

Research article

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***Omphreus (Elladomphreus) eggeri*, new species from the Peloponnese with description of a new subgenus (Coleoptera: Carabidae, Omphreini)**

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Abstract

In this article the systematics of the genus *Omphreus* is revisited, describing a new subgenus for the Greek species previously attributed to *Paromphreus*. *Elladomphreus* n. subg. differs from *Paromphreus* in the lateral gutter of pronotum deep and narrow all along, with 2-6 pore punctures, the striae deep and impunctate, the elytral surface smooth and shiny, the mandibles even longer and thinner. A new species belonging to this group is also described: *Omphreus (Elladomphreus) eggeri* n. sp. was collected on the Oros Panachaiko near Kalanistra (northern Peloponnese) in an interstitial forest environment. *O. eggeri* shows an average size smaller than *O. krueperi* but larger than *O. aetolicus*, with mandibles very elongated, pronotum smooth, narrower at base than at apex, elytra narrow, subparallel, with clearly marked humeral angles and with several setigerous pore-punctures on stria 6 and interval 7.

Key words: ground beetles, Greece, new subgenus, new species.

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Introduction

The discovery by Manfred Egger on the Oros Panakhai-ko near Kalanistra (northern Peloponnese, Greece) of a species of *Omphreus* Dejean, 1828, that immediately appeared to be new, lead us to restudy the systematics of the species from Greece and Turkey previously included in the subgenus *Paromphreus* Ganglbauer, 1887. During this study we became persuaded that all the species from Greece belong to a different subgenus than those from Turkey. The descriptions of the new subgenus and of the new species are presented in this work.

Material and methods

The studied specimens are deposited in the following collections:

CE: Coll. M. Egger, Bad Enns, Austria;

CG: Coll. P. Giachino, Turin, Italy;

CM: Coll. V. Monzini, San Giuliano Milanese (Milano), Italy;

CS: Coll. R. Sciaky, Milan, Italy (in fact, already part of the Zoologische Staatssammlung München, Germany).

The illustrations were made using a Canon EOS 6D digital camera with a Canon MP-E 65mm macro lens, using Helicon Focus software, and subsequently edited in Photoshop CC 2019.

Historical notes

Dejean (1828) described the genus *Omphreus* based on the species *O. morio* from Montenegro. After more than fifty years, a second species of this genus was added: *Omphreus krueperi* Reitter, 1885, from M. Taygetos, in Peloponnese (Reitter 1885). Since then, various authors, including Ganglbauer (1887), Apfelbeck (1904) and others, described several new species.

In 1887 Ganglbauer described *Omphreus korbi*, collected near Adalia (= Antalya) in southern Turkey, for which he established a new subgenus: *Paromphreus*. This Author included in this subgenus also *O. krueperi*, due to the affinities he saw between the two taxa. In this sense, *Paromphreus* was distinguished from *Omphreus* in the eyes small and flattened, the mandibles elongated and sickle-shaped, the first antennomere moderately enlarged towards the apex and nearly as long as the following three together, the pronotum narrow and elongated, almost parallel-sided, the

episterna of prothorax visible from above and the male protarsi undilated.

Later, Winkler (1933) described another new subgenus, *Neomphreus*, for *Omphreus apfelbecki* Reitter, 1893 from the former Yugoslavia, almost exclusively characterized by the lack of dilatation of the male protarsi. This character is also found in *Paromphreus*, but it is difficult to assess whether it indicates a relationship, or it has evolved separately in the two groups.

Later, beyond those belonging to *Omphreus* s. str., one species from Greece [*Omphreus (Paromphreus) aetolicus* Apfelbeck, 1904] and three species from Turkey [*O. (P.) chareti* Lassalle, 1995; *O. (P.) prunierorum* Lassalle, 1998 and *O. (P.) adriaenssenssi* Lassalle, 1998] have been described; currently these species are all attributed to *Paromphreus*.

Therefore, two of the species attributed to the subgenus *Paromphreus* are diffused exclusively in Greece: *O. krueperi* Reitter, 1885 widespread on Mount Taygetos and Mount Parnonas in the southern Peloponnese and *O. aetolicus* Apfelbeck, 1904 known from M. Tymphristos (= M. Veluchi) and the surrounding area in central Greece, while the other four species live in a limited area of southern Turkey, in the provinces of Mugla and Antalya.

Examining the different species from Greece and from Turkey or at least their original descriptions, we realized that the two groups are markedly different. For this reason in this note we will describe a new subgenus for the two species from Greece known up to now, adding a third, new one.

***Elladomphreus* n. subg.**

(Figs 1, 2, 3)

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Diagnosis. A subgenus of *Omphreus* characterized as follows: very elongated, falciform mandibles, very small and flat eyes, protasomeres of the male not dilated; basal pits of the pronotum very elongated, diverging anteriorly and reaching half the length; in the lateral gutter of the pronotum deep and narrow along the entire length, with 2-6 setae, each of which starts from a small pore-puncture located in the gutter, the striae deep and smooth, the elytral surface smooth and shiny, the mandibles very long, the elytra more or less parallel, with well impressed striae and isodiametric microsculpture but sometimes very weak, partly disappearing.

Description. Body narrow and elongate, completely black, smooth on head and pronotum, with very lightly impressed microsculpture on elytra. Head (Figs 4, 5, 6) very long and narrow, with long falciform mandibles: the right one flattened, the left almost conical; antennae with first article as long as the following two and a half; labrum short, with 4 setae near the anterior margin; all palpi very elongate, with the last article securiform.

Pronotum (Figs 4, 5, 6) very elongate, much longer than wide, sometimes wrinkled, but without microsculpture and micropunctuation. Lateral gutter well marked all along, narrow, with 2-6 pore-punctures: the posterior one more or less at one-fifth of the length, the anterior one (or more) in the anterior half. The basal pits impunctate, anteriorly diverging, reaching forward slightly more than the middle of the length. Prosternum smooth and without microsculpture; the epimera visible from above.

Elytra (Figs 8, 9, 10) elongate, rather parallel-sided, with evident humeral tooth. Striae well marked, smooth, intervals flat or weakly convex, microsculpture absent or isodiametric, but always giving the elytra a very shiny appearance. Lateral gutter narrow; umbilicate series continuous all along the 9th interval.

Legs rather long and slender, protarsi simple in both sexes; tarsi dark brown to black, superiorly not furrowed, onychium inferiorly with two rows of short bristles, nails smooth.

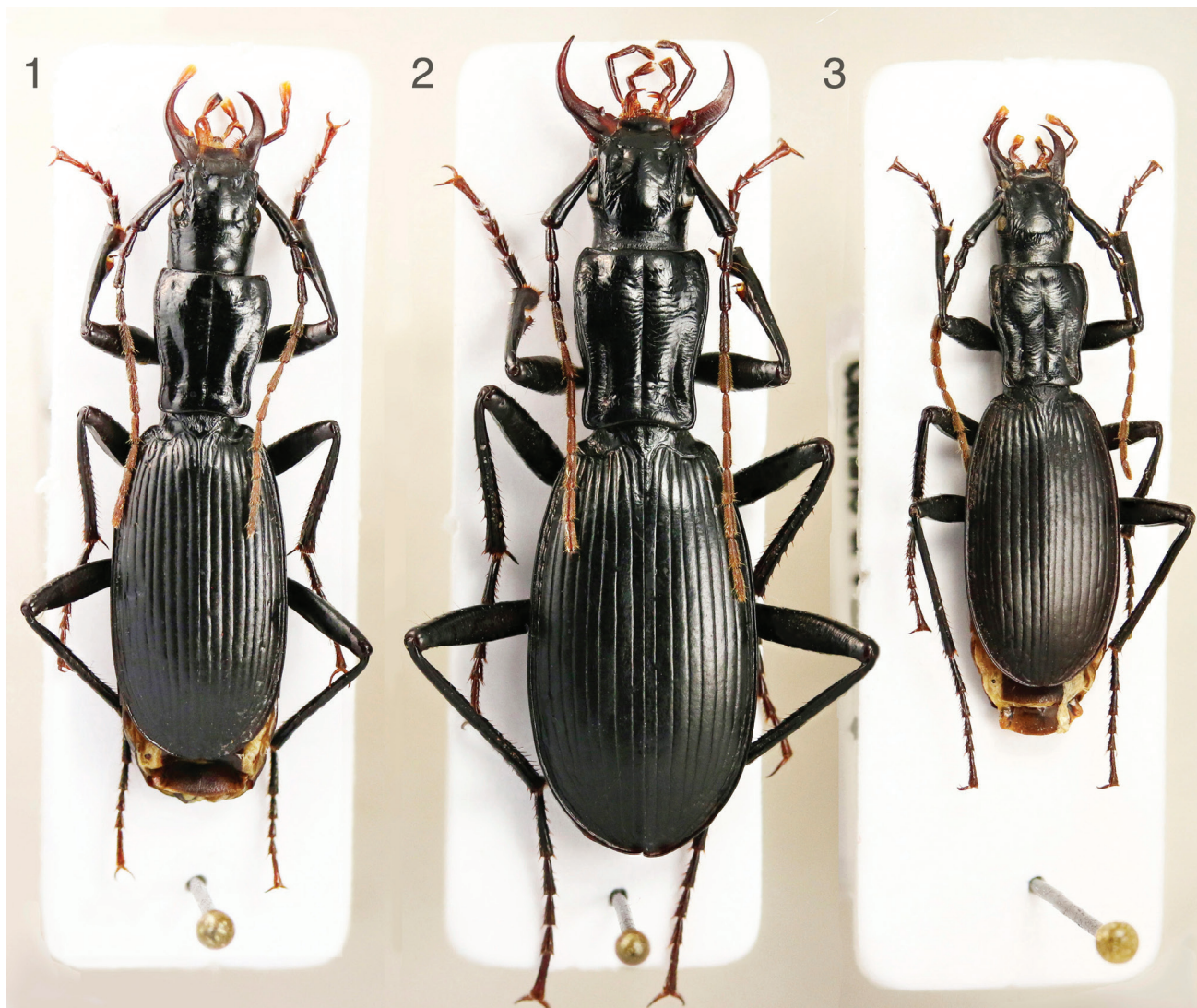
Genitalia (Figs 12, 13, 14): median lobe of aedeagus rather small, in lateral view curved at obtuse angle and with short and pointed tip almost rectilinear; in dorsal view with long ostium, very narrow apical lamella and broadly rounded apex. Last segment of gonapophyses rather short, attenuate at apex, with 3 long nematiform setae internally (Fig. 17), while these in *Paromphreus* are longer, with apex very broad and internally with two short spines.

Type-species: *Omphreus (Elladomphreus) krueperi* Reitter, 1885.

Affinities: A subgenus of *Omphreus* similar to *Paromphreus* Ganglbauer, 1887 in the large size, undilated male protarsi and sickle-shaped mandibles, but pronotum with basal pits arcuate and reaching slightly more than one half of length (instead of prolonged until the anterior margin); lateral gutter deep and well marked for all its length (instead of very superficial and almost vanishing); lateral setae varying in number from 2 to 7 and mainly placed in the anterior half (instead of 6-10 along the whole length of pronotum) and with pore-punctures small and not evident (instead of very large and evident), placed in the gutter itself (instead of internally with respect to the gutter); elytral striae deep and well marked (instead of very superficial, punctate and hardly visible), elytral microsculpture weak, giving the elytra a very shiny appearance (instead of very strong, giving the elytra a very opaque appearance); apex of aedeagus short and rounded (instead of long and pointed).

While the Turkish species are diffused only in the southern Anatolian peninsula, in an area limited to the east of the province of Mugla and the west of the province of Antalya, the Greek species are distributed in the Pindos chain and in the Peloponnese. The minimum distance between the distribution areas of the two groups is about 400 km.

Here we describe a third species from Greece, collected on the Oros Panakhaikon in the northernmost part of the Pello-



Figs 1-3 – Habitus of the three species of *Omphreus (Elladomphreus)* n. subg.: **1**, *Omphreus (E.) eggeri* n.sp.; **2**, *O. (E.) krueperi*; **3**, *O. (E.) aetolicus*.

ponnese, recently discovered by Manfred Egger during the repeated research campaigns he has been conducting for several years also by means of baits in the southern Balkans and in Greece, aimed in particular at the troglaxene and troglotic fauna.

***Omphreus (Elladomphreus) eggeri* n. sp.**

(Figs 1, 5, 9, 13, 17, 18)

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Type locality: Greece, Peloponnese, M. Panachaiko, Kalanistra.

Type series: *Holotypus* ♂: [Greece:] GR. Peloponnes / Panachaikogeb. / Kalanistra V.2014, leg. Manfred Egger (CM); *Paratypi*: ibidem, 1 ♂, 1 ♀, 2.V.2014 (CE, CM); ibidem, 6 ♂, 20.IV, 2.V.2014 (CE, CS); ibidem, 2 ♂, IV.2015 (CE); ibidem, 1 ♂, V.2015 (CM); ibidem, 1 ♂, 3.V.2022, (CE); ibidem, 1 ♂, IV.2023 (CE); ibidem, 1 ♂, V.2023 (CE).

Etymology. We are glad to dedicate this new species to our colleague and friend Manfred Egger, tireless researcher of Carabidae in the Balkan Peninsula and in many other places.

Diagnosis. Size medium (20 - 24 mm); body very elongated and slender, integuments black, palps and tarsi brownish; head oblong, with reduced and flattened eyes, mandibles sickle-shaped, rather elongated but significantly less than in *O. krueperi*, labrum slightly concave, while it is convex in the two other species. Pronotum longer than wide, less elongated and parallel than in the other two Greek species, with sides slightly sinuate towards base, narrower at the base than at the apex with prominent anterior angles and sub-angular posterior angles, with 6-8 setae at the sides. This characteristic is also found in the Turkish species, while in *O. krueperi* there are 3-4 setae and in *O. aetolicus* there are only 2 setae on each side. Elytra narrow and subparallel with smooth and deep striae, intervals flat, humeral angles

4



5



6



7



Figs 4-7 – Head and pronotum in dorsal view: 4, *Omphreus (Elladomphreus) aetolicus*; 5, *O. (E.) eggeri* n.sp.; 6, *O. (E.) krueperi*; 7, *O. (Paromphreus) prunierorum*.

marked and curved upwards, elytral apex widely rounded. Elytra with two setigerous pores near the base of stria 6, several pores on interval 7, occasionally some points also on striae 3 and 5. Legs slender, very elongated, tarsi brownish. Male genitalia: median lobe of aedeagus rather elongated, with short base and elongated median portion, curved and slightly dilated, the apex in dorsal view is rounded.

Description. Size medium: 20 - 24 mm (Holotype: 21 mm) from apex of mandibles to elytral apex; this size is smaller than in *O. krueperi* (23 - 28 mm), but larger than *O. aetolicus*, (16.5 - 18 mm); body very elongated (Figs 1, 18), completely black, shining on head and pronotum, duller on elytra due to a fine microreticulation. Palpi and tarsi brownish, antennae black.

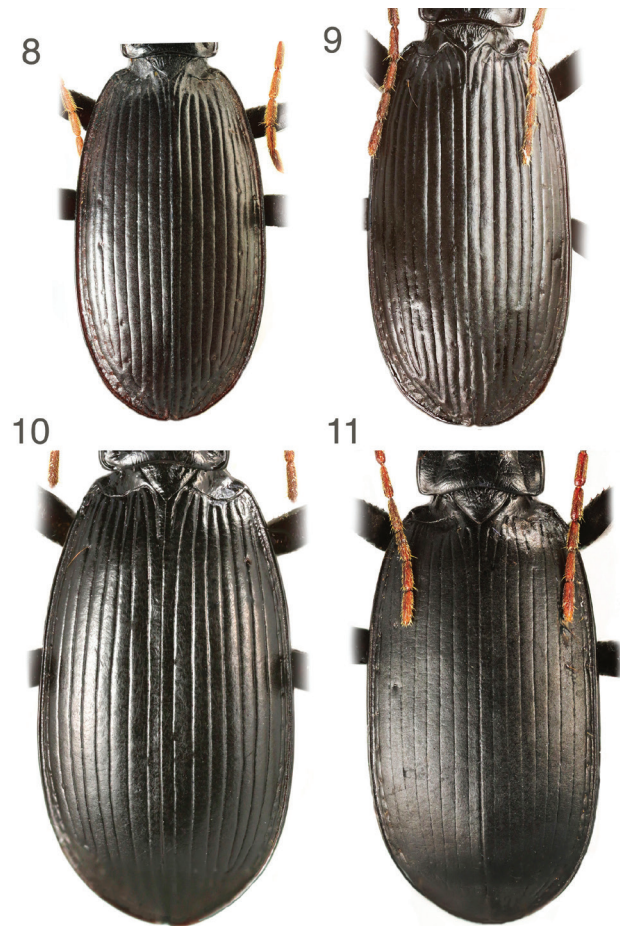
Head elongated (Fig. 5), with a transverse sulcus behind the eyes, that are reduced and flat, much more so than in the two other species of the subgenus; mandibles falciform, very elongated, labrum slightly concave at middle, with 4 setae. Antennae elongated, posteriorly passing the middle of the elytral length; antennomere 1 as long as the following two and a half, slightly dilated in the distal third, with 5-6 long setae; antennomeres 2-3 with some long setae, the following densely pubescent.

Pronotum elongated (Fig. 5), length/width ratio = 1,25, slightly narrower at base, with deep median sulcus. Sides slightly sinuate, with fore angles prominent and basal angles subangulate; epipleurae visible from above. Basal pits impunctate, rather deep at base, more superficial at middle and at apex. Lateral margins with 6 setigerous pores almost at same distance from each other; the marginal channel well marked all along, and continues along the first part of the base as well; central part of base unmargined.

Elytra very narrow, subparallel (Fig. 9), length/width ratio = 1,91. The maximum width is almost at the middle; striae deep, smooth and complete up to the elytral apex; humeral angles well marked, the basal margin evident and forming an acute angle with the lateral margin; elytral apex widely rounded. Frequently the striae are confluent with each other, almost in one over three specimens. Scutellar pore-puncture present, interval 7 with 2-3 pore-punctures in the anterior third, adjacent to stria 6, then with 3-5 pore-punctures usually in the middle of the interval, variously distributed in the remaining part of the interval. Sometimes there are pore-punctures varying in number also in intervals 3 and 5.

Legs elongated but robust, slightly shorter than in *O. krueperi* but longer than in *O. aetolicus*; tarsi dark brown, superiorly not furrowed, onychium inferiorly with two rows of short bristles, nails smooth. Tarsi slightly thinner than in the two other species of the subgenus.

Genitalia: median lobe of aedeagus (Fig. 13) rather small, in lateral view curved at obtuse angle and with short and pointed tip almost rectilinear; in dorsal view with long ostium, very narrow apical lamella and broadly rounded



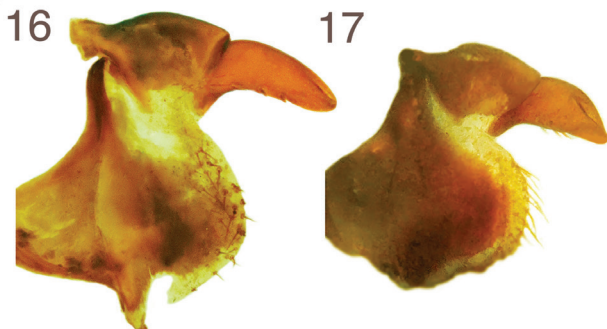
Figs 8-11 – Elytra in dorsal view: **8**, *Omphreus (Elladomphreus) aetolicus*; **9**, *O. (E.) eggeri* n.sp.; **10**, *O. (E.) krueperi*; **11**, *O. (Paromphreus) prunierorum*.

apex, slightly more than in the other two species of the subgenus. Right paramere wide and flattened, the left one thinner. Gonapophyses of females rather short and robust, with sub-acute apex (Fig. 17)

Ecological notes. The specimens of the new species were all collected in a single Greek locality near Kalanistra on the Oros Panakhaiko, a mountain range located in Achaea, the northern part of the Peloponnese, which reaches almost 2000 m a.s.l. and which overlooks the entrance to the Gulf of Corinth. The findings were possible by means of baits buried in a medium-altitude forest environment, at the base of well-cracked limestone walls and among the clastic debris (Fig. 19). The captures took place on various dates ranging from April 2014 to May 2023; unfortunately, this biotope is now completely destroyed by excavation works for the recent construction of a new road (Fig. 20). *Omphreus eggeri* was collected in association with other species of endemic, infra- and sub-lapidicolous Carabidae such as *Elladopterus* sp. (Giachino & Vailati, in press), *Molops spartanus chelmosensis* Maran, 1940 and also other strictly endogean and subterranean species such as *Elasmopterus eggeri* Giachino, Allegro & Vailati, 2024 (Giachino et al. 2024).



Figs 12-15 – Median lobe of aedeagus, **a**, in lateral view; **b**, apex in dorsal view: **12**, *Omphreus (Elladomphreus) aetolicus*; **13**, *O. (E.) eggeri* n.sp.; **14**, *O. (E.) krueperi*; **15**, *O. (Paromphreus) prunierorum*.



Figs 16-17 – Gonapophyses of the two subgenera: **16**, *Omphreus (Paromphreus) prunierorum*; **17**, *O. (Elladomphreus) eggeri* n. sp.

The Panachaiko (Greek: Παναχαϊκό), also known with the ancient name of Vodias (Βοδιάς), is a mountain range in Achaea, Peloponnese, Greece. It spans about 20 km in length from north to south, and 15–20 km from east to west. It is the northernmost mountain range in the Peloponnese.

***Omphreus (Elladomphreus) krueperi* Reitter, 1885**
(Figs 2, 6, 10, 14)

This species is the earliest described taxon of this group and does not seem to be extremely rare, as shown by the many times it has been collected. It shows no significant systematical problems. Its distribution seems limited to M. Taygetos and M. Paronias, in southern Peloponnese.

Examined material: 1 ♂: [Greece:] SE EUROPE S-GREECE Peloponnese / Pen Messenia, Kalamata Municipality / Taygetos mts 37.06114N 22.27141E / 1290 m V.2017 lgt M. Häckel & B. Březina (CS); ♂: GR, Peloponnes / Taygetosgeb., Kalamata- / Sparti, Neochori, Ag. / Nikolaos, various dates, leg. Manfred Egger (CE, CM, CS); 50 ♂♂♀♀: GR, Peloponnes / Taygetosgeb., Kalamata- / Sparti, Neochori, Ag. / Nikolaos, various dates, leg. Manfred Egger (CE, CM, CS).

***Omphreus (Elladomphreus) aetolicus* Apfelbeck, 1904**
(Figs 3, 4, 8, 12)

We know very few captures of this species, that seems at the same time rather widely diffused and quite rare. We have directly examined only one specimen collected on Mount Kaliakouda (or Kalikouda), at almost 10 km to the south-west from M. Tymphristos (loc. typ. of the species). We also know of the capture of two specimens, one of them mentioned in an Italian entomological forum from Mount Agrafa, about 45 km to the north of M. Tymphristos [<http://www.entomologiitaliani.net/public/forum/phpBB3/viewtopic.php?f=143&t=94657&highlight=omphreus>], the other collected by a French entomologist in Aetolia, about 45 km south of the site of the original description [<https://insecterra.forumactif.com/t24104-omphreus>].

The examined specimen exhibits a very slender shape and small size (17.5 m), the pronotum is narrow and elongated, with parallel sides and with only two marginal setae, the elytra are sub-parallel with very rounded, almost receding humeri, along the seventh stria there are six almost equidistant setiger pores. The aedeagus is small-sized, with a slightly voluminous and flattened basal lobe, the median lobe is elongated, slightly dilated and curved, the apex in dorsal view is sub-acute.

Examined material: 1 ♂: Greece: Mount Kaliakouda, P.M. Giachino leg. (CG).

***Omphreus (Paromphreus) sp. cfr. prunierorum* Lassalle, 1998**

(Figs 7, 11, 15, 16)

We have examined 4 specimens most probably belonging to this species, verifying its main characters, but since the localities of our specimens do not completely correspond to the type locality of this species, their identification must be considered uncertain.

Examined material: 2 ♂♂: [Turkey:] Incirkoy, 900 m, nord de Fethiye, Turquie Mugla 05.98 (CS); 2 ♀♀: Turkey, Fethiye 900-1000 m, IV.2012 (CS).

Identification key for the species of *Omphreus (Elladomphreus)*

1. Sides of pronotum with 6-8 setae 2
 - Sides of pronotum with only two setae, interstria 7 with six or more setigerous pores *aetolicus* Apfelbeck, 1904
2. Elytral interval 7 with one or two post-humeral setigerous pores. Elytra ellipsoidal, slightly enlarged in their posterior third *krueperi* Reitter, 1885
 - Elytral interval 7 with numerous setigerous pores, on average six. Elytra sub-parallel, only very slightly enlarged in their posterior third *eggeri* n. sp.

Acknowledgements – First of all, we would like to express our thanks to Manfred Egger who, as a formidable and tireless researcher, with his field research offers an important contribution to the knowledge of the troglobite and troglaxene fauna, especially in Greece, but not only. A special thanks also to Pier Mauro Giachino for allowing us to examine the specimen of *Omphreus aetolicus* from Mount Kaliakouda and for his clarifications on the genus *Elladopteris*.



Fig. 18 – Habitus of *Omphreus (Elladomphreus) eggeri* n.sp.



Fig. 19 – Original habitat of *Omphreus (Elladomphreus) eggeri* n.sp.



Fig. 20 – The state of the type locality of *Omphreus (Elladomphreus) eggeri* n.sp., after the construction of a new road.

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