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Description of larva of *Euanoma starcki* Reitter, 1889 (Coleoptera: Omalisidae)

Описание личинки *Euanoma starcki* Reitter, 1889 (Coleoptera: Omalisidae)

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Ключевые слова: Coleoptera, Omalisidae, Thilmaninae, личинки, Палеарктическая область.

Abstract. The larva of *Euanoma starcki* Reitter, 1889 is described for the first time. Neither in the genus *Euanoma*, nor in the tribe Euanomini or subfamily Thilmaninae have the preimaginal stages been known. Although the taxon was long attributed to the the family Drilidae, its larval morphology, i.e., the shape and structure of the head, mandibles and antennae, confirms recent placement of Thilmaninae in Omalisidae.

Резюме. Впервые описана личинка *Euanoma starcki* Reitter, 1889. Личиночные стадии до сих пор не были известны ни для рода *Euanoma*, ни для трибы Euanomini, ни для подсемейства Thilmaninae. Хотя таксон долгое время относили к семейству Drilidae, морфологические признаки личинки в частности, форма и строение головы, мандибул и антенн, подтверждают недавнее отнесение Thilmaninae к Omalisidae.

The genus *Euanoma* Reitter, 1889, a Palaearctic endemic, includes nine species distributed in the eastern Mediterranean. Four of its species are registered in the Western Caucasus, four in Turkey and one in Greece [Kazantsev, 2010]. It belongs to the tribe Euanomini of the subfamily Thilmaninae, which had been regarded as a member of Drilidae [e.g., Crowson, 1972; Kazantsev, 2007, 2010], but recently placed in the family Omalisidae [Kundrata et al., 2015]. Neither in the genus *Euanoma*, nor in the subfamily Thilmaninae in general had the preimaginal forms been known.

In 2013, however, a peculiar larva that resembled *Omalisus fontisbellaquaei* Geoffroy, 1785, the only omalisid with a known preimaginal stage [Bertkau, 1891; Burakowski, 1988], was found in the mountains near Sochi (Northwestern Caucasus). Given that just one omalisid species occurs in the whole of the Northwestern Caucasus, it was natural to presume the larva should be attributed to this species, which is *Euanoma starcki* Reitter, 1889.

Material and methods

The studied adult specimens were glued on cardboard plates. The larva was preserved in 70% ethanol. For a detailed examination the head of the larva was detached and treated for several hours in 10% KOH at room temperature, then placed in a microvial with glycerin for photography.

MSP-1 zoom stereoscopic dissecting microscope with ×8–×80 and Micromed-2/3-20 zoom stereoscopic light microscope with ×100–×400 magnification range were used. Photographs were taken with Canon EOS 6D camera.

The following acronyms are used in the paper:

ICM – Insect Centre (Moscow, Russia);

MSPU – Moscow State University of Education (Moscow, Russia).

Genus *Euanoma* Reitter, 1889

Euanoma Reitter, 1889: 98.

Type species: *Euanoma starcki* Reitter, 1889: 99 (by monotypy) (Color plate 5: 15).

Euanoma starcki Reitter, 1889
(Color plates 3, 4; Color plate 5: 9–14)

Euanoma starcki Reitter, 1889: 99.

Material. 1 specimen, last (?) instar larva, NW Caucasus, Krasnodar Region, Adler district, E slope of Iegosh Mt., upper Byuryuchka River, 800–900 m, 43°42′00″N / 40°00′02″E, 29.04.2013, sifting litter and rotten wood from decayed beech stump (K.V. Makarov, A.V. Matalin, A.A. Zaitsev leg.) (MSGU); 2♂, NW Caucasus, Sochi National Park, Chvizhepse valley, 500–700 m, ca. 43.67°N / 40.06°E, 14.06.2014 (S.V. Kazantsev leg.) (ICM).

Description. Last (?) instar larva. Body elongate, almost parallel-sided in thorax and abdominal segments I–V, subcylindric. Upper side brown; sclerites of underside light brown to testaceous; legs yellowish. Body length 8.2 mm (Color plate 3: 1, 2).

Head large, transverse, not retractable into pronotum. Head capsule closed ventrally, gula short; dorsally divided by Y-shaped

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front sutures into 3 sclerites: triangular anterior plate (with 2 long setae) and a pair of lateral sclerites (each with at least 6 setae dorsally). Dorsal plate with one pair of small stemmata located at lateral edges posteriad of antennae. Tentorium represented by a pair of narrow vertical rods, not attaining to dorsal plate (Color plate 4: 3–8).

Antennae 3-segmented, non-retractable, antennomeres 1–3 elongate, relatively narrow; antennomere 2 ca. 1.5 times longer than antennomere 1, bearing well-developed conical sensorium; antennomere 3 small, tapering; all antennomeres with numerous setae. Mandibles large, separated by less than their width at base, proximally narrowing and bent downwards, minutely serrate at distal half on inner surface, non-setiferous, with both condyles on dorsal plate of cranium and their distal part, together with labrum resting on galea. Labrum elongate, narrow, divided by median groove, with longitudinal rows of setae. Maxillae with prominent stipes; maxillary palps 4-segmented, all palpomeres short, transverse, noticeably diminishing in size distally. Galea elongate, lying between maxillary palps and above labium, bearing one prominent seta and several minute setae in distal part. Labium small, with undivided prementum; labial palps 3-segmented, palpomeres 2–3 transverse, palpomere 3 conical; ligula minute (Color plate 4: 3–8).

All thoracic terga divided by narrow median suture (Color plate 3: 1). Thoracic pleuron consisting of epipleurite and pleurite (both absent on prothorax), and well developed episternum and epimeron. Mesothoracic epipleurite entire, bearing functional trilobe spiracle (Color plate 5: 11, 12). Metathoracic epipleurite entire, spiracle rudimentary. Thoracic sterna consisting of obscure presternites and undivided pro-, meso- and metasternum, each with 2 pairs of setae (Color plate 3: 2).

Legs 5-segmented, coxa elongate, with numerous setae. Trochanter not divided. Tibiotarsus with a pair of short setae (Color plate 3: 2).

Abdominal tergites I–VIII completely divided by dark narrow median line, with numerous long setae (Color plate 3: 1), abdominal tergite IX without median line, conspicuously produced distally into unpaired parallel-sided urogomphus, noticably emarginate at apex; abdominal segment X elongate, tubular, located at ca. 45° to central line, with membranous grooming organ, bearing shorter setae than preceeding sternites on rim of sclerotised proximal part (Color plate 3: 1; Color plate 5: 9, 10). Epipleurite in abdominal segments I–VIII large, entire. Abdominal spiracle identic to mesothoracic spiracle, present in segments I–VIII, located between tergite and epipleurite. Abdominal segments I–VII with triangular elongate hypopleurite (Color plate 3: 2; Color plate 5: 10, 13, 14). Abdominal sternites I–VIII entire, with numerous setae (Color plate 3: 2); abdominal sternite IX with 1 row of setae, abdominal segment X with 2 rows of shorter setae (Color plate 5: 9, 10).

Diagnosis. The larva of *Euanoma starcki* is quite similar to the *Omalisus fontisbellaquaei* Geoffroy, 1785 larva [Bertkau, 1891; Burakowski, 1988] in the shape and structure of the head, mandibles and antennae, at the same time readily separable by the conspicuous frontal sutures, 3-segmented labial palps and prominent non-paired urogomphus (Color plate 3: 1, 2; Color plate 4: 3–8; Color plate 5: 9–14).

Biology. The unique specimen of the *Euanoma starcki* larva was collected by sifting rotten wood from a decayed beech stump and litter around, where numerous *Trachysphaera* sp. (spp.?) millipeds were observed. As *Omalisus fontisbellaquaei* larvae are known to feed on *Glomeris* sp. millipeds, inserting their head into the prey and sucking it out [Burakowski, 1988], it is possible that a similar relationship exists between the *Euanoma starcki* larvae and *Trachysphaera* sp. The similarity of their mouth parts also tesify to the plausability of such assumption.

Discussion

Despite the similarity of the larva of *Euanoma starcki* to *Omalisus fontisbellaquaei*, it is still rather different, especially in division of the cranial dorsum by the frontal sutures into triangular anterior plate and a pair of lateral sclerites, in having 3-segmented labial palps (vs. 2-segmented palps in *O. fontisbellaquaei*) and prominent non-paired urogomphus (Color plate 3: 1, 2; Color plate 4: 3–8; Color plate 5: 9–14). However, it is separated from the larva of *Drilus* Olivier, 1790, the type genus of Drilidae [e.g., Bøving, Craighead, 1930–1931], by a number of much more conspicuous and systematically important characters. And although the adults of the Thilmaninae (where *Euanoma* belongs) occupy a somewhat intermediate position between *Omalisus* Geoffroy, 1762 and *Drilus* [Kazantsev, 2007], the larval morphology of *Euanoma starcki* suggests the subfamily should be attributed to Omalisidae rather than Drilidae, thus confirming its most recent placement in the former family in accordance with a study based on morphology and molecular data [Kundrata et al., 2015].

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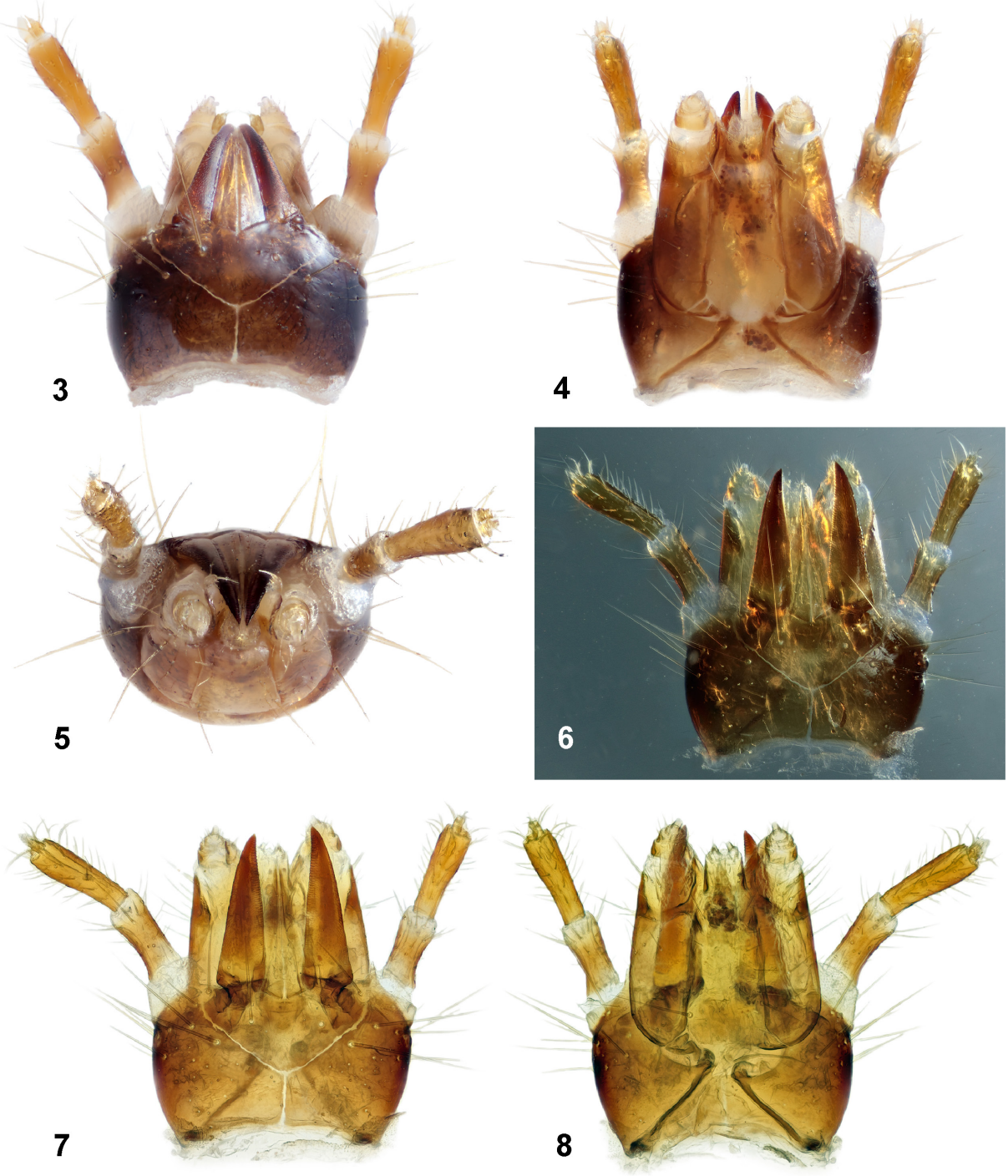
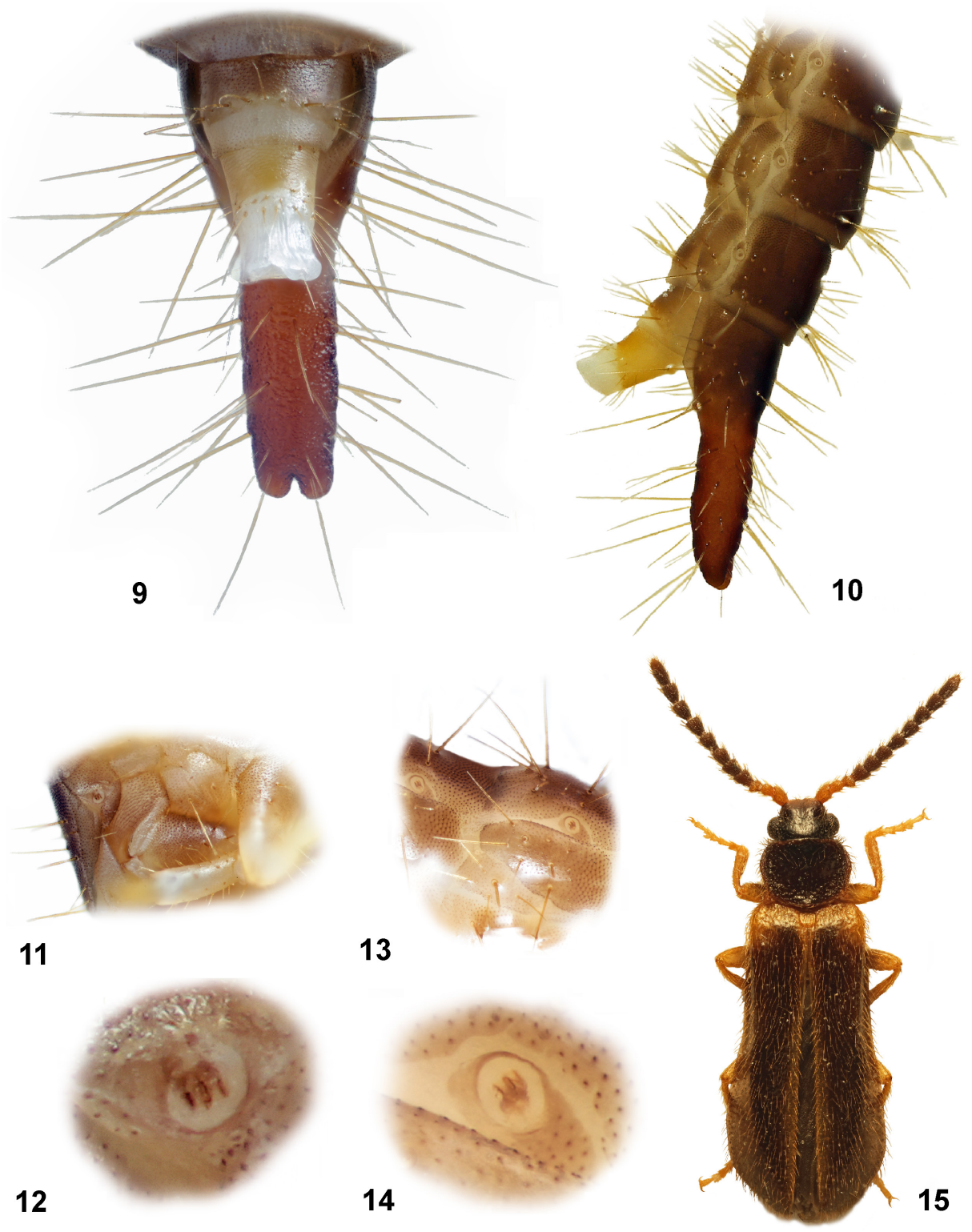
Figs 1–2. *Euanoma starcki*, larva, general view.
1 – dorsally; 2 – ventrally.
Рис. 1–2. *Euanoma starcki*, личинка, общий вид.
1 – сверху; 2 – снизу.



Figs 3–8. Euanoma starcki, larva, head.
3, 6, 7 – dorsally; 4, 8 – ventrally; 5 – anteriorly; 6–8 – KOH cleared.
Рис. 3–8. Euanoma starcki, личинка, голова.
3, 6, 7 – сверху; 4, 8 – снизу; 5 – спереди; 6–8 – после обработки KOH.



Figs 9–15. *Euanoma starcki*.

9–14 — larva, details: 9 – apex of abdomen, ventrally; 10 – same, laterally; 11–12 – thoracic spiracle, 13–14 — abdominal spiracle; 15 – adult male, general view.

Рис. 9–15. *Euanoma starcki*.

9–14 – личинка, детали строения: 9 – вершина брюшка, снизу; 10 – то же, сбоку; 11–12 – грудное дыхальце; 13–14 – брюшное дыхальце; 15 – имаго, самец, общий вид.