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**DESCRIPTION OF THE LARVA OF THE GENUS *PHARAPHODIUS*  
REITTER, 1892 (COLEOPTERA: SCARABAEIDAE)**

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**Summary.** The larva of the genus *Pharaphodius* Reitter, 1892 is described and illustrated for the first time. The larva of *Ph. rugosostriatus* (Waterhouse, 1875) is similar to larva of the genus *Bodilopsis* Adam, 1994 by presence of one section of 60–70 setae in the caudal part of the anal sternite, by absent of setae in the basal part of anal sternite, by lateral abdominal extension with 3 setae, and by the first and second antenna segments approximately equal in length. The larva of the genus *Pharaphodius* differs from larva of the genus *Bodilopsis* in coloration, proportions and chaetotaxy of head capsule and chaetotaxy of mouthparts.

**Key words:** dung-beetles, Aphodiini, *Pharaphodius*, larva, morphology, Russian Far East.

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**Резюме.** Впервые описана и проиллюстрирована личинка рода *Pharaphodius* Reitter, 1892. Личинка *Ph. rugosostriatus* (Waterhouse, 1875) сходна с личинкой рода *Bodilopsis* Adam, 1994 по наличию единого поля шипиков на анальном стерните, участка без шипиков в базальной части анального стернита, трех щетинок на боковых склеритах брюшных сегментов и примерно одинаковой длине первого и второго членика усиков. Описываемая личинка рода *Pharaphodius* отличается от личинки рода *Bodilopsis* окраской, хетотаксией и пропорциями головной капсулы, а также хетотаксией ротовых органов.

This publication is a continuation of our investigation on the morphology of the dung-beetles larvae of the Russian Far East (Shabalin, 2018a, b). The genus *Pharaphodius* Reitter, 1892 contains over 100 species distributed in Afrotropical, Oriental, Palearctic regions and Mexico (Dellacasa *et al.*, 2001). There are 21 species known in Palearctic region (Dellacasa *et al.*, 2016). The only one species *Ph. rugosostriatus* (Waterhouse, 1875) is recorded from Russia (Akhmetova & Frolov, 2014; Shabalin, 2018c). The beetles of *Ph. rugosostriatus* were collected in Primorskii krai. After collecting the beetles have been placed in the laboratory conditions for the getting of eggs and rearing larvae. In this study, the third larval instar of *Ph. rugosostriatus* is described. The morphological terminology follows by 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.

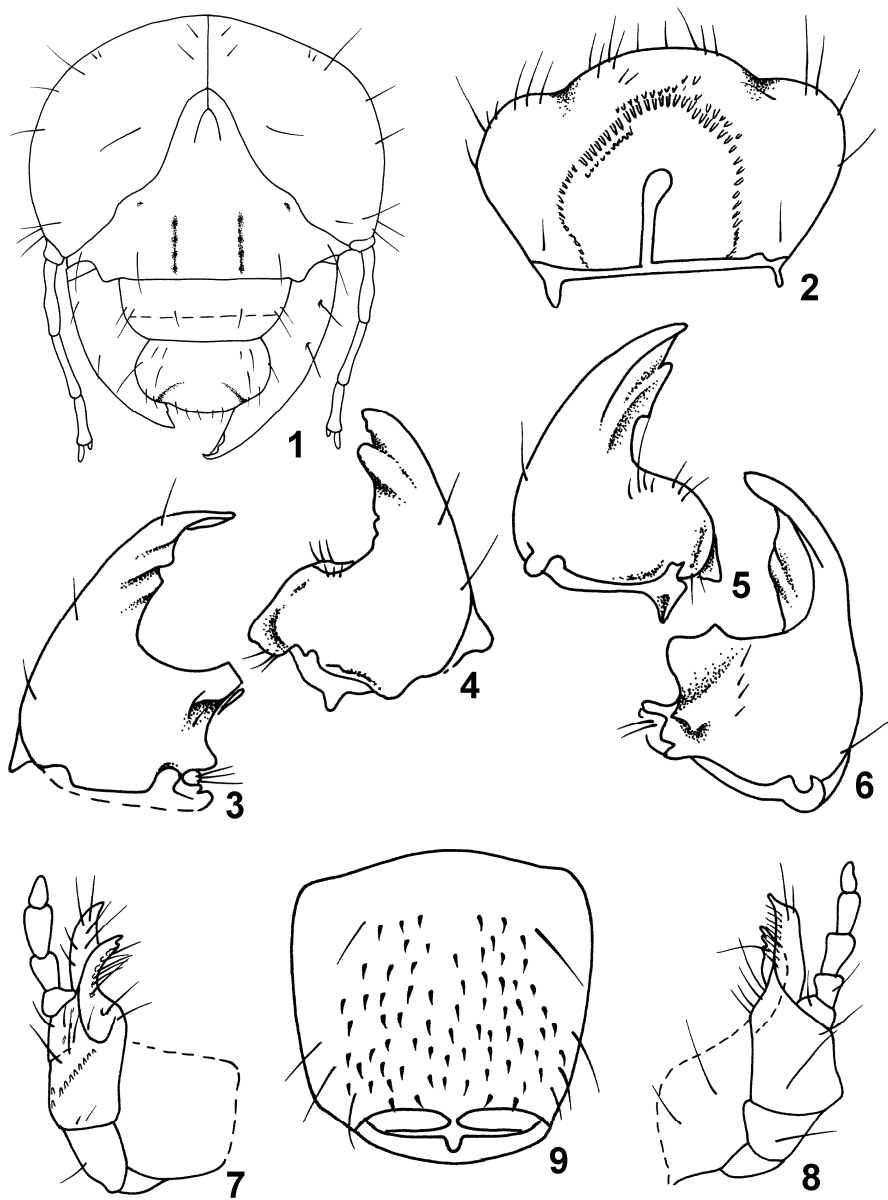
## DESCRIPTION OF LARVA

### *Pharaphodius rugosostriatus* (Waterhouse, 1875)

Figs 1 – 9

**MATERIAL.** Primorskii krai: 16 third-instar larvae reared 9.X 2018 from the eggs laid by the beetles collected 12.IX 2018 in the valley of Ryazanovka River in cow dung by S.A. Shabalin.

**DESCRIPTION.** Larva of typical C-shape form. Head surface smooth light yellow-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 1.6 mm, length (without clypeus and labrum) 1.1 mm. Epicranial suture is short, narrowly dark, dark brown, slightly convex. Frontal sutures visible, as fine light lines, tortuous. The length of the epicranial suture is about two times shorter than the height of the frons. Each pleural sclerite with 12 setae: 8 dorsoepicranial setae, 4 basiantenal setae. Frons with pair elongated depressions in central part (each formed from the confluence of four pits), and with pair pits in a central part of frontal sutures; with pair exterior frontal setae, and pair setae of anterior frontal angle. Ocelli absent. Clypeus trapezoidal, with four of setae laterally, and two setae medially. Basal part of clypeus (2/3 length of clypeus) is darker than apical quarter. Labrum three-lobed, with pair elongated depressions in apical part; with 4 posterior setae; 2 central setae; and 2 lateral setae, and 10 apical setae (Fig. 1). Corypha with 9 marginal setae. Right and left clithrum being present, its surface thinly sclerotized. Epizygum and zygum absent. Haptomerum with 14 triangle flattened rounded apically 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 protophoba with 2 setae row. Pedium rounded, it occupying between one-third epipharengial surface. Epitorma narrow, long; its apical part slightly thickened and rounded. Dextortorma and laeotorma not similar in size and shape; only dextortorma produced cephalid caudal. 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. Stridulatory area absent. Lateral part of right mandible with two setae dorsally. Molar area complex of right mandibula, bilobed, with apical depression, basal molar lobe wide, dorso-longitudinally compressed (Figs 4, 5). Left mandible with 1 apical, acute scissorial tooth and 2 wide scissorial blade. Without stridulatory area. Lateral part of left mandible with two setae dorsally. Molar area complex of left mandibula, bilobed, apical molar lobe with subtriangular shortern teeth, basal molar lobe wide, dorso-longitudinally compressed (Figs 3, 6). A well developed brush of bristles at base of both right and left molar parts. Maxillae symmetrical. Dorsal side of cardo with one long basal seta, ventral side with one long and two median setae. Ventral side of stipes with one long basal and one short distal setae; dorsal side with one row of 9 conical stridulatory teeth, and with two shorten basal setae, and two longer distal setae. Palpifer dorsally with one stridulatory teeth, with two shorten distal setae, and with one longer seta ventrally. Maxillary palp 4-segmented. Ventral side of galea with median longitudinal row of shorten setae, with three longer apical setae. Dorsal side of galea with 4 long setae apically and two shorten seta basally; uncus with well development apical tooth. Dorsal side of lacinia with row of 6 long thick setae, ventral side with 4 long thick setae basally, and one seta distally. Uncus of lacinia 4-dentate (Figs 7, 8) ventrally. The first and the second antenna segments approximately equal in length, third antenna segment shorten than first carries a sensory appendage. Fourth antenna segments shorter than the third three



Figs 1–9. Third-instar larva of *Pharaohodius rugosostriatus* (Waterhouse, 1875). 1 – head capsule; 2 – epipharynx; 3 – left mandible, dorsal view; 4 – right mandible, dorsal view; 5 – right mandible, ventral view; 6 – left mandible, ventral view; 7 – maxilla, dorsal view; 8 – maxilla, ventral view; 9 – anal sternite.

times. Sensory appendage shorter than third antenna segments the three times. Claw rather short, practically cylindrical in basal half, with two setae strong basally. Lateral abdominal extension with 3 setae. Each fold of abdominal tergites carries a line of setae. The caudal part of anal sternite with one section of setae. Its setae are triangular flattened and slightly curved apically. Median part of anal sternite without setae. Anal sternite also with two longer setae basally and with 6 longer setae caudally (Fig. 9).

NOTES. The larva of *Pharaphodius* is similar to larva of the genus *Bodilopsis* described by Krell (1997) by presence of one section of 60–70 setae in the caudal part of the anal sternite, by absent of setae in the basal part of anal sternite, by lateral abdominal extension with 3 setae, and by the first and second antenna segments approximately equal in length. The larva of the genus *Pharaphodius* differs from larva of the genus *Bodilopsis* in coloration, proportions and chaetotaxy of head capsule and chaetotaxy of mouthparts.

DISTRIBUTION. Russia (Primorskiy krai, Khabarovskiy krai), North Korea (Pyengannam-do, Hwanghaebuk-do), South Korea (Gyeonggi-do, Chungcheongbuk-do, Gyeongsangbuk-do, Jeollabuk-do, Jeollanam-do, Jeju-do), China (Heilongjiang, Jilin, Liaoning, Inner Mongolia, Beijing, Tianjin, Hebei, Shandong, Shanxi, Ningxia, Gansu, Shaanxi, Henan, Jiangsu, Shanghai, Zhejiang, Anhui, Hubei, Sichuan, Taiwan, Fujian, Jiangxi, Hunan, Guizhou, Guangdong, Guangxi, Yunnan, Hainan), Japan (Hokkaido, Honshu, Sado, Shikoku, Kyushu).

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