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ORTHOPTERA FROM THE LOWER PERMIAN VORKUTA LOCALITY (RUSSIA: KOMI REPUBLIC; KUNGURIAN STAGE)

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Summary. Two wing fragments of Orthoptera are known from the Lower Permian Vorkuta locality (Russia, Komi Republic; Kungurian Stage). *Parapermula circummaculosa* Aristov, 2005 was described in the family Liomopteridae (order Grylloblattida) but herein is transferred into genus *Sylvoedischia* Sharov, 1968 (Orthoptera: Pruvostitidae: Sylvoedischiinae). Second fragment is not belong to *Sylvoedischia circummaculosa* (Aristov, 2005), **comb. n.** and could be either Oedischiidae or Pruvostitidae.

Key words: Insecta, Orthoptera, Oedischioidea, taxonomy, new combination, Permian.

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Резюме. Из нижнепермского местонахождения Воркута (Россия, Республика Коми; кунгурский ярус) известно два фрагмента крыльев прямокрылых насекомых. *Parapermula circummaculosa* Aristov, 2005, описанный в семействе Liomopteridae отряда гриллоблаттидовых (Grylloblattida), перенесен в род *Sylvoedischia* Sharov, 1968 отряда прямокрылых (Orthoptera: Pruvostitidae: Sylvoedischiinae). Второй фрагмент крыла не принадлежит к *Sylvoedischia circummaculosa* (Aristov, 2005), **comb. n.** и может относиться либо к семейству Oedischiidae либо к семейству Pruvostitidae.

INTRODUCTION

Two wing fragments are known from Vorkuta locality. One of them was described as *Parapermula circummaculosa* Aristov, 2005 in the family Liomopteridae of the order Grylloblattida (Rasnitsyn *et al*., 2005). Currently this family is attributed to order Reculida (Aristov, 2015). However, this species shows number of characters which are characteristic for Orthoptera – base of RS located near the wing mid length, distal branch of MA drawn close to RS, numerous simple transverse veins present. Reculids have base of RS located in wing basal third, RS trunk lying in close proximity to MA never been recorded, transverse veins are more sparse (Storozhenko, 1998). Thereby and because of similarity with Orthoptera

of subfamily Sylvoedischiinae we transfer this species to genus *Sylvoedischia* Sharov, 1968. Second wing fragment does not belong to *Sylvoedischia circummaculosa* (Aristov, 2005), **comb. n.** Its current taxonomic position within superfamily Oedischioidea is uncertain.

LIST OF SPECIES

Order Orthoptera Olivier, 1789

Superfamily Oedischioidea Handlirsch, 1906

Family Pruvostitidae M.Zalessky, 1929

Subfamily Sylvoedischiinae Gorochov, 1987

Genus *Sylvoedischia* Sharov, 1968

***Sylvoedischia circummaculosa* (Aristov, 2005), comb. n.**
Figs 1, 2

Parapermula circummaculosa Aristov in Rasnitsyn *et al*., 2005: 413.

TYPE MATERIAL. Holotype – PIN, no. 1631/414, part of forewing fragment; Russia: Komi Republic, Pechora coal basin, Khal'mer-Yu coalfield, borehole KhK-997, depth 717.7 m, Vorkuta Locality; Lower Permian, Kungurian Stage, Vorkuta Group, Lek-Vorkuta Formation, Ayach'yaga Subformation, Member R (upper part); in Borissiak Paleontological Institute, Russian Academy of Sciences (PIN).

REDESCRIPTION. Anterior margin of forewing is convex. Sc ends before wings distal third, with anterior branches curved. Trunk of RA S-shaped, RA with four anterior branches. RS starts near wings mid length, subpectinate, with four branches, interradial field wide. MA_1 start branching right after wings mid length, with five branches. Proximal region of $1MA_1$ brought closer to RS not far from its base, but separated from the latter by very short, probably pseudotransverse veinlet, the rest of $1MA_1$ make an obtuse angle with proximal region and directed almost at the wing's apex. $2MA_1$ with three apices. MA_2 is simple, desclerotized near the wings mid length. $MP+CuA_1$ ends beyond apex of Sc. Coloration is in form of small roundish spots located in fields between longitudinal veins.

MEASUREMENTS. Forewing length about 45 mm.

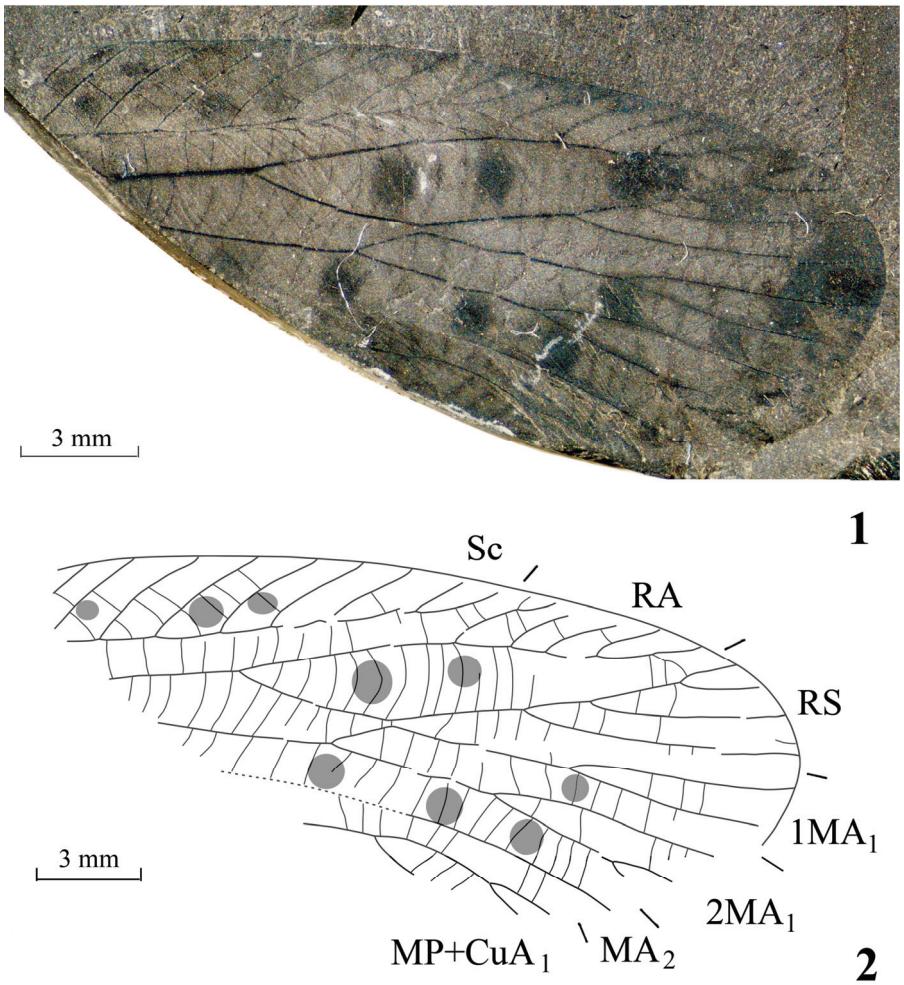
COMPARISON. *Sylvoedischia circummaculosa* **comb. n.** most similar with *S. crassa* Gorochov, 1987 from Lower Permian locality Chekarda (Russia, Perm region: Lower Permian, Kungurian Stage) from which it differs in convex anterior branches of Sc, subpectinate RS, coloration in form of small round spots and bigger size. *S. crassa* have anterior branches of Sc straight, RS branching dichotomically, wing membrane lacking coloration, wing length 26 mm (Gorochov, 1987).

Superfamily Oedischioidea insertae sedis

Gen. et sp.
Fig. 3

MATERIAL EXAMINED. PIN, no 1631/490, part of forewing fragment; Russia: Komi Republic, Pechora coal basin, Khal'mer-Yu coalfield, borehole KhK-997, depth 717.7 m, Vorkuta Locality; Lower Permian, Kungurian Stage, Vorkuta Group, Lek-Vorkuta Formation, Ayach'yaga Subformation, Member R (upper part); in Borissiak Paleontological Institute, Russian Academy of Sciences (PIN).

NOTES. Besides the holotype of *S. circummaculosa*, one more Orthoptera wing fragment was obtained from Vorkuta locality it does not belong to aforementioned species and could be either Oedischiidae (Oedischiinae, Elcanoedischiinae, Mesenoedischiinae, Tettoedischiinae, Tcholmanvissiinae) or Pruvostitidae (Pruvostitinae).



Figs 1, 2. Forewing of *Sylvoedischia circummaculosa* (Aristov, 2005), **comb. n.**: 1 – holotype PIN, no 3840/50; 2 – reconstruction.

DISCUSSION

Orthoptera from Vorkuta locality (Russia, Komi Republic; Lower Permian, Kungurian Stage) are low in numbers and make only 0,5% of all insects. Such a small percentage of Orthoptera may have geographical reasons. Vorkuta is located at 39.5°N in temperate climatic zone. Other Kungurian localities – older Chekarda and younger Tyulkino (Perm region, Russia 30.6° and 31.9° N respectively) are located in semi-aridic climatic zone. Percentage of Orthoptera in these localities are higher: 1,8% in Chekarda and 4,6% in Tyulkino. Similar percentage (climatic zones are given after Shcherbakov, 2008, percentage of Orthoptera is taken from Laboratory of Arthropod PIN RAS database, paleolatitudes are from http://fossilworks.org).

Fig. 3. Forewing fragment of Oedischioidea gen. et sp. insertae sedis, spec. PIN, no 1631/490.

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