

**DESCRIPTION OF THE LARVA OF *ACROSSUS SUPERATRATUS*  
(NOMURA ET NAKANE, 1951) (COLEOPTERA, SCARABAEIDAE) FROM  
THE RUSSIAN FAR EAST**

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**Summary.** The larva of the *Acrossus superatratus* (Nomura et Nakane, 1951) is described and illustrated for the first time. The larva of *A. superatratus* differs from other known larvae of the genus *Acrossus* Mulsant, 1842 from Russian Far East by rows paired and extending forward and inward from one of the ends of the anal slit. A key to known larvae of the genus *Acrossus* from the Russian Far East is given.

**Key words:** Coleoptera, Scarabaeidae, Aphodiini, larva, Russia.

**С. А. Шабалин. Описание личинки *Acrossus superatratus* (Nomura et Nakane, 1951) (Coleoptera: Scarabaeidae) с Дальнего Востока России // Дальневосточный энтомолог. 2018. N 352. С. 9-13.**

**Резюме.** Впервые описана и проиллюстрирована личинка *Acrossus superatratus* (Nomura et Nakane, 1951). Личинка *A. superatratus* отличается от представленных на Дальнем Востоке России известных личинок рода *Acrossus* Mulsant, 1842 расходящимися к анальному отверстию симметричными рядами шипиков. Приведена определительная таблица известных на Дальнем Востоке личинок рода *Acrossus*.

**INTRODUCTION**

Four species of the genus *Acrossus* Mulsant, 1842 (type-species *Scarabaeus luridus* Fabricius, 1775) are known in the Russian Far East: *A. binaevulus* (Heyden, 1887), *A. depressus* (Kugelann, 1792), *A. rufipes* (Linnaeus, 1758), and *A. superatratus* (Nomura et Nakane, 1951). Larvae of the genus *Acrossus* were known for *A. rufipes* (Linnaeus, 1758), *A. depressus* (Kugelann, 1792), *A. bimaculatus* (Laxmann, 1770), *A. luridus* (Fabricius, 1775), *A. gagatinus* (Ménétriés, 1832), and *A. planicollis* (Reitter, 1890) (Madle, 1935; Medvedev, 1952; Medvedev, 1964; Dzhambazishvili & Medvedev, 1974; Krell, 1997; Frolov & Akhmetova, 2006). The beetles of *Acrossus superatratus* was collected in vicinities of Kaimanovka and Ryazanovka (Primorskii krai). It was contained in the laboratory and we could examine the morphology of the larvae. In this study the third larval instar of *Acrossus superatratus* is firstly described and illustrated. The morphological terminology followed those of Böving (1936). All examined material is deposited in Federal Scientific Center of the East Asia Terrestrial Biodiversity Far East Branch of Russian Academy of Sciences (Vladivostok).

## DESCRIPTION OF LARVA

### *Acrossus superatratus* (Nomura et Nakane, 1951)

Figs 1–9

*Aphodius* (*Acrossus*) *superatratus* Nomura & Nakane, 1951: 36. Type locality: "Buhei-toge, Ise, Honshu" [Japan, Honshu].

*Aphodius* (*Acrossus*) *superatratus*: Balthasar, 1964: 129; Nakane & Masumoto, 1967: 36; Stebnicka, 1980: 233; Kim, 1987: 193; Dellacasa & Dellacasa, 2006b: 107; Gusakov, 2009: 128; Kim, 2012: 118; Akhmetova & Frolov, 2014: 406; Bezborodov, 2013: 131.

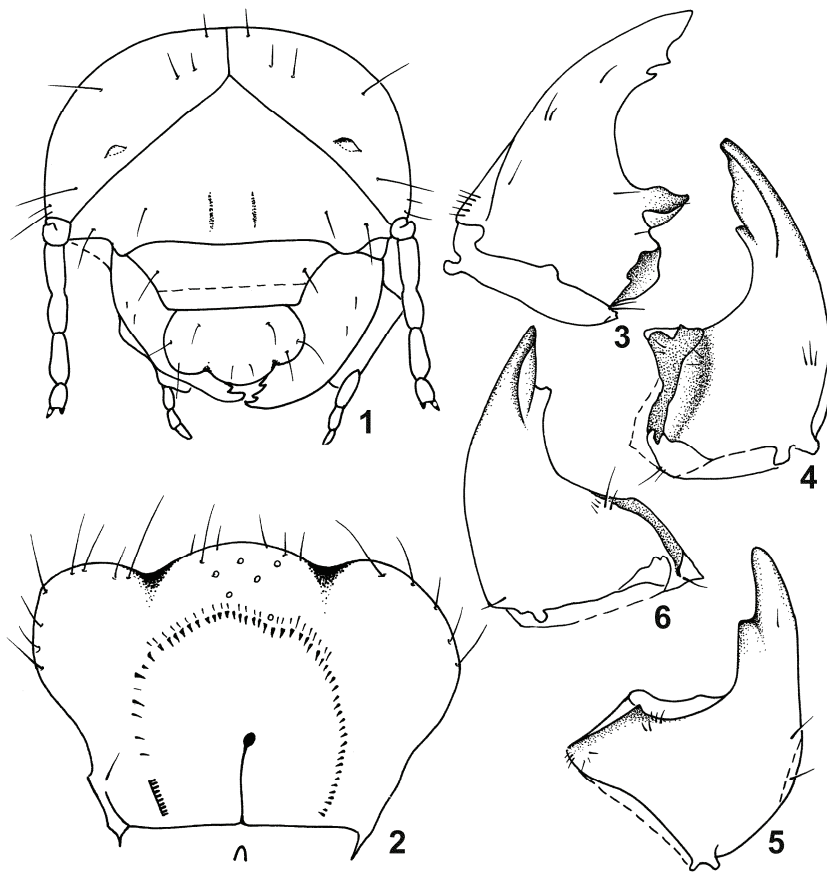
*Acrossus superatratus*: Dellacasa *et al.*, 2016a: 2; Dellacasa *et al.*, 2016b: 101.

*Aphodius* (*Acrossus*) *arsenjevi* Berlov, 1989: 394. Type locality: Vladivostok [Russia: Primorskii krai]. Synonymized by Stebnicka & Galante, 1991: 727.

*Aphodius* (*Acrossus*) *arsenjevi*: Bezborodov & Berlov, 2005: 325.

**MATERIAL.** **Russia:** Primorskii krai. Four third-instar larvae, one second-instar larva, and one first-instar larva reared from the eggs laid by the beetles collected in cow dung 21.V 2017 in Kaimanovka village and 24.V 2017 in Ryazanovka village by S.A. Shabalin.

**DESCRIPTION.** Larva of typical C-shape form. Head surface shiny, reddish-brown. Medial part of pleural sclerites and base of frons a bit darker than remaining part of the head capsule. Head width of third-instar larva 2.10–2.05 mm, length (without clypeus and labrum) 1.50 mm. Head width of second-instar larva 1.80 mm, length 1.20 mm. Head width of first-instar larva 1.20, length 0.90 mm. Frontal sutures visible as fine lines. Length of epicranial suture approximately half height of frons. Each pleural sclerite with darkish spot in central part of epicranial suture; with 7 setae: 4 dorsoepicranial setae, 3 basiantenal setae. Frons with pair elongated depression in central part; with 4 rounded depressions above the fronto-clypeal suture; with pair exterior frontal setae, and pair of setae of anterior frontal angle. Ocelli absent. Clypeus trapezoidal, with pair of long setae laterally, with pair of shorten setae medially. Basal part of clypeus (2/3 length of clypeus) is darker than apical quarter. Labrum three-lobed, with 2 posterior setae; 2 central setae; and 4 lateral setae (Fig. 1). Corypha with 4 marginal setae. Right and left clithrum being present, its surface thinly sclerotized. Epizygum and zygum absent. Haptomerum with 6 rounded sencillae. Plegmatium and proplegmatium absent. Right acantoparia with 6 marginal setae. Left acantoparia with 4 setae. Phoba in laterals parts with 1 setae row, in apical part with 2 setae row. Pedium rounded, it occupying between one-fourth epipharengial surface. Epitorma narrow, long; its apical part rounded. Dextortorma and pternotorma almost straight. Haptolachus complete, but crepis absent. Nesium being present, its surface thinly sclerotized (Fig. 2). Mandibles triangular, asymmetrical. Left mandible slightly longer than right one, its scissorial part wider. Base of mandibles light brown, scissorial and molar part almost black. Right mandible with 1 apical, acute scissorial tooth followed by 1 wide, scissorial blade. Without stridulatory area. Molar area complex of right mandibula, bilobed, with apical depression, basal molar lobe wide, dorso-longitudinally compressed (Figs 5, 6). Left mandible with 1 apical, acute scissorial tooth and 2 wide scissorial blade. Without stridulatory area. Molar area complex of left mandibula, bilobed, apical molar lobe with subtriangular shorter teeth, basal molar lobe wide, dorso-longitudinally compressed. A well developed brush of bristles at base of both right and left molar parts (Figs 3, 4). Maxillae symmetrical. Ventral side of stipes with one long basal and three short distal setae, dorsal side with row of 5 conical stridulatory teeth and three short setae near base of palpifer. Maxillary palp 4-segmented. Palpifer without stridulatory teeth, with 1 short seta ventrally. Ventral side of galea with longitudinal row of short setae. Dorsal side of galea

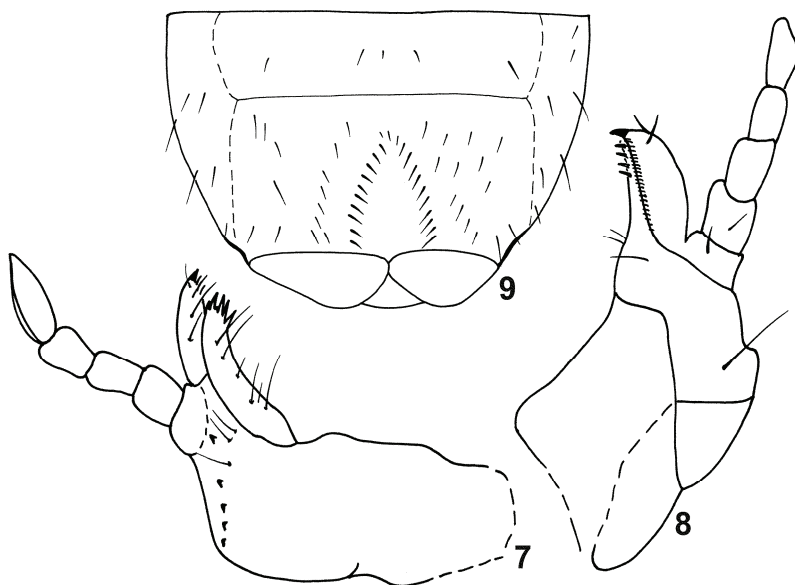


Figs 1–6. Larva of *Acrossus superatratus*. 1 – head capsula, 2 – epipharynx, 3 – left mandible (dorsal view); 4 – left mandible (lateral view); 5 – right mandible (dorsal view); 6 – right mandible (lateral view).

with 5 long setae; with small apical teeth. Dorsal side of lacinia with 8 long thick setae, ventral side with 1 long thick seta basally. Apex of lacinia 4-dentate (Figs 7, 8). Legs subequal in length, fore leg slightly shorter than others. Central part of anal sternite with 2 rows of relatively long, heavily sclerotized pali (11 in the row), lacinate apically. Rows removed caudally and becoming closer to each other basally. Anal sternite also with smaller 12–15 setae at each side of medial rows (Fig. 9).

NOTES. As well as all other species of the genus *Acrossus*, larva of *A. superatratus* have two distinct rows of pali on anal sternite differing from lateral setae, and modified setae on central abdominal tergites, situated on conical tubercles.

DISTRIBUTION. Russia (Primorskii krai, Khabarovskii krai, Jewish autonomous region, Amurskaya oblast), North Korea (Hamgyengbuk-do, Yanggang-do), South Korea (Gangwon-do, Jeju-do), Japan (Honshu).



Figs 7–9. Larva of *Acrossus superatratus*. 7 – maxilla (dorsal view); 8 – maxilla (lateral view); 9 – raster.

#### Key to known larvae of the genus *Acrossus* from the Russian Far East

1. Pallidium with rows paired and extending forward and inward from one of the ends of the anal slit ..... *A. superatratus* (Nomura et Nakane, 1951)
  - Pallidium with rows paired and extending straight, arcuately, or obliquely forward from inside of one of the ends of the anal slit ..... 2
2. Head is reddish. Pali of pallidium is wider and lacinate apically ..... *A. rufipes* (Linnaeus, 1758)
  - Head is darker, brown to blackish brown. Pali of pallidium is simple, with rounded or acute apices ..... *A. depressus* (Kugelann, 1792)

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