



Establishment of the North American Eastern Eyed Click Beetle *Alaus oculatus* L. (Coleoptera: Elateridae) in the Caucasus

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ABSTRACT

In 2009 we for the first time found a look in a neighborhood of the city of Geledzhik. Still this look wasn't specified for the territory of Russia, but also Palearctica as a whole. In 2013 this look was noted repeatedly. It testifies about not accidents of detection. The species is resulted for the first time for Russia and will be included in base Zoological institute the Russian Academy of Sciences (www.zin.ru/ANIMALIA/COLEOPTERA/eng/atl_elat.htm)

Keywords: Invasion; *Alaus oculatus*; Elateridae; Palearctica

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The *Alaus oculatus* it is extended to territories of east part of the United States, from Quebec (a province of Canada) to Florida (state of USA) and on the West of Texas and South Dakota (states). It lives in deciduous woods and in areas with a considerable quantity of trees with firm breed, for example, a cherry, an apple-tree, but in particular in places with decaying wood. Is more often than larvae it is possible to meet on the earth where they eat seeds, roots and underground small stalks of plants. Develop in the earth from two till six years. Beetles eat nectar a flower. Larvae - phitophageus, also are wreckers of cultural plants, for example, eat corn roots, roots of vegetables and some flowers. Larvae zoophagous, eating larvae of some insects which hatched in trunks of a cherry, an apple-tree and an oak. Time of summer of beetles - autumn and meet in September is more often.

In 2011 the eastern eyed click beetle *Alaus oculatus* (Linnaeus, 1758) native to North America was recorded from the Caucasus for the first time [1]. Findings of this species in 2012, 2013 and 2014 show that the beetles overwinter and reproduce successfully.

The genus *Alaus* is formed by 11 species distributed throughout of North, Central and South America [2]. *Alaus oculatus* is native to

North America. It is widespread in the eastern United States being recorded from New York [3], Missouri [4], Illinois and Florida [2], Texas, South Dacota [5], Indiana and Georgia [2]. In Canada it is recorded in Ontario and Quebec [5].

Alaus oculatus (Linnaeus, 1758) is one of the largest click beetles in the world. Adult of this species is up to 45 mm long and is easily recognized by the large eyespots on the pronotum [3].

Alaus oculatus is common in its native range [1,2,3,4]. Adults and larvae often occur in decaying logs and stumps infested by various woodborers upon which they are predaceous. In particular, they eat larvae of Buprestidae [10] and Cerambycidae [4]. Larva of *A. oculatus* can be reared in cage and can eat more than 200 cerambycid larvae during its development [4]. Pupae and adults also occur in rotten stumps and logs. Adults were observed to fly about during late June and early July [4]. Population local, unstable breeding capacity is limited (Mishvelov E.G.).

In 2011 *A. oculatus* was found in Palaeartic for the first time: three adult were collected by S.V. Pushkin in Gelendzhik (near the Black Sea shore, Krasnodar region, Russia) [1]. Then two specimens were collected there in 2012, five specimens - in 2013 and one specimen - in 2014. The specimens were collected in the forest belt from *Gleditsia* and in the pine forest *Gleditsia* trees, on the trunks and in litter under

trees. Dates of collection: 20.07.2011, 22.07.2011, 06.07.2012, 23.07.2013, 1.08.2013, 8.08.2013, 1.08.2014. The material is stored in the Museum of Zoology of the North Caucasus Federal University.

Since adults were found in four subsequent years at the same place, it probably indicates that the population of alien species has established. If *Alaus oculatus* will become as common in the Caucasus, as it is in its native range, it could significantly affect local communities, because *A. oculatus* is larger than all Elateridae species native to Europe, and its larvae is a voracious predator, consuming many larvae of Cerambycidae and Buprestidae. *A. oculatus* is the first known alien click beetle in Russia.

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Authors contribution

The paper was carried out by the author on the basis of data collected during the identification of *A. oculatus*.

Mishvelov E.G. Contributed to the theoretical substantiation of faunistic research.

The work was carried out at the expense of Pushkin S.V.

Conflict of interest

In the article, there is no information capable of provoking conflicts of interest, with the exception of information contained in previously published articles by the Pushkin S.V.

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