

SHORT COMMUNICATION

N. D. Sinitshenkova, D. S. Aristov. THE BIGGEST FOSSIL MAYFLY (INSECTA: EPHEMERIDA = EPHEMEROPTERA) FROM THE UPPER PERMIAN LOCALITY OF ISADY, NORTHERN EUROPEAN RUSSIA. – Far Eastern Entomologist. 2012. N 255: 8-10.

Summary. From the Upper Permian (Severodviniian Stage, Poldarsa Formation) locality of Isady (Velikoustyugskii District, Vologda Region, European part of Russia) new genus and species of mayfly *Ponalex maximus* **gen. et sp. n.** from the family Prottereismatidae is described and illustrated based on the unique remain of the hindwing. This new species is the biggest known mayfly.

Key words: Insecta, Ephemera, Prottereismatidae, taxonomy, Upper Permian, Russia.

Н. Д. Синиченкова, Д. С. Аристов. Самая крупная ископаемая поденка (Insecta: Ephemera = Ephemeroptera) из верхнепермского местонахождения Исады на севере Европейской части России // Дальневосточный энтомолог. 2012 . N 255. С. 8-10.

Резюме. Из верхнепермского местонахождения Исады (северодвинский горизонт, поддарская свита) в Великоустюжском районе Вологодской области на севере Европейской части России по единственному остатку заднего крыла описана новая поденка *Ponalex maximus* Sinitshenkova et Aristov, **gen. et sp. n.** из семейства Prottereismatidae. Новый вид является самым крупным из известных видов поденок.

INTRODUCTION

The mayflies (Ephemera = Ephemeroptera) of two families only, Prottereismatidae Sellards, 1907 and Mithodotidae Tillyard, 1932, occur in the Upper Permian locality of Isady. Both families are characterized by almost homogeneous fore and hind wings. Hitherto *Alexandrinia gigantea* Sinitshenkova et Vassilenko, 2012 described from Isady was the biggest species of the family Prottereismatidae (Sinitshenkova & Vassilenko, 2012). New species of mayflies with the full length of hindwing about 55 mm is described below. It is the biggest known mayfly. The description is based on the only remain of hindwing preserved on the rough rock.

ORDER EPHEMERIDA (= EPHEMEROPTERA)

SUBORDER PROTTEREISMATINA

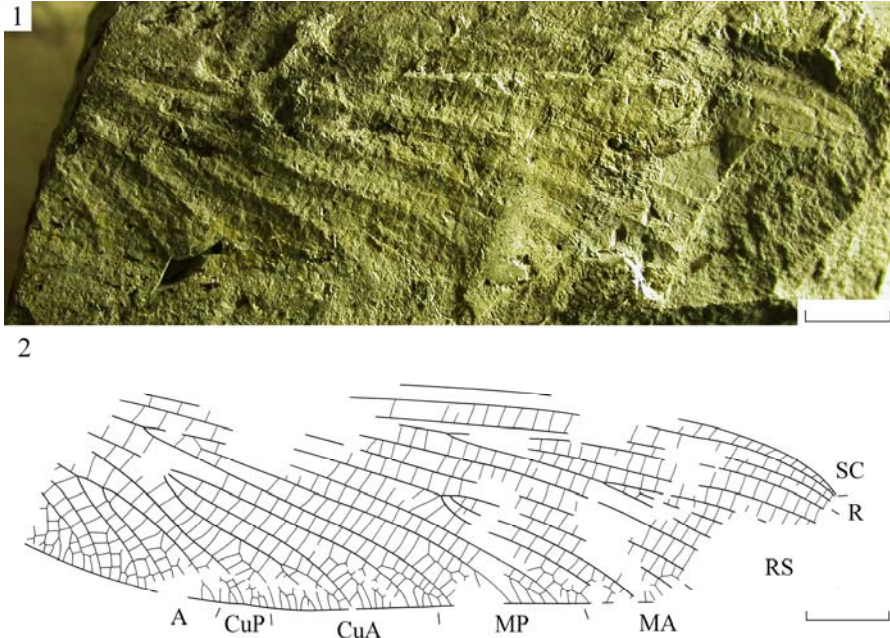
Family Prottereismatidae Sellards, 1907

Genus *Ponalex* Sinitshenkova et Aristov, **gen. n.**

Type species: *Ponalex maximus* Sinitshenkova et Aristov, sp. n., here designated.

DESCRIPTION. Very large mayflies, the hindwing is almost four times as long as wide. *MA* fork is short, it is two times shorter than stem of *MA*, intercalary vein connects to *MA* branches by the fine cross veins. *MP* divides at the basal quarter of wing; its intercalary vein

diverges from its anterior branch forming triad as well at the wing margin. The fork of *CuA* long, considerably longer than the stem of *CuA*, intercalary vein of *CuA* simple, *CuP* simple. The crossveins between the main longitudinal veins *MA*, *MP*, *CuA* and *CuP* arrange two rows forming additional fine veins at the wing margin. *A*₁ and *A*₂ with distinct triads, *A*₃ and *A*₄ simple, straight parallel crossveins diverge from *A*₄ toward the wing margin forming here short forks.



Figs 1, 2. Hindwing of *Ponalex maximus* Sinitshenkova et Aristov, sp. n., holotype PIN No 3840/875. 1 – negative imprint; 2 – reconstruction. Scale bar = 5 mm.

COMPARISON. The mayflies with homogeneous wings have almost similar venation pattern of both wing pair. That is why it is possible to compare the venation patterns of different genera known by fore- or hindwings. The new genus *Ponalex* differs from *Protereisma* Sellards, 1907 and *Alexandrinia* by large size and by presence of additional veins at the wing margin in *M* and *Cu* systems. The proportions of the wing are similar to that of *Alexandrinia*, from which *Ponalex* differs in addition to the above features by the long fork of *CuP*.

REMARKS. The presence of triads on the first two anal veins allows considering the wing to be hindwing, as the similar structure is characterized for hindwing of *Protereisma* (Carpenter, 1933, 1979). The described hindwing cannot be associated with the forewing of *A. gigantea* because of considerable difference in size and peculiarities of venation. The additional crossveins at the wing margin between the branches of *M* and *Cu* may be explained by the large wing size.

COMPOSITION. Type species from the Upper Permian of Russia.

ETYMOLOGY. The name of new genus is acronym of the Russian palaeontologist Alexander G. Ponomarenko.

***Ponalex maximus* Sinitshenkova et Aristov, sp. n.**

Figs 1, 2

MATERIAL. Holotype: PIN, No 3840/875, negative impression of almost whole hind wing remains with well defined corrugation. **Russia:** Vologda Region, Velikoustyugskii District, left bank of the Sukhona River, 1.2 km below the Mutovino landscape unit, 0.9 km above the village of Isady, Isady locality; Upper Permian, Upper Severodvinian Substage, Poldarsa Formation, Lower part of Kalikino Member; deposited in PIN (Moscow).

LOCALITY AND HORIZON. Russia: Isady locality; Upper Permian, Poldarsa Formation.

DESCRIPTION. On the hindwing *RS* with seven branches. *MA* divides somewhat distally of the wing middle. *CuA* divides obviously distally of *MP* branching, the tops of its intercalary and the posterior branch come close together. *CuP* slightly curved, *A*₁ divides obviously basally of *A*₂ branching.

MEASUREMENTS. Hindwing fragment length 48 mm, its full length about 55 mm, maximum width 14 mm.

REMARKS. Hitherto *Alexandrinia gigantea* was the largest species in Prottereismatidae, the length of its forewing is about 36 mm. A new *Ponalex maximus* is the largest species not only in this family but among all known true mayflies.

ETYMOLOGY. The species name after *maxima* the Latin for the largest.

ACKNOWLEDGEMENTS

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