Russian Entomol. J. 4 (1-4): 109-113

A revision of the genus *Homalocephala* Zetterstedt, 1838 (Diptera Ulidiidae) of Russia

Ревизия двукрылых рода *Homalocephala* Zetterstedt, 1838 (Diptera Ulidiidae) России

M.G. Krivosheina, N.P. Krivosheina
М.Г. Кривошеина, Н.П. Кривошеина

A.N. Severtzov Institute of Ecology and Evolution, Russian Academy of Sciences, 33 Leninsky Prospect, 117071 Moscow, Russia
Институт проблем экологии и эволюции им. А.Н. Северцова РАН, Ленинский проспект 33, Москва 117071, Россия

KEY WORDS: Diptera, Ulidiidae, revision, Russia, new species, distribution, key.

КЛЮЧЕВЫЕ СЛОВА: Diptera, Ulidiidae, ревизия, Россия, новый вид, распространение, определительная таблица.

ABSTRACT. 5 species of the genus *Homalocephala* Zetterstedt are registered in Russia as a result of the revision of the collections of the Zoological Museum of Moscow Lomonosov State University and the Institute of Ecology and Evolution. The sixth species: *H. mamaevi* sp.n. is described from the territory of Tuva. The key to imagos of the genus *Homalocephala* is given. The data on the biology of all species are discussed.

РЕЗЮМЕ. В результате ревизии коллекционных материалов Зоологического Музея МГУ и Института проблем экологии и эволюции РАН на территории России зарегистрировано 5 видов рода *Homalocephaha* Zetterstedt. Шестой вид, *H. mamaevi* sp.n. описан с территории Тувы. Составлена определительная таблица видов. Для всех видов приводятся данные по биологии.

There are 6 species of the Genus *Homalocephala* Zetterstedt known for Palaearctic Region. The next species are mentioned in the Catalogue of Palaearctic Diptera [Zaitzev, 1984]: *H. albitarsis* Zett., *H. angustata* (Wahlb.), *H. apicalis* (Wahlb.), *H. bimaculata* (Loew) and *H. biseta* (Frey). The revision of the Swedish species of *Homalocephala* [Andersson, 1991] allowed to specify position of several species. The species *H. biumbrata* (Wahlb.) previously considered as the synonym of *H. albitarsis* Zett. has proved to be valid species, and *H. bipunctata* (Loew) became the junior synonym of *H. albitarsis* [Andersson, 1991].

The revision of the collections of the Zoological Museum of the Moscow Lomonosov State University (ZMUM) and the Institute of Ecology and Evolution (IEE) has shown that 5 species of *Homalocephala* are distributed in Russia (except *H. biseta* (Frey)). Besides this one new species from Tuva — *H. mamaevi* sp.n. was discovered and described. The data on the biology of 2 species: *H. bimaculata*, *H. angustata* are given for the first time, the data on the biology of *H. biumbrata* are precised.

The research described in this publication was made possible in part by Grant No.MDA 300 from the International Science Foundation and Russian Government. The holotype of the new species is deposited in ZMUM.

Homalocephala mamaevi sp.n.

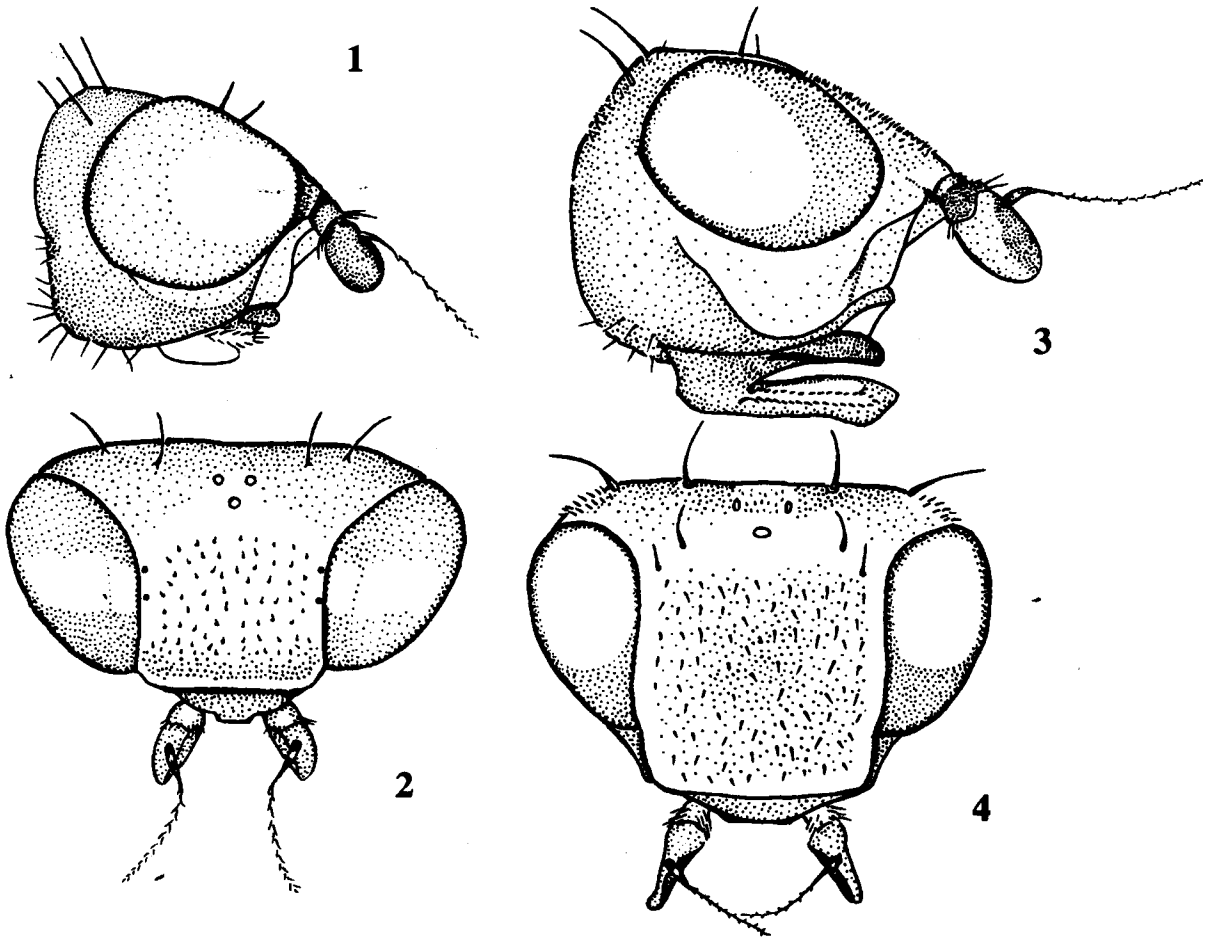
Figs 3-4, 7-9.

MATERIAL. Holotype ♂, labelled "Tuva, Ishtii-Hem, 25 km SW Shagonar, 7.VII.1974, reared from larvae collected from the wood of larch; Paratypes 2♀♀, the same place, 22.VI.1979, reared from larvae collected under the bark of larch (B.M. Mamaev).

DESCRIPTION. MALE. Body length 5 mm. Body blackish-brown. Eyes round, frons noticeably protruding beyond anterior margin of eyes, with almost parallel margins, this character distinguishes the new species from *H. apicalis* (Wahlb.). Frons brown, somewhat lighter anteriorly, not conspicuously two-coloured as in some other species. Frons 0.5 times as wide as the head and slightly longer than wide (4.6:4.2).

Face light, but with narrow brown band at the margin of mouth cavity. Parafacial and gena yellowish, light. Clypeus black, palpus orange with darkened apex. Third antennal segment slightly elongated, longer than wide, orange in base and on ventral half, brown on dorsal half. Arista brown, black in base.

Mesonotum brown shining with brown short setae on the whole surface. Anepisternum and katepisternum without short silvery pubescence, carrying long brown setae on the most part of the surface. Scutellum pollen, dull. Legs unicolours, brown. Halteres dark. Wing hyaline with dark median spot between Sc and R_1. Apical spot absent, but a narrow dark band along the apex of the wing present, occupying the apexes of R_{2+3}, R_{4+5} and the part of C between R_{2+3} and M_1.



Figs 1-4. Head of the female of *H. apicalis* (Wahlb.) (1,2) and *H. mamaevi* sp.nov. (3,4); 1, 3 — lateral view; 2, 4 — dorsal view.

Abdomen blackish-brown, shining, with rear dark setae. The first and the base of the second tergites dull, pollen. Male's surstylus with rounded apex and 3 strong long dents (Figs 7-9).

FEMALE. Body length 6 mm. Resembles male except the following characters: 3rd antennal segment lighter with brown spot at dorsal margin in front of arista. Arista brown. The index of the length of the frons to its width is 3.5:3.

BIOLOGY. The larvae were found in moist soft wood of fallen larch. The wood of such kind is usually prefered by the larvae of Cecidomyiidae: *Catotricha marinae* Mamaev.

DISTRIBUTION. Tuva.

ETYMOLOGY. The species is named after Prof. B.M. Mamaev.

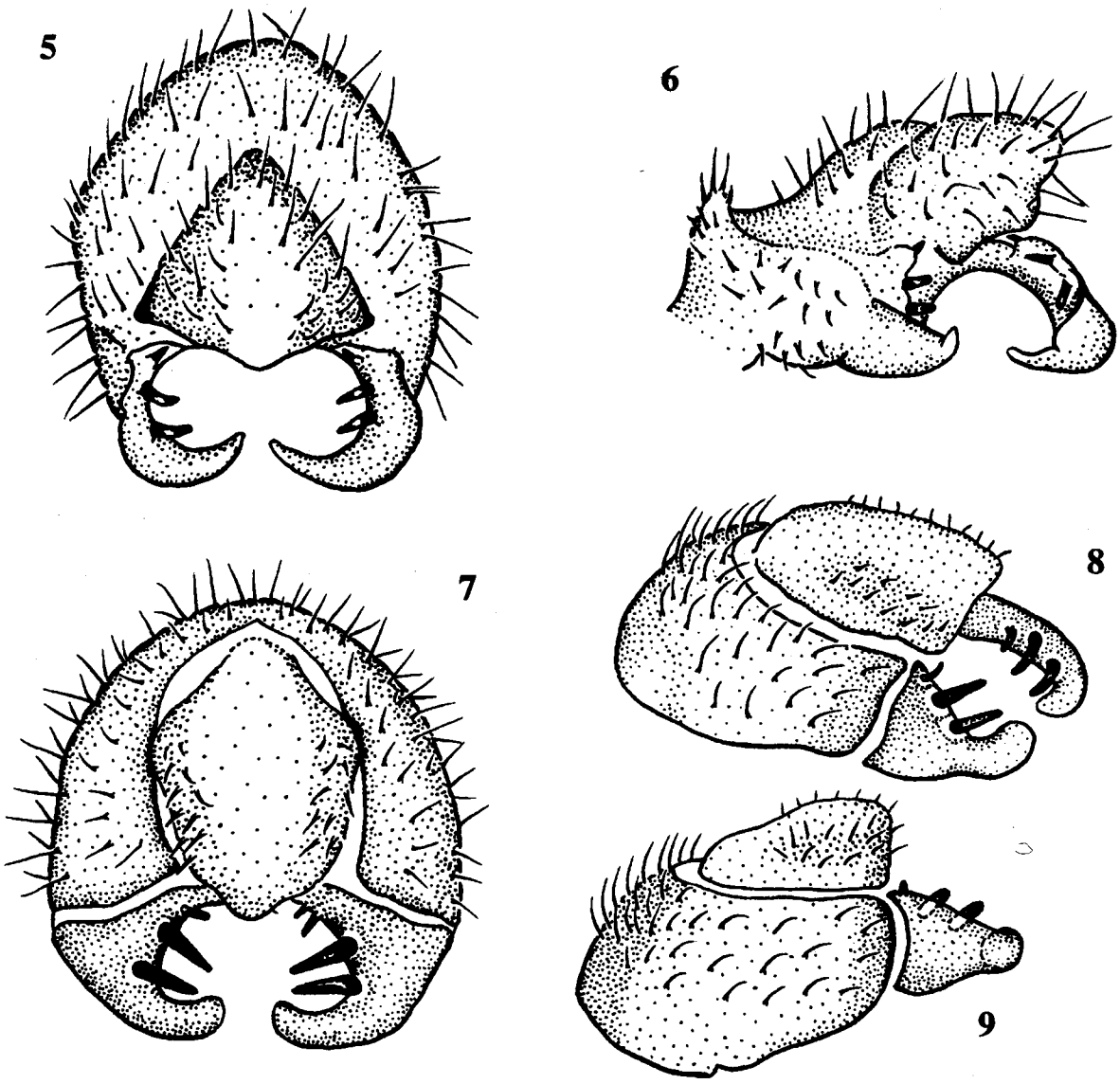
Homalocephala albitarsis Zetterstedt, 1838

MATERIAL. 1 ♂, Vologda Area, Ust-Kubensky District, Nikolskoye, 18.06.1983 (N.P. Krivosheina); 3♂♂, 2♀♀, Kostroma Area, Manturovo District, Polomy, 15.03.1982 (A.I. Zaitzev); 3 ♂♂, 4 ♀♀, Buryatia, Babushkin, 23-29.06. 1976 (N.P. Krivosheina); 2 ♂♂, Amur Area, Zeya, 15.07.1981 (A.I. Shatalkin).

The species under the name of *H. bipunctata* Lw. was reported from Leningrad and Moscow Areas [Stackelberg, 1958].

DIAGNOSIS. Eyes transversely oval. Frons orange with a small black spot in front of the ocellus, 0.5 as wide as the head, and as long as or slightly longer than wide. Face, genae and parafacial snow-white. Clypeus black, palpus orange. The 3rd antennal segment orange, with brown spot along dorsal margin in front of arista, almost round, as long as or slightly longer than wide. Mesonotum and scutellum with grey pollen. Katepisternum in dense short silvery pubescence. Besides there are long light setae on the ventral part of katepisternum and on the whole surface of anepisternum. Legs dark, first tarsomeres orange. Wing with black spot between Sc and R_1 and a small spot at the apex of R_{2+3}, contacting C.

BIOLOGY. The larvae of the species are linked to coniferous trees. The larvae were discovered under the bark of stumps of spruce and cedar-pine at clearings. As a rule the larvae develop in cedar-pine stumps of every size, which are well heated by the sun. The larvae are concentrated in light-brown moist bast pierched by galleries of bark-beetle *Trypodendron lineatum* Ol., followed by Syrphidae — *Brachyopa conica* Pz. and Limoniidae — *Libnotes* spp. larvae. Judging by the state of the bast the larvae are phloeophages. Before pupation the larvae usually join in groups in various deepenings of bark. Imagos are common in summer and early autumn [Stackelberg, 1958]. There is data on rearing of imagos



Figs 5-9. Epandrium and surstyli of the male of *H. apicalis* (Wahlb.) (5,6) and *H. mamaevi* sp.nov. (7-9); 5,7 — dorsal view, 6,8,9 — anterolateral view.

from decaying bark of *Pinus* [Zetterstedt, 1838] and from trunks of *Pseudotsuga taxifolia* [Cogan, Dear, 1974].

DISTRIBUTION. Northern Europe; Russia: Leningrad and Moscow Areas [Stackelberg, 1958], Vologda and Kostroma Areas, Buryatia, Amur Area.

Homalocephala angustata (Wahlberg, 1838)

MATERIAL. 1♂, 1♀, Krasnodar Prov., Ubinskaya, 10.07.1970; 1 ♂, 1 ♀, Buryatia, Babushkin, 21.06.1976 (N.P. Krivosheina); 1 ♂, Amur Area, Kundur. 15.09.1975 (M.L. Danilevsky); 1 ♀, Moscow Area, Krasnaya Pakhra, 5.06.1973 (V.G. Kovalev).

DIAGNOSIS. Eyes transversely oval. Frons in both sexes slightly narrower than 0.5 of the head's width, frons slightly longer than wide (3.2:2.7 in males and 3:2.6 in females). Frons unicolourously brown. Face snow-white on the upper half just below antennae, with wide brown band bordering mouth cavity in the lower half. Parafacial and gena dark. Clypeus and palpus black. 3rd antennal segment orange in base and brown on the other surface, considerably longer than wide. Arista brown. Katepisternum in dense short silvery pubescence. Anepisternum with the same pubescence on the lower margin. Anepisternum on the most surface and katepisternum ventrally with rare long brown setae. Halter white. Legs brown. Metatarsus ventrally with dense gold pubescence. Wing hyaline only with narrow dark spot between Sc and R_1.

BIOLOGY. Larvae breed under the bark of asp in fallen trunks, lying on the ground in shade, as a rule never in the open space, often on the northern slopes. Bast light, wet. The trunks at first stages of settlement of these larvae are occupied by bark beetle *Trypodendron signatum* F., in the galleries of which the larvae of syrphid fly *Brachyopa*

sp. occure. Mature larvae are gathered in more dry brown bast, where they are present together with the larvae of *Megamerina dolium* (Fabr.), as well as with predatory larvae of *Phaonia* (Muscidae). Emergence of imagos takes place in the end of June under laboratory conditions. According to Stackelberg [1958] imagos are met in wet deciduous forests, mainly on the trunks of old asps.

DISTRIBUTION. Northern Europe; Russia: Leningrad Area [Stackelberg, 1958], Moscow Area, Krasnodar Prov., Buryatia, Amur Area.

Homalocephala apicalis (Wahlberg, 1838)
Figs 1-2, 5-6.

MATERIAL. 1♂, 4♀♀. Buryatia, Babushkin, 28.06.1976 (N.P. Krivosheina): 1♀, Amur Area, Kundur, 16.05.1975 (A.I. Zaitzev); 5♂♂, 29♀♀, Amur Area, Zeya, 9.06-28.07.1978, 18.07.1981, 7-29.07.1982 (A.I. Shatalkin); 2♂♂, 7♀♀, the same place, 11.07-8.08.1982 (A.L. Ozerov); 1♂, 2♀♀, 17.06.1978 (A. Belov), 2♂♂, 2 ♀♀, Khabarovsk Prov., 50 km S Komsomolsk-na-Amure; 16.09.1975 (T.V. Kompantzeva); 10 ♂♂, 5 ♀♀, Kamchatka, Kozyrevsk, 22.06-20.07.1984 (N.P. Krivosheina).

DIAGNOSIS. Body generally dark. Eyes transversely oval, narrowed anteriorly. Frons slightly more than 0.5 as wide as the head. Frons wider than long (4.7:4). Frons black, orange anteriorly. Face, parafacial and gena snow-white, sharply contrasting with dark surface of the other parts of head. The 3rd antennal segment and arista completely black in males and with a small red spot in base in females. Palpus dark, light-brown in base. Mesonotum black with bluish pollen. Pollen on the lateral surface of the thorax is not developed, anepisternum with slight and katepisternum with dense bluish pollen. Halter black. Legs unicoloured, black. Metatarsus of fore and hind legs with thick gold pubescence ventrally. Females have the same pubescence on the fore tibia. Spots of wing are of various intensity, from grey to black between Sc and R_1. Apical spot is sometimes unbroken, triangular or looking like separate dark stripes along radial veins and on the costa between R_{2+3} and M_1.

BIOLOGY. Larvae are linked to asp, prefering trunks lying on the ground at open well heated sites. Larvae breed in light yellowish or brownish moist bast near sap-extracting zones. Larvae are usually met in groups. The bast at the places inhabited by the larvae is transformed in dust; this shows that the larvae feed on the bast fibres or they are phloeophages. The last stages of breeding take place in more dry brown bast. As a rule the larvae of Syrphidae and Nitidulidae breed inside bark in trunks inhabited by *Homalocephala* larvae. Imagos may be observed at open sites on fallen trunks. Under laboratory conditions imagos emerged at the end of June.

As a result our data show that *H. apicalis* is connected only with deciduous trees. The literature data witness of the breeding of the same species in the trunks of coniferous trees – *Pinus monticola* [Steyskal, 1965]. Our observations prove the fact that the species of *Homalocephala* are separated according to types of wood: decidiuous or coniferous. For example the new species decribed above breeds only in coniferous. Because of this we presume that the data on the breeding of *H. apicalis* in North America belong to another species.

DISTRIBUTION. Northern Europe; Russia: Leningrad Area [Stackelberg, 1958]. Buryatia, Amur Area, Khabarovsk Prov., Kamchatka.

Homalocephala bimaculata (Wahlberg, 1838)

MATERIAL. 3♂♂, Moscow Area, Golitsyno, 3.08.1989 (A.I. Shatalkin); 1 ♂, 1 ♀, Vologda Area, Ust-Kubensky District, Nikolskoye, 6.06.1983, 27.06.1983; 3♂♂, 1♀, Buryatia, Babushkin, 5.7.1976 (N.P. Krivosheina).

DIAGNOSIS. Eyes transversely oval. Frons 0.5 as wide as the head. Frons noticeably projecting bejond anterior margin of eyes. Its length is equal to the width, sometimes slightly less. Frons orange, vertex dark. 3rd antennal segment orange, with a small dark spot in front of arista on the external side. Clypeus black. Palpus orange. Mesonotum and scutellum dark in grey pollen. Katepisternum in dense silvery pubescence. Besides long light setae present on the ventral part of katepisternum and on the whole surface of anepisternum, where they are rather dense. Legs light-brown. Fore femora, hind tibiae and metatarsi are darkened. In females legs are usually orange. Wing with 2 big dark spots, the median one reaching discal cell, and the apiacal spot projecting beyond median vein not reaching the wing apex in such a way that wing apex between R_{2+3} and M_1 is light.

BIOLOGY. Larvae breed inside fallen trunks of asp, grouping at shadow and moist side and lower parts of trunk. Larvae prefer places with bast bordering fresh bark close to sap-wood. Larvae inhabit upper layers as well as deep layers of bast. Pupation as a rule takes place in more dry dark bast just under the rind. Imagos emerge in the end of June-July under laboratory conditions. In nature imagos may be met also in August. According to literature data [Stackelberg, 1958] the species prefer moist deciduous forests, which corresponds to our observations.

DISTRIBUTION. Northern Europe; Russia: Leningrad Area [Stackelberg, 1958]. Moscow and Vologda Areas, Buryatia.

Homalocephala biumbrata (Wahlberg, 1838)

MATERIAL. Moscow Area: 1♀, Krasnaya Pachra, 20.05.1974 (E.M. Antonova), 1♂, 6♀♀, Golitsyno, 23.06.1975, 14-20.06.1981 (A.I. Shatalkin), 1♀, Velyaminovo, 28.06.1988 (A.V. Antropov); 1 ♂, Vologda Area, Ust-Kubensky District, Nikolskoye, 3.06.1983; 1♀, Kostroma Area, Manturovsky District, near Polomy, 20.06.1982; 2♂♂, Krasnodar Prov., Ubinskaya, 10.07.1970 (N.P. Krivosheina); 1 ♂, 1 ♀, Tuva, Ishtii-Hem, 6.08.1973; 1 ♂, 2 ♀♀, Buryatia, Babushkin, 13-26.06.1976 (N.P. Krivosheina); 6♂♂, 3♀♀, Amur Area, Kundur, 4.05-13.06.1975 (A.I. Zaitzev); 1 ♂, 11 ♀♀, Amur Area, Zeya, 11.07.1978, 23.07-14.08.1982 (A.I. Shatalkin); 5 ♀♀, 3.08.1982 (A.L. Ozerov).

The species was registered from Leningrad Region under the name of *H. albitarsis* [Stackelberg, 1958].

DIAGNOSIS. Eyes transversely oval. Frons 0.5 as wide as the head and approximately as long as wide. Frons light, orange on anterior third and darker posteriorly. The part of frons in front of the ocellus black. Face, parafacial and gena snow-white. The 3rd antennal segment mainly dark brown, with orange spot in base. Arista black.

Palpus dark-orange, darkened apically. Body generally black. Mesonotum with short setae on the whole surface, matt, in grey pollen. Katepisternum in short dense silvery pubescence, besides katepisternum and anepisternum with light long setae on the whole surface. Scutellum shining without pollen. Knob of halter light. Legs two-coloured: femur and tibia black, two basal tarsomeres light-yellow, the rest tarsomeres darkened. Wing with two big spots-bands, the intensity of colouration varies. Median spot reaches discal cell, apical spot

occupies the apex of wing; sometimes one darker small spot present at the end of R_{2+3}. Posterior margin of wing is also slightly darkened in such a way that as a rule a light oval or round spot marginated with dark bands may be seen against darker background. As a rule females have more distinct picture of wing.

BIOLOGY. Larvae breed under the bark of fallen trunks of asp, poplar and willow situated at shadowed sites. Larvae are concentrated on the lower side of trunks where the bast is moist. Pupation occures inside bast, the larvae being grouped in 25-30 specimens. Larvae breed among light orange bast filaments, moist with sap. According to our observations the larvae feed on liquid excrets of bast filaments. Emergence of imagos takes place during June-September. Imagos may be met during summer – in the beginning of autumn on tree trunks [Stackelberg, 1958]. Some literature data specify that the larvae of the species are found among decaying leaves [Wahlberg, 1938 cit. after Andersson, 1991]. The presence of large serias of larvae inside trunks cause certain doubts concerning the possibility of these larvae to breed in litter.

DISTRIBUTION. Northern Europe; Russia: Leningrad Area [Stackelberg, 1958], Moscow, Vologda and Kostroma Areas, Krasnodar Prov., Buryatia, Amur Area.

Key to the species of *Homalocephala* Zett.

1. Halteres black 2
- Halteres white 3
2. Katepisternum and anepisternum matt, in grey pollen, without setae. Face without narrow brown band along the margin of the mouth cavity. 3rd antennal segment mainly black ..... *H. apicalis* (Wahlb.)
- Katepisternum and anepisternum mainly without pollen, shining, with long brown setae on the whole surface. Face with narrow brown band along the mouth cavity. 3rd antennal segment orange with dark dorsal spot ..... *H. mamaevi* sp.n.
3. Scutellum with 2 long bristles ..... *H. biseta* Frey
- Scutellum with 2 long apical bristles and 2 shorter lateral ones 4
4. Femur and tibia at least partly yellow. Dark marginal spot not reaching the apex of the wing. The apex of R_{2+3} as well as R_{4+5} light ..... *H. bimaculata* (Wahlb.)
- Femur and tibia black. Marginal spot is placed at the extreme apex of the wing 5
5. Face in the lower half, parafacial and gena darkened. Frons unicolourously brown. Katepisternum with dense short silvery pubescence and separate rare dark setae. Rare dark setae are developed also on anepisternum. Wing with distinct narrow median spot along costal margin, apical spot as a rule not developed ..... *H. angustata* (Wahlb.)
- Face, parafacial and gena snow-white. Frons at least partly orange. Katepisternum with dense short silvery pubescence and with long light setae ventrally. Dense light setae are situated also on the whole surface of anepisternum 6
6. Apical dark spot of wing distinct, small, situated at the apex of R_{2+3}. Median spot is limited only by Sc and R_1. Scutellum matt, in grey pollen ..... *H. albitarsis* Zett.
- Apical spot light, grey, occupying completely the apex of wing, a darker small spot on R_{2+3} may be distinguished against its background like in above mentioned species. Median spot of weak intensity, reaching discal cell. Scutellum black, shining ..... *H. biumbrata* (Wahlb.)

References

Andersson H. 1991. Revision of Swedish *Homalocephala* Zetterstedt (Diptera, Otitidae) // Ent. Tidskr. Vol.112. P.27-32.

Cogan B.H., Dear J.P. 1974. Additions and corrections to the list of British Acalyptratae Diptera // Ent. Mon. Mag. Vol.110. P.173-181.

Hennig W. 1940. 45. Ulidiidae // Lindner (ed.): Die Fliegen der palaearktischen Region. Stuttgart, Sweizerbart. Band 5. H.1. S.1-34.

Stackelberg A.A. 1958. [Materials on the fauna of Diptera of Leningradskaya Region. III. Diptera Acalyptrata, Part 1] // Trudy Zool. Inst. AN SSSR. Moscow-Leningrad, Nauka. Vol.24. P.103-191 [in Russian].

Steyskal G.H. 1965. Otitidae // Stone et al.: A Catalog of the Diptera north of Mexico. Agric. Handbook No.276. Washington, U.S.Depart.Agric. P.642-654.

Zaitzev V.F. 1984. Ulidiidae // Soos and Papp (ed.): Catalogue of Palaearctic Diptera. Budapest, Akademiai Kiado. Vol.9. P.59-66.

Zetterstedt J.W. 1838. Insecta Lapponica III, Diptera. Leipzig. P.485-868.