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DESCRIPTION OF THE LARVA OF *PROTAETIA (CETONISCHEMA) SPECIOSA SPECIOSA* (ADAMS, 1817) (COLEOPTERA: SCARABAEIDAE)

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Summary. The larva of *Protaetia (Cetonischema) speciosa speciosa* (Adams, 1817) is described and illustrated for the first time. The larvae of the subgenus *Cetonischema* Reitter, 1899 have a thoracic spiracle same size as a spiracle of abdominal segments VII–VIII, larger than spiracles of abdominal segments I–VI; spiracles of abdominal segments I–VI are the same size; venter of last abdominal segment with short setae and a single of long to short setae on the lateral sides and at the apex, as well as areas without setae and spines in median part. The larva of *Protaetia s. speciosa* differs from larva of *P. speciosissima* (Scopoli, 1786) by a number of pali and it chaetotaxy in the row in palidia, and by a chaetotaxy of head capsula.

Key words: Coleoptera, Scarabaeidae, Cetoniinae, *Protaetia*, *Cetonischema*, rose chafers, larva.

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Резюме. Впервые описана и проиллюстрирована личинка *Protaetia (Cetonischema) speciosa speciosa* (Adams, 1817). У личинок бронзовок подрода *Cetonischema* Reitter, 1899 первое грудное дыхальце такого же размера как и VII–VIII брюшные дыхальца, но крупнее чем I–VI брюшные дыхальца; брюшные дыхальца I–VI примерно одинакового размера; последний брюшной стернит по бокам и на вершине несет короткие шипики и более длинные щетинки, а также участки без щетинок и шипиков в центральной части. Личинка *Protaetia s. speciosa* отличается от личинки *P. speciosissima* (Scopoli, 1786) количеством шипиков в симметричных рядах и их расположением, а также хетотаксией головной капсулы.

INTRODUCTION

Cetoniinae are commonly called rose chafers, for the adult usually visiting flowers, fruits, and flowing sap on the plants. Cetoniinae consists of almost 3900 species all over the world. The immature Cetoniinae were considered one of the best studied group in Scarabaeoidea, though their larval descriptions have been provided for only a small number of species (Šípek & Kral, 2012). When keeping beetles of *Protaetia (Cetonischema) speciosa speciosa* (Adams, 1817) in cages, larvae were obtained. In this study, we firstly describe the third larval instar for this species. This publication is a continuation of our investigation on the morphology of scarab-beetles larvae (Shabalin, 2014, 2019 a, b). The morphological terminology follows

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. The photographs were taken with an Olympus SZX16 stereomicroscope and an Olympus DP74 digital camera, and then stacked using Helicon Focus software. The final illustrations were post-processed for contrast and brightness using Adobe® Photoshop™ software.

DESCRIPTION OF LARVA

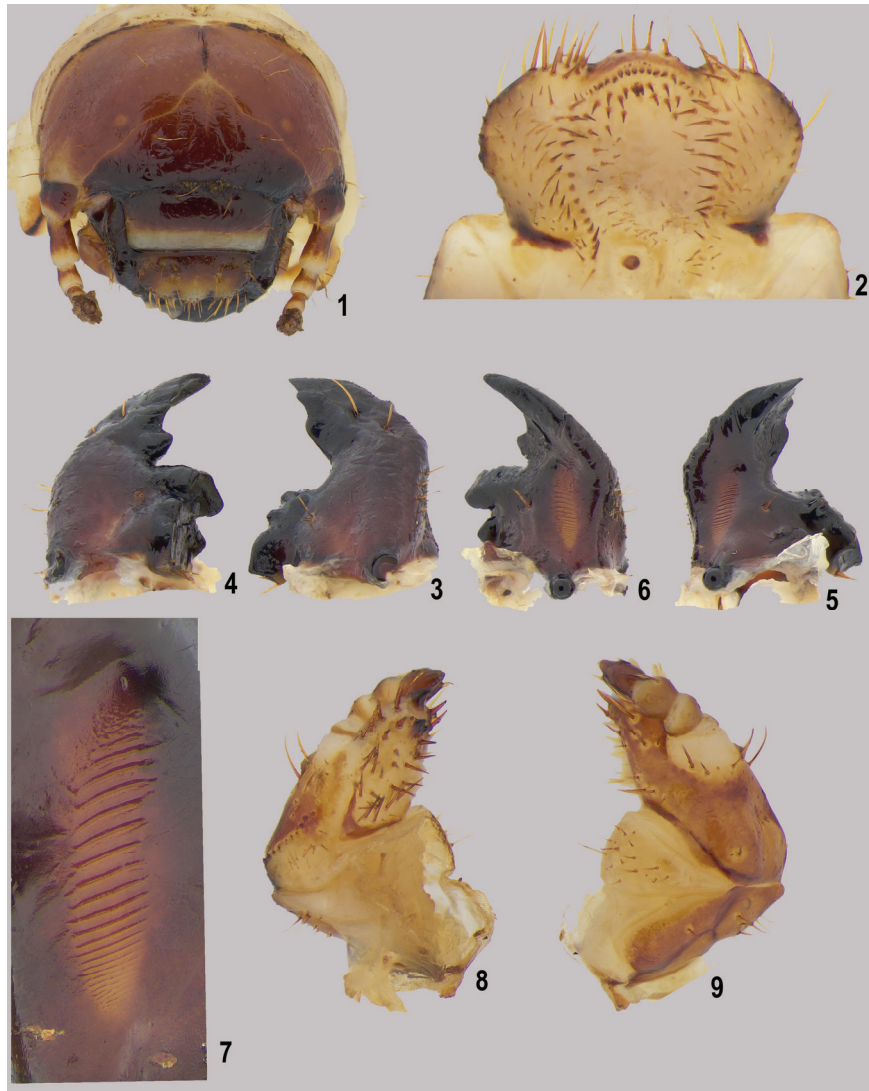
Protaetia (Cetonischema) speciosa speciosa (Adams, 1817)

Figs 1 – 11

MATERIAL. **Russia:** Krasnodarskii krai, vicinity of Anapa, 3 third-instar larvae and one second-instar larva reared from the eggs laid by the beetles collected in early June 2020.

DESCRIPTION. Third-instar larva of typical C-shape form. Head surface smooth dark brown. Medial part of pleural sclerites, apical part of mandibula, and base of frons a bit darker than remaining part of the head capsule. Head width of third-instar larva 5.6 mm, length (without clypeus and labrum) 3.1 mm. Head width of second-instar larva 3.1 mm, length (without clypeus and labrum) 2.0 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. Dorsoepicranium with 2 groups of short setae more or less arranged in 2 rows on each side; normally with 2 long setae on each side. Each pleural sclerite with longer anterior epicranial seta and with longer exterior epicranial seta. Frons with obscure pits in a central part; with pair exterior frontal setae, and two pairs (longer and shorten) posterior frontal setae. Ocelli absent. Clypeus trapezoidal, with two pairs of setae laterally and pair of anterior clypeal setae. The basal part of the clypeus (2/3 length of clypeus) significantly darken than the apical. Labrum trilobed anteriorly, with 3 pairs rounded shallow pits in a central part; with 5 pairs posterior labral setae; with 2 longer central setae; with 6 setae of medial labral lobe; with 8 pairs of setae of lateral labral lobe; and with one long and two short pair of exterior labral setae (Fig. 1). Corypha with 4 marginal setae. Right and left clithrum being present, it surfaces thinly sclerotized. Epizygum and zygum absent. Haptomerum with 3 rows of sencillae. Apical row with 7 shorten rounded sencillae. Median row with 12 shorten triangular curved flattened apically sencillae. Basal row with 14 long acuminate apically sencillae. Plegmatium and proplegmatium absent. Acanthoparia with 5–10 almost subequal setae, surrounded by distinct sheath at base. Posterior 1–2 setae of acanthoparia often smaller than the remaining ones. Gymnoparia absent. Acanthoparia with 5–10 almost subequal setae, surrounded by distinct sheath at base. Posterior 1–2 setae of acanthoparia often smaller than the remaining ones. Chaetoparia asymmetrical, right part with 60 hair-like to stout setae, left part with 38 hair-like setae. Pedium rounded, it occupying between one-eight epipharengial surface. Dextortoma prolonged, right pternotorma absent. Laeotorma narrow, shorter than dextortoma, left pternotorma well developed. Haptolachus with rounded sense cone with 4 apical sensilla. Anteriorly to sense cone distinct plate-shaped sclerome. Crepis absent (Fig. 2). Mandibles triangular, asymmetrical. Left mandible slightly longer than right one, its scissorial part wider. Base of mandibles darken brown, scissorial and molar part almost black. Right mandible with one apical, acute scissorial tooth followed by two wide, scissorial blade. Lateral part of right mandible with eight setae dorsally. Dorsal surface with two longer setae in apical-lateral part (fig. 3). Molar area complex of right mandibula, bilobed, with apical depression, basal molar lobe wide, dorso-longitudinally compressed. Right mandible with stridulatory area and long seta in central part ventrally. Stridulatory area elongated-oval consisting of 27 transverse ridges (Fig. 5). Left mandible with 1 apical, acute scissorial tooth and 3 wide scissorial blade.

Lateral part of left mandible with 5 setae dorsally. Dorsal surface with two longer setae in apical-lateral part (Fig. 4). Molar area complex of left mandibula, bilobed, apical molar lobe with subtriangular shorten teeth, basal molar lobe wide, dorso-longitudinally compressed. Left mandible with stridulatory area and long seta in central part ventrally (Fig. 6). Stridulatory area elongated-oval consisting of 23 transverse ridges. A well-developed brush



Figs 1–9. Third-instar larva of *Protoetia (Cetonischema) speciosa speciosa* (Adams, 1817). 1 – head capsula; 2 – epipharynx; 3 – right mandible, dorsal view; 4 – left mandible, dorsal view; 5 – right mandible, ventral view; 6 – left mandible, ventral view; 7 – stridulatory area of right mandible; 8 – maxilla, dorsal view; 9 – maxilla, ventral view.

of bristles at base of both right and left molar parts (Fig. 7). Maxillae symmetrical. Ventral side of cardo with 4 long setae and one short seta laterally; with 13 setae mediannly (Fig. 8). Dorsal side of cardo with 4 long setae and 4 short setae laterally and with 4 long medial setae. Ventral side of stipes with 3 long basal setae, 4 long lateral setae, and 2 long central setae. Dorsal side of stipes with 11 shorten-thin basal setae; with 2 longer lateral setae; with 2 longer and 3 shorten central setae. Stridulatory area placed in a basal part of distal surface of stipes; consisting of a row of 7 acute teeth basally and 3 small anterior conical process distally (Fig. 9). Galea and lacinia fused forming mala. Mala with large uncus at apex and 2 subterminal unci fused at base. Median side of mala with long setae. Palpifer dorsally without stridulatory teeth. Maxillary palp 4-segmented. Third segment of maxillary palp with pair of setae ventrally. The first antenna segment is the longest, one and a half times longer the second antenna segment. The second antenna segment is slightly longer than third antenna segment. The third antenna segment shorten than first and second antennae segments. Apical parts of legs with cylindrical-conical appendages. Appendage with 2 hair-like setae in basal third. Dorsa of thoracic segments with 1–2 rows of short setae, each posterior row with long to short setae. Respiratory plate with superior lobe slightly larger than inferior lobe. Thoracic spiracle same size as a spiracle of abdominal segments VII–VIII, larger than spiracles of abdominal segments I–VI. Spiracles of abdominal segments I–VI are the same size. Abdominal spiracles similar in size. Abdominal segments I–VIII with 2–4 rows of short setae, each posterior row with long to short setae. Abdominal segments IX–X fused, densely setose with short setae and a single row of long to short setae in the middle and at the apex. Tegilla composed of short, acute setae and sparse long setae. Lower anal lip with many short and curved setae and long, acute setae. Venter of last abdominal segment with short setae and a single of long to short setae in the middle and at the apex, with areas without setae and spines (Fig. 10). Raster with a pair of palida joined anteriorly and diverging posteriorly, surrounded on the sides by scattered setae. Each palidium consisting of caudomesally directed 18–22 pali. Apex of pali blunt almost flat (Fig. 11).



Figs 10–11. Third-instar larva of *Protaetia (Cetonischema) speciosa speciosa* (Adams, 1817). 10 – anal sternite; 11 – palidium.

NOTES. There are two species of beetles in the subgenus *Cetonischema*: *Protaetia (C.) speciosa* and *Protaetia (C.) speciosissima* (Scopoli, 1786). The larva of latter species has been described by Medvedev (1952). The larvae of the subgenus *Cetonischema* are characterized by a thoracic spiracle same size as a spiracle of abdominal segments VII–VIII, larger than

spiracles of abdominal segments I–VI; spiracles of abdominal segments I–VI are the same size; venter of last abdominal segment with short setae and a single of long to short setae on the lateral sides and at the apex, as well as areas without setae and spines in median part. The larva of *Protaetia s. speciosa* differs from larva of *P. speciosissima* by a number of pali and it chaetotaxy in the row in palidia, and by a chaetotaxy of head capsula.

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