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A REVIEW OF THE GENUS *AMISCHA* THOMSON, 1858 (COLEOPTERA, STAPHYLINIDAE: ALEOCHARINAE) OF UKRAINE

The work summarizes information about the finds of species of the genus Amischa based on the study of collections stored on the territory of the country, collected in different administrative regions of Ukraine and the Autonomous Republic of Crimea. As a result of the research, it was established that the genus Amischa is represented in Ukraine by four species (A. analis, A. bifoveolata, A. decipiens, A. nigrofusca). Data on ecological features and distribution of the identified species are presented. The obtained results can be used to solve a number of theoretical issues of fauna, zoogeography and ecology, as well as in the preparation of the fauna cadastre of Ukraine, for comparative faunal studies, analysis of the distribution of species, biogeographic structures, study of faunogenesis, ecological monitoring and forecasting of the consequences of human activity on the natural ecosystems of the region.

Key words: rove beetles, subfamily Aleocharinae, genus *Amischa*, fauna, Ukraine.

Introduction. *Amischa* Thomson, 1858 is a widespread genus, which, based on a set of morphological features, belongs to the tribe Athetini Casey, 1910, subfamily Aleocharinae Fleming, 1821, family Staphylinidae Latreille, 1802 (Muona, 1993).

Information about findings of representatives of the genus is fragmentary and does not often make it into faunal summaries from different regions of Ukraine. Special studies on the distribution and biological features of representatives of the genus *Amischa* in Ukraine have not been conducted before. The largest number of findings is known from the southeastern regions of Ukraine (Luhansk and Donetsk regions), as well as the western regions (Ivano-Frankivsk, Lviv, Transcarpathian regions) and the Ukrainian Carpathians. There is fragmentary information about findings of species in the Crimea and southern Ukraine. The most studied is the widespread *A. analis*. In the latest edition of the “Catalogue of Palaearctic Coleoptera” three species are listed for Ukraine (Schülke, Smetana, 2015). Thus, there is an urgency to summarize all known data on findings of species of the genus *Amischa* in the fauna of Ukraine. This paper is a continuation of the series of reviews of the genera and species of the tribe Athetini of the fauna of Ukraine started by the author (Glotov, 2021).

Material and methods. The paper is based on the collection of the author which have been formed over many years and are currently deposited in the State Museum of Natural History of the National Academy of Sciences of Ukraine (CGL, deposited in SMNH), as well as all materials which are stored in the reserve collections of: State Museum of Natural History of the National Academy of Sciences of Ukraine, Lviv (SMNH); I. I. Schmalhausen Institute of Zoology of the National Academy of Sciences of Ukraine, Kyiv (SIZK); National Science and Natural History Museum of the National Academy of Sciences of Ukraine, Kyiv (NMNH); Zoological Museum of Donetsk National University, Donetsk (ZMDONU); Zoological Museum of Luhansk National University, Luhansk (ZMLG); Zoological Museum of Taras Shevchenko National University, Kyiv (ZMTSNU). Acronyms for Zoological Collections of Ukraine follow Zagorodniuk & Shydlovskyy (2014). In addition, materials from the personal collections of fellow entomologists were processed: V. Chumak

(Uzhhorod, CCH); V. Foroshchuk (Luhansk, CFR); S. Konovalov (Severodonetsk, CKN); N. Koval (Velyke Berezne, CKV); I. Severov (Rubizhne, CSV); P. Voitko, (Skole, CVT).

Collecting and laboratory processing of the material was carried out according to standard methods of entomological research.

The taxonomic position of species, authors and years of taxon description are given according to the Staphylinidae catalogues for the Palaearctic region (Schülke, Smetana, 2015). Abbreviations and depositories. Province codes of Ukraine: CRI – Crimea, CER – Chernivtsi, CRK – Cherkasy, DON – Donetsk, IFR – Ivano–Frankivsk, KRO – Kropyvnytskyi, KYI – Kyiv, LUG – Luhansk, LWI – Lviv, MYK – Mykolaiv, ODE – Odesa, POL – Poltava, RIV – Rivne, SUM – Sumy, TER – Ternopil, VOL – Volyn, ZAK – Zakarpattia; (NNR) – National Nature Reserve; (RLP) – Regional Landscape Park; (c) – city; (r) – region; (riv) – river; (v) – village; (d) – district.

Results. The type species of the genus *Amischa*: *Aleochara analis* Gravenhorst, 1802 (= *Amischa analis*). *Amischa* is a large genus of the subfamily Aleocharinae, which has more than 63 species in the world fauna. There are 30 known species in the fauna of Palaearctic (Assing, 2021), 4 of which (*A. analis*, *A. bifoveolata*, *A. decipiens*, *A. nigrofusca*) are represented in the fauna of Ukraine.



Fig. Representatives of *Amischa analis* (a), *A. bifoveolata* (b), *A. decipiens* (c), *A. nigrofusca* (d).

Diagnosis of the genus *Amischa*. Body length 1,7-4 mm. The color of the body in different representatives of the genus varies greatly from yellowish to blackish coloration, elytra, antennae, mandibular tentacles and legs are light brown. Body small, oval and somewhat parallelsided, slightly flattened from above. Entire body is moderately densely finely punctate and evenly covered with short light bristles with a distinct reticulate microsculpture. Head of trapeziform shape, dilated posteriorly. Ligula broad and apically convex, undivided, anteriorly concave, in the middle membranous. Antennae slender and short, articles 5–10 slightly transverse or elongated. Pronotum transverse, the greatest width in the center of the disc, front and back corners of the disc rounded, center slightly flattened, with pubescence on disc forming distinct pattern, usually directed lateroposteriad from midline. Elytra slightly longer than pronotum. Foot formula 4–4–5. Abdomen densely punctate; segment VII longer than segment VI. Tergite VIII and sternite VIII with

pronounced sexual dimorphism. In males, tergite VIII weakly concave to deeply excised, antero-laterally with long processes; sternite VIII much longer than tergite VIII, posteriorly convex, truncate, or excised, and often with characteristic arrangement of long black setae; median lobe of aedeagus rather large in relation to body size, with bulbous capsule, pronounced crista apicalis, very long crista proximalis, and usually with distinct long sclerotized basal structures in internal sac. Paramere of very intricate structure, apical lobe short, broad, and flattened. In females, tergite VIII posteriorly truncate, broadly concave, or with distinct median excision, anterolaterally with shorter processes than in male; sternite VIII slightly longer than tergite VIII, posteriorly broadly convex, in the middle sometimes weakly concave, with dense and short marginal setae. Spermatheca with moderately to strongly enlarged distal portion, more or less straight median portion, and coiled proximal portion (usually 1–2 coils).

Representatives of the genus *Amischa* are found in wet places, on river banks and lakes shores in plant remains, in moist grasslands, in a flooded willow thicket near rivers, in mixed forests, and on calcareous slopes, both on flat meadow and steppe areas, and high in the mountains, partly together with other *Amischa* species. The beetles fly to light traps at dusk.

***Amischa analis* (Gravenhorst, 1802) (Figs 1. a)**

Material. Ukraine. CRI: Radianskyi d., Zavitne, 10.08.2003, light trap, 1 spec., S. Glotov; same locality but, lake shore, in rotten plant remains, 12.08.2003, light trap, 4 spec., S. Glotov (all – CGL); mount Chatyrdah, 26.08.1978, 1 spec., A. Petrenko (SIZK). **CER:** Chernivtsi [Bukowina, Cernowitz], 5 spec., (ZMTSNU). **CRK:** Kaniv d., Kaniv Nature Reserve, 20.07.2008, 1 spec., S. Beliakova (CGL). **DON:** Volodarske d., Kamiani Mohyly Nature Reserve, light trap, 25–27.06.2010, 1 spec., S. Glotov; Debaltseve, ravine forest, litter layer, 1.05.2012, 1 spec., S. Glotov (all – CGL); Donetsk, 27.08.1999, 1 spec., T. Trykheleb (SIZK); same locality but, Park of Leninskyi Komsomol, litter layer, 26.05.2001, 1 spec., V. Martynov (ZMDONU); Kostiantynivka d., Kleban-Byk Regional Landscape Park, 1–2.07.2010, 1 spec., S. Glotov (all – CGL); Novoazovsk d., Khomutovskyi Steppe Nature Reserve, floodplain of riv. Hruzskyi Yelanchyk, light trap, 25–27.06.2010, 5 spec., S. Glotov (all – CGL); Snizhne, 1–5.06.1998, 1 spec., S. Konovalov; same locality but, 1–15.07.1999, 1 spec., S. Konovalov; same locality but, 22.07.2000, 1 spec., S. Konovalov; Chystiakove (Torez), light trap, 1–10.05.1996, 1 spec., S. Konovalov; same locality but, 16–20.05.1996, 1 spec., S. Konovalov; same locality but, 1–20.06.1996, 1 spec., S. Konovalov; same locality but, 1–24.06.1996, 1 spec., S. Konovalov; same locality but, 1–15.07.1996, 3 spec., S. Konovalov; Shakhtarsk, 1–5.06.1999, 1 spec., S. Konovalov (all – CKN); Sloviansk d., Bohorodychne, 4.08.2004, 2 spec.; Sviatohirsk, 6.08.2004, 2 spec. (all – ZMLG); Sloviansk, shore of a salt lake, light trap, 4.07.2010, 4 spec., S. Glotov (CGL). **KRO:** Svitlovodsk d., Biletskivka, 12.08.1982, 1 spec., A. Petrenko (SIZK). **KYI:** Kyiv [K.], 1 spec., J. Hochhuth (NMNH). **LUG:** Alchevsk d., Alchevsk, 05.2000, 1 spec. (ZMLG); Brianka, 1 spec., I. Severov (CSV); Anratsyt d., Bobrykove, 6.06.2008, 1 spec., S. Konovalov; Diakove, 27.04.1999, 1 spec., S. Konovalov; same locality but, 11.05.2000, 2 spec., S. Konovalov; same locality but, 19.05.2000, 2 spec., S. Konovalov; same locality but, 22.05.2005, 1 spec., S. Konovalov; same locality but, 3.06.2006, 1 spec., S. Konovalov; same locality but, 11.06.2006, 1 spec., S. Konovalov; same locality but, 26.06.2006, 1 spec., S. Konovalov; same locality but, 1–25.06.2007, 1 spec., S. Konovalov (all – CKN); Ivanivka, 17.04.–05.05.2011, 1 spec., V. Landyk (CGL); Novokrasnivka, 15.06.2008, 1 spec., S. Konovalov; Platonivka, 20–22.07.2008, 1 spec., S. Konovalov (all – CKN); Rovenky, Dubova Balka, at

light, 15.06.2010, 1 spec., S. Glotov; 29–30.04.2012, 1 spec., S. Glotov; Bilokurakine d., Rozdilne, Rozdilnianski Prudy Nature Preserve, 5.06.2005, 1 spec., S. Glotov; Bilovodsk d., Bilovodsk, bank of riv. Aidar, light trap, 16.07.2009, S. Glotov; Horodyshe, Botanical Reserve named after Kostiantyn Yunytskyi, 10–11.06.2009, 8 spec.; same locality but, 13.06.2009, 1 spec. S. Glotov; Horodyshe, Svynarska Balka Natural Monument, 7.06.2005, 1 spec., S. Glotov; Stepove, Yevsuh-Stepove Nature Preserve, 5.06.2005, 1 spec. S. Glotov; Kreminna d., Kudriashovka, 30.06.2009, 1 spec., S. Glotov; Stara Krasnianka, bank of riv. Siverskyi Donets, floodplain forest, light trap, 6.07.2010, 1 spec., S. Glotov (all – CGL); Lysychansk, 05.2005, light trap, 1 spec., I. Severov (CSV); same locality but, 08.2005, light trap, 1 spec., I. Severov (all – CSV); Luhansk, 1–10.05.2002, 1 spec.; Lutuhino, 14.05.2001, 1 spec. (all – ZMLG); Novoaidar d., Borovske, 1 spec., I. Severov; Kapitanove, light trap, 1 spec., I. Severov; Muratovo, 06.2009, 1 spec., I. Severov; Spivakivka, light trap, 1 spec., I. Severov (all – CSV); Novopskovsk d., Bilolutsk, Bilolutsk Nature Preserve, 21.05.2004, 1 spec., S. Glotov; Novobila Natural Monument, 20.05.2004, 1 spec., S. Glotov; Zaidarivka, litter layer, v. Ikove, 29.05.2004, 1 spec., S. Glotov; Novopskovsk, 29.05.2004, 1 spec., S. Glotov; Osynove, Osynove Nature Preserve, bank of riv. Aidar, 21.05.2004, 1 spec., S. Glotov; Pysarivka, 29–30.05.2004, 1 spec., S. Glotov; Taniushchivka, 25.05.2004, 1 spec., S. Glotov; Teviasheve, 21.05.2004, 1 spec., S. Glotov; same locality, 21.05.2004, 2 spec., S. Glotov (all – CGL); Milove d., Striltsivskyi Steppe Nature Reserve, 17–25.05.2002, 1 spec., V. Foroshchuk; same locality but, 24.07.1999, 1 spec., same locality but, 24.05.2000, 1 spec., V. Foroshchuk; same locality but, 25–28.05.2000, 3 spec., V. Foroshchuk (all – CFR); same locality but, light trap, 14.07.2007, 1 spec., S. Glotov; same locality but, light trap, 13.07.2009, 2 spec., S. Glotov; same locality but, 16.04.2009, 1 spec., S. Glotov (all – CGL); Rubizhne, light trap, 08.07.2010, 2 spec., S. Glotov (CGL); same locality but, 06.2008, light trap, 2 spec., I. Severov; same locality but, 07.2008, 1 spec., I. Severov; same locality but, 06.2008, 2 spec., I. Severov (all – CSV); Sverdlovsk d., Provalskyi Steppe Nature Reserve, 6.06.2008, 1 spec., S. Glotov; light trap, 10.06.2010, 2 spec., S. Glotov; Korolivski Skeli Geological Natural Monument, 26–30.05.2010, 1 spec., S. Glotov; Stanytsia-Luhanska d., Stanytsia-Luhanska Nature Reserve, 28.05.2009, 1 spec., S. Glotov (all – CGL); Derkul Ichthyological Nature Preserve, bank of riv. Derkul, light trap, 10.07.2010, 1 spec., S. Glotov; same locality but, river bank, light trap, 11.07.2010, 1 spec., S. Glotov; floodplain forest, at lake shore, in plant remains, 31.03.2007, 1 spec., S. Glotov; same locality but, light trap, 21.07.2007, 24 spec., S. Glotov; Stanytsia-Luhanska, 2.05.2013, light trap, 1 spec., S. Glotov; same locality but, light trap, 6.08.2008, 2 spec., S. Glotov; Kondrashivka Nature Preserve, 2.06.2013, 1 spec., S. Glotov (all – CGL); Slovianoserbsk d., Trokhizbenka, light trap, 28–29.05.2010, 1 spec., S. Konovalov; same locality but, light trap, 12.06.2010, 1 spec., S. Konovalov; same locality but, light trap, 14.06.2011, 4 spec., S. Konovalov; same locality but, light trap, 16–17.06.2010, 4 spec., S. Konovalov; same locality but, light trap, 1–2.07.2010, 1 spec., S. Konovalov; same locality but, light trap, 3.07.2009, 1 spec., S. Konovalov; 3–4.07.2010, 1 spec., S. Konovalov; same locality but, light trap, 6–7.07.2010, 1 spec., S. Konovalov; same locality but, light trap, 12–15.07.2010, 1 spec., S. Konovalov; same locality but, light trap, 23.07.2010, 1 spec., S. Konovalov; same locality but, light trap, 3–6.08.2010, 1 spec., S. Konovalov; same locality but, light trap, 1–5.08.2011, 1 spec., S. Konovalov; same locality but, light trap, 7–8.08.2010, 5 spec., S. Konovalov; same locality but, light trap, 7–8.08.2010, 1 spec., S. Konovalov; same locality but, 9.08.2010, 1 spec., S. Konovalov (all – CKN); Svatove d.,

Svatove, 05–06.2002, 1 spec., I. Severov (CSV); Troitske d., Demyno-Oleksandrivske, lake shore, 1 spec., 28.07.2009 1 spec., S. Glotov (CGL); Troitske, 05–06.2002, 1 spec., I. Severov (CSV). **IFR:** Osmoloda, Anheliv tract [Ay], 12.4., 1 spec. (SMNH). **LWI:** Lviv [Lwów, L, Lp., Okolica Lwowa], 9.3., 1 spec.; same locality but, 23.9., 1 spec.; same locality but, 23.9., 1 spec.; same locality but, 15.5., 1 spec.; same locality but, Bohdanivka [Bg], 18.7., 1 spec.; same locality but, Holosko [H], 6.4., 1 spec.; same locality but, [Pasieki], 6.5.[1]917, 6 spec.; same locality but, 12.5.[1]917, 2 ex.; 22.3., 1 spec., same locality but, Pohulanka [Pohulanka], 6.4.[1]917, 1 spec.; same locality but, Znesinnia [Zn], 5.5., 1 spec.; same locality but, 3.5., 1 spec.; Sambir [S], 21.4., 1 spec. (all – SMNH). **ODE:** Odesa d., Dachne [state farm Dachne], 25.06.1977, 1 spec., Z. Berest (SIZK). **POL:** Kremenchuk, 22.06.1984, 1 spec., A. Petrenko (SIZK). **TER:** Butsyky [B], 17.4., 1 spec.; same locality but, 7.8., 1 spec.; same locality but, 6.8., 2 spec.; same locality but, 4.6., 1 spec.; same locality but, 11.8., 1 spec.; same locality but, 8.7., 1 spec. (all – SMNH). **SUM:** Seredyna-Buda d., Desniansko-Starohutskyi National Park, Starohutska Area, 21.06.2006, 1 spec., A. Petrenko (SIZK). **VOL:** Turiisk d., Turiisk, at light, 13.07.2010, 1 spec., P. Voitko (CVT). **ZAK:** Tiachiv d., vicinity Mala Uholka, Carpathian Biospheric Reserve, 02.06.2017, 3 spec., V. Chumak; same locality but, 20.06.2017, 3 spec., V. Chumak; vicinity Velyka Uholka, Carpathian Biospheric Reserve, 05.05.2017, 6 spec., V. Chumak; 19.05.2017, 2 spec., V. Chumak; same locality but, 30.06.2017, 18 spec., V. Chumak; same locality but, 07.07.2017 2 spec., V. Chumak (all – CCH); Velyke Berezne d., Mochar, Yavirnyk mountain ridge, 1010 m, 12.05.2019, forest, litter layer, 1 spec. N. Koval (CKV).

Additional material. Poland. Warmian-Masurian Voivodeship, Rybaki [Rybaki], 22.4., spec. Locality not specified or illegible: [label missing], 13 spec.; [Podyr], 6.4., 1 spec.; [fam], 26.7., 1 spec.; 22.3., 4 spec.; 20.1., 1 spec.; in *Formica rufa*, 3 spec. (all – SMNH).

Distribution. Trans-Palaeartic; adventive in North America and New Zealand (Assing, 2021).

Amischa bifoveolata (Mannerheim, 1830) (Figs 1. b)

Material. Ukraine. CER: Chernivtsi [Bukowina, Cernowitz], 1 spec., (ZMTSNU). **DON:** Volodarske d., Kamiani Mohyly Nature Reserve, litter layer, 15–23.05.2008, 1 spec., K. Savchenko (ZMDONU). **LUG:** Bilovodsk d., Horodyshche, Botanical Reserve named after Kostiantyn Yunytskyi, 10–11.06.2009, 1 spec., S. Glotov; Lutuhyno d., Piatyhorivka, 18.06.2009, 2 spec., S. Glotov; Novoaidar d., Novoaidar, 23.07.2010, 10 spec., S. Glotov; Rubizhne, 29.06.–1.07.2009, 2 spec., S. Glotov (all – CGL). **LWI:** Ivano-Frankove [Janów], 4.9.[1]917, 4 spec.; same locality but, 9.9.[1]917, 2 spec.; Lviv, Zubra, 2 spec. (all – SMNH).

Additional material. Czech Republic: Prague [Ocolica Pragy], 2 spec., leg. Dr. Lokay. **Poland:** Subcarpathian Voivodeship, Przemysl [Przemysl], 1 spec. Locality not specified or illegible: [label missing], 6 spec. (all – SMNH).

Distribution. West Palaeartic (Assing, 2021).

Amischa decipiens (Sharp, 1869) (Figs 1. c)

Material. Ukraine. LUG: Rubizhne, floodplain of riv. Siverskyi Donets, floodplain forest, light trap, 29.06.–1.07.2009, 1 spec., S. Glotov; Stanytsia Luhanska d., Stanytsia Luhanska, floodplain forest, light trap, 6.08.2008, 2 spec., S. Glotov; Stanytsia-Luhanska Nature Reserve, light trap, 21.07.2007, 10 spec., S. Glotov (all – CGL).

Additional material. Azerbaijan: Lankaran [Lencoran], 1 spec., leg. E. Reitter (SIZK).

Distribution. Palaeartic Region eastwards to Japan; adventive in North America and New Zealand (Assing, 2021).

***Amischa nigrofusca* (Stephens, 1832) (Figs 1. d)**

Material. Ukraine. LUG: Slovianoserbsk d., Trokhizbenka, light trap, 1–2.07.2010, 1 spec., S. Konovalov (CGL). **ZAK:** Tiachiv d., vicinity Velyka Uholka, Carpathian Biospheric Reserve, litter layer, 15.06.2021, 2 spec., V. Chumak (CCH).

Distribution. West Palaearctic; Middle Asia; adventive in New Zealand (Assing, 2021).

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Огляд роду *Amischa* Thomson, 1858 (Coleoptera: Staphylinidae: Aleocharinae) України

У роботі узагальнено відомості про знахідки видів роду *Amischa* на основі вивчення колекцій, що зберігаються на території країни, зібраних з різних адміністративних областей України та Автономної Республіки Крим. В результаті проведеного дослідження встановлено, що рід *Amischa*, в Україні представлений чотирма видами (*A. analis*, *A. bifoveolata*, *A. descipiens*, *A. nigrofusca*). Наведено дані про екологічні особливості та поширення виявлених видів. Отримані результати можуть бути використані для вирішення ряду теоретичних питань фауністики, зоогеографії та екології, а також при підготовці кадастру фауни України, для порівняльних фауністичних досліджень, аналізу поширення видів, біогеографічних побудов, вивчення фауногенезу, екологічного моніторингу та прогнозування наслідків діяльності людини на природні екосистеми регіону.

Ключові слова: жуки-стафілініди, підродина Aleocharinae, рід *Amischa*, фауна, Україна.