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Некоторые новые в малопозвестные эвропейские виды рода *Diceranota* (Diptera, Limoniidae)

Таксономич. *D. (P.) flammatra* sp. n., *D. (P.) candelisena* sp. n., 2 new species, гениталии самцов
Резюме. Дано описание *Diceranota (Paradiceranota) flammatra* sp. n., *D. (P.) candelisena* sp. n. из Европы и указания их отграничения соответственно от *D. (P.) landrocti* Czízek, 1931 и *D. (P.) fusciplena* Lachschewitz, 1940. У двух последних видов дано первоописание, основанное на изучении типовых экземпляров. Обсуждаются и изображены диагностические признаки всех четырех видов.

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Abstract. By baiting traps with natural attractants (meat and faeces) 2750 imagines of carried flies representing 12 species of the genus *Meoneura* Rond. were collected from 29 Czechoslovak localities, mostly in southern Moravia. Most species seemed prefer dry and warm habitats, and the highest densities were observed during July and August in forest-steppe. In urban agglomerations *M. freta* Coll. attains high density and abundance. Some species appear to be obligately coprophagous, others necrophagous. A new species – *M. moravica* sp. n. – is described.

Historically, the first faunistic records of the genus *Meoneura* ROND. from Czechoslovakia concern *M. obscurella* (FALL.) (CZÍZEK, 1907; WIMMER, 1913), but these have not been confirmed. In 1961 *M. vagans* (FALL.) was recorded from eastern Slovakia together with an unidentified species, of which were figured the male genitalia (GREGOR & POVOLNÝ, 1961, Fig. 22a). DOSKOČIL (1962) recorded 5 species from northern Moravia, viz. *M. vagans* (FALL.), *lacteipennis* (FALL.), *minutissima* ZETT., *neglecta* COLL. and *flavifacies* COLL. DOSKOČIL & HŮTKA (1962) recorded *M. lacteipennis* (FALL.) from via, Slovakia) and *M. acuticerca* (Moravia) and in the same paper mentioned the afore mentioned new species. PAPP (1978a) published, on the basis of material treated in this paper, the following further species, viz. *M. milleri* (Moravia, Slovakia) and *M. triangularis* COLL. and *M. minutissima* (ZETT.) as species associated with the genus *Meoneura*. GREGOR (1973) described two new species, *M. acuticerca* (Moravia, Slovakia: *M. carpathica* L. PAPP, *freta* COLL., *hungarica* L. PAPP, *neottiophila* COLL. and *prima* (BECK.). An additional species from Czechoslovakia, *M. moravica* sp. n., is described in the present paper. Thus the total number of the species of *Meoneura* recorded from Czechoslovakia is now 15.

MATERIAL AND METHODS

During investigations of the synanthropic flies in Czechoslovakia by a team from Department of Parasitology, Czechoslovak Academy of Sciences, classical traps and attractive substrates (e.g. animal meat, fish, faeces) were used extensively. Traps with a fine mesh of nylon impenetrable by small Diptera over about 1 mm *in situ* were used on 230 occasions, of which 94 samples yielded members of the genus *Meoneura* Rond. The total material includes 2750 specimens to which 43 more individuals are added which were caught in silhouette-traps without attractive substrates (GREGOR & MRŠKA, 1981). The collectors were F. Gregor and D. Povolný up to 1965, later F. Gregor and M. Stanek. Up to 1972 the material (preserved in alcohol) was partly determined by F. Gregor. As a whole, this material was redetermined by L. Papp who also identified all subsequent materials. Only the females remain mostly unidentified.

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FAUNISTIC

(Abbreviations: HF — trapped on human faeces, DM — trapped on decaying meat.)

M. acuticerca GREGOR, 1973; known only from Czechoslovakia.

Moravia mer.: Děvín in Pavlovské vrchy (hills), 300 m, forest-steppe (calcite), 1 ♂ 31. VIII. 1957, HF. Děvín in Pavlovské vrchy-hills, 360 m, rocky steppe (calcite), 28 ♂ 13. X. 1971 (type series) HF, 1 ♂ 7. VI. 1973, HF. Mikulov, Kopeček (hill), 300 m, rocky steppe (calcite), 5 ♂ 2. VI. 1978, HF. — Moravia occ.: Mohelno, 360 m, rocky steppe (serpentino), 1 ♂ 2. VI. 1970, HF.



Fig. 1. Distribution of Czechoslovak localities from which the identified specimens of the genus *Meoneurus* treated in this paper originated. 1 Hoščka, 2 Českovice, 3 Třtěno, 4 Lovoš, 5 Slaný, Pomezi near Landštejn, 7 Vranov, 8 Vranov-Podhradí, 9 Unanov, 10 Mohelno, 11 Rokytná, 12 Čebínka, 13 Brno city, 14 Brno-environs, 15 Děvín, 16 Mikulov, 17 Lednice, 18 Újezd u Brna, 19 Kobetic, 20 Kobylí, 21 Uherské Hradiště, 22 Lázně Jeseník, 23 Ostrý kameň, 24 Kováčovské kopce, 25 Súľovské skaly, 26 Ploská, 27 Velký Choč, 28 Párnica, 29 Zádiel.

M. carpathica L. PAPP, 1977; known from Austria, Hungary, Romania and Czechoslovakia (PAPP, 1978a).

Bohemia contr.: Slaný, 200 m, dry pasture, 2 ♂ 2. VIII. 1905, JIF. — Moravia centr.: Čebínka-hill near Kufim, 250 m, rocky steppe (calcite), 1 ♂ 25. V. 1972, JIF. — Slovakia occ.: Ostrý kameň (hill) near Jablonica, 400 m, *Seslerietum* (calcite), 1 ♂ 10. VII. 1968, HF.

M. flavifacies COLLIN, 1930; widely distributed Holarctic species (central and northern Nearctic region, Mongolia, Himalaya, Europe).

Moravia occ.: Hoščka near Přimda, 600 m, meadow, 1 ♀ 8. VI. 1976 on cow excrement, 1 ♀ 9. VI. 1978, HF, 22 ♂, 17 ♀ 17.—19. VIII. 1976 in Skufin trap. Českovice near Bor u Tachova, 530 m, cow farm, 1 ♂, 2 ♀ 19. VIII. 1976 on cow excrement. — Slovakia occ.: Párnica, 650 m, *Fagetum abietinum*, clearing, 1 ♂ 31. VII. 1966, HF.

M. freta COLLIN, 1937; little known, but in all probability a species with wide range of distribution, occurring in England, Spain, Hungary and Czechoslovakia (PAPP, 1978a).

Moravia occ.: Mohelno, 360 m, rocky steppe (serpentino), 73 ♂ 9. VIII. 1960, DM, 80 ♂ 31. VII. 1960, DM (fish). — Moravia centr.: Brno, city, 200 m, 14 ♂, 2 ♀ 1. VII.—13. VIII. 1964, JIF DM, leg. M. Stanek. Brno, Palackého vrch (hill), 300 m, 1 ♂, 1 ♀ 1. VII. 1966, HF, 16 ♂ 5. VIII. 1968, DM (fish). Brno, Černá Pole, 250 m, garden, 270 ♂ V.—IX. 1957—1960. Nové Knínický near Brno, 200 m, forest meadow, 4 ♂ 20. VI. 1959, DM. — Moravia mer.-occ.: Vranov, 180 m, 1 ♂ 6. VII. 1959, HF. — Moravia mer.: Újezd u Brna, 270 m, fallow with steppe vegetation, 11 ♂, 2 ♀ 14. VIII. 1975, DM. Děvín in Pavlovské vrchy (hills), 360 m, rocky steppe (calcite), 1 ♂ 7. VI. 1973, DM. — Slovakia occ.: Ostrý kameň (hill) near Jablonica, 400 m, *Seslerietum*

(calcite), 1 ♂ 10. VII. 1958, HF. — Slovakia centr.: Ploská (hill) in Velká Fatra mountains, 1200 m, 1 ♂ 7. VIII. 1964, HF.

M. hungarica L. PAPP, 1977; little known, but in all probability a species with wide range of distribution, being known from Hungary, Tunisia (PAPP, 1978b) and Czechoslovakia (PAPP, 1978a).

Bohemia sept.: Třtěno, 250 m, quarry, 3 ♂ 4. VIII. 1965, HF. Lovoš hill, 400 m, rocky steppe (basalt), 1 ♂ 13. VII. 1950, HF. — Bohemia centr.: Slaný, 200 m, dry pasture, 4 ♂, 3 ♀ 2. VIII. 1965, JIF. — Moravia centr.: Čebínka (hill) near Kufim, 250 m, rocky steppe (calcite), 2 ♂ 25. V. 1972, 5 ♂, 1 ♀ 30. VIII. 1972, HF. Brno, centre of city, 200 m, 1 ♂, 1 ♀ 12. VIII. 1966 (leg. M. Stanek). Brno, Černá Pole, garden, 250 m, 3 ♂, 1 ♀ 24. IX. 1965, DM (fish). — Moravia occ.: Mohelno, 400 m, rocky steppe (serpentino), 1 ♂ 31. VII. 1960, DM. (fish). Rokytná, 300 m, forest-steppe, 20 ♂ 5. VIII. 1978, HF. Unanov near Znojmo, 180 m, 2 ♂, 2 ♀ 26. V. 1959 on rabbit corpse and HF. — Moravia mer.-occ.: Vranov nad Dyji, 180 m, 1 ♂ 6. VII. 1959, HF. — Moravia mer.: Újezd u Brna, fallow with steppe vegetation, 14. VIII. 1975, 153 ♂, 28 ♀ and 3 intersex, HF, 7 ♂, 2 ♀, DM. Děvín in Pavlovské vrchy (hills), 360 m, rocky steppe (calcite), 1 ♂ 31. VIII. 1957, DM (fish), 12 ♂, 1 ♀ 31. VIII. 1957, HF, 5 ♂, 4 ♀ 7. VI. 1973, DM. Mikulov, Kopeček (hill), 300 m, 3 ♂ 2. VI. 1973, HF. — Slovakia occ.: Súľovské skaly (hills), 450 m, *Quercetum pubescens*, 5 ♂, 1 ♀ 24. V. 1966. — Slovakia mer.: Kováčovské kopce (hills), 180 m, *Quercetum pubescens*, 5 ♂, 1 ♀ 30. V. 1960. — Slovakia or.: Zádiel, 400 m, forest steppe (calcite), 3 ♂, 3 ♀ 30. V. 1960.

M. milleri GREGOR, 1973; known only from Czechoslovakia.

Moravia mer.: Děvín in Pavlovské vrchy (hills), 360 m, rocky steppe (calcite), 22 ♂ 13. X. 1971 (type series), JIF; 6 ♂ 7. VI. 1973 on excrement of *Capra negagrus*. — Slovakia centr.: Velký Choč (mountain), 1600 m, *Seslerietum* (dolomite), 1 ♂ 12. VII. 1968, HF.

M. minutissima (ZETTERSTEDT, 1800); known from Sweden, England, Czechoslovakia and Hungary.

Moravia mer.: Děvín in Pavlovské vrchy (hills), 360 m, rocky steppe (calcite) 1 ♂ 13. X. 1971, HF.

M. moravica sp. n.; known only from Czechoslovakia.

Moravia mer.-occ.: Vranov nad Dyji, valley of Dyje river 2 ♂ 6. VII. 1960, HF (leg. I. Polvalný).

M. neglecta COLLIN, 1930; known from England, Germany, European USSR (Leningrad), Hungary and Czechoslovakia.

Bohemia occ.: Hoščka near Přimda, 600 m, meadow, 1 ♂ 19. VIII. 1976 in Skufin trap.

M. neottiophila COLLIN, 1930; known from England, Sweden, USSR, Germany, Hungary and Czechoslovakia (PAPP, 1978a)

Bohemia mer.-or.: Pomezi near Landštejn, 500 m, orchard, 1 ♂ 7. VII. 1972 on dead blind-worm. — Moravia centr.: Brno, Černá Pole, orchard, 1 ♂ 8. IX. 1969, DM. Brno, Palackého vrch (hill), 300 m, 1 ♂ 5. VIII. 1960, DM (fish) (leg. M. Stanek). Mokrá near Brno, 230 m, forest meadow, 4 ♂, 3 ♀ 6. VII. 1969, DM. — Moravia occ.: Mohelno, rocky steppe (serpentino), 360 m, 1 ♂ 9. VIII. 1969, 2 ♂ 3. VII. 1960, DM. — Moravia mer.: Kobetic (distr. Vyškov), 400 m, *Quercetum (Asperula-type)* 1 ♂ 1. VIII. 1976 and 2 ♂, 1 ♀ 14. VIII. 1975, DM. Děvín in Pavlovské vrchy (hills), 360 m, rocky steppe (calcite) 2 ♂ 31. VIII. 1957, DM.

M. prima (BECKER, 1903); widely distributed Holarctic species, but dominant only in the Mediterranean region (Greece, Tunisia, Jordan, Afghanistan, Czechoslovakia) (PAPP, 1978a).

Moravia occ.: Mohelno, 360 m, rocky steppe (serpentino) 1 ♂ 9. VIII. 1959, DM. Moravia centr.: Brno, centre of city, 200 m, 2 ♂, 1 ♀ 19. VIII. 1966, HF (leg. M. Stanek). — Moravia mer.: Lednice, 160 m, pigsty, 2 ♂, 7 ♀ 10. VI. 1975 on pig manure. Uherské Hradiště, 180 m, slaughter house, 4 ♂, 2 ♀ 3. VI. 1959, DM.

The diagram in Fig. 2A summarising the total numbers of male and female individuals shows a distinct maximum occurring July and August. During this period the males of *M. freta* and *M. hungarica* predominate. However, it is impossible to conclude whether the summer maximum is due to population dynamics and voltinism or to peak period of flying activity. More detailed information on the changes in seasonal incidence is seen in Fig. 2B from July to the end of August. Consequently, the existence of three generations cannot be excluded.

Seasonal incidence

SYNCOLOGY

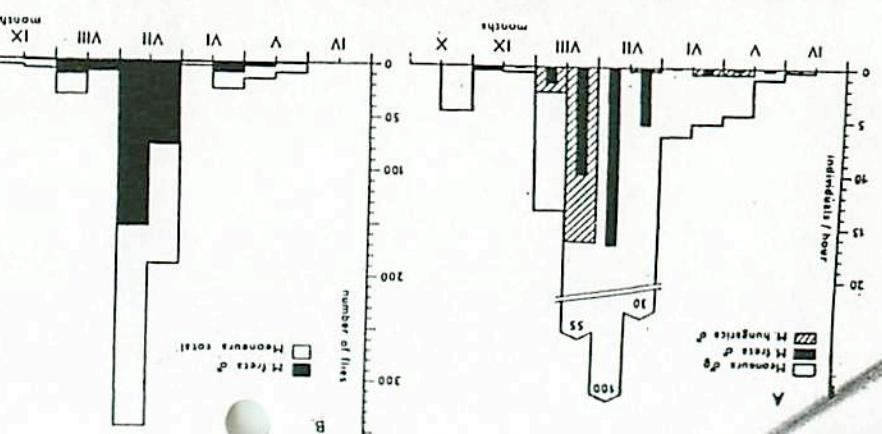
Moravia sept.: Jesenik, 600 m., moderate, 1 g. II. VIII., HF. - Moravia centre: Brno, city centre, 200 m., 2 g. VIII., 1966, 1 g. II. VIII., 1966. HF. - Moravia south: Brno, Moravia sept.: Jesenik, 600 m., moderate, 1 g. II. VIII., 1966, 1 g. III. 1966, HF. - Moravia south: Brno, Drahonice, 180 m., steppes (gravel) 2 g. III. VI., 1966, HF. - Moravia north: Motovany occ.: Motovany, 350 m., rock steppe rabbit, 1967, 1 g. VI., 1967, 1965, DM. - Moravia occ.: Motovany, 350 m., rock steppe (steppe), 1967, 3 g. VIII. 1965, DM. - Moravia occ.: Motovany, 350 m., rock steppe (steppe) (gravel), 2 g. VIII. 1965, DM. Drahonice, 180 m., rock steppe (gravel) 2 g. VI., 1966, HF. - Drahonice, 180 m., steppe (gravel) 2 g. III. VI., 1966, HF. - Drahonice, 180 m., rock steppe (gravel) 2 g. VI. 1966, HF. - Drahonice, 180 m., rock steppe (gravel), 2 g. VI., 1966, HF. - Drahonice, 180 m., rock steppe (gravel), 2 g. VI., 1966, HF. - Drahonice, 180 m., rock steppe (gravel) 2 g. VI., 1966, HF. - Drahonice, 180 m., rock steppe (gravel) 2 g. VI., 1966, HF. - Drahonice, 180 m., rock steppe (gravel) 2 g. VI., 1966, HF. - Drahonice, 180 m., rock steppe (gravel), 2 g. VI., 1966, HF. - Drahonice, 180 m., rock steppe (gravel) 2 g. VI., 1966, HF. - Drahonice, 180 m., rock steppe (gravel), 2 g. VI., 1966, HF.

M. vagans (FALLERIN, 1823); Holartic, in the Carpathian Basin known from Romania (unpublished) and Czechoslovakia.

Moravia occ.: Drahonice near Znojmo, 180 m., 1 g. II., 1966, HF. - Moravia centre: Motovany, 350 m., 2 g. III. VIII., 1967. - Moravia north: Motovany, 350 m., 2 g. VIII., 1967. - Moravia north: Motovany, 350 m., 2 g. VI. 1967. Drahonice, 180 m., dead rabbit, Motovany, 350 m., 2 g. VII. 1969, HF. - Moravia north: Motovany, 350 m., 2 g. VI. 1969, HF. - Moravia centre: Motovany, 350 m., 2 g. VIII., 1969, HF. - Moravia north: Motovany, 350 m., 2 g. VI. 1969, HF. - Moravia south: Brno, 280 m., gravelly meadow, 1969 on dead rabbit, Motovany, 350 m., 2 g. VIII., 1969, HF. - Moravia centre: Motovany, 350 m., 2 g. VI. 1969, HF. - Moravia south: Brno, 280 m., gravelly meadow (gravel), 1969 on dead rabbit, Motovany, 350 m., 2 g. VII. 1969, HF. - Moravia south: Brno, 280 m., gravelly meadow, 1969 on dead rabbit, Motovany, 350 m., 2 g. VIII., 1969, HF. - Moravia south: Brno, 280 m., gravelly meadow (gravel), 1969 on dead rabbit, Motovany, 350 m., 2 g. VI. 1969, HF. - Moravia south: Brno, 280 m., gravelly meadow (gravel), 1969 on dead rabbit, Motovany, 350 m., 2 g. VII. 1969, HF. - Moravia south: Brno, 280 m., gravelly meadow (gravel), 1969 on dead rabbit, Motovany, 350 m., 2 g. VIII. 1969, HF. - Moravia south: Brno, 280 m., gravelly meadow (gravel), 1969 on dead rabbit, Motovany, 350 m., 2 g. VI. 1969, HF. - Moravia south: Brno, 280 m., gravelly meadow (gravel), 1969 on dead rabbit, Motovany, 350 m., 2 g. VII. 1969, HF. - Moravia south: Brno, 280 m., gravelly meadow (gravel), 1969 on dead rabbit, Motovany, 350 m., 2 g. VIII. 1969, HF.

M. triangularis GOLDRIN, 1930: a Holartic species, Europe to Mongolia, common but extremely rare.

M. trinotata (LEWIS, 1830): Syntopic with *M. hungarica*, but distributed in the genus *Aleurocanthus* and males of *M. freta*.



Explanatory note: In column (2) the number of samples in each of the biotopes (1) is given; (3) shows the frequency of samples positive for the genus *Meconema*; (4) the total of determined individuals in each biotope; (5) the number of all localities in each biotope; (6) the frequency of the positive localities for the individual species.

Habitat

The collection of 238 samples mentioned were taken from biotopes of various character, including urban and suburban localities (Table I, columns 1 and 2). If the various biotopes are sorted according to the decreasing abundance (average number of individuals of all samples), the following sequence

activities in Czechoslovakia. In comparison with Hungary, which is the second most investigated country in Europe as far as the genus *Meoneura* is concerned (PAPP, 1978a), the following species can be expected to occur in Czechoslovakia: *M. lamellata* COULIN, 1930 (Holarctic), *paralacteipennis* L. PAPP, 1977 (Hungary) and *minuscula* L. PAPP, 1977 (Hungary). Quantitat-

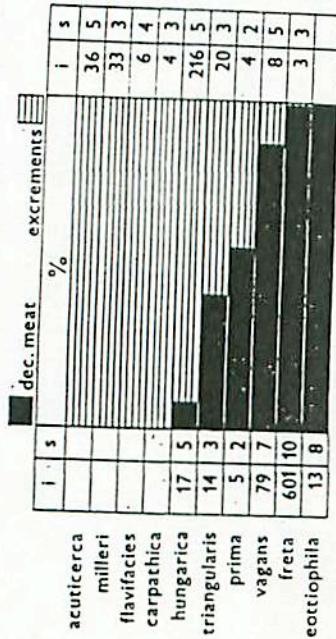


Fig. 3. Food preference in the adults of the genus *Meoneura* between decaying meat (including carcasses) and excrements (mostly human faeces) based on their relative abundance; i = number of imagines, s = number of positive samples. Identified females are included.

(/ results: "steppe" 24.0, periphery of city 17.0, centre of city 8.8, cultural steppe in lowland 2.6, deciduous forest in lowland 0.9. From a quantitative point of view the warm and dry habitats clearly prevail. The species *M. fretta* and *hungarica* clearly predominate, while less important appear to be such species as *M. carpathica*, *neottiphila*, *triangularis* and *vagans*. The "steppe" biotope appears to be richest in species, 11 of the 13 species being present. Only *M. flavifacies* and *M. neglecta* are absent from this type of habitat, DOSKOČIL, 1962; GREGOR & DANIEL, 1976). The urban biocenoses proved to be poor in species, with only one dominant species, *M. fretta*.

Food preference

In most of the species investigated food selection by the imagines was clean-cut in respect to the main attractant substrates: decaying meat and faeces. The trophical potence of the species of the genus *Meoneura* is, however, much wider (HENNIG, 1937; PAPP, 1978a). As seen from Fig. 3, the species *fretta*, *neottiphila* and *vagans* preferred visibly the decaying meat. Contrary to this *M. hungarica* was prevalently coprophagous. Less evidenced appears to be the 100% visitation of faeces by the species *acuticerca*, *carpathica*, *flavifacies* and *milleri*. Trophically indifferent in this respect were the species *prima* and *triangularis*.

CONCLUSIONS

From the territory of Czechoslovakia so far 15 species (of 39 Palearctic and of 26 European species, which represents 38% and 58% respectively) are known. This relatively high percentage reflects the considerable faunistic

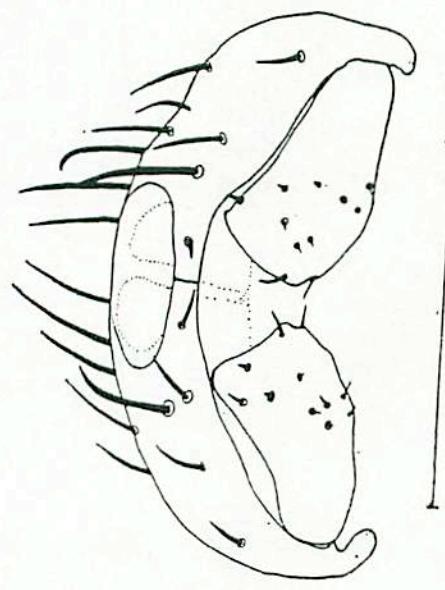


Fig. 4. *Meoneura moravica* sp. n. (holotype), male genitalia, ventral view (surstyli in the widest extension).

diversity the most abundant species of *Meoneura* in these two neighbouring countries are *fretta* (Ost.), and *hungarica* L. PAPP. In Czechoslovakia *M. milleri* is an abundant species which is at present little known from Hungary.

The choice of substrates (meat and faeces) confirms the data generally known (see HENNIG, 1937; PAPP, 1978a) and we may presume that the adult obligatorily necrophagous and/or coprophagous, and this is valid also in species known as obligatory nichicolous (*M. neottiphila*). Knowledge of the bionomy and autecology of the individual species remains limited. Their sanitary importance is negligible as regards their size but the vectorship of pathogens cannot be completely excluded. There is a tendency towards slight synanthropy (an affinity towards human settlement) in the species *M. primi* and *fretta*.

Meoneura moravica sp. n.

Body and legs black, subshining. Head rather big, 0.47 mm wide on holotype male. Frontal triangle reaching to anterior 2/5 of frons. Only frontal triangle shining, other parts of frons dull. Genae not very broad, longest diameter of eyes 3.5 times longer than smallest genal width.

Mesonotum with only 1 pair of do bristles. Aerostichal microchaetae scattered, thin but comparatively long. Legs rather short. First femur with 3 strong posteroverentral bristles. Mid metatarsus short, mid tarsus only slightly longer than mid tibia. Wings transparent, somewhat milky, veins almost colourless, pale yellowish, costal vein brownish yellow. Costal vein without a fringe of strong bristles. Knob of halteres dirty white, stalk brownish.

Abdomen and also genital vault (epandrium) with short bristles only (Fig. 5). Epandrium dorsally as long as its width. Male genitalia without lamella. Aedeagus strongly curved (U-shaped), forked plate (St 9) without strong bristles. Surstyli (Fig. 5) medially directed, short and widening apicad, with a few very short bristles.

Body length: holotype male: 1.12 mm., paratype male: 1.17 mm. Wing length: holotype male: 0.37 mm., paratype male: 0.32 mm.; wing width: holotype male: 0.40 mm.

Holotype male: Moravia n. sp., Vranov nad Dyjí, 1st instar, 6.VII. 1965, leg. J. Kováč. Paratype male: date same as for holotype. The type was preserved in alcohol. The holotype is deposited in the collection of the Moravian Museum, Brno; the paratype is in the collection of the Zoological Department, Hungarian Natural History Museum.

Meonura moravica sp. n. is an easily distinguishable species. It has only 1 pair of dorsocentral bristles as in *M. freta* Coll., *exigua* Coll., *gracea* Hennig, *wagens* (Fall.) and *kaszabi* L. Parr, but it has no strong bristle pairs on male epandrium; thus it is related to *M. wagans* (Fall.). Unlike *wagens* (Fall.), *M. moravica* sp. n. has weakly sclerotized cerci without bristles, there are no long bristles on its epandrium, its surstyli are of different shape and there are only very small bristles on its surstyli (Fig. 4).

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Виды рода *Meonura* (Diptera, Carnidae) из Чехословакии и описание вида *Meonura moravica* sp. n.

Фаунистика, сезоны, стадии, кормовое притягивание, синантропии. *Meonura*. Синантропные личинки-прыгуны сestructурной питательной средой (внешн. и внутр.) на 13 видов рода *Meonura* (Rond.). Описано притягивание на 23 видах в Чехословакии, болгарии частично и в южной Моравии. Популяции видов, краткое представление о сухие и теплые стации в засушливом местном климате, популяции наблюдаемы в течение июня и августа в засушливом. В горных пунктах погодные условия и абсолютная высота над уровнем моря определяют, каким образом, в первую очередь. Принадлежание нового вида *M. moravica* sp. n.

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REVIEW

Flammingo J. F. & Marshall K. E. (Eds.): Altitudinal distribution, population stability, predation, mating and climate (G. F. Elmendorf, J. F. Flammingo, R. Sora, J. R. Werner and others). Evaluation of acute toxicity and introducing of new progressive methods (J. Schmidbauer, J. D. Agnew, T. J. Fink, A. Kováč et al. others).

In comparison with previous conferences on Ephemeroptera more attention was paid to ecology and morphology of mayflies. It is very important for this field of study to progress as there are many questions on mayfly biology and morphology yet to be answered. The editors have carried out a speedy and highly professional editing job. Despite some differences in terminology resulting from different points of view of individual contributors (e.g. larvae versus nymphs or adults; there are provincial names as "new genus" etc.) all papers are logically arranged and the volume is completed by an author index, a subject index and a taxonomic index to families, subfamilies and genera with general reference to new taxa. Although the papers are reproduced by a simple technique, the reproduction of figures and especially photographs including scanning micrographs are perfect.

Without any doubt, the International Conference on Ephemeroptera resulting in such a series of papers are very successful, producing more international cooperation than ever before.

T. Soldán and V. Landa