

## ***Cebrio (Cebrio) elymicus* n. sp. from North-western Sicily, Italy (Coleoptera Elateridae Cebriionini)**

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### **ABSTRACT**

A new species of *Cebrio (Cebrio) Oliver*, 1790 (Coleoptera Elateridae Cebriionini) found in western Sicily is described below. *Cebrio (Cebrio) elymicus* n. sp. is well distinct morphologically from *C. (C.) benedicti* Fairmaire, 1849 the only other species of the nominotypical subgenus present in Sicily. Further comparative notes between *C. (C.) elymicus* n. sp. and the other species reported in neighboring territories, in particular North Africa and Sardinia, and useful biological information are provided. The discovery of this new species confirms the particular biodiversity of the Sicilian territory that requires greater attention and protection.

### **KEY WORDS**

Cebriionini; *Cebrio*; new species; taxonomy; biodiversity; Western Sicily.

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### **INTRODUCTION**

The genus *Cebrio* Olivier, 1790 includes about two hundred species distributed in southern Europe (from Portugal to Turkey) and North Africa. According to Zapata de La Vega & Sánchez-Ruiz (2017), all these species are divided into two subgenera. The nominotypical subgenus is widespread with about 25 species mainly in southern Europe and, to a lesser extent, in North Africa, where two species have recently been described for Algeria and Tunisia (Zapata de la Vega & Sánchez-Ruiz, 2020); all other species belong to the subgenus *Tibesia* Leach, 1824 and live mainly in the Iberian Peninsula and western North Africa up to Egypt.

In Sicily, the genus *Cebrio* is represented by three species (Sánchez-Ruiz & Löbl, 2007; Zapata de La Vega et al., 2020): *C. (Cebrio) benedicti* Fairmaire, 1849 endemic to Sicily and also reported on the island of Malta (Luigioni, 1929; Zapata de La Vega et al., 2020), *C. (Tibesia) germari* Ja-

quelin du Val, 1860 endemic to Sicily and *C. (T.) prazziae* Sparacio & Lo Cascio, 2023 endemic to the Island of Lampedusa (Sparacio & Lo Cascio, 2023).

In particular, *C. (C.) benedicti* was described by Fairmaire (1849) on material collected in Sicily and dedicated to the Sicilian malacologist and ornithologist Luigi Benoit.

Ragusa (1894) recorded *C. benedicti* from Sicily and attributed it to *C. corsicus* Jacquelin du Val, 1860 (endemic species of Corsica and Sardinia: Rattu, 2024), observing that, being a species dedicated to L. Benoit, Fairmaire (1849) should have named it “*benoiti*” and not “*benedicti*”.

Leoni (1906) based on this observation (Ragusa, 1894) renames Fairmaire’s taxon in *C. benoiti* as will be cited in numerous works (i.e., Porta, 1929; Luigioni, 1929; Gobbi & Platia, 1995; Sparacio, 1997).

*Cebrio benedicti*, as it is now correctly named (Sánchez-Ruiz & Löbl, 2007; Zapata de La Vega,

& Sánchez-Ruiz, 2017), is the only species of the nominotypical subgenus present in Sicily.

In the following work, a new species belonging to the nominotypical subgenus, recently found in western Sicily, is described.

## MATERIAL AND METHODS

### *Study area*

The study area is located within the Natural Reserve “Monte Cofano”, in the locality Baglio Cofano, at approximately 250 meters above sea level. It is an intensively grazed area, characterized by a garrigue dominated by shrub species such as *Ampelodesmos mauritanicus* (Poir.) T. Durand & Schinz, *Chamaerops humilis* L. and *Euphorbia dendroides* L., and from a synphytosociological point of view, it is characterized by the Sicilian coastal-hilly series, of the wild olive (*Oleo-Euphorbia dendroidis* euphorbietoso *bivonae* sigmetum) (Gianguzzi et al., 2005).

The annual average temperatures are influenced by the mitigating effect of the sea and range from 18.1–19 °C, with January being the coldest month and August the hottest. Rainfall records show annual average precipitation ranging from 502.4 mm (Capo S. Vito) to 602.7 mm (S. Andrea di Bonagia). The overall regime shows a concentration of rainfalls between October and February, during which over 85% of the annual precipitation occurs. December and January are the rainiest months, while July is the driest (SIAS, 2025). Based on the bioclimatic classification defined according to the indices of Rivas-Martínez (1996) applied to the aforementioned thermopluviometric records, the study area falls predominantly within the lower thermomediterranean zone, with an upper dry ombrotopy (Gianguzzi & La Mantia, 2000).

### *Samples*

*Cebrio* specimens, belonging to the subnominal subgenus, were sampled during a single session conducted in the afternoon hours of November 23, 2023. Six specimens were collected from small troughs used for livestock watering, two were caught in flight in the minutes immediately preceding dusk, and finally, two specimens were intercep-

ted by a light trap. The latter is based on the model described, among others, by Yang et al. (2013) and illuminated by a UV LED of 390–405 nm.

Photos of the habitat, habitus and other morphological characters were taken with a Canon Eos 100D camera with an EF Macro 100mm lens and mounted on a Manfrotto micro-slider movement system. The images were then processed with Combine ZP software and enhanced with Photoshop CS6 software. The measurements were taken (in mm) with a digital calliper or a lens equipped with a millimetric scale. Total length: from the anterior edge of the labrum to the elytral apex; body width measured at the humeri (the maximum visible in dorsal view in these male specimens); elytral length: measured from the maximum forward protrusion of the elytra at their apex; diameter of an eye in dorsal view: measured from the anterior edge to the rear edge; width of an eye in dorsal view: measured from the inner edge to the outer edge; pronotum width: the maximum visible in dorsal view measured between the spine-like apophyses of the hind angles.

The systematic approach adopted in the paper follows that provided by Zapata de La Vega & Sánchez-Ruiz (2017) and other works cited in the text. Samples data are listed using the standardised format suggested by Chester et al. (2019).

ABBREVIATIONS. Vittorio Aliquò collection, Museum of Zoology “Pietro Doderlein”, University of Palermo, Italy (CVA); Calogero Muscarella collection, Palermo, Italy (CMC); Museo Civico di Storia Naturale “Giacomo Doria”, Genova, Italy (MSNG); Ignazio Sparacio collection, Palermo, Italy (CIS) - EL/CW: ratio of length of elytron to body width; ML/MW: length to width ratio of metafemura; EYD/EYW: diameter to width ratio of eye in dorsal view.

## RESULTS

### *Systematics*

Ordo COLEOPTERA Linnaeus, 1758  
 Familia ELATERIDAE Leach, 1815  
 Subfamilia ELATERINAE Leach, 1815  
 Tribus CEBRIONINI Latreille, 1802  
 Genus *Cebrio* Olivier, 1790  
 Subgenus *Cebrio* Olivier, 1790

***Cebrio (Cebrio) elymicus* n. sp.**

<https://www.zoobank.org/3A60A99A-A874-4121-A59D-581E96465E0F>

TYPE MATERIAL. Italy, North-western Sicily: Monte Cofano, Baglio Cofano.

TYPE MATERIAL. Holotype (Figs. 1, 3, 5). ITALY • 1 specimen male; Sicily, Monte Cofano, 23 Nov. 2023, legit C. Muscarella (MSNG). Paratypes. ITALY • 5 male specimens; same data of the holotype (CMC) (Fig. 1); 4 male specimens; same data of the holotype (CIS).

OTHER MATERIAL EXAMINED. *Cebrio (C.) benedicti* Fairmaire, 1849. ITALY • Sicily, Palermo: Alimena; 26 Oct. 1993; 1 specimen male (CIS); Gratteri; 13 Oct. 2011; 1 specimen male (CVA); Cefalù; 27 Oct. 2003; 1 specimen male (CIS); Palermo, Addaura; 18 Oct. 1970; 1 specimen male (CVA); 2 male specimens (CIS); Altofonte; 04 Oct. 1963; 1 specimen male (CVA); Palermo, Bello-lampo, Monte Castellaccio; 14 Dec. 2024; 1 specimen male (CMC); Palermo, Mondello; 1 Oct. 2004; 1 specimen male (CIS); Palermo, Parco della Favorita; 03 Oct. 1971; 1 specimen male (CVA); idem; 4 Oct. 1998; 3 male specimens (CIS); idem; 11 Oct. 1998; 9 male specimens (CIS); idem; 7 Nov. 2010; 1 specimen male (CMC); idem; Oct. 2021; 8 male specimens (CMC); Godrano; 26 Oct. 1980; 1 specimen male; leg. M. Arnone (CVA); Ficuzza: lago Scanzano; 31 Jan. 2024; 1 specimen male (CMC); Villagrazia di Palermo; 22 Oct. 1994; 2 male specimens (CVA). Trapani: Erice; 8 Sept. 1994; 1 specimen male (CIS); Monte Erice; 20 Sept. 1969; 2 male specimens; leg. A. Carapezza (CVA). Ragusa: Palazzolo Acreide; 24/27 Aug. 2001; 1 specimen male (CS). Siracusa; 25 Oct. 1967; 2 male specimens (CVA).

DESCRIPTION OF HOLOTYPE (Figs. 1, 3, 5, 6). Male. Total length 17 mm; body width 5.8 mm; EL/CW: 2.1. Dorsal side with shiny integuments. Head, antennae, pronotum, scutellum and elytra dark in colour; legs with yellowish femura, except for the apex that is darker; tibiae darkened in the basal half and yellowish in the apical half; tarsi darkened; mesosternum is dark brown in colour, abdomen is yellowish. Yellowish pubescence short, evenly distributed and never particularly dense; the sternites are more pubescent compared to the tergites.

Punctuation consisting of round, impressed and large piliferous punctures, on non microreticulate integument. The punctures on the head are denser and close together; no punctuation on the temples.

On the pronotum the punctuation is spaced, with spaces between punctures on average greater than the diameter of one-two punctures, especially on the disc. On the scutellum, minute and superficial. On the elytra, the punctures are large, deep, close-set, densely packed and irregular on the disk, more spaced only on the humeri.

Epistoma and labrum lying on the same slightly inclined plane. Labrum broad, subrectangular, straight at the sides and on the anterior edge showing long yellowish bristling setae. Mandibles quite long, falcate with an acute apex and long hairs reclining and pointing forwards at the base of external face; palps brownish, the 2nd and 3rd yellowish and rounded at the apex. Frons between the eyes with a width of 3.6 the diameter of an eye in dorsal view.

Eyes sharply protruding with respect to the temples, in dorsal view, the outer edge of the eyes is semicircular; EYD/EYW: 1.4.

Antennae thin, covered with short and reclined pubescence, 11 antennomeres, no longer than half the body, exceeding the apex of hind angles of pronotum by about 4 antennomeres; 1st antennomere clearly longer than wide, almost as long as the 4th antennomere, claviform and mildly curved in the dorsal view, truncated at the apex; the 2nd and 3rd antennomeres are very much shorter and moniliform, the 4th is significantly shorter than the 1st-3rd together, the 4th to the 8th are very elongated and flattened, of almost equal length, with the apex moderately dilated; the 9th and 10th with the apex very dilated; the 11th antennomere is slightly shorter than the 10th, slightly narrowing from the distal sixth to form a short, eccentric conical appendage.

Pronotum subtrapezoidal, slightly transverse, 1.6 wider than long, with long, yellowish pubescence slightly raised and oriented backwards on the lateral and hind edges, oriented forwards, on the anterior edge; lateral edges straight and slightly converging in a forwards direction, ending in almost straight posterior angles, pointed, little divergent, prolonged beyond the basal edge of the pronotum; anterior edge arched, clearly advanced at the centre with anterior angles rounded; basal edge slightly protruding backwards at the centre.

Scutellum subtriangular, almost as long as wide, with rounded apex and slightly hollowed out at the base. Elytra broad, elongated, 4.5 longer than the pronotum, width/length ratio = 0.43, sub-rectilinear on the sides, narrowed in the preapical area and rounded at the apex; humeri rounded and convex; striae are pronounced with interstriae sunken.

Protibiae and mesotibiae compressed in dorsal ventral direction. Protibiae dilated towards the apex, sinuate at the apex and with an apical mucro obtuse and slightly protruding; outer edge of mesotibiae and metatibiae with short spinules; pro-, meso- and metatibiae with two apical spinules of subequal length; ML/MW: 3.5; first and last articles of the tarsi claviform at the apex; the tarsomeres 2–4 shorter. Claws elongated, sickle-shaped and slightly dilated at the base. Length of mesotibia/1st tarsomere = 1.33 mm.

Tergites with shiny appearance with minute, slightly impressed and sparse punctures; the last tergite is more densely punctuated and pubescent in the distal and lateral area.

Genital structure as shown in Fig. 5.

VARIABILITY. The male paratypes do not show substantial morphological variation compared to the holotype. In two specimens the elytra are brown-black, in one of these the base of the elytra is brown. Total length varies from 15 to 17.1 mm (average 16.4 mm); body width between 5.2 and 6 mm (average 5.9 mm); EL/CW between 1.25 and 1.5 mm (average 1.35 mm); ML/MW between 3.35 and 3.8 mm (average 3.5 mm).

Female unknown.

ETYMOLOGY. The specific name refers to the very ancient people of the Elymi, who disappeared after the 4th century BC, who inhabited this western part of Sicily where the new species was found.

BIOLOGY AND DISTRIBUTION. Currently, we have little information about the biology of *Cebrio (C.) elymicus* n. sp. From what was observed during the only occasion on which they were found active, this species exhibits autumnal phenology, crepuscular habits, is attracted to lights, and is linked to rains. These characteristics have also been observed in other species of *Cebrio (C.)* (Reveliere, 1874; Leoni, 1905; Rattu, 2024), including *C. (C.) benedicti* in Sicily. Likely, as in the case of other congeneric species (Rattu, 2024), the female stays in a shallow burrow dug in the ground from where she

releases pheromones to attract males, and this occurs in the presence of a high level of atmospheric humidity.

*Cebrio (C.) elymicus* n. sp. is known only from the type locality in North-western Sicily, where it occurs in syntopy with *Geotrogus michaelis* (Sparacio, 2014) (Coleoptera Scarabaeoidea Melolonthidae) (Sparacio, 2014; Muscarella et al., 2024).

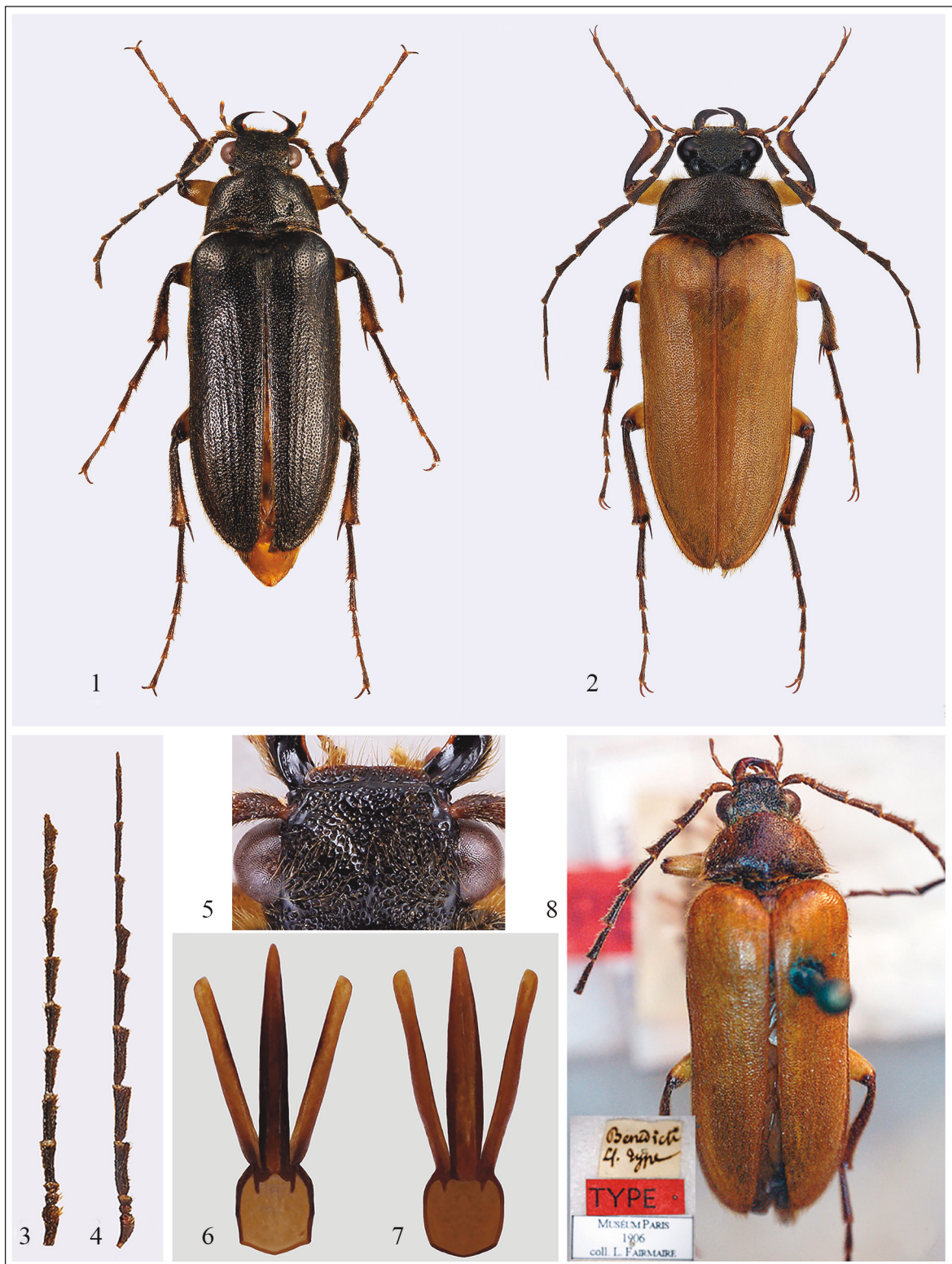
REMARKS. *Cebrio (C.) elymicus* n. sp. appears morphologically well distinct from *C. (C.) benedicti* (Figs. 2, 4, 7, 8), the other species of the subgenus *Cebrio* present in Sicily.

*Cebrio (C.) benedicti* is yellowish in colour on the dorsal surface with longer pubescence; the labrum is shorter on the sides, slightly rounded forward; the antennae longer exceeding half the length of the elytra; the scape clearly shorter than the 4th antennomere, 2nd slightly shorter than the 3rd, the 4th clearly longer than the 1st–3rd together, the last is long and thin with slight apical constriction, clearly longer than the penultimate, with a pointed apex; the pronotum is shorter and more transverse, subrectangular, 2.1 wider than long, smaller posterior angles, pointed and clearly divergent, anterior edge slightly advanced in the center, posterior edge clearly protruding backwards in the center. The elytra are narrower in the posterior half, smaller and less dense punctures, well spaced also on the disc, only 2–3 striae slightly pronounced; in the protibiae the apical mucro is more protruding and pointed.

*Cebrio (C.) elymicus* n. sp. is also morphologically different from the two North African species *C. (C.) mantillerii* Zapata de la Vega et Sánchez-Ruiz, 2020 from Algeria and *C. (C.) tunecinus* Zapata de la Vega et Sánchez-Ruiz, 2020 from Tunisia.

In particular, *C. (C.) elymicus* n. sp. differs from these two species (see also Zapata de la Vega & Sánchez-Ruiz, 2020) above all for the uniform black color of the body including the posterior angles of the pronotum which are also shorter, the shape and length of the elytra, the shape of the aedeagus in particular the less narrow parameres in the preapical area and with a less wide and more rounded apex; from *C. (C.) tunecinus* also for its larger size.

Three species are reported for Sardinia belonging to the nominate subgenus (Rattu, 2024): *C. (C.) sardous* Perris, 1869, *C. (C.) supramuntanus* Rattu et Cillo, 2012 and *C. (C.) corsicus*.



Figures 1, 3, 5, 6. *Cebrio (C.) elymicus* n. sp., holotype from Mount Cofano (Italy, North-western Sicily). Fig. 1: habitus in dorsal view. Fig. 3: antennae. Fig. 5: head. Fig. 6: aedeagus. Figures 2, 4, 7. *Cebrio (C.) benedicti* from Parco della Favorita near Palermo (Italy, Sicily). Fig. 2: habitus in dorsal view. Fig. 4: antennae. Fig. 7: Aedeagus. Figure 8. Syntype of *Cebrio (C.) benedicti* by Fairmaire collection - Muséum national d'Histoire naturelle de Paris (from Zapata de La Vega et al., 2020).

*Cebrio (C.) elymicus* n. sp. differs from these Sardinian species (see also Rattu, 2012; Rattu, 2024; Rattu & Cillo, 2012) above all for the different shape and colour of the body, shape and length of the antennae and for the different aedeagus. Furthermore, *C. (C.) elymicus* n. sp. is different from these Sardinian species also for the arrangement and length of the pubescence, which is shorter and sparser, especially compared to *C. (C.) sardous* and *C. (C.) corsicus*.

## CONSIDERATIONS AND CONCLUSIONS

The discovery of *Cebrio (C.) elymicus* n. sp. adds another important piece to the coleopterological fauna, and biodiversity in general, of Sicily, highlighting that even in an entomologically well-explored region, the level of knowledge cannot be considered optimal. This is not only due to a lack of specialized research but also and above all to the fact that the presence or behavior of many species is influenced by many factors, largely unknown, which determine their apparent rarity, making them difficult to sample. It is worth noting that the study area has been the subject of intense and methodical research, especially in the last decade (Muscarella et al., 2024), and only recently this new taxon was identified, which appears to be very well differentiated from the most closely related species. Further and more in-depth research could allow us to better define its biology, thus acquiring fundamental data to propose adequate conservation measures for a species that, according to current knowledge, appears to be localized and subject to multiple pressures and threats.

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