areas between foveolae smooth and shiny; venter of head smooth and shiny; dorsum of mesosoma smooth and shiny with sparse, very shallow foveolae; lateral face of pronotum partly superficially shagreened but shiny; mesopleuron, metapleuron and lateral face of propodeum smooth and shiny; propodeum declivity superficially reticulate but shiny; petiolar node smooth and shiny; each gastral tergite with dense hair pits but areas between hair pits smooth and shiny.

Pilosity comparatively dense; dorsum and lateral faces of head with dense appressed to decumbent hairs; venter of head with sparse appressed hairs; dorsum of mesosoma with dense, very short decumbent hairs; petiole and gaster with dense, longer decumbent hairs; pygidium and hypopygium with dense erect hairs.

Body reddish brown to dark brown; legs, terminal segment of antenna (XI) and tip of gaster yellowish brown; 2/3 of head, dorsa of mesosoma and petiole darker than elsewhere.



Figs 5–8. *Sphinctomyrmex siamensis*, sp. n., holotype worker. 1 – head in full-face view; 2 – body from dorsal view; 3 – body in profile; 4 – labels.

MEASUREMENTS. Holotype: TL 3.95 mm, HL 0.66 mm, HW 0.54 mm, SL 0.36 mm, WL 0.86 mm, PL 0.36 mm, PW 0.30 mm, CI 83, SI 67. Paratypes (n = 5): TL 3.85–3.95 mm, HL 0.66–0.73 mm, HW 0.54–0.58 mm, SL 0.35–0.36 mm, WL 0.89–0.92 mm, PL 0.33–0.36 mm, PW 0.30–0.36 mm, CI 77–83, SI 62–65.

DISTRIBUTION. Thailand (Chiang Mai Province).

DIAGNOSIS. *Sphinctomyrmex siamensis* sp. n. has been compared with high resolution images of syntypes and paratypes of all the related forms which were described from Australasian and Oriental regions (Antweb, 2015). New species is most similar to *Sphinctomyrmex trux* Brown, 1975 (Australian species) in general appearance as they share the pygidium truncate when seen in dorsal view, 12-segmented antenna, subtriangular subpetiolar process (Fig. 7), and somewhat smooth

and shiny dorsa of mesosoma and petiolar node. However, *S. siamensis* sp. n. is easily separated from *S. trux* by the following conditions: much smaller body (HW 0.54-0.58 mm, WL 0.89-0.92 mm in *S. siamensis* while HW 0.74-0.84 mm, WL 1.12-1.26 mm in *S. trux*); relatively longer head (CI 77-83 vs 87-89); complete lack of eyes (in *S. trux* the eyes are present as pigmented dots in the middle of the side of the head); possession of a distinct tubercle in median portion of clypeus (tubercle absent in *S. trux*); and relatively longer petiole.

**HABITAT.** The type series of the new species was collected from soil surface in a shifting agricultural area at an elevation of about 800 m above sea level near a hill-evergreen forest during the dry season.

**ETYMOLOGY.** The scientific name is an adjective meaning ‘of Siam (old name of Thailand)’.

#### ACKNOWLEDGEMENTS

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#### REFERENCES

- Antweb. 2015. Genus: *Sphinctomyrmex* Mayr, 1866. Accessed online at <http://www.antweb.org/description.do?genus=sphinctomyrmex&rank=genus>.
- Bingham, C.T. 1903. *The Fauna of British India, including Ceylon and Burma. Hymenoptera 2. Ants and Cuckoo-Wasps*. London, 506 pp.
- Bolton, B. 1994. *Identification Guide to the Ant Genera of the World*. Harvard University Press, Cambridge, Massachusetts. 222 pp.
- Bolton, B. 1995. *A New General Catalogue of the Ants of the World*. Harvard University Press, London. 504 pp.
- Bolton, B. 2003. Synopsis and classification of Formicidae. *Memoirs of the American Entomological Institute*, 71: 1–370.
- Brady, S.G., Fisher, B.L. Schultz, T.R. & Ward P.S. 2014. The rise of army ants and their relatives: diversification of specialized predatory doryline ants. *BMC Evolutionary Biology*, 14: 1–14.
- Brown, W.L., Jr. 1975. Contributions toward a reclassification of the Formicidae. V. Ponerinae, tribes Platythyreini, Cerapachyini, Cylindromyrmecini, Acanthostichini, and Aenictogitini. *Search Agriculture* (Ithaca), 5 (1): 1–115.
- Emery, C. 1893. Unintituled contribution introduced by “M.C. Emery, Envoie les diagnoses de cinq nouveaux genres de Formicides”. *Bolletín Bimensuel de la Societe Entomologique de la France*, 1892: 275–277.
- Emery, C. 1895. Viaggio di Leonardo Fea in Birmania e regioni vicine. 63. Formiche di Birmania del Tenasserim e dei Monti Carin raccolte da L. Fea. *Annali del Museo Civico di Storia Naturale di Genova*, 34: 450–483.



- Feitosa, R.M., Brandão, C.R.F., Fernandez, F. & Delabie, J.C.H. 2012. The Ant Genus *Sphinctomyrmex* Mayr (Hymenoptera, Formicidae, Cerapachyinae) in the Neotropical Region, with the Description of Two New Species. *Psyche*, 2012: article ID 342623, 9 pp.
- Hölldobler, B. & Wilson, E.O. 1990. *The Ants*. Harvard University Press, Cambridge, Massachusetts. 733 pp.
- Mayr, G. 1866. Diagnosen neuer und wenig gekannter Formiciden. *Verhandlungen der k.k. Zoologisch-Botanischen Gesellschaft in Wien*, 16: 885–908.

## Correspondence

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**R. V. Yakovlev<sup>1,2\*</sup>, M. Ströhle<sup>3)</sup>. NEW FOR TURKISH FAUNA GENUS *STYGIA* LATREILLE, [1802] (LEPIDOPTERA: COSSIDAE). – Far Eastern Entomologist. 2016. N 305: 10-12.**

1) Altai State University (South Siberian Botanical Garden), pr. Lenina 61, Barnaul, 656049, Russia.

2) Tomsk State University, Laboratory of Biodiversity and Ecology, Lenina pr. 36, 634050 Tomsk, Russia. \*Corresponding author, E-mail: yakovlev\_asu@mail.ru

3) Jahnstr. 20 D-92637 Weiden i.d.OPf., Germany. E-mail: Manfred.Stroehle@gmx.de

**Summary.** *Stygia mosulensis* Daniel, 1965 (Lepidoptera: Cossidae) is recorded from Turkey for the first time.

**Key words:** Lepidoptera, Cossidae, *Stygia mosulensis*, fauna, Turkey.

**Р. В. Яковлев<sup>1,2\*</sup>, М. Штрелле<sup>3)</sup>. Новый для фауны Турции род *Stygia* Latreille, [1802] (Lepidoptera: Cossidae) // Дальневосточный энтомолог. 2016. N 305. С. 10-12.**

**Резюме.** *Stygia mosulensis* Daniel, 1965 (Lepidoptera, Cossidae) впервые приводится для фауны Турции.

## INTRODUCTION

The Cossidae (Lepidoptera) of Turkey are rather well studied. Modern data on the fauna and systematic of Cossidae of Minor Asia have been published in a series of works (de Freina, 1994; Koçak & Kemal, 2006, 2007; Yakovlev 2011). The Cossidae fauna of Turkey is one of the richest in the Palaearctic region. In total, 45 species (20 of which are endemics) have been reported (Yakovlev, 2015). As a result of examining the materials stored in the collection of the second author a genus and species of Cossidae new for the fauna of Turkey has been discovered.

## NEW RECORD

### Genus *Stygia* Latreille, [1802]

Type species: *Stygia australis* Latreille, 1804.

COMPOSITION. The genus has four known species distributed in Southern Europe (France, Spain, Italy, Portugal, Bulgaria, Greece), the Canary Islands, Morocco, and Iran; one of which is found in Turkey.

### *Stygia mosulensis* Daniel, 1965

Fig. 1

MATERIAL EXAMINED. **Türkei:** Prov. Nevşehir, Zelve, 1100 m, 11.VII 1996, 1 ♀, leg. Ströhle (coll. M. Ströhle, Weiden, Germany).

NOTES. *Stygia mosulensis* was described from Iraq, Mosul Desert (Daniel, 1965), and known by a small number of specimens from Iraq, Iran, Bulgaria and Greece (Witt, 1983; de Freina & Witt, 1989, 1990; de Freina, 1996). Here this species is reported for the fauna of Turkey for the first time.

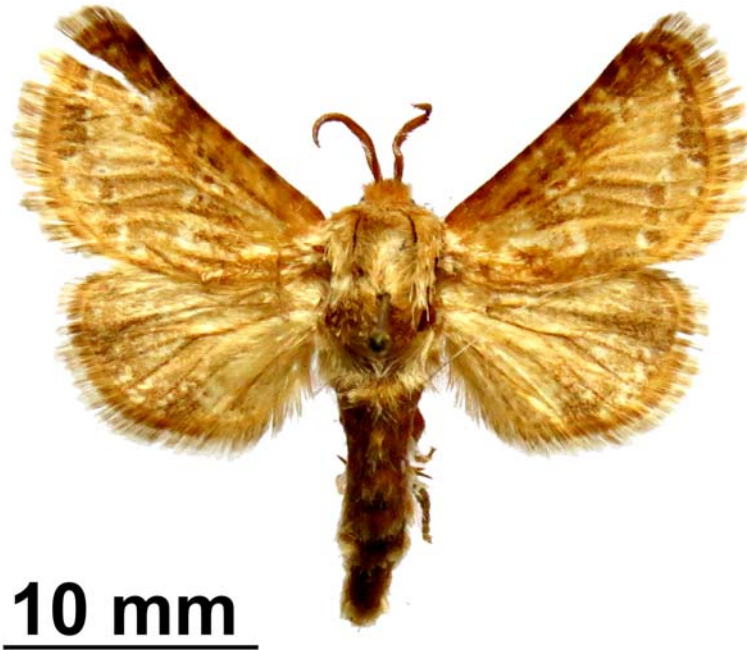


Fig. 1. *Stygia mosulensis* Daniel, 1965, female (Türkei, Prov. Nevsehir, Zelve), dorsal view.

#### REFERENCES

- Daniel, F. 1965. Monographie der palaearktischen Cossidae. VIII. Nachträge und Register zur Subfamilie Cossinae. *Mitteilungen der Münchner Entomologischen Gesellschaft*, 55: 77–114.
- Freina, J.J. de. 1994. Beitrag zur systematischen Erfassung der Bombyces- und Sphinges-Fauna Kleinasiens. Weitere Kenntnisse über Artenspektrum, Systematik und Verbreitung von Cossidae, Psychidae, Cochlididae, Syntomidae, Saturniidae, Brahmaeidae, Psychidae, Axiidae, Hepialidae, Dilobidae und Nolidae (Insecta, Lepidoptera). *Atalanta*, 25(1/2): 317–349.
- Freina, J.J. de. 1996. Cossidae. P. 129–130. In: Karsholt, O. & Razowski, J. (Eds.). *The Lepidoptera of Europe. A distribution Checklist*. Apollo Books, Soro, 380 pp.
- Freina, J.J. de & Witt, T.J. 1989. Kritische Betrachtung de rim Genus *Stygia* Latreille, 1803 zusammengefassten Taxa (Lepidoptera, Cossidae). *Mitteilungen der Münchner Entomologischen Gesellschaft*, 79: 119–123.

- Freina, J.J. de & Witt, T.J. 1990. Cossidae. P. 9–41. In: Witt, Th.J. (Ed.). *Die Bombices und Sphinges der Westpalaearktis*, 2. Forschung und Wissenschaft Verlag, München, 140 pp.
- Koçak, A.Ö. & Kemal, M. 2006. Checklist of the Lepidoptera of Turkey. *The Centre for Entomological Studies Ankara, Priamus Supplement*, 1: 1–196.
- Koçak, A.Ö. & Kemal, M. 2007. Revised and Annotated Checklist of the Lepidoptera of Turkey. *The Centre for Entomological Studies Ankara, Priamus Supplement*, 8: 1-150.
- Witt, T.J. 1983. *Stygia mosulensis* Daniel 1965 (Lepidoptera: Cossidae) new for Iran. *Entomologist's Gazette*, 34(4): 236.
- Yakovlev, R.V. 2011. Catalogue of the Family Cossidae of the Old World. *Neue Entomologische Nachrichten*, 66: 1–129.
- Yakovlev, R.V. 2015. Patterns of Geographical Distribution of Carpenter Moths (Lepidoptera: Cossidae) in the Old World. *Contemporary Problems of Ecology*, 8(1): 36–50. DOI: 10.1134/S1995425515010151

## Correspondence

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**Wei Xiao<sup>1,2</sup>, Shaoli Mao<sup>3</sup>, Jianfeng Wang<sup>4</sup>, Jianhua Huang<sup>1,2\*</sup>. TETTIGONIIDAE (ORTHOPTERA: TETTIGONIOIDEA) FROM HUNAN PROVINCE, CHINA. PART 2. SUBFAMILIES CONOCEPHALINAE, HEXACENTRINAE AND MECONEMATINAE. – Far Eastern Entomologist. 2016. N 305: 13-24.**

1) Key Laboratory of Cultivation and Protection for Non-Wood Forest Trees (Central South University of Forestry and Technology), Ministry of Education, Changsha, Hunan 410004, China. \* Corresponding author: caniscn@aliyun.com

2) College of Forestry, Central South University of Forestry and Technology, Changsha, Hunan 410004, China.

3) Xi'an Botanical Garden of Shaanxi Province (Institute of Botany of Shaanxi Province), Xi'an, Shaanxi 710061, China.

4) Key Laboratory of Urban Integrated Pest Management and Ecological Security of Liaoning Province, College of Life Science and Bioengineering, Shenyang University, Shenyang, Liaoning 110044, China.

**Summary.** A checklist of 48 species of Tettigoniidae (subfamilies Conocephalinae, Hexacentrinae and Meconematinae) recorded from Hunan Province of China is given based on the materials examined and published data. Ten species are new to the fauna of Hunan Province.

**Key words:** Orthoptera, Tettigoniidae, Conocephalinae, Meconematinae, Hexacentrinae, fauna, Hunan, China.

**В. Цяо, Ш. Мао, Ж. Ванг, Я. Хуанг. Tettigoniidae (Orthoptera: Tettigonioidae) провинции Хунань, Китай. Часть 2. Подсемейства Conocephalinae, Hexacentrinae и Meconematinae // Дальневосточный энтомолог. 2016. N 305. С. 13-24.**

**Резюме.** Приведен аннотированный список 48 видов кузнечиков (Tettigoniidae) подсемейств Conocephalinae, Hexacentrinae и Meconematinae, отмеченных из китайской провинции Хунань на основании изученного материала и литературных данных. Впервые для провинции Хунань указываются 10 видов.

### INTRODUCTION

Hunan is located at the central part of South China, covering an area of about 210000 square kilometers between 24°39'–30°38' N and 108°47'–114°15' E, and having a common boundary with Jiangxi, Hubei, Chongqing, Guizhou, Guangxi, Guangdong respectively in the east, north, west and south. A tabular checklist of the 52 species of the family Tettigoniidae (subfamilies Mecopodinae, Phaneropterinae, Pseudophyllinae, Tettigoniinae and Lipotactinae) recorded from Hunan Province has been published recently (Xiao & Huang, 2015). Here we prepare a list of 48 species of the subfamilies Conocephalinae, Hexacentrinae and Meconematinae based on the published data (Kang, 1992; Gorochoy, 1993; Jin & Xia, 1994; Liu & Zhang, 2000, 2001; Gorochoy *et al.*, 2005; Shi *et al.*, 2005; Liu & Zhang, 2007; Liu *et al.*, 2010; Zhou *et al.*, 2010; Chang *et al.*, 2012; Shi & Bian, 2012; Shi *et al.*, 2013, 2014; Wang *et al.*, 2014; 2015) and materials collected by us in Hunan province.

## LIST OF THE SPECIES

### Subfamily Conocephalinae

#### *Conanalus axinus* Shi, Wang et Fu, 2005

MATERIAL EXAMINED. **Hunan Province:** Yangmingshan, 18.VIII 2000, 1♂, 2♀ (holotype and paratypes), Peng Fu leg.; the same locality, 30.IX 2004, 13♂, 8♀, Jianhua Huang leg.; Xinning County, 27. IX 1998 1♂ (paratype), Peibai Zhu leg.; Zhangjiajie, Tainmenshan, 13.X 2003, 3♂, 2♀, Jianhua Huang leg.; Yuanling County, Jiemuxi, Hunan Province, 1-2.VIII 2004, 8♂, 6♀, Jianfeng Wang & Jiliang Wang leg.; Fenghuang County, Liangtouyang, 30.VII 2004, 1♂, 1♀, Jianfeng Wang & Jiliang Wang leg.; Anhua County, Liubuxi, 16.VII 2004, 1♂, Jianfeng Wang leg.; Jiangyong County, Qianjiadong, 18.IX 2004, 1♀, Jianhua Huang leg.; Jiangyong County, Yuankou, 23.IX 2004, 3♂, 1♀, Jianhua Huang leg. **Guangxi Province:** Xing'an County, 22.IX 2001, 1♀, Guofang Jiang leg.; Tian'eshan forestry station, 2-3.VIII 2002, 2♂, Guofang Jiang leg.

DISTRIBUTION. China (Hunan, Guangxi).

#### *Conanalus pieli* (Tinkham, 1943)

MATERIAL EXAMINED. **Hunan Province:** Wudaoshui, Sangzhi County, 11.X 2004, 22♂, 10♀, Jianfeng Wang leg.; Zhangjiajie, 13-14.VIII 2004, 6♂, 7♀, Jianfeng Wang leg.; Shimen County, 17.VIII 2004, 21♂, 8♀, Jianfeng Wang leg.; Sangzhi County, Badagongshan, 12-14.VIII 2001, 11♂, 6♀, Fuming Shi leg.; the same locality, 15.X 2003, 1♂, Jianhua Huang leg.; Sangzhi County, Badagongshan, Wudaoshui, 13.X 2014, 1♂, 4♀, Jianhua Huang leg.; the same locality, 12.X 2014, 1♂, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Hubei, Shaanxi, Henan, Sichuan, Chongqing, Guizhou, Anhui, Jiangxi, Zhejiang).

#### *Conocephalus (Amurocephalus) chinensis* (Redtenbacher, 1891)

MATERIAL. No specimens from Hunan have been examined by the authors.

DISTRIBUTION. China (Hunan, Heilongjiang, Jilin, Shaanxi, Inner Mongolia, Hebei, Hubei, Anhui, Jiangsu, Shanghai, Jiangxi). – Mongolia, Russia, Korea, Japan.

NOTES. This species was recorded from Hunan Province by Kang (1992).

#### *Conocephalus (Anisoptera) exemptus* (Walker, 1869)

MATERIAL EXAMINED. **Hunan Province:** Sangzhi County, Badagongshan, 11.VIII 2004, 6♂ 6♀, Jianfeng Wang leg.; CHINA: Sangzhi County, Badagongshan, Wudaoshui, 13.X 2014, 1♂, 6♀, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Zhejiang, Shanghai, Anhui, Jiangxi, Fujian, Taiwan, Henan, Hubei, Guangdong, Guangxi, Shaanxi, Chongqing, Sichuan, Guizhou, Yunnan, Xizang). – Korea, Japan.

NOTES. This species was firstly recorded from Hunan as *Conocephalus gladius* (Redtenbacher, 1891) (Kang, 1992), which is considered now as a junior synonym of *Conocephalus exemptus* (Walker, 1869) (Eades *et al.*, 2015).

#### *Conocephalus (Anisoptera) longipennis* (Haan, 1842)

MATERIAL. No specimens from Hunan have been examined by the authors.

DISTRIBUTION. China (Hunan, Sichuan, Anhui, Zhejiang, Shanghai, Fujian, Taiwan, Xianggang, Hainan, Guangxi, Xizang). – Japan, Philippines, Indonesia, Myanmar, Sri Lanka.

NOTES. This species was recorded from Hunan by Xia & Liu (1993).

***Conocephalus (Anisoptera) maculatus (Le Guillou, 1841)***

MATERIAL. No specimens from Hunan have been examined by the authors.

DISTRIBUTION. China (Hunan, Beijing, Hebei, Shaanxi, Shanxi, Sichuan, Guizhou, Yunnan, Shanghai, Jiangxi, Zhejiang, Fujian, Guangdong, Xianggang, Taiwan). – Japan, Korea, Malaysia, Indonesia, Philippines, India, Africa.

NOTES. This species was recorded from Hunan by Kang (1992) and Xia & Liu (1993).

***Conocephalus (Anisoptera) melaenus (Haan, 1842)***

MATERIAL EXAMINED. **Hunan Province:** Yuanling County, Jiemuxi, 3.VIII 2004, 1♂, Jianfeng Wang leg.; Sangzhi County, Badagongshan, Wudaoshui, 13.X 2014, 1♀, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Henan, Sichuan, Guizhou, Hubei, Anhui, Jiangsu, Shanghai, Zhejiang, Fujian, Jiangxi, Guangdong, Hainan, Guangxi, Yunnan, Taiwan). – Japan, Nepal, India, Thailand, Singapore, Indonesia.

NOTES. This species was firstly recorded from Hunan as *Conocephalus melas* (Haan, 1842) (Kang, 1992), the species name which derived from a subsequent misspelling, and the correct spelling is *melaenus* (Eades *et al.*, 2015).

***Conocephalus (Conocephalus) bambusanus Ingrisch, 1990***

MATERIAL EXAMINED. **Hunan Province:** Yongshun County, Xiaoxi, 6.VIII 2004, 1♀, Jianfeng Wang leg.

DISTRIBUTION. China (Hunan, Henan, Sichuan, Yunnan, Guangxi, Xizang). – Japan, Korea, Thailand.

NOTES. Here this species is firstly recorded from Hunan Province.

***Conocephalus (Conocephalus) brevivalvus (Shi, Wang et Fu, 2005)***

MATERIAL EXAMINED. **Hunan Province:** Yangmingshan, 18.VIII 2000, 3♀ (holotype and paratypes), Peng Fu leg.

DISTRIBUTION. China (Hunan).

NOTES. This species was described from Hunan as *Conanalus brevivalva* (Shi *et al.*, 2005), but latter it was transferred to the genus *Conocephalus* (Zhou *et al.*, 2010).

***Euconocephalus nasutus (Thunberg, 1815)***

MATERIAL EXAMINED. **Hunan Province:** Sangzhi County, Badagongshan, Nanmuping, 15.X 2014, 1♀, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Sichuan, Chongqing, Guizhou, Zhejiang, Fujian, Guangdong, Guangxi, Hainan, Taiwan). – Japan, India, Thailand, Indonesia.

***Euconocephalus pallidus (Redtenbacher, 1891)***

MATERIAL EXAMINED. **Hunan Province:** county seat of Tongdao, 22.VII 2004, 1♀, Jianfeng Wang leg.

DISTRIBUTION. China (Hunan, Fujian, Guangdong, Guangxi, Hainan, Yunnan, Taiwan). – Vietnam, Myanmar, Thailand, Singapore, Philippines, Indonesia, New Guinea, Sri Lanka.

NOTES. Here this species is firstly recorded from Hunan Province.

***Euconocephalus varius* (Walker, 1869)**

MATERIAL. No specimens from Hunan have been examined by the authors.

DISTRIBUTION. China (Hunan, Jiangsu, Xianggang). – Bangladesh, Malaysia.

NOTES. This species was recorded from Hunan by Kang (1992).

***Pseudorhynchus crassiceps* (Haan, 1842)**

MATERIAL. No specimens from Hunan have been examined by the authors.

DISTRIBUTION. China (Hunan, Henan, Chongqing, Guizhou, Yunnan, Shanghai). – Indonesia.

NOTES. This species was recorded from Hunan by Xia & Liu (1993).

***Pseudorhynchus pyrgocorypha* (Karny, 1920)**

MATERIAL EXAMINED. **Hunan Province:** Sangzhi County, Badagongshan, Wudaoshui, 13.X 2014, 1♂, 1♀, Jianhua Huang leg.

DISTRIBUTION. CHINA (Hunan, Yunnan, Sichuan, Chongqing, Guizhou, Jiangxi, Zhejiang, Fujian).

NOTES. This species was described originally as *Euconocephalus pyrgocorypha* (Karny, 1920). Otte (1997) placed it to the genus *Ruspolia*. Liu & Jin (1999) transferred it to the genus *Pseudorhynchus* and recorded its distribution in Hunan for the first time.

***Ruspolia dubia* (Redtenbacher, 1891)**

MATERIAL EXAMINED. **Hunan Province:** Sangzhi County, Badagongshan, 15.X 2003, 2♂, Jianhua Huang leg.; the same locality, 11.X 2014, 1♂, Jianhua Huang leg.; Yongshun County, Xiaoxi, 6.VIII 2004, 2♀, Jianfeng Wang leg.; Zhangjiajie, 13-14.VIII 2004, 6♂, 7♀, Jianfeng Wang leg.; Hupingshan, 18-20.VIII 2004, 2♂, Jianfeng Wang leg.

DISTRIBUTION. China (Hunan, Heilongjiang, Hebei, Gansu, Shanxi, Sichuan, Chongqing, Guizhou). – Japan, Korea.

NOTES. Here this species is firstly recorded from Hunan Province.

***Ruspolia lineosa* (Walker, 1869)**

MATERIAL EXAMINED. **Hunan Province:** Sangzhi County, Xishaping, 12.X 2014, 1♂, 1♀, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Henan, Sichuan, Yunnan, Guizhou, Chongqing, Hubei, Anhui, Shanghai, Jiangxi, Zhejiang, Fujian, Taiwan). – Japan, Korea, Myanmar, Sri Lanka.

NOTES. This species was firstly recorded from Hunan as *Homorocoryphus lineosus* (Walker, 1869) (Kang, 1992), but latter placed in the genus *Ruspolia* (Jin & Xia, 1994).

**Subfamily Hexacentrinae**

***Hexacentrus japonicus* Karny, 1907**

MATERIAL EXAMINED. **Hunan Province:** Zhangjiajie, 11.VIII 2001, 2♂, Fuming Shi leg.; Yanling County, Taoyuandong, 16.IX 2001, 1♀, Wei Xiao leg.; Sangzhi County, Badagongshan, Wudaoshui, 13.X 2014, 1♂, 2♀, Jianhua Huang leg.



DISTRIBUTION. China (Hunan, Henan, Shandong, Sichuan, Chongqing, Guizhou, Hubei, Anhui, Shanghai, Fujian). – Japan, Korea.

***Hexacentrus unicolor* Serville, 1831**

MATERIAL EXAMINED. **Hunan Province:** Zhangjiajie, 11.VIII 2001, 2♂, Fuming Shi leg.; Yanling County, Taoyuandong, 16.IX 2001, 1♀, Wei Xiao leg.

DISTRIBUTION. China (Hunan, Sichuan, Guizhou, Hubei, Jiangxi, Zhejiang, Shanghai, Fujian, Taiwan). – Japan, Korea, Nepal, Vietnam, Malaysia, Indonesia.

**Subfamily Meconematinae**

***Allicyrtaspis globosis* Shi, Bian et Chang, 2013**

MATERIAL EXAMINED. **Hunan Province:** Wugang County, Yunshan, 9.X 2004, 1♂ (holotype), Jianhua Huang leg.

DISTRIBUTION. China (Hunan).

***Alloxiphidiopsis emarginata* (Tinkham, 1944)**

MATERIAL. No specimens from Hunan have been examined by the authors.

DISTRIBUTION. China (Hunan, Guangxi, Sichuan, Guizhou, Yunnan).

NOTES. This species was firstly recorded from Hunan as *Xiphidiopsis emarginata* (Xia & Liu, 1993), but latter transferred to the genus *Alloxiphidiopsis* (Liu & Zhang, 2007).

***Decma (Decma) fissa* (Hsia et Liu, 1993)**

MATERIAL EXAMINED. **Hunan Province:** Zhangjiajie, 11.VIII 2001, 3♂, Fuming Shi leg.; the same locality, 13.VIII 2004, 1♂, Jianfeng Wang & Jiliang Wang leg.; Shimen County, Hupingshan, 17-20.VIII 2004, 13♂, 10♀, Jianfeng Wang & Jiliang Wang leg.; Yongshun County, Xiaoxi, 6-7.VIII 2004, 5♂, 3♀, Jianfeng Wang & Jiliang Wang leg.; Yuanling County, Jiemuxi, 1.VIII 2004, 1♂, 1♀, Jianfeng Wang & Jiliang Wang leg.; Fenghuang County, Liangtouyang, 30.VI 2004, 2♂, Jianfeng Wang & Jiliang Wang leg.; Sangzhi County, Badagongshan, 10.VIII 2004, 1♂, 1♀, Jianfeng Wang & Jiliang Wang leg.; Anhua County, Liubuxi, 17.VII 2004, 1♀, Jianfeng Wang & Jiliang Wang leg.; Sangzhi County, Badagongshan, Nanmuping, 14.X 2014, 3♂, 5♀, Jianhua Huang leg.; the same locality, 13.X 2014, 5♂, 7♀, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Hubei, Jiangxi, Jiangsu, Zhejiang, Fujian, Guangdong, Guangxi, Sichuan, Chongqing, Guizhou).

NOTES. This species was recorded from Hunan firstly as *Xiphidiopsis fissa* Hsia & Liu, 1993 (Xia & Liu, 1993), which was transferred to the genus *Decma* (Gorochov *et al.*, 2005).

***Euxiphidiopsis capricercus* (Tinkham, 1943)**

MATERIAL EXAMINED. **Hunan Province:** Yongshun County, Xiaoxi, 8.VIII 2004, 103♀, Jianfeng Wang & Jiliang Wang leg.; Yuanling County, Jiemuxi, 1-2.VIII 2004, 29♀, Jianfeng Wang & Jiliang Wang leg.; Shimen County, Hupingshan, 20.VIII 2004, 1♂, 1♀, Jianfeng Wang & Jiliang Wang leg.

DISTRIBUTION. China (Hunan, Zhejiang, Fujian, Hubei, Chongqing, Guizhou, Sichuan).

NOTES. This species was recorded from Hunan firstly as *Xiphidiopsis capricercus* Tinkham, 1943 (Xia & Liu, 1993), but latter transferred to the genus *Euxiphidiopsis* (Liu *et al.*, 2010; Shi *et al.*, 2014).

***Kuzicus (Kuzicus) suzukii* (Matsumura et Shiraki, 1908)**

MATERIAL EXAMINED. **Hunan Province:** Jiangyong County, Qianjiadong, 18.IX 2004, 2♂, 2♀, Jianhua Huang leg; Pingjiang County, Mufushan, 13.IX 2003, 1♀, Jianhua Huang leg; Yanling County, Xiangshan Park, 19.IX 2003, 1♀, Jianhua Huang leg.; Anhui County, Hongyan, 14.VII 2004, 2♂, Jianfeng Wang and Jiliang Wang leg.; Fenghuang County, Liangtouyang, 30.VII 2004, 1♂, Jianfeng Wang and Jiliang Wang leg.

DISTRIBUTION. China (Hunan, Hebei, Hubei, Chongqing, Guizhou, Hainan). – Japan, Korea.

NOTES. This species was firstly recorded from Hunan as *Xiphidiopsis suzukii* (Matsumura et Shiraki, 1908) (Xia & Liu, 1993), which was transferred to the genus *Kuzicus* (Gorochoy, 1993).

***Leptoteratura (Leptoteratura) albicornis* (Motschulsky, 1866)**

MATERIAL. No specimens from Hunan have been examined by the authors.

DISTRIBUTION. China (Hunan, Anhui, Sichuan, Chongqing), Japan.

NOTES. Recorded from Hunan by Xia & Liu (1993), where the species name was misspelled as *albicorne*.

***Meconemopsis quadrinotata* (Bey-Bienko, 1971)**

MATERIAL EXAMINED. **Hunan Province:** Pingjiang County, Mufushan, 14.IX 2003, 1♂, 1♀, Jianhua Huang leg.; Wugang County, Yunshan, 9.X 2004, 1♂, Jianhua Huang leg.; Jiangyong County, Yuankou, 23.IX 2004, 1♀, Jianhua Huang leg; CHINA: Sangzhi County, Badagongshan, Doupengshan, 11.X 2014, 2♂, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Guangxi, Sichuan, Guizhou, Xizang). – Burma.

NOTES. This species was just transferred from the genus *Xiphidiopsis* to the genus *Mecconemopsis* (Wang *et al.*, 2015). Here this species is recorded from Hunan for the first time.

***Phlugiolopsis minuta* (Tinkham, 1943)**

MATERIAL EXAMINED. **Hunan Province:** Hengshan, 8.IX 2003, 1♀, Jianhua Huang leg.; the same locality, 29.VIII 2007, 1♂, 2♀, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Guangxi, Jiangxi, Zhejiang).

NOTES. This species was firstly recorded from Hunan as *Phlugiolopsis fallax* Hsia et Liu, 1993, which is treated as a junior synonym of *Phlugiolopsis minuta* (Tinkham, 1943) (Liu & Zhang, 2001).

***Phlugiolopsis brevis* Hsia et Liu, 1993**

MATERIAL EXAMINED. **Hunan Province:** Xinning County, Shunhuangshan, 5.V 2004, 1♂, Jianhua Huang leg.; Yongshun County, Xiaoxi, 6.VII 2004, 2♂, Jianfeng Wang & Jiliang Wang leg.

DISTRIBUTION. China (Hunan, Guangxi, Guizhou, Sichuan).

***Pseudocosmetura curva* Shi et Bian, 2012**

MATERIAL EXAMINED. **Hunan Province:** Zhangjiajie, 13.VIII 2004, 1♂ (holotype), Jianfeng Wang & Jiliang Wang leg.  
DISTRIBUTION. China (Hunan).

***Sinocyrtaspis angustisulcus* Chang, Bian et Shi, 2012**

MATERIAL EXAMINED. **Hunan Province:** Sangzhi County, Badagongshan, 14.VIII 2001, 1♂ (holotype), Fuming Shi leg.; Sangzhi County, Badagongshan, Doupengshan, 10.X 2014, 1♂, Jianhua Huang leg.  
DISTRIBUTION. China (Hunan).

***Teratura (Macroteratura) megafurcula* (Tinkham, 1944)**

MATERIAL EXAMINED. **Hunan Province:** Jiangyong County, Qianjiadong, 15.IX 2004, 2♂, 1♀, Jianhua Huang leg.; Wugang County, Yunshan, 9.X 2004, 1♂, Jianhua Huang leg.; Sangzhi County, Badagongshan, Wudaoshui, 12.X 2014, 1♂, 1♀, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Zhejiang, Fujian, Anhui, Jiangxi, Hubei, Guangdong, Guangxi, Chongqing, Sichuan, Guizhou).

NOTES. This species was firstly recorded from Hunan as *Xiphidiopsis megafurcula* Tinkham, 1944 (Xia & Liu, 1993), which was transferred to the genus *Teratura* (Gorochov, 1993).

***Teratura (Megaconema) geniculata* (Bey-Bienko, 1962)**

MATERIAL EXAMINED. **Hunan Province:** Sangzhi County, Badagongshan, 10.VIII 2004, 1♀, Jianfeng Wang & Jiliang Wang leg.; Zhangjiajie, 8.VIII 2001, 1♀, Fuming Shi leg.

DISTRIBUTION. China (Hunan, Anhui, Henan, Hubei, Chongqing, Sichuan, Guizhou, Shaanxi, Taiwan).

NOTES. Here this species is firstly recorded from Hunan Province.

***Teratura (Stenoteratura) subtilis* Gorochov et Kang, 2005**

MATERIAL. No specimens from Hunan have been examined by the authors.

DISTRIBUTION. China (Hunan).

NOTES. This species was described from Hunan Province (Gorochov *et al.*, 2005).

***Teratura (Teratura) cincta* (Bey-Bienko, 1962)**

MATERIAL. No specimens from Hunan have been examined by the authors.

DISTRIBUTION. China (Hunan, Fujian, Jiangxi, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan).

NOTES. This species was firstly recorded from Hunan as *Xiphidiopsis cincta* Bey-Bienko, 1962 (Xia & Liu, 1993), which latter was transferred to the genus *Teratura* (Gorochov *et al.*, 2005).

***Xiphidiopsis (Xiphidiopsis) bituberculata* Ebner, 1939**

MATERIAL EXAMINED. **Hunan Province:** Sangzhi County, Badagongshan, Wudao-shui, 12.X 2014, 1♂, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Anhui, Zhejiang, Chongqing, Sichuan, Guizhou, Guangxi).

***Xiphidiopsis (Xiphidiopsis) cheni* Bey-Bienko, 1955**

MATERIAL EXAMINED. **Hunan Province:** Anhua County, Liubuxi, 16.VII 2004, 7♂, 8♀, Jianfeng Wang & Jiliang Wang leg.; Tongdao County, Hongmenchong, 26.VII 2004, 4♂, 7♀, Jianfeng Wang & Jiliang Wang leg.; Tongdao County, Mujiao, 25.VII 2004, 3♂, 10♀, Jianfeng Wang & Jiliang Wang leg.; Yongshun County, Xiaoxi, 6-7.VIII 2004, 2♂, 1♀, Jianfeng Wang & Jiliang Wang leg.; Yuanling County, Jiemuxi, 1.VIII 2004, 3♀, Jianfeng Wang & Jiliang Wang leg.; Hongjiang County, Xuefengshan, 28.VII 2004, 1♂, 1♀, Jianfeng Wang & Jiliang Wang leg.; Shimen County, Hupingshan, 17.VIII 2004, 1♀, Jianfeng Wang & Jiliang Wang leg.; Fenghuang County, Liangtuyang, 30.VII 2004, 1♀, Jianfeng Wang & Jiliang Wang leg.; Huaihua, Zhongposhan, 21.VII 2004, 1♀, Jianfeng Wang & Jiliang Wang leg.; Zhangjiajie, 7-8.VIII 2001, 1♂, 4♀, Fuming Shi leg.

DISTRIBUTION. China (Hunan, Jiangxi, Zhejiang, Fujian, Anhui, Hubei).

***Xiphidiopsis (Xiphidiopsis) elongata* Hsia et Liu, 1993**

MATERIAL EXAMINED. **Hunan Province:** Shimen County, Hupingshan, 17.VIII 2004, 2♂, Jianfeng Wang & Jiliang Wang leg.

DISTRIBUTION. China (Hunan, Guangxi, Guizhou, Sichuan).

***Xiphidiopsis (Xiphidiopsis) excavata* Xia et Liu, 1993**

MATERIAL. No specimens from Hunan have been examined by the authors.

DISTRIBUTION. China (Hunan).

NOTES. Recorded from Hunan by Xia & Liu (1993).

***Xiphidiopsis (Xiphidiopsis) gurneyi* (Tinkham, 1944)**

MATERIAL EXAMINED. **Hunan Province:** Sangzhi County, Badagongshan, 12-14.VIII 2001, 9♂, 8♀, Fuming Shi leg.; Shimen County, Hupingshan, 17.VIII 2004, 1♂, Jianfeng Wang & Jiliang Wang leg.

DISTRIBUTION. China (Hunan, Hubei, Anhui, Fujian, Guangxi, Guizhou, Chongqing, Sichuan).

NOTES. Liu & Zhang (2000) transferred this species to the genus *Euxiphidiopsis*, and Liu *et al.* (2010) followed this opinion. However, this has not been accepted generally to date (Shi *et al.*, 2014; Eades *et al.*, 2015). Here this species is firstly recorded from Hunan Province.

***Xizicus (Axizicus) appendiculatus* (Tinkham, 1944)**

MATERIAL EXAMINED. **Hunan Province:** Shimen County, Hupingshan, 19.VIII 2004, 2♀, Jianfeng Wang & Jiliang Wang leg.; HINA: Sangzhi County, Badagongshan, Nanmuping, 14.X 2014, 1♂, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Guizhou, Sichuan).

NOTES. Here this species is recorded from Hunan for the first time.

***Xizicus (Eoxizicus) howardi* (Tinkham, 1956)**

MATERIAL EXAMINED. **Hunan Province:** Zhangjiajie, 13.VIII 2004, 3♂, Jianfeng Wang & Jiliang Wang leg.; the same locality, 7.VIII 2001, 4♂, Fuming Shi leg.; Shimen County, Hupingshan, 17-18.VIII 2004, 2♂, Jianfeng Wang & Jiliang Wang leg.; Yuanling County, Fenghuangshan, 4.VIII 2004, 1♂, Jianfeng Wang & Jiliang Wang leg.; Wangcheng County, Heimingfeng, 12.IX 2003, 1♂, 1♀, Jianhua Huang leg.; Hengshan, 8.IX 2003, 1♀, Jianhua Huang leg.; Pingjiang County, Mufushan, 14.IX 2003, 1♂, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Shaanxi, Henan, Hubei, Anhui, Zhejiang, Fujian, Guangxi, Guizhou, Sichuan).

NOTES. This species was firstly recorded from Hunan as *Xiphidiopsis howardi* Tinkham, 1956 (Xia & Liu, 1993), but latter transferred to the genus *Xizicus* (Gorochov, 1993).

***Xizicus (Eoxizicus) kulingensis* (Tinkham, 1943)**

MATERIAL EXAMINED. **Hunan Province:** Pingjiang County, Mufushan, 14.IX 2003, 2♂, Jianhua Huang leg.

DISTRIBUTION. China (Hunan, Jiangxi).

NOTES. Here this species is firstly recorded from Hunan.

***Xizicus (Eoxizicus) magnus* (Xia et Liu, 1993)**

MATERIAL EXAMINED. **Hunan Province:** Yongshun County, Xiaoxi, 6.VIII 2004, 1♂, Jianfeng Wang & Jiliang Wang leg.

DISTRIBUTION. China (Hunan, Fujian, Guangxi, Guizhou).

NOTES. Here this species is recorded from Hunan for the first time.

***Xizicus (Eoxizicus) xiai* (Liu et Zhang, 2000)**

MATERIAL. No specimens from Hunan have been examined by the authors.

DISTRIBUTION. China (Hunan, Guangxi, Chongqing, Guizhou, Yunnan).

NOTES. This species was firstly recorded from Hunan (Liu & Zhang, 2000) as *Eoxizicus xiai* Liu et Zhang, 2000, but latter it was transferred to the genus *Xizicus* (Gorochov *et al.*, 2005; Eades *et al.*, 2015).

***Xizicus (Haploxizicus) hunanensis* (Hsia et Liu, 1993)**

MATERIAL. No specimens from Hunan have been examined by the authors.

DISTRIBUTION. China (Hunan).

NOTES. This species was described from Hunan as *Xiphidiopsis hunanensis* (Xia & Liu, 1993), but latter it was transferred to the genus *Xizicus* (Wang *et al.*, 2014).

***Xizicus (Haploxizicus) maculatus* (Hsia et Liu, 1993)**

MATERIAL EXAMINED. **Hunan Province:** Zhangjiajie, 11.VIII 2001, 1♀, Fuming Shi leg.; the same locality, 14.VIII 2004, 1♀, Jianfeng Wang & Jiliang Wang leg.; Shimen County, Hupingshan, 19.VIII 2004, 1♀, Jianfeng Wang & Jiliang Wang leg.

DISTRIBUTION. China (Hunan).

NOTES. This species was described from Hunan as *Xiphidiopsis maculata* (Xia & Liu, 1993), and recently transferred to the genus *Xizicus* (Wang *et al.*, 2014).

***Xizicus (Haploxizicus) spathulatus* (Tinkham, 1944)**

MATERIAL EXAMINED. **Hunan Province:** Zhangjiajie, 13.VIII 2004, 10♂, 4♀, Jianfeng Huang & Jiliang Wang leg.; the same locality, 8-11.VIII 2001, 3♂, 4♀, Fuming Shi leg.; Tongdao County, Shangyan, 24.VII 2004, 1♂, Jiliang Wang & Jianfeng Wang leg.; Shimen County, Hupingshan, 17.VIII 2004, 1♀, Jiliang Wang and Jianfeng Wang leg.

DISTRIBUTION. China (Hunan, Hubei, Guangxi, Chongqing, Sichuan, Guizhou).

NOTES. Here this species is recorded from Hunan for the first time.

***Xizicus (Haploxizicus) szechwanensis* (Tinkham, 1944)**

MATERIAL EXAMINED. **Hunan Province:** Shimen County, Hupingshan, 17-19.VIII 2004, 5♂, 20♀, Jianfeng Wang & Jiliang Wang leg.; Zhangjiajie, 14.VIII 2004, 7♂, 4♀, Jianfeng Wang & Jiliang Wang leg.; the same locality, 7-8.VIII 2004, 4♂, 2♀, Fuming Shi leg.; Yongshun County, Xiaoxi, 6-8.VIII 2004, 2♂, 2♀, Jianfeng Wang & Jiliang Wang leg.; Yuanling County, Jiemuxi, 2.VIII 2004, 2♂, Jianfeng Wang & Jiliang Wang leg.; Huaihua, Zhongposhan, 21.VII 2004, 1♀, Jianfeng Wang & Jiliang Wang leg.; Anhua County, Hongyan, 14.VII 2004, 1♂, Jianfeng Wang & Jiliang Wang leg.; Anhua County, Liubuxi, 17.VI 2004, 1♀, Jianfeng Wang & Jiliang Wang leg.; Tongdao County, Mujiao, 26.VII 2004, 1♀, Jianfeng Wang & Jiliang Wang leg.; Tongdao County, Hongmenchong, 25.VII 2004, 1♀, Jianfeng Wang & Jiliang Wang leg.

DISTRIBUTION. China (Hunan, Zhejiang, Anhui, Jiangxi, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan).

NOTES. This species was firstly recorded from Hunan as *Xiphidiopsis szechwanensis* Tinkham, 1944 (Xia & Liu, 1993), which was transferred to the genus *Xizicus* (Gorochov *et al.*, 2005).

***Xizicus (Xizicus) fascipes* (Bey-Bienko, 1955)**

MATERIAL EXAMINED. **Hunan Province:** Tongdao County, Mujiao, 26.VII 2004, 2♂, 3♀, Jianfeng Wang & Jiliang Wang leg.; Sangzhi County, Badagongshan, 13.VIII 2004, 6♂, 11♀, Jianfeng Wang & Jiliang Wang leg.; Sangzhi County, Badagongshan, Nanmuping, 14.X 2014, 1♂, 2♀, Jianhua Huang leg.; the same locality, 15.X 2014, 3♂, Jianhua Huang leg.; Zhangjiajie, 13-15.VIII 2004, 6♂, 15♀, Jianfeng Wang & Jiliang Wang leg.; the same locality, 7-11.VIII 2001, 7♂, 8♀, Fuming Shi leg.; Shimen County, Hupingshan, 17-20.VIII 2004, 6♂, 13♀, Jianfeng Wang & Jiliang Wang leg.

DISTRIBUTION. China (Hunan, Guangxi, Chongqing, Sichuan, Guizhou).

NOTES. This species was firstly recorded from Hunan as *Xiphidiopsis fascipes* Bey-Bienko, 1955 (Xia & Liu, 1993), but latter it was transferred to the genus *Xizicus* (Gorochov, 1993).

**DISCUSSION**

Up to now (Xiao & Huang, 2015, and the present paper), 100 species in eight subfamilies of the family Tettigoniidae are recorded from Hunan Province of China. The most diverse subfamilies are Phaneropterinae (37 species in 15 genera) and Meconematinae (30 species in

13 genera). Less diverse subfamilies are Conocephalinae (16 species in 5 genera), Tettigoniinae (8 species in 3 genera), Pseudophyllinae (3 species in 2 genera), Mecopodinae, Lipotactinae and Hexacentrinae (2 species in 1 genus for each of the last three subfamilies). However, this result is much less than those recorded in neighboring provinces of China, for example, 177 species in Guangxi, 112 species in Guizhou and 178 species in Yunnan. Therefore, it is necessary to do a further comprehensive investigation on the biodiversity of Tettigoniidae in Hunan. We believe that much more species of Tettigoniidae will be found in Hunan Province in the near future after intensive collecting.

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#### REFERENCES

- Chang, Y.L., Bian, X. & Shi, F.M. 2012. Remarks on the genus *Sinocyrtaspis* (Orthoptera: Tettigoniidae: Meconematinae) from China. *Zootaxa*, 3495: 83–87.
- Eades, D.C., Otte, D., Cigliano, M.M. & Braun, H. 2015. *Orthoptera Species File*. Version 5.0/5.0. Available at: <http://Orthoptera.SpeciesFile.org>. [Accessed 18 August 2015]
- Gorochov, A.V. 1993. A contribution to the knowledge of the tribe Meconematini (Orthoptera: Tettigoniidae). *Zoosystematica Rossica*, 2(1): 63–92.
- Gorochov, A.V., Liu, C.X. & Kang, L. 2005. Studies on the tribe Meconematini (Orthoptera: Tettigoniidae: Meconematinae) from China. *Oriental Insects*, 39: 63–88.
- Jin, X.B. & Xia, K.L. 1994. An index-catalogue of Chinese Tettigonioida (Orthoptera: Grylloptera). *Journal of Orthoptera Research*, 3: 15–41.
- Kang, L. 1992. Family Tettigoniidae. In: Peng, J.W. & Liu, Y.Q. (Eds.). *Iconography of forest insects in Hunan, China*. Hunan Science and Technology Press, Changsha. P. 77–86.
- Karny, H.H. 1920. Dodecas Conocephalidarum novarum. *Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien*, 70: 21–33.
- Liu, X.W. & Jin, X.B. 1999. Tettigonioida. In: Huang BK. (Ed.). *Fauna of insects, Fujian Province of China. Volume 1*. Fujian Science & Technology Publishing House, Fuzhou. P. 119–174.
- Liu, X.W. & Zhang, D.J. 2007. A new genus of the tribe Meconematini (Orthoptera: Tettigoniidae: Meconematinae). *Zootaxa*, 1581: 37–43.
- Liu, X.W. & Zhang, W.N. 2000. Studies on Chinese katydids, I. Ten new species of the tribe Meconematini (Orthoptera: Tettigonioida: Meconematidae) from China. *Entomotaxonomia*, 22(3): 157–170.
- Liu, X.W. & Zhang, W.N. 2001. Orthoptera: Tettigonioida, Rhabdophoroidea and Gryllacridoidea. In: Wu, H. & Pan, C.W. (Eds.). *Insects of Tianmushan National Nature Reserve*. Science Press, Beijing. P. 90–102.
- Liu, X.W., Zhou, M. & Bi, W.X. 2010. Orthoptera: Tettigonioida. In: Xu, H.C. & Ye, T.X. (Eds.). *Insects of Fengyangshan National Nature Reserve*. China Forestry Publishing House, Beijing. P. 68–91.

- Otte, D. 1997. Orthoptera Species File 7. Tettigonioidea. Orthopterists' Society at Academy of Natural Sciences of Philadelphia, Philadelphia. 373 pp.
- Shi, F.M. & Bian, X. 2012. A revision of the genus *Pseudocosmetura* (Orthoptera: Tettigoniidae: Meconematinae). *Zootaxa*, 3545: 76–82.
- Shi, F.M., Bian, X. & Chang, Y.L. 2013. A new genus and two new species of the tribe Meconematini (Orthoptera: Tettigoniidae) from China. *Zootaxa*, 3681(2): 163–168. DOI:10.11646/zootaxa.3681.2.5.
- Shi, F.M., Han, L., Mao, S.L. & Bai, J.R. 2014. Two new species of the genus *Euxiphidiopsis* Gorochov, 1993 (Orthoptera: Meconematinae) from China. *Zootaxa*, 3827(3): 387–391. DOI:10.11646/zootaxa.3827.3.8.
- Shi, F.M., Wang, J.F. & Fu, P. 2005. A review of the genus *Conanalus* Tinkham (Orthoptera, Tettigonioidea) from China. *Acta Zootaxonomica Sinica*, 30(1): 84–86.
- Wang, H.Q., Jing, J., Liu, X.W. & Li, K. 2014. Revision on genus *Xizicus* Gorochov (Orthoptera, Tettigoniidae, Meconematinae, Meconematini) with description of three new species from China. *Zootaxa* 3861(4): 301–316. DOI:10.11646/zootaxa.3861.4.1.
- Wang, H.Q., Liu, X.W., Li, K. 2015. New taxa of Meconematini (Orthoptera: Tettigoniidae: Meconematinae) from Guangxi, China. *Zootaxa*, 3941(4): 509–541. DOI:10.11646/zootaxa.3941.4.3.
- Xia, K.L. & Liu, X.W. 1993[1992]. Orthoptera: Tettigonioidea and Grylloidea. In: Huang, F.S. (Ed.). *Insects of Wuling Mountains Area, southwest China*. Science Press, Beijing. P. 87–113.
- Xiao, W. & Huang, J.H. 2015. Tettigoniidae (Orthoptera: Tettigonioidea) from Hunan Province, China. Part I. Subfamilies Mecopodinae, Phaneropterinae, Pseudophyllinae, Tettigoniinae and Lipotactinae. *Far Eastern Entomologist*, 298: 11–16.
- Zhou, M., Bi, W.X. & Liu, X.W. 2010. The genus *Conocephalus* (Orthoptera, Tettigonioidea) in China. *Zootaxa* 2527: 49–60.

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Address: Institute of Biology and Soil Science, Far East Branch of Russian Academy of Sciences, 690022, Vladivostok-22, Russia.

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