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Melanophila cuspidata (Klug, 1829) (Coleoptera: Buprestidae) – a new alien species for the fauna of Russia

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Abstract. Data on the occurrence of the jewel beetle *Melanophila cuspidata* (Klug, 1829) (Coleoptera: Buprestidae) in Donbass in 2025 are presented. The species is registered as a new alien species for the fauna of Russia. *Melanophila cuspidata* has the ancient Mediterranean range type and it is widely distributed throughout Southern Europe and North Africa to Central Asia. Trophically, the species is primarily associated with coniferous trees and shrubs. As a pyrophilous xylophagous beetle, it colonizes trees and shrubs damaged or killed by fire. The ecological and biological characteristics of *M. cuspidata* are discussed, and recommendations for further survey and monitoring studies are provided.

Key words: Coleoptera, Buprestidae, *Melanophila cuspidata*, alien species, first record, conifers, Donbass.

Melanophila cuspidata (Klug, 1829) (Coleoptera: Buprestidae) – новый чужеродный вид в фауне России

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Резюме. Приведены сведения о находке в 2025 году на территории Донбасса златки *Melanophila cuspidata* (Klug, 1829) (Coleoptera: Buprestidae) – нового чужеродного вида в фауне России. Вид имеет древнесредиземноморский тип ареала и широко распространен – от Южной Европы и Северной Африки до Средней Азии. Трофически *M. cuspidata* связан в первую очередь с хвойными древесно-кустарниковыми породами и, будучи пирофильным ксилофагом, заселяет растения, пострадавшие или погибшие во время пожаров. Обсуждаются особенности экологии и биологии вида, даются рекомендации по проведению поисковых и мониторинговых исследований.

Ключевые слова: Coleoptera, Buprestidae, *Melanophila cuspidata*, чужеродный вид, первое указание, хвойные, Донбасс.

The paper is dedicated to the memory of Lev Nikandrovich Medvedev

The genus *Melanophila* Eschscholtz, 1829 currently includes 13 species trophically associated with woody plants, predominantly conifers. Within the Palaearctic fauna, five species have been recorded, of which two occur in Europe: the widespread Holarctic *M. acuminata* (De Geer, 1774) and *M. cuspidata* (Klug, 1829), exhibiting an Ancient Mediterranean distribution pattern [Bellamy, 2008; Kubáň, 2016] and Afrotropics. In Russia, the genus has hitherto been represented by two species, *M. acuminata* and the East Asian *M. obscurata* Lewis, 1893, whose occurrence in the Russian Far East is considered probable [Richter, 1949; Volkovitsh, 2025]. In 2025, a series of specimens of *M. cuspidata* was collected by the authors in the Donetsk People's Republic. This record establishes the species as a new alien element in the Russian fauna.

Material and methods

Adult beetles were collected using a light trap equipped with a 250 W mercury-vapor lamp (DRL-250W) during the evening and by hand during field surveys. Photographs *in situ* were taken using a Nikon Z 7II camera equipped with a Nikon 105 mm f/2.8G IF-ED AF-S VR Micro-Nikkor lens, a Nikon FTZ II adapter, and a Raynox DCR-250 close-up converter. Images of mounted specimens and genitalia were taken using an AxioCam ERc5s camera mounted on a Carl Zeiss Stemi 2000-C stereomicroscope. Image stacking and post-processing were performed using ZEN 2012 (Blue Edition), Adobe Photoshop CS5, and Adobe Photoshop Lightroom Classic 2020 v9.2.1.10. Species identification was based on the examination of male genitalia and comparison with those of *M. acuminata* specimens from the authors' collection, as well as with published illustrations and descriptions [Verdugo, 2005]. The studied specimens are deposited in the authors' collection.

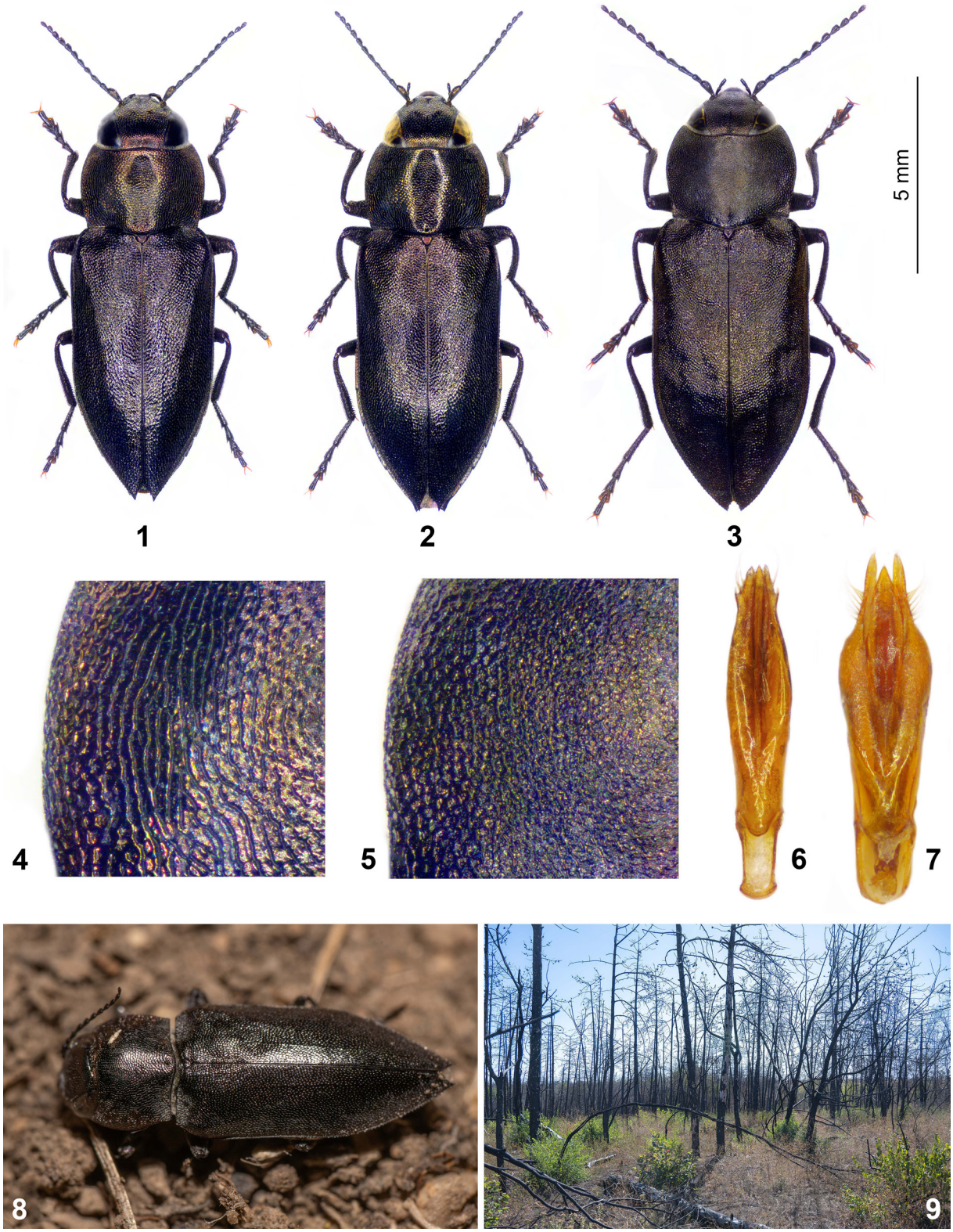
Family Buprestidae Leach, 1815
Subfamily Buprestinae Leach, 1815
Genus *Melanophila* Eschscholtz, 1829

Melanophila cuspidata (Klug, 1829)
(Figs 1, 2, 4, 6, 8, 9)

Material. Russia, Donetsk People's Republic: Volodarskoe Distr.: 1♀, "Kamennye Mogily" Nature Reserve, 47°18′43″N / 37°04′33″E, attracted to a DRL-250W mercury-vapor lamp, 23.07.2025 (V.V. Martynov, A.I. Gubin, T.V. Nikulina); 7♂, 9♀, same locality, attracted to a DRL-250W mercury-vapor lamp near a steppe fire, 27.07.2025 (V.V. Martynov, A.I. Gubin, T.V. Nikulina); Shakhtersk Distr.: 1♀, "Donetskiy Kryazh" Regional Landscape Park, Saur-Mogila, 47°55′30″N / 38°44′44″E, 18.08.2025 (D.A. Tereshchenko).

Comparative material. *Melanophila acuminata*: 1♂, Russia, Volgograd Region, Zhirnovsk Distr., Teterevyatka vill., 10.06.2012 (A.V. Kravets).

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Figs 1–9. Species of the genus *Melanophila* from the European part of Russia, habitus, details, genitalia and habitat.

1, 2, 4, 6, 8, 9 – *M. cuspidata*; 3, 5, 7 – *M. acuminata*; 1, 3, 8 – male, habitus; 2 – female, habitus; 4–5 – sculpture of the pronotal surface; 6–7 – aedeagus; 9 – habitat (artificial pine plantations that died following fire).

Рис. 1–9. Виды рода *Melanophila* из европейской части России, габитус, детали строения, гениталии и биотоп.

1, 2, 4, 6, 8, 9 – *M. cuspidata*; 3, 5, 7 – *M. acuminata*; 1, 3, 8 – самец, габитус; 2 – самка, габитус; 4–5 – скульптура покровов переднеспинки; 6–7 – эдеагус; 9 – биотоп (искусственные насаждения сосны, погибшие после пожара).

Biology. Pyrophilous, polyphagous xylophagous species. Morphologically and biologically, the species is closely related to *M. acuminata*; however, adults are readily distinguished by overall body proportions (Figs 1–3, 8), pronotal sculpture (Figs 4, 5), and the structure of the male genitalia (Figs 6, 7). *Melanophila cuspidata* primarily develops on coniferous woody shrubs and trees, especially Juniperus (Cupressaceae) and Pinus (Pinaceae). Additional recorded host plants include Pistacia (Anacardiaceae), Ficus carica and Morus alba (Moraceae), Populus (Salicaceae), Quercus (Fagaceae) [Théry, 1942; Richter, 1949; Verdugo, 2005; Pineda, Mondaca, 2021]. In Donbass, development of the species presumably occurs on Pinus sylvestris and Pinus nigra pallasiana, the stands of which were present in all localities where beetles were collected (Fig. 9). Larvae develop under the bark of trees damaged or killed by fire. As in other species of the genus, adults of *M. cuspidata* possess a pair of metathoracic infrared organs used for detecting fire sources [Linsley, 1943; Schneider et al., 2015]. Adults are most active at dusk and are attracted to light [Théry, 1942; Richter, 1949]. Most of specimens were collected using a light trap installed in the "Kamennye Mogily" Nature Reserve, approximately one kilometer from a steppe fire. Mating usually takes place on the still-hot tree trunks, and oviposition occurs on charred bark. Larval galleries are wide, tightly packed with fine frass, and run through the phloem and sapwood. Larval feeding further stresses fire-affected trees, increasing their likelihood of mortality. The pupal chamber is located beneath the surface of the sapwood or within the bark. The larva develops over the course of one year. Adults are active from early May to late summer [Théry, 1942; Richter, 1949; Verdugo, 2005].

Notes. The occurrence of a new alien conifer-inhabiting xylophagous species is an important factor accelerating the degradation and decline of natural and artificial pine stands in the steppe zone of Russia. Therefore, further studies are required to clarify the current distribution and aspects of the biology of *M. cuspidata* within its expanded range. We consider it necessary to provide several recommendations relevant to targeted surveys and monitoring of the species. Field sampling should be conducted during the spring-summer period directly in fire-affected areas that attract the species, as well as during transect surveys of burnt sites in the first and second years after fire. Light trapping in the evening, particularly near active or recent fire sites, is also effective. For assessing population dynamics, window traps combined with ethanol-terpene attractants are recommended. It should be noted that *M. cuspidata* is a typical representative of the early stage of pyrogenic succession of xylophagous insects; colonization of trees occurs within the first and second years after fire disturbance. At later stages of wood decomposition, trees are no longer attractive for oviposition and larval development. For example, in autumn 2025 and spring 2026 we conducted surveys of pine plantations in the "Donetskiy Kryazh" Regional Landscape Park that had been burned in 2023 (Fig. 9), including the collection of xylophagous beetle larvae and subsequent rearing of adults in the laboratory. Infestation of pine trees by *Phaenops cyaneus* (Fabricius, 1775) and *Ph. formaneki* Jakobson, 1913 was recorded, whereas larvae of *M. cuspidata* were no longer present in the wood.

Distribution. Africa: Morocco, Tunisia, Algeria, Libya, Egypt, Chad, Cameroon; Europe: Portugal, Spain, France, Italy, Malta, Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Albania, North Macedonia, Bulgaria, Greece; Asia: Turkey, Cyprus, Syria, Lebanon, Israel, Jordan, Georgia, Armenia, Azerbaijan, Iraq, Iran, United Arab Emirates, Kazakhstan, Turkmenistan, Uzbekistan, Kyrgyzstan, Tajikistan, Afghanistan; South America: Chile (introduced) [Kubáň, 2016; Pineda, Mondaca, 2021]. Records from southern Africa (Mozambique, South Africa, Zimbabwe) refer to *M. unicolor* Gory, 1841 [Scholtz, MacRae, 2016].

In 2015, one female of *M. cuspidata* was collected in Kherson Region within the Black Sea Biosphere Reserve [Prokhorov, 2016]. However, no additional records confirming the occurrence of the species in the area have been published since then. The series of specimens collected in the Donbass demonstrates the presence of a reproducing population and allows *M. cuspidata* to be regarded as a new alien species in the fauna of Russia.

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