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Taxonomy & Inventories

New records of stoneflies (Insecta, Plecoptera) from the Greater Khingan Mountains, China

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Abstract

Background

Plecoptera (stoneflies) are an ancient order of aquatic insects that serve as vital bioindicators in freshwater ecosystems. This study focuses on the Greater Khingan Mountains in north-eastern China, a biodiversity hotspot with limited stonefly research. By documenting new genera and species records, it expands our knowledge of Chinese Plecoptera. The findings enhance biogeographical and ecological insights into this underexplored region.

New information

This paper records five families, six genera and seven species of stoneflies from the Greater Khingan Mountains, among them *Diura* Billberg, 1820 and *Megarcys* Klapálek, 1912 as new Chinese-recorded genera and seven species recorded for the first time in

China, including *Isocapnia kudia* Ricker, 1959, *Paraleuctra zapekinae* Zhiltzova, 1974, *Nemoura arctica* Esben-Petersen, 1910, *Nemoura sirotskii* Teslenko, 2018, *Diura majuscula* (Klapálek, 1912), *Megarcys ochracea* (Klapálek, 1912) and *Utaperla lepnevae* (Zhiltzova, 1970). The research materials were from the northern part of the Greater Khingan Mountains in north-eastern China, including parts of Heilongjiang Province and Inner Mongolia Autonomous Region.

Keywords

Plecoptera, new recorded genus, new recorded species, China

Introduction

The Greater Khingan Mountains is located in the north-eastern part of China, starting from the banks of the Heilongjiang River in the north and ending in the upper valley of the Xilamulun River in the south (40°59′N~53°33′N, 115°5′E~125°16′E, with a length of about 1400 km and a width ranging from 200 to 300 km). The Greater Khingan Mountains area is adjacent to the Russian Far East and Mongolia. Administratively, it encompasses the eastern part of the Inner Mongolia Autonomous Region (including Hulunbuir City, Hinggan League, Tongliao City and Chifeng City), as well as the north-western part of Heilongjiang Province (Da Hinggan Ling Prefecture). There are multiple hills and branches of streams on the Greater Khingan Mountains, making it an ideal habitat for stoneflies.

Since the last century, there have been relatively few records of stoneflies in the north-eastern region of China (Nelson and Hanson 1969, Yang and Yang 1996, Li et al. 2015a, Li et al. 2015b, Chen and Du 2016, Yang and Li 2018, Huo et al. 2020, Huo et al. 2022, Shi et al. 2022) and there has been a lack of systematic investigation and research. Nelson and Hanson (1969) described *Utaperla orientalis* Nelson & Hanson, 1969, the first stonefly species with a type locality in the Greater Khingan Mountains. There were no reports of Plecoptera in the Greater Khingan Mountains for a long period thereafter. Recently, we conducted a continuous survey of rivers (including GanHe River, Pangu River, Huma River, Duobukuer River and Heilongjiang River) in the northern part of the Greater Khingan Mountains. In this paper, two genera and seven species from this region are recorded for the first time in China.

Materials and methods

Specimens were collected by hand, sweep net and light trap and preserved in 75% ethanol. Abdominal segments of specimens were examined and illustrated by KEYENCE VHX-5000 and optimised by Adobe Photoshop CS6. The materials are deposited in the Insect Collection of Yangzhou University (ICYZU), Jiangsu Province, China.

Taxon treatments

Isocapnia kudia Ricker, 1959

Nomenclature

Isocapnia kudia Ricker, 1959: 650

Material

a. scientificName: ***Isocapnia kudia*** Ricker, 1959; taxonomicStatus: Valid; kingdom: Animalia; phylum: Arthropoda; class: Insecta; order: Plecoptera; family: Capniidae; taxonRank: species; genus: ***Isocapnia*** ; specificEpithet: ***kudia***; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Jiagedaqi District; maximumElevationInMeters: 451; verbatimLatitude: 50.403951; verbatimLongitude: 124.120544; year: 2023; month: 6; day: 3; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Ya-Fei Zhu & Xiao Yang; occurrenceStatus: present; disposition: ICYZU; identifiedBy: Xiao Yang; language: en; basisOfRecord: PreservedSpecimen; occurrenceID: 835990E5-B8A6-5C49-AFFF-5F796C540B97

Diagnosis

Epiproct in lateral view almost straight, directed upwards, slightly thickened in the middle, its tip with a small tooth in front of the apex (Fig. 1A-C).

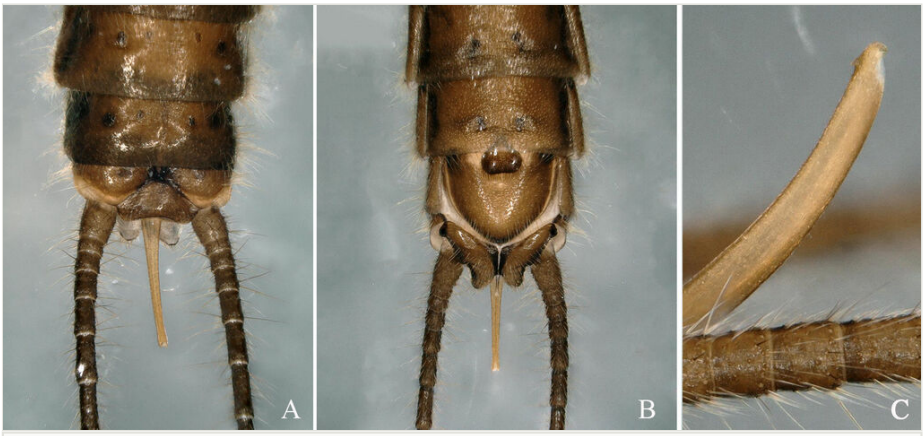

Figure 1. doi

Isocapnia kudia Ricker, 1959. **A-B** male terminalia, dorsal, ventral; **C** epiproct, lateral view.

Distribution

Russia, Transbaikalia, Far East (Teslenko and Zhiltzova 2009). The species is recorded for China for the first time.

Paraleuctra zapekinae Zhiltzova, 1974

Nomenclature

Paraleuctra zapekinae Zhiltzova, 1974: 360

Material

a. scientificName: ***Paraleuctra zapekinae*** Zhiltzova, 1974; taxonomicStatus: Valid; kingdom: Animalia; phylum: Arthropoda;; class: Insecta; order: Plecoptera; family: Leuctridae; genus: ***Paraleuctra***; specificEpithet: ***zapekinae***; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Xinlin District, Dawusu town; maximumElevationInMeters: 471; verbatimLatitude: 51.768247; verbatimLongitude: 124.512166; year: 2023; month: 6; day: 6; individualCount: 10; sex: male; lifeStage: adult; occurrenceStatus: present; disposition: ICYZU; identifiedBy: Xiao Yang; language: en; institutionCode: ICYZU; occurrenceID: 9CE13161-BA4E-5C46-8FA3-D235BCA28FE1

Diagnosis

Male cerci are slightly swollen at the base, sharply curved and directed medially with their apices; the ventral tooth of the cerci without an additional tooth and the dorsal tooth posteriorly has a short tooth and bluntly bifurcated apex (Fig. 2A-C).

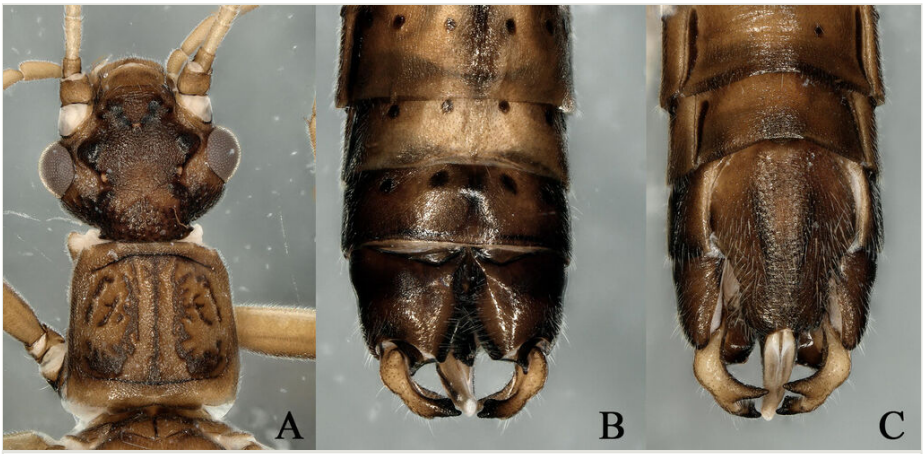

Figure 2. doi

Paraleuctra zapekinae Zhiltzova, 1974. **A** male head and pronotum; **B-C** male terminalia, dorsal and ventral view.

Distribution

Russia, Siberia, Far East (Teslenko and Zhiltzova 2009). Mongolia (DeWalt et al. 2024). The species is recorded for China for the first time.

Nemoura arctica Esben-Petersen, 1910

Nomenclature

Nemoura arctica Esben-Petersen, 1910: 85.

Nemoura trispinosa Claassen, 1923:289.

Material

a. scientificName: ***Nemoura arctica*** Esben-Petersen, 1910; taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda; class: Insecta; order: Plecoptera; family: Nemouridae; genus: ***Nemoura*** ; specificEpithet: ***arctica***; continent: Asia; country: China; countryCode: CN; stateProvince: Inner Mongolia Autonomous Region; locality: HulunBuir city, Genhe city, Jinhe town; maximumElevationInMeters: 791; verbatimLatitude: 51.331111; verbatimLongitude: 121.491944; year: 2023; month: 5; day: 27; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Ya-Fei Zhu & Xiao Yang; occurrenceStatus: present; identifiedBy: Ya-Fei Zhu & Valentina A. Teslenko; language: en; institutionCode: ICYZU; occurrenceID: 2EE0772D-FF21-5E04-81B9-84BFC182AF62

Diagnosis

Males exhibit consistency with epiproct shape and characteristics across the Holarctic. The apical sclerite terminates laterally, bearing two short, thick spines. Male cerci are sclerotized laterally and terminate typically in a pair of appressed spines; they also have an outer spine (Fig. 3A-F).

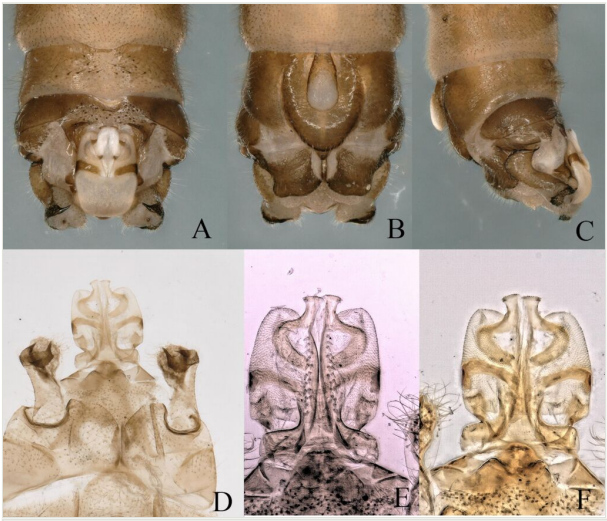

Figure 3. doi

Nemoura arctica Esben-Petersen, 1910. **A-C** male terminalia, dorsal, ventral and lateral view; **D** epiproct dorsal and cerci, ventral view; **E-F** epiproct, ventral and dorsal view.

Distribution

Canada, USA, and Europe, including Estonia, Finland, Latvia, Lithuania, Norway and Sweden, Mongolia (DeWalt et al. 2024). Russia, north of the European part, Siberia, Far East (Teslenko and Zhiltzova 2009). The species is recorded for China for the first time.

Nemoura sirotskii Teslenko, 2018

Nomenclature

Nemoura sirotskii Teslenko 2018 in Teslenko & Boumans (2018: 154)

Materials

a. scientificName: *Nemoura sirotskii* Teslenko, 2018; kingdom: Animalia; phylum: Arthropoda; class: Insecta; order: Plecoptera; family: Nemouridae; genus: *Nemoura* ; specificEpithet: *sirotskii*; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Mohe county, Beiji town, Beihong Village; maximumElevationInMeters: 287; verbatimLatitude: 53.330427; verbatimLongitude: 123.115030; year: 2023; month: 5; day: 29; individualCount: 1; sex: male; lifeStage: adult; recordedBy: Ya-Fei Zhu & Xiao Yang; occurrenceStatus: present; identifiedBy: Ya-Fei Zhu & Valentina A. Teslenko; institutionCode: ICYZU; occurrenceID: DBDA7C8D-CC95-52DA-BF2B-BC5A399826C4

b. scientificName: *Nemoura sirotskii* Teslenko, 2018; kingdom: Animalia; phylum: Arthropoda; class: Insecta; order: Plecoptera; family: Nemouridae; genus: *Nemoura* ; specificEpithet: *sirotskii*; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Xinlin District, Dawusu town; maximumElevationInMeters: 471; verbatimLatitude: 51.768247; verbatimLongitude: 124.512166; year: 2023; month: 6; day: 6; individualCount: 2; sex: 2 males, 2 females; lifeStage: adult; recordedBy: Ya-Fei Zhu & Xiao Yang; occurrenceStatus: present; identifiedBy: Ya-Fei Zhu & Valentina A. Teslenko; institutionCode: ICYZU; occurrenceID: 2C8C68D2-891B-57D5-9FA6-B2BCFE4C1072

Diagnosis

Male epiproct is oval dorsally, slightly widening in the anterior half, becoming narrow basolaterally. Paired lateral arms of the dorsal sclerite directed obliquely down towards the middle, nearly touching and sclerotized; the paired dorsal folds deep and covered with comb-like scales. Each apical sclerite of the epiproct is elongated and flat-lying, with the base extending beyond the dorsal folds, directed obliquely downward, slightly widened at the apex and the edge of the distal apex is rounded and rough, bearing fine comb-like scales and 3–4 stout lateral spines. Female sternum 7 extended medially, forming a well-developed, broadly rounded and swollen pregenital plate, which is slightly(?) sclerotized, overlapping sternum 8 completely and the anterior margin of sternum 9 partly (Fig. 4A-E).

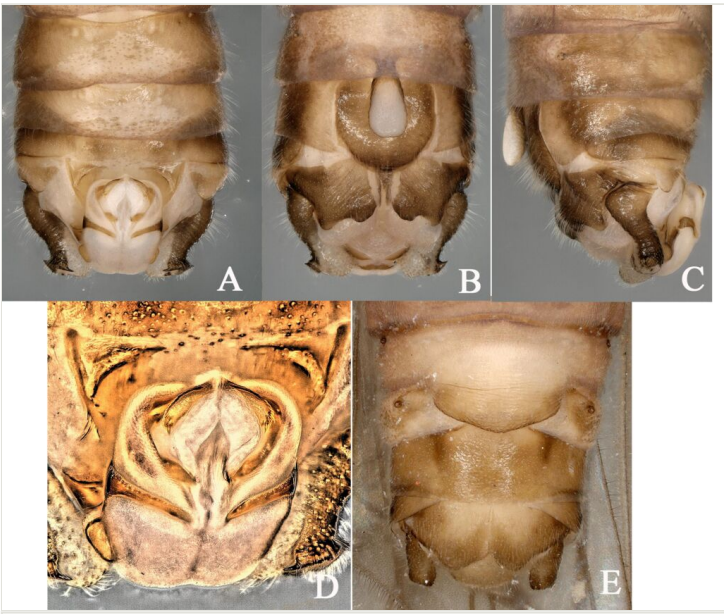

Figure 4. doi

Nemoura sirotskii Teslenko, 2018. **A-C** male terminalia, dorsal, ventral and lateral view; **D** epiproct, dorsal view; **E** female terminalia, ventral view.

Distribution

Russia, Far East (Teslenko and Boumans 2018). The species is recorded for China for the first time.

Diura majuscula (Klapálek, 1912)

Nomenclature

Dictyopterygella majuscula Klapálek, 1912: 45.

Diura majuscula Zhiltzova, 1975.

Materials

a. scientificName: *Diura majuscula* (Klapálek, 1912); taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda;; class: Insecta; order: Plecoptera; family: Perlodidae; genus: *Diura*; specificEpithet: *majuscula*; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Mohe county; maximumElevationInMeters: 444; verbatimLatitude: 52.974534; verbatimLongitude: 122.543546; year: 2023; month: 5; day: 28; individualCount: 7; sex: 3 males, 4 females; lifeStage: adult; recordedBy: Ya-Fei Zhu & Xiao Yang; occurrenceStatus: present; identifiedBy: Qing-Bo Huo; language: en; institutionCode: ICYZU; occurrenceID: 350DF541-54F4-5CE1-A85F-7C19EE812579

b. scientificName: *Diura majuscula* (Klapálek, 1912); taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda;; class: Insecta; order: Plecoptera; family: Perlodidae; genus: *Diura*; specificEpithet: *majuscula*; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Tahe county, Pangu town; maximumElevationInMeters: 562; verbatimLatitude: 52.682158; verbatimLongitude: 123.861120; year: 2023; month: 6; day: 1; individualCount: 2; sex: 2 females; lifeStage: adult; recordedBy: Ya-Fei Zhu & Xiao Yang; occurrenceStatus: present; identifiedBy: Qing-Bo Huo; language: en; institutionCode: ICYZU; occurrenceID: 350DF541-54F4-5CE1-A85F-7C19EE812579

c. scientificName: *Diura majuscula* (Klapálek, 1912); taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda;; class: Insecta; order: Plecoptera; family: Perlodidae; genus: *Diura*; specificEpithet: *majuscula*; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Tahe county; maximumElevationInMeters: 363; verbatimLatitude: 52.304958; verbatimLongitude: 124.696754; year: 2023; month: 6; day: 6; individualCount: 14; sex: 8 males, 6 females; lifeStage: adult; recordedBy: Ya-Fei Zhu & Xiao Yang; occurrenceStatus: present; identifiedBy: Qing-Bo Huo; language: en; institutionCode: ICYZU; occurrenceID: 350DF541-54F4-5CE1-A85F-7C19EE812579

d. scientificName: *Diura majuscula* (Klapálek, 1912); taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda;; class: Insecta; order: Plecoptera; family: Perlodidae; genus: *Diura*; specificEpithet: *majuscula*; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Mohe county, Amuer town; maximumElevationInMeters: 509; verbatimLatitude: 52.833932; verbatimLongitude: 123.173923; year: 2023; month: 6; day: 8; individualCount: 4; sex: 2 males, 2 females; lifeStage: adult; recordedBy: Ya-Fei Zhu & Xiao Yang; occurrenceStatus: present; identifiedBy: Qing-Bo Huo; language: en; institutionCode: ICYZU; occurrenceID: 350DF541-54F4-5CE1-A85F-7C19EE812579

Diagnosis

The male paraprocts are slightly swollen, laterally without a projection in front of the apex. The M-line on the head is light and clear. The female subgenital plate is strongly transverse, not tapering posteriorly, reaching half the length of the 9th sternum (Fig. 5A-D).

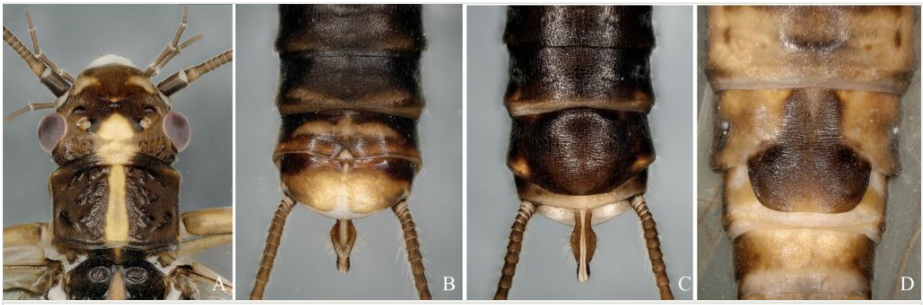

Figure 5. doi

Diura majuscula (Klapálek, 1912). **A** male head and pronotum; **B, C** male terminalia, dorsal and ventral view; **D** female terminalia, ventral view.

Distribution

Russia, Far East (Teslenko and Zhiltzova 2009). Mongolia (DeWalt et al. 2024). The genus *Diura* Billberg, 1820 and species *D. majuscula* are recorded for China for the first time.

Megarcys ochracea (Klapálek, 1912)

Nomenclature

Perlodes (*Megarcys*) *ochracea* Klapálek, 1912: 10.

Matsumuria sapporensis Okamoto, 1912: 16.

Perlodes yarizawana Uéno, 1931: 99.

Megarcys ochracea Kasai, 1938: 49.

Perlodes lepneva Šámal, 1939: 420.

Arcynopteryx (*Megarcys*) *ochracea* Ricker, 1952: 78.

Megarcys lepneva Illies, 1966: 370.

Materials

a. scientificName: ***Megarcys ochracea*** (Klapálek, 1912); taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda; class: Insecta; order: Plecoptera; family: Perlodidae; genus: ***Megarcys***; specificEpithet: ***ochracea***; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Songlin District, Jinsong town; maximumElevationInMeters: 480; verbatimLatitude: 51.072427; verbatimLongitude: 124.194817; year: 2023; month: 6; day: 4; individualCount: 6; sex: 2 males, 4 females; lifeStage: adult; recordedBy: Ya-Fei Zhu & Xiao Yang; occurrenceStatus: present; identifiedBy: Qing-Bo Huo; language: en; institutionCode: ICYZU; occurrenceID: BF80B542-C585-5297-80BB-0C53BC487D63

b. scientificName: ***Megarcys ochracea*** (Klapálek, 1912); taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda; class: Insecta; order: Plecoptera; family: Perlodidae; genus: ***Megarcys***; specificEpithet: ***ochracea***; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Tahe county; maximumElevationInMeters: 363; verbatimLatitude: 52.304958; verbatimLongitude: 124.696754; year: 2023; month: 6; day: 6; individualCount: 2; sex: 1 male, 1 female; lifeStage: adult; recordedBy: Ya-Fei Zhu & Xiao Yang; occurrenceStatus: present; identifiedBy: Qing-Bo Huo; language: en; institutionCode: ICYZU; occurrenceID: BF80B542-C585-5297-80BB-0C53BC487D63

c. scientificName: ***Megarcys ochracea*** (Klapálek, 1912); taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda; class: Insecta; order: Plecoptera; family: Perlodidae; genus: ***Megarcys***; specificEpithet: ***ochracea***; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Mohe county, Amuer town; maximumElevationInMeters: 486; verbatimLatitude: 52.832106; verbatimLongitude: 123.156700; year: 2023; month: 6; day: 8;

individualCount: 1; sex: 1 males; lifeStage: adult; recordedBy: Ya-Fei Zhu & Xiao Yang; occurrenceStatus: present; identifiedBy: Qing-Bo Huo; language: en; institutionCode: ICYZU; occurrenceID: BF80B542-C585-5297-80BB-0C53BC487D63

Diagnosis

The apex of each hemitergal lobe of the male tergrum 10 is narrow laterally, bluntly rounded; the apex of the epiproct is narrow, rod-shaped; the lateral stylets are dark, tapering towards the apex and pointed. The supracoxal and submental gills are elongated. The posterior margin of the female subgenital plate is divided by a wide notch into two obliquely cut lobes directed medially backwards (Fig. 6A-D).

Figure 6. doi

Megarcys ochracea (Klapálek, 1912). **A** male head and pronotum; **B-C** male terminalia, dorsal and ventral view; **D** female terminalia, ventral view.

Distribution

Russia, Siberia, Far East (Teslenko and Zhiltzova 2009). Mongolia, North Korea, Japan (DeWalt et al. 2024). The genus *Megarcys* Klapálek, 1912 and species *M. ochracea* are recorded for China for the first time.

Notes

Shi (2022) regarded this genus and species as new records from Jiling Province (Mt. Changbai) in his Master's degree thesis (data are available from CNKI), but it was not published.

Utaperla lepnevae (Zhiltzova, 1970)

Nomenclature

Paraperla lepnevae Zhiltzova & Levanidova, 1970: 380.

Utaperla lepnevae Stark, Baumann, Kondratieff & Stewart, 2013: 101.

Materials

a. scientificName: ***Utaperla lepnevae*** (Zhiltzova, 1970); taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda; class: Insecta; order: Plecoptera; family: Chloroperlidae; genus: ***Utaperla***; specificEpithet: ***lepnevae***; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Jiagedaqi District; maximumElevationInMeters: 451; verbatimLatitude: 50.403951; verbatimLongitude: 124.120544; year: 2023; month: 6; day: 3; individualCount: 2; sex: 2 males; lifeStage: adult; occurrenceStatus: present; identifiedBy: Abdur Rehman & Valentina A. Teslenko; language: en; institutionCode: ICYZU; occurrenceID: 0E458D34-9030-5DF9-B810-94A33F22B09B

b. scientificName: ***Utaperla lepnevae*** (Zhiltzova, 1970); taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda; class: Insecta; order: Plecoptera; family: Chloroperlidae; genus: ***Utaperla***; specificEpithet: ***lepnevae***; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Xinlin District, Dawusu town; maximumElevationInMeters: 451; verbatimLatitude: 51.735212; verbatimLongitude: 124.504425; year: 2023; month: 6; day: 5; individualCount: 1; sex: 1 males; lifeStage: adult; occurrenceStatus: present; identifiedBy: Abdur Rehman & Valentina A. Teslenko; language: en; institutionCode: ICYZU; occurrenceID: 0E458D34-9030-5DF9-B810-94A33F22B09B

c. scientificName: ***Utaperla lepnevae*** (Zhiltzova, 1970); taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda; class: Insecta; order: Plecoptera; family: Chloroperlidae; genus: ***Utaperla***; specificEpithet: ***lepnevae***; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Xinlin District, Taergen town; maximumElevationInMeters: 392; verbatimLatitude: 52.232944; verbatimLongitude: 124.689441; year: 2023; month: 6; day: 6; individualCount: 18; sex: 8 males, 10 females; lifeStage: adult; occurrenceStatus: present; identifiedBy: Abdur Rehman & Valentina A. Teslenko; language: en; institutionCode: ICYZU; occurrenceID: 0E458D34-9030-5DF9-B810-94A33F22B09B

d. scientificName: ***Utaperla lepnevae*** (Zhiltzova, 1970); taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda; class: Insecta; order: Plecoptera; family: Chloroperlidae; genus: ***Utaperla***; specificEpithet: ***lepnevae***; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Mohe county, Amuer town; maximumElevationInMeters: 451; verbatimLatitude: 52.833932; verbatimLongitude: 123.173923; year: 2023; month: 6; day: 8; individualCount: 34; sex: 18 males , 16 females; lifeStage: adult; occurrenceStatus: present; identifiedBy: Abdur Rehman & Valentina A. Teslenko; language: en; institutionCode: ICYZU; occurrenceID: 0E458D34-9030-5DF9-B810-94A33F22B09B

e. scientificName: ***Utaperla lepnevae*** (Zhiltzova, 1970); taxonomicStatus: valid; kingdom: Animalia; phylum: Arthropoda; class: Insecta; order: Plecoptera; family: Chloroperlidae; genus: ***Utaperla***; specificEpithet: ***lepnevae***; continent: Asia; country: China; countryCode: CN; stateProvince: Heilongjiang; locality: Da Hinggan Ling Prefecture, Xinlin District, Dawusu town; maximumElevationInMeters: 500; verbatimLatitude: 51.735212; verbatimLongitude: 124.504425; year: 2023; month: 6; day: 5; individualCount: 1; sex: 1 males; lifeStage: adult; occurrenceStatus: present; identifiedBy: Abdur Rehman & Valentina A. Teslenko; language: en; institutionCode: ICYZU; occurrenceID: 0E458D34-9030-5DF9-B810-94A33F22B09B

Diagnosis

The head is elongated behind the eyes, the postfrontal suture is triangular, the ocelli are equidistant from each other. The epiproct of the male consists of three plates. The subgenital plate of female is very wide at the base, tapering posteriorly (Fig. 7A-C).

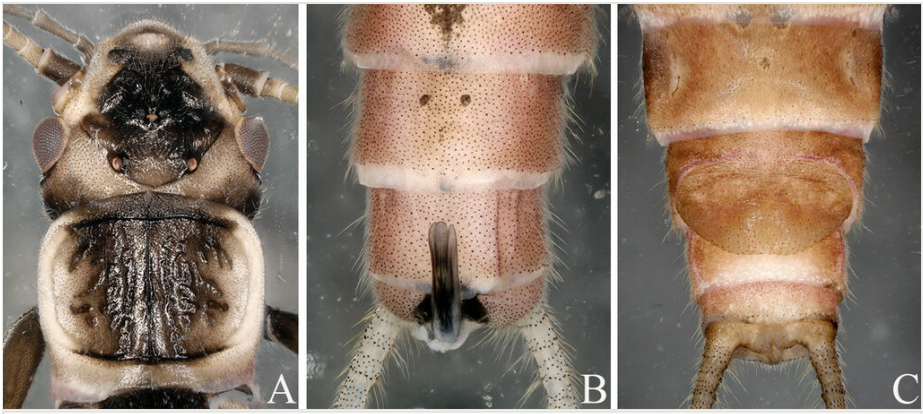

Figure 7. doi

Utaperla lepnevae (Zhiltzova, 1970). **A** male head and pronotum; **B** male terminalia, dorsal view; **C** female terminalia, ventral view.

Distribution

Russia, Far East (Teslenko and Zhiltzova 2009). The species is recorded for China for the first time.

Discussion

This study further elucidated the species diversity and faunal composition of stoneflies in the Greater Khingan Mountains of China and updated the distribution of stoneflies in the north-eastern Palaearctic Region. The research findings indicate that the stonefly fauna composition in the Greater Khingan Mountains is closely linked to neighbouring areas of the Russian Far East and Mongolia. Populations of some species may exist in isolated distributions. Especially in north-eastern and north-western China, there are still many regions awaiting further investigation in the future. Stoneflies spanning North America and Eurasia comprise 10 families and 46 genera (DeWalt et al. 2024). Through this study, nine families and 33 genera have been recorded in China (Yang and Li 2018). With further biodiversity surveys across northern China, it is highly probable that additional stonefly with Holarctic (or at least North Asian) distribution will be discovered in the future. These data will provide a basis for understanding the faunal characteristics of the local stonefly.

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