Far Eastern Entomologist

Number 516: 7-14 ISSN 1026-051X (print edition) ISSN 2713-2196 (online edition) February 2025

https://doi.org/10.25221/fee.516.2
https://elibrary.ru/fskoww
https://zoobank.org/References/8A39E523-3543-42B7-A68A-19EA5766369D

REVIEW OF THE GENUS *TONDANOTETTIX* C. WILLEMSE, 1928 (ORTHOPTERA: TETRIGIDAE)

S. Yu. Storozhenko

Federal Scientific Center of the East Asia Terrestrial Biodiversity, Far East Branch of the Russian Academy of Sciences, Vladivostok, 690022, Russia. E-mail: storozhenko@ibss.dvo.ru

Summary. The genus *Tondanotettix* C. Willemse, 1928 includes two species endemic to Sulawesi Island (Indonesia). The third species, *T. doloduo* **sp. n.**, is described from northeast part of this island. *Tondanotettix* is most similar to the genus *Hyboella* Hancock, 1915 (Metrodorinae) but differs from latter in the arch-like infrascapular area and a deeply excised apex of pronotal process. Therefore *Tondanotettix* is transferred here from subfamily Cladonotinae to subfamily Metrodorinae. An annotated list and a key to species and subspecies of this genus are provided also.

Key words: pygmy grasshoppers, Cladonotinae, Metrodorinae, taxonomy, new species, Oriental region.

С. Ю. Стороженко. Обзор рода *Tondanotettix* C. Willemse, 1928 (Orthoptera: Tetrigidae) // Дальневосточный энтомолог. 2025. N 516. С. 7-14.

Резюме. Род *Tondanotettix* C. Willemse, 1928 включает два вида, эндемичных для острова Сулавеси (Индонезия). Из северо-восточной части этого острова описывается третий вид, *T. doloduos* **sp. n.** *Tondanotettix* наиболее сходен с родом *Hyboella* Hancock, 1915 (Metrodorinae), но отличается от последнего дугообразно изогнутым нижним краем отростка переднеспинки и глубоко вырезанной вершиной этого отростка. Поэтому род *Tondanotettix* переносится из подсемейства Cladonotinae в подсемейство Metrodorinae. Также приводятся аннотированный список и определительная таблица видов и подвидов этого рода.

INTRODUCTION

The monotypic genus *Tondanotettix* C. Willemse, 1928 was established for *Acridium brevis* Haan, 1843 from Sulawesi Island (Willemse, 1928). Later, one species and one subspecies, i.e. *T. modestus* Günther, 1937 and *T. brevis meridionalis* Günther, 1937, were described from Sulawesi (Günther, 1937) and *Mazarredia dorrea* Hancock, 1909 from New Guinea (Hancock, 1909) was transferred to this genus (Günther, 1938). Recently Tumbrinck (2014) established for *T. dorrea* a new genus *Devriesetettix* Tumbrinck, 2014 in the subfamily Cladonotinae. Storozhenko (2023) clarify the taxonomic position of *Devriesetettix* and placed it to the tribe Trusmaditetrigini. Thus, nowadays the genus *Tondanotettix* consists of two species, one of them is divided in two subspecies.

In present paper the diagnosis and position of this genus in Tetrigidae system is clarified, an annotated list of taxa included is given, and a key to species and subspecies of *Tondanotettix* is also provided.

MATERIAL AND METHODS

This paper is based on the collections of the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia, as well as on images of the type specimens available in the Orthoptera Species File database (Cigliano *et al*., 2025), which is here cited as OSF. Abbreviations of museums are following: MfN – Museum für Naturkunde, Berlin, Germany; MZPW– Polish Academy of Science, Museum of the Institute Zoology, Warszawa, Poland; NBC – Naturalis Biodiversity Center, Leiden, The Netherlands; ZIN – Zoological Institute, St. Petersburg, Russia.

Nomenclature is given according to rules of the International Code of the Zoological Nomenclature (ICZN 1999). The morphological terminology and measurements follow those of Tumbrinck (2014). Photographs were taken with an Olympus SZX16 stereomicroscope and an Olympus DP74 digital camera, and then stacked using Helicon Focus software. The final illustrations were post-processed for contrast and brightness using Adobe® Photoshop® software.

TAXONOMY

Family Tetrigidae

Subfamily Metrodorinae

Genus *Tondanotettix* C. Willemse, 1928

Tondanotettix Willemse, 1928: 23; Günther, 1937: 170; Günther, 1938: 346; Blackith, 1992: 193; Otte, 1997: 28; Tumbrinck, 2014: 351, 389; Storozhenko, 2023: 68.

Type species: *Acridium brevis* Haan, 1843, by original designation.

DIAGNOSIS. Body strong. Head not protruding above pronotum in lateral view. Antennae filiform. Frontal ridge in lateral view deeply excised between eyes; width of frontal ridge near base of antennae equal to width of 1st antennal segment, therefore typical for Cladonotinae scutellum absent; sides of frontal ridge below lateral ocelli paralell. Apical segment of maxillary palps strongly dilated, oviform. In dorsal view anterior margin of the pronotum straight; apex of posterior process of the pronotum bifurcate; hind margin of lateral lobes of the pronotum with a lower sinus only; lateral lobes directed outwards and downwards, with posterior angles rounded; infrascapular area broad. Tegmina and hind wings absent. Hind femora stout; antegenicular and genicular teeth distinct. First tarsal segment of hind legs almost as long as 3rd segment. Valves of ovipositor narrow and dentate.

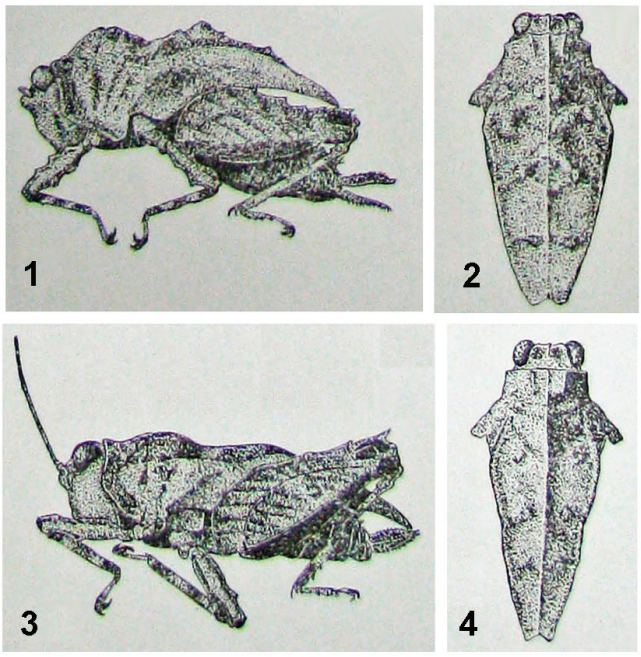
COMPOSITION. Three species of witch one is described below.

DISTRIBUTION. The genus is endemic to Sulawesi Island.

COMPARISON. This genus is most similar to the genus *Hyboella* Hancock, 1915 from subfamily Metrodorinae but latter differs from *Tondanotettix* in follow combination of features: frontal ridge in lateral view broadly rounded or weakly excised between eyes; sides of frontal ridge below lateral ocelli divergent; apex of posterior process of the pronotum rounded or acute; infrascapular area of the pronotum narrow; tegmina and hind wings present but in some species of *Hyboella* absent.

Key to species and subspecies

1(6) Median carina of pronotum in lateral view excised.
2(5) Median carina of pronotum deeply excised before shoulders (Fig. 1) ..... *M. brevipes*
3(4) Median carina of pronotum after shoulders with a few tubercles (North Sulawesi) .....
..... *M. brevipes brevipes*
4(3) Median carina of pronotum after shoulders with two humps (South Sulawesi) .....
..... *M. brevis meridionalis*
5(2) Median carina of pronotum with shallow excision (Fig. 3) ..... *M. modestus*
6(1) Median carina of pronotum in profile arch-like (Fig. 5) ..... *T. doloduo* **sp. n.**



Figs 1–4. *Tondaotettix* spp., females (after Günther, 1937). 1, 2 – *T. brevis meridionalis*: 1 – lateral view; 2 – dorsal view; 3, 4 – *T. modestus*: 3 – lateral view; 4 – dorsal view.

An annotated list of species and subspecies

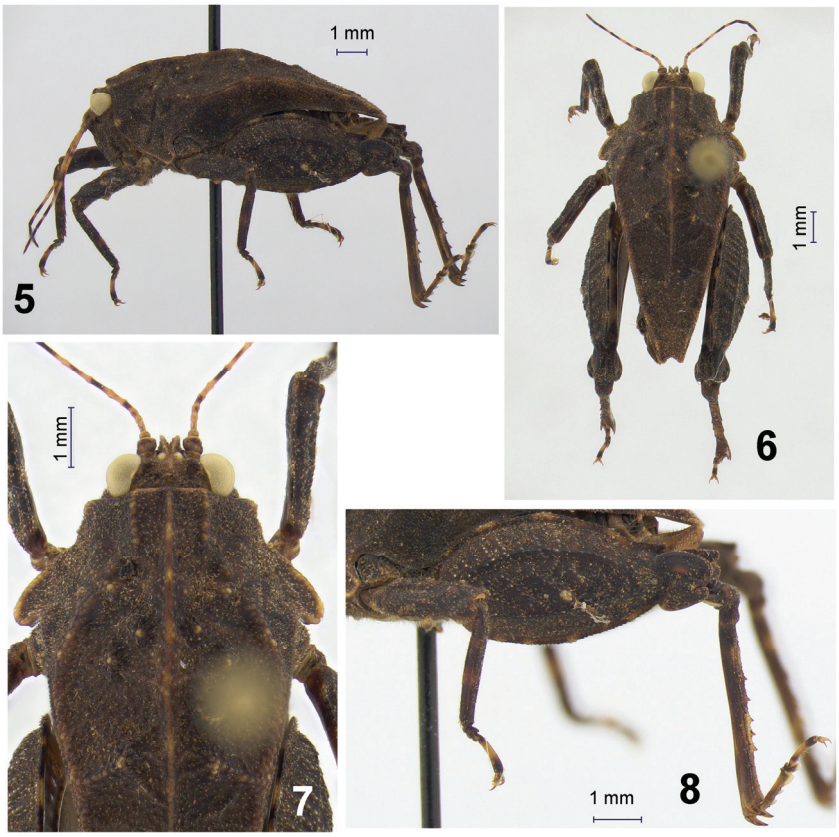
***Tondaotettix brevipes brevipes* (Haan, 1843)**

Acridium (*Tetrix*) *breve* Haan, 1843: 167, 170 (holotype – ♀, Indonesia: Sulawesi Utara: Tondano; in NBC).
Criotettix brevis: Bolívar, 1887: 229;
Loxilobus brevis: Hancock, 1907: 30; Kirby, 1910: 19.
Tondanotettix brevis: Willemse, 1928: 23; Günther, 1937: 183; Günther, 1938: 349; Blackith, 1992: 193; Otte, 1997: 28; Tumbrinck, 2014: 389, pl. 89, fig. 1–7.

REMARKS. The nominotypical subspecies is known by a single specimen. The images of holotype are available in OSF as well as in the paper of Tumbrinck (2014).

MEASUREMENTS (in mm). Female: pronotum length 10.0; pronotum lobe width 5.2; pronotum height 3.1; hind femur length 6.4; hind femur width 3.0 mm; vertex width 1.2; eye width 0.7 (after Tumbrinck, 2014).

DISTRIBUTION. Indonesia: NE Sulawesi (ca. 1.32°N, 124.91°E).



Figs 5–8. *Tondaotettix doloduo* sp. n., male, holotype. 5 – body, lateral view; 6 – same, dorsal view; 7 – anterior part of body, dorsal view; 8 – mid and hind legs, lateral view.

***Tondanotettix brevis meridionalis* Günther, 1937**
Figs 1, 2

Tondanotettix brevis meridionalis Günther, 1937: 183, fig. 20, 21 (syntypes – 1♀, 1♂, Sulawesi: Lompo Batang, 1000 m, 03.1896, leg. Fruhstorfer; deposition of syntypes unknown because the part of specimens deposited in the former Museum Stettin is found in MZPW now); Günther, 1938: 349; Blackith, 1992: 193; Otte, 1997: 28; Tumbrinck, 2014: 389.

REMARKS. The subspecies differs from the holotype of *Tondanotettix brevis brevis* only by the shape of pronotum but Tumbrinck (2014) considered that this feature could also be variable. I consider these two forms to be separate subspecies, as they are found in different parts of the island, in the north-east and south-west, respectively.

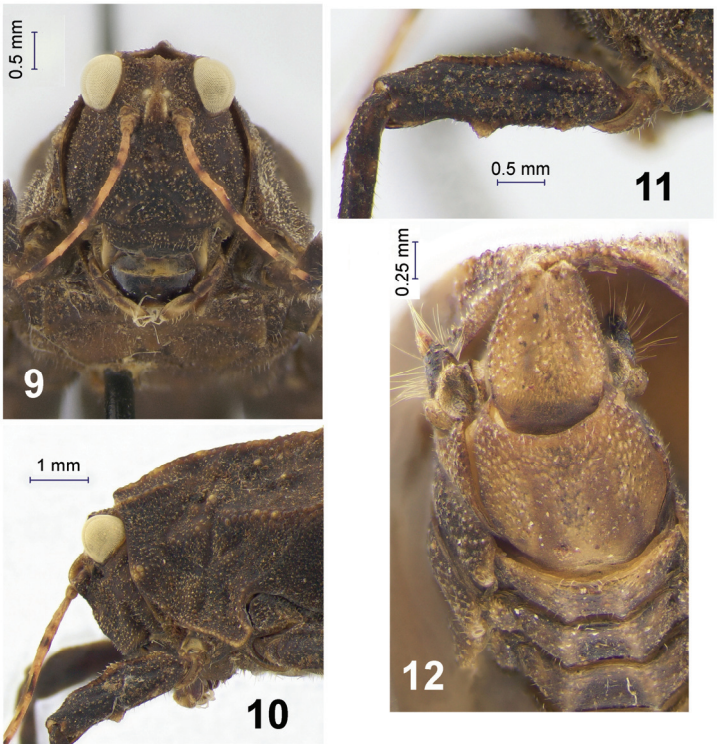
DISTRIBUTION. Indonesia: Sulawesi Selatan (=South Sulawesi, ca. 5.40°S, 120.00°E).

***Tondanotettix doloduo* Storozhenko, sp. n.**

https://zoobank.org/NomenclaturalActs/021277BE-CDB4-4D88-81EB-33896EF08CCD

Figs 5–12

MATERIAL. Holotype – ♂, Indonesia: Sulawesi Island, Prov. Sulawesi Utara, Nat. park Bogani Nani Wartabone, near vill. Toraut not far of town Doloduo, env. of Wallace Base Camp., 0.56°N, 123.90°E, 17–25.I 2011, leg. A.V. Gorochov (ZIN).



Figs 9–12. *Tondaotettix doloduo* sp. n., male, holotype. 8 – head, frontal view; 10 – anterior part of body, lateral view; 11 – fore femur, lateral view; 12 – apex of abdomen, ventral view.

DESCRIPTION. Male. Body robust, medium sized for genus. Antennae filiform, 14-segmented; antennal grooves situated at the level of lower margin of eyes. Length of antenna 1.2 times longer than length of fore femur; mid segments of antennae 7.5–8.3 times as long as

wide. Eyes not protruding above vertex in lateral view. Lateral ocelli placed slightly below the middle of eyes. Fastigium of vertex with deep concavities between lateral carinae, 2.4 times wider than width of one eye from above; anterior margin of fastigium weakly excised, median carina of fastigium reaching middle of eye; lateral carinae elevated. Frontal ridge in lateral view deeply excised between eyes. Width of frontal ridge near base of antennae equal to width of 1st antennal segment. Pronotum rugulose, almost reaching apex of hind femora; in dorsal view anterior margin of pronotum straight in the middle; posterior process of pronotum excised; disc of pronotum with 6 tubercules. Median carina of the pronotum in profile arch-like. Prozonal carinae well defined. Hind margin of lateral lobes of the pronotum with a lower sinus only; posterior angles of lateral lobes in dorsal view rounded. Tegmen and hind wings absent. Fore and mid femora with two lappets on upper and lower carinae. Fore femur 3.4 times, mid femur 3.0 times as long as wide. Hind femur stout, 2.2 times as long as wide; upper and lower carina weakly serrate. Upper side of hind tibia with 3–4 outer and 3–5 inner teeth. First tarsal segment of hind legs almost as long as 3rd segment (without claws). Epiproct narrow triangular, with pointed apex. Cerci short, conical. Subgenital plate in lateral view elongated with shallow excision at apex; in ventral view apex of plate weakly excised.

Body rusty black. Head brownish black. Antennae yellowish with black rings. Apical segment of maxillary palps light brown with black marks, other segments black. Dorsal side of pronotun and posterior angles of lateral lobes blackish brown; infrascapular area black. Fore and mid femora black; lappets light brown. Fore and mid tibiae black, with indistinct light marks. First segment of fore and mid tarsi black; second segment black with light brown ring; claws brown. Hind femora black. Hind tibiae brownish black; first and second segments of tarsi blackish brown; third segment blackish with light brown ring; claws brown. Abdomen black with dark brown subgenital plate. Cerci black with brown apex.

Female. Unknown.

MEASUREMENTS (in mm). Male: length of body (from frontal ridge to apex of subgenital plate) 10.5; pronotum length 9.3; pronotum lobe width 4.9; pronotum height 4.0; fore femur length 2.7; mid femur length 2.7; hind femur length 6.1; hind femur width 2.8; antenna length 5.6; vertex width 1.1; eye width 0.5.

DISTRIBUTION. Indonesia: NE Sulawesi (Sulawesi Utara).

ETYMOLOGY. The name of new species is originated from the type locality.

***Tondanotettix modestus* Günther, 1937**

Figs 3, 4, 13–17

Tondanotettix modestus Günther, 1937: 185, figs. 22, 23 (holotype – ♂, Sulawesi: Ile Ile, 500 m, 11.XII 1930, leg. G. Helnrich; deposited in MfN).

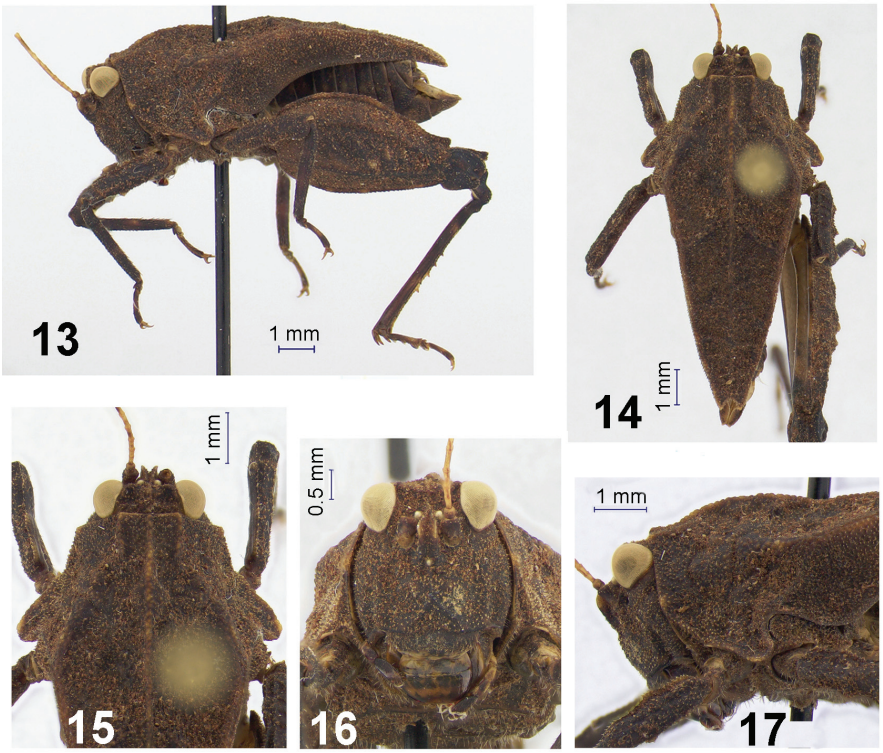
Tondanotettix modestus: Günther, 1938: 349; Blackith, 1992: 194; Otte, 1997: 29.

MATERIAL. Indonesia: Sulawesi Island, Prov. Sulawesi Tengah, Nat. park Lore Lindu, ca. 45 km SSE of city Palu, env. of vill. Tomado on Lake Lindu, 1.34°S, 120.04°E, 1000 m, 13–17.II 2011, 2 ♂, leg. A.V. Gorochov (ZIN).

REMARKS.The images of the type specimens of this species are available in OSF.

MEASUREMENTS (in mm). Male: body length 10.3–10.5; pronotum length 9.5; pronotum lobe width 5.0; pronotum height 3.4; fore femur length 2.6; mid femur length 2.6–2.8; hind femur length 6.0–6.4; hind femur width 2.7–2.9; vertex width 1.1–1.2; eye width 0.5.

DISTRIBUTION. Indonesia: North and Central Sulawesi. Here this species is recorded from central part of island for the first time.



Figs 13–17. *Tondaotettix modestus*, male from Central Sulawesi. 13 – body, lateral view; 14 – same, dorsal view; 15 – anterior part of body, dorsal view; 16 – head, frontal view; 17 – anterior part of body, lateral view.

DISCUSSION

Currently, the system of the family Tetrigidae is undergoing significant changes. The composition of all subfamilies is being revised; new tribes are being established (Muhammad *et al*., 2018; Devriese *et al*., 2023; Skejo *et al*., 2023; Storozhenko, 2023a, b; etc.). The subfamilies Metrodorinae and Cladonotinae are discussed especially intensively. The genera *Hyboella* and *Tondanotettix* are characterized by frontal ridge as wide as 1st antennal segment, which does not form a typical for Cladonotinae scutellum. Therefore, both genera belong to the subfamily Metrodorinae and forming a group, probably a tribe rank.

ACKNOWLEDGEMENTS

I thank A.V. Gorochov for the opportunity to study the collections of the Zoological Institute (St. Petersburg) and S.V. Lapteva (Federal Scientific Center of the East Asia Terrestrial Biodiversity, Vladivostok) for his assistance in preparing photographs. The research was carried out within the state assignment of Ministry of Science and Higher Education of the Russian Federation (theme No. 124012400285-7).

REFERENCES

Blackith, R.E. (1992) *Tetrigidae (Insecta; Orthoptera) of Southeast Asia: Annotated catalogue with partial translated keys and bibliography*. JAPAGA Press, Wicklow, 248 pp.

Bolívar, I. 1887. Essai sur les Acridiens de la tribu des Tettigidae. *Annales de la Societe entomologique de Belgique*, 31, 173–313.

Cigliano, M.M., Braun, H., Eades, D.C. & Otte, D. 2021. Orthoptera Species File Online. Version 5.0/5.0. Available from: http://Orthoptera.SpeciesFile.org. (accessed 6 January 2025)

de Haan, W. 1843. Bijdragen tot de kennis der Orthoptera. P. 165–228. In: *Temminck* (Ed.) *Verhandelingen over de Natuurlijke Geschiedenis der Nederlansche Overzeesche Bezittingen: Vol. 19/20*. In commissie bij S. en J. Luchtmans, en C.C. van der Hoek, Leiden.

Devriese, H., Nguyen, E. & Husemann, M. 2023. An identification key to the genera and species of Afrotropical Tetrigini (genera *Paratettix*, *Leptacrydium, Hedotettix, Rectitettix* nov. gen., and *Alienitettix* nov. gen.) with general remarks on the taxonomy of Tetrigini (Orthoptera, Tetrigidae). *Zootaxa*, 5285(3): 511–556. DOI: 10.11646/zootaxa.5285.3.4

Günther, K. 1938. Revision der Acrydiinae, I. Sectiones, Tripetalocerae, Discotettigiae, Lophotettigiae, Cleostratae, Bufonidae, Cladonotae, Scelimenae verae. *Mitteilungen aus dem Zoologischen Museum in Berlin*, 23(2): 299–437.

Hancock, J.L. 1907. Orthoptera Fam. Acridiidae. Subfam. Tetriginae. In: *Genera Insectorum. Vol. 48*. V. Verteneuil & L. Desmet, Bruxelles, pp. 1–79, pls. 1–4.

Hancock, J.L. 1909. Further studies of the Tetriginae (Orthoptera) in the Oxford University Museum. *Transactions of the Entomological Society of London*, [1909]: 387–426, pl. 22. DOI: 10.1111/j.1365-2311.1909.tb02160.x

ICZN [International Comission on the Zoological Nomenclature]. 1999. *International Code of the Zoological Nomenclature*. 4th edition. The International Trust for Zoological Nomenclature, London, 306 pp. DOI: 10.5962/bhl.title.50608

Kirby, W.F. 1910. *A Synonymic Catalogue of Orthoptera (Orthoptera Saltatoria, Locustidae vel Acridiidae).* The Trustees of the British Museum, London, 674 pp.

Muhammad, A.A., Tan, M.K., Abdullah, N.A., Azuirun, M.S., Bhaskkar, D & Skejo J. 2018. An annotated catalogue of the pygmy grasshoppers of the tribe Scelimenini Bolívar, 1887 (Orthoptera: Tetrigidae) with two new Scelimena species from the Malay Peninsula and Sumatra. *Zootaxa*, 4485(1): 1–70. DOI: 10.11646/zootaxa.4485.1.1

Otte, D. 1997. *Orthoptera Species File 6. Tetrigoidea and Tridactyloidea (Orthoptera: Caelifera) and Addenda to OSF Vols 1-5*. Orthopterists' Society & Academy of Natural Sciences of Philadelphia, Philadelphia, 261 pp.

Skejo, J., Yong, S., Bogić, D. & Kasalo, N. 2023. Caribbean pygmy jumping leaves (Tetrigidae, Cladonotinae, Choriphyllini). *Deutsche Entomologische Zeitschrift*, 70(1): 129–141. DOI: 10.3897/dez.70.98982

Storozhenko, S.Yu. 2023a. New curious genus of the subfamily Cladonotinae (Orthoptera: Tetrigidae) from Borneo Island with remarks on the classification of this subfamily. *Zootaxa*, 5315(1): 59–70. DOI: 10.11646/zootaxa.5315.1.3

Storozhenko, S.Yu. 2023b. A new tribe of the pygmy grasshoppers subfamily Cladonotinae (Orthoptera: Tetrigidae). *Far Eastern Entomologist*, 468: 16–18. DOI: 10.25221/fee.468.2

Tumbrinck, J. 2014. Taxonomic revision of the Cladonotinae (Orthoptera: Tetrigidae) from the islands of South-East Asia and from Australia, with general remarks to the classification and morphology of the Tetrigidae and descriptions of new genera and species from New Guinea and New Caledonia. In: Telnov, D. (Ed.), *Biodiversity, biogeography and nature conservation in Wallacea and New Guinea. Vol. II*. The Entomological Society of Latvia, Riga, pp. 345–396, pls. 64–91.

Willemse, C.J.M. 1928. Revision des Acridiodea, décrites par De Haan, avec descriptions de nouvelles espèces. *Zoologische Mededeelingen*, 11(1), 1–27.