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V. N. Makarkin. A NEW FOSSIL GENUS OF OSMYLIDAE (NEUROPTERA) FROM THE EARLY CRETACEOUS OF BAISSA, TRANSBAIKALIA. – Far Eastern Entomologist. 2014. N 278: 8-12.

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Summary. *Kempynosmylus zherikhini* **gen. et sp. n.** (Neuroptera: Osmylidae) is described from the Early Cretaceous of the Baissa locality (Russia: Transbaikalia). The genus is considered a member of the subfamily Kempyninae. Its main distinguishing feature is the very long AA1 (with ≥ 13 branches). The forewing of the new genus further differs from that of *Cretosmylus* (the only other genus of the family known from that locality) by M forked approximately at level of termination of AA2, longer AA1, distinct color pattern, and larger size.

Key words: Osmylidae, Kempyninae, taxonomy, Early Cretaceous, Baissa, Russia.

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Резюме. *Kempynosmylus zherikhini* **gen. et sp. n.** (Neuroptera: Osmylidae) описан из раннего мела Байсы, Забайкалье. Род рассматривается в подсемействе Кемпюнины. Его основной отличительный признак – очень длинная AA1 (≥ 13 ветвей). Переднее крыло нового рода хорошо отличается от переднего крыла *Cretosmylus* (единственного рода семейства, известного из того же местонахождения) медиальной жилкой, ветвящейся примерно на уровне окончания AA2, более длинной AA1, рисунком и большими размерами.

INTRODUCTION

The Osmylidae is a rather small family today, with little more than 200 species widely distributed in tropical to warm-temperate areas of the world except in North America (Oswald, 2013). The family has a rich fossil record of 40 species in 28 genera from the Early Jurassic to the Eocene (pers. data).

The Early Cretaceous locality of Baissa is located at the left bank of the Vitim River downstream of the mouth of the Baissa River, western Transbaikalia (Russia: Buryat Republic). Detailed analysis of its paleoenvironment was provided by Zherikhin *et al.* (1999), and the neuropteran assemblage (about 140 specimens) was briefly analyzed by Makarkin *et al.* (2012). Osmylidae occur very rarely in Baissa. Only two specimens were found (~0.4% of all neuropteran specimens). One of these was earlier described as *Cretosmylus sibiricus* Makarkin (Makarkin, 1990); another is described in this paper as a new genus and species. The specimen was collected in 1997 during the expedition of Paleontological Institute (PIN) of the Russian Academy of Sciences (Moscow) under the guidance of Dr. V. V. Zherikhin and deposited in PIN.

ORDER NEUROPTERA LINNAEUS, 1758

Family Osmylidae Leach, 1815

Subfamily Kempyninae Krüger, 1913

Genus *Kempynosmylus* Makarkin, gen. n.

Type and only species: *Kempynosmylus zherikhini* gen. et sp. n.

DIAGNOSIS. M forked approximately at level of AA2 termination [markedly proximad in *Jurakempynus* Wang *et al.*; markedly distad in *Cretosmylus* Makarkin]; most branches of RP strongly sinuate [slightly sinuate in *Jurakempynus*]; CuA few branched, with 3–4 branches [strongly pectinate with at least 7 branches in *Jurakempynus*]; CuP strongly pectinate, with 11–12 branches [few pectinate with 3–4 branches in *Jurakempynus*; 9 branches in *Arbusella* Khramov]; AA1 very long, with ≥ 13 branches [moderately long, with 6–8 branches in *Jurakempynus*, *Arbusella*].

ETYMOLOGY. Kempyn(o)- (from *Kempynus*, a genus-group name of Kempyninae) + -(o)smylus (from *Osmylus*, a genus-group name of Osmylinae). Gender masculine.

REMARKS. Of nine subfamilies currently recognized in the family Osmylidae, the preserved forewing venation of *Kempynosmylus* gen. n. may be comparable only with that of Osmylinae and Kempyninae, which differ from each other by small details. The single character state found in the venation of this specimen that has diagnostic value at the subfamily level is the strongly sinuate branches of RP characteristic of Kempyninae, and not of Osmylinae. Therefore, a kempynine affinity of *Kempynosmylus* gen. n. is most probable. Its venation is most similar to that of *Arbusella*, clearly differing from it by wing color pattern, longer AA1, sinuous RP branches, and other details.

The subfamily Kempyninae consists of four extant genera distributed in Australia, New Zealand and southern South America (Kimmins, 1940; New, 1983), and four fossil genera: *Jurakempynus* (Middle Jurassic of Daohugou, China; the Late Jurassic of Karatau, Kazakhstan, and Shar-Teg, Mongolia); *Arbusella* (Karatau); ?*Cretosmylus* (Early Cretaceous of Baissa); and *Euporismites* Tillyard (Eocene of Redbank Plains Series, Australia) (Lambkin, 1987; Makarkin, 1990; Wang *et al.*, 2011; Khramov, 2014).

The subfamily affinity of *Cretosmylus* is tentative due to incompleteness of the holotype.

Jurakempynus arcanus Khramov (Karatau) most probably does not belong to this genus, and its character states are not considered in the above diagnosis. Its venation (although fragmentarily preserved) is very dissimilar to that of the type species of the genus from Daohugou, e.g., the forewing CuA is few pectinate, and AA2 very long, with 12 branches; the hind wing CuP is very long (cf. Wang *et al.*, 2011: fig. 2 and Khramov, 2014: pl. 14, fig. 1).

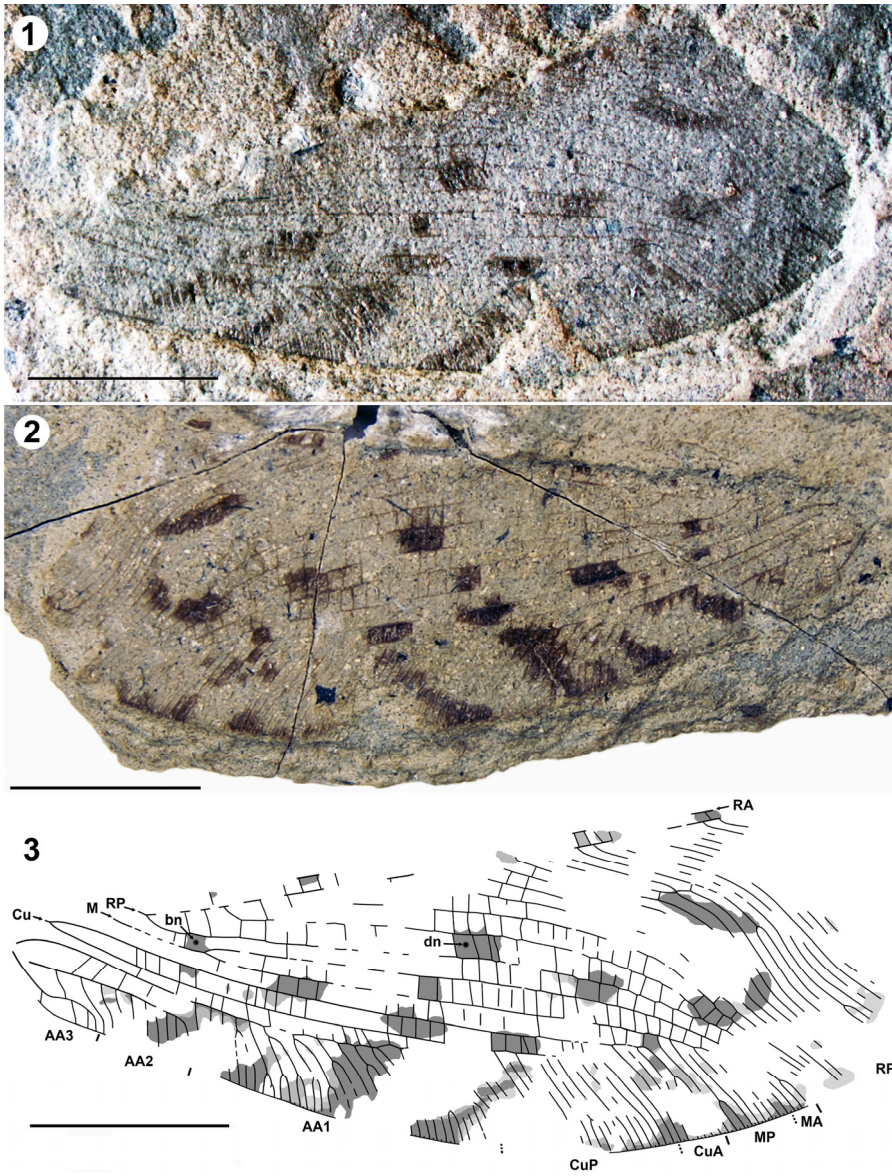
***Kempynosmylus zherikhini* Makarkin, sp. n.**

Figs 1–3

MATERIAL. Holotype – PIN, No. 4210/5274 (part and counterpart). A rather well-preserved incomplete forewing.

LOCALITY AND HORIZON. Russia, Transbaikalia, Buryat Republic, Baissa locality (layer 31); Early Cretaceous (pre-Barremian/early Barremian).

DESCRIPTION. Forewing ca. 21 mm long, ca. 8 mm wide as preserved (estimated complete length ca. 24–25 mm, width ca. 9 mm). Costal and subcostal spaces not preserved. RA space partly preserved, relatively narrow, with closely spaced crossveins. RA, stem of RP frag-



Figs 1–3. *Kempynosmylus zherikhini* gen. et sp. n. (holotype PIN, No. 4210/5274). 1–part; 2 – same, counterpart; 3 – forewing venation. bn, basal nygma; dn, distal nygma. Scale bars: 5 mm.

mentarily preserved. RP with at least 16 branches, all incompletely preserved; RP1, RP2 fused distally; RP8, RP9 fused medially; all preserved branches RP (except RP1) markedly to strong sinuate; distal branches closely spaced. Crossveins in radial space not detected in distal one fourth of space. Two crossveins preserved between RP1, M proximad fork of M. M forked approximately at termination of AA2, slightly proximad origin of RP2. MA poorly preserved distally, probably with few terminal branches. MP with five to six pectinate branches, at least one rather shallowly forked. Cu dividing into CuA, CuP near wing base. CuA few branched, with three to four pectinate long simple branches. CuP strongly pectinately branched, with more than 10 branches; some rather shallowly forked. AA1 very long, strongly pectinate, with 13 preserved branches; five branches deeply forked (two of these having both branches rather shallowly forked). AA2 with nine rather long pectinate branches, all most probably simple; basal-most branch terminated at AA3. AA3 short, with three pectinate short branches. Radial (between RPI, RP2) to cubitoanal spaces with dense crossveins; crossveins between AA1, AA2 scarcer. Crossveins between branches of MA to AA3 absent. Trichosores along hind margin poorly preserved. Color pattern consists of numerous dark spots all through wing varying in size and shape (see Figs 1–3).

ETYMOLOGY. The species is named in memory of Vladimir Vasilievich Zherikhin (1945–2001), a known Russian paleoentomologist, who collected this specimen.

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REFERENCES

- Khrarov, A.V. 2014. Lacewings of the family Osmylidae (Insecta: Neuroptera) from the Upper Jurassic of Asia. *Paleontologicheskii Zhurnal*, 3: 77–86. [In Russian].
- Kimmins, D.E. 1940. A revision of the osmylid subfamilies Stenosmylinae and Kalosmylinae (Neuroptera). *Novitates Zoologicae*, 42: 165–201.
- Lambkin, K.J. 1987. A re-examination of *Euporismites balli* Tillyard from the Palaeocene of Queensland (Neuroptera: Osmylidae: Kempyninae). *Neuroptera International*, 4: 295–300.
- Makarkin, V.N. 1990. A new fossil genus and species of Osmylidae from the Lower Cretaceous of East Siberia (Neuroptera). *Deutsche Entomologische Zeitschrift*, 37: 101–103.
- Makarkin, V.N., Yang, Q., Peng, Y.Y. & Ren, D. 2012. A comparative overview of the neuropteran assemblage of the Early Cretaceous Yixian Formation (China), with description of a new genus of Psychopsidae (Insecta: Neuroptera). *Cretaceous Research*, 35: 57–68.
- New, T.R. 1983. A revision of the Australian Osmylidae: Kempyninae (Insecta: Neuroptera). *Australian Journal of Zoology*, 31: 393–420.
- Oswald, J.D. 2013. Neuropterida Species of the World. Version 3.0. <http://lacewing.tamu.edu/Species-Catalogue/>. Accessed on 17 April 2014.

- Wang, Y.G., Liu, Z.Q., Ren, D. & Shih, C.K. 2011. New Middle Jurassic kempynin osmylid lacewings from China. *Acta Palaeontologica Polonica*, 56(4): 865–869.
- Zherikhin, V.V., Mostovski, M.B., Vrsansky, P., Blagoderov, V.A. & Lukashevich, E.D. 1999. The unique Lower Cretaceous locality Baissa and other contemporaneous fossil insect sites in North and West Transbaikalia. *In: Proceedings of the First Palaeontological Conference, Moscow 1998*. Bratislava: AMBA projects AM/PFICM98/1.99. P. 185–191.

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