

## The Lampyridae of the Achille Costa's (1823-1898) collection, preserved at the Zoological Museum of Naples (Italy)

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Fanti F., Improta R., 2020. The Lampyridae of the Achille Costa's (1823-1898) collection, preserved at the Zoological Museum of Naples (Italy). *Baltic J. Coleopterol.*, 20(1): 7- 14.

Specimens of the family Lampyridae (Insecta, Coleoptera) from the Achille Costa collection at the Zoological Museum of Naples (Italy) are reviewed to reveal their cultural and scientific significance. This collection is especially important to Lampyridae experts, given the age, historical significance and origin of the specimens (especially those from Southern Italy). The collection is also noted for containing some specimens of the typical series of *Lampyris brutia* A. Costa, 1881.

Key words: Lampyridae, A. Costa, typical series, scientific heritage, Zoological Museum of Naples.

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### INTRODUCTION

The Achille Costa collection (Lecce, 10 August 1823 - Roma, 17 November 1898) is one of the most important historical collections from Southern Italy and is of enormous importance for studies of the evolution and dynamics of species, especially concerning the entomological populations of Southern Italy. Costa visited on various trips (*e.g.*, Costa 1847, 1858, 1863, 1874, 1877, 1881, 1882; Pantaleoni 2012) and collected numerous species, some new to science that he described in various works. We have personally studied (Fanti & Improta 2016) a species of the Cantharidae family ("sister group" of Lampyridae) described by Costa himself, but no one had ever studied the family Lampyridae of this collection

from a taxonomic/systematic point of view, which is therefore the subject of this note (Fig. 1). His historical collection (Poggi & Conci 1996) also turned out to be the first of Italy studied, using modern criteria, for the Lampyridae family. We also highlight the presence of specimens of the typical series of *Lampyris brutia* A. Costa, 1881 previously overlooked by experts.

### MATERIALS AND METHODS

The materials have been kept in the Achille Costa collection at the Zoological Museum of Naples (Campania, Italy) since its establishment. The Coleoptera collection is in relatively good condition, organized in new entomological boxes with

a glass cover. It has been reorganized (a job completed in 1996 that lasted about 10 years) due to the bad conditions in which the original boxes were placed. The specimens are kept in the box Coleoptera Cembrionidae C,3,2 and are stapled and contain the original handwritten labels by Costa, to which are sometimes added (under the Costa Management) a label printed by hand bearing the catalog number. The specimens are then reported on the museum's cards with an alphanumeric number (Fig. 2). We studied the specimens visually and under a microscope, then photographed each one, after which we compared them with the general literature and that produced by Costa himself. The following are reported: (1) the specific name intended by Costa and the number of specimens in the collection; (2) the data written on the original labels (The // indicate that the original script is on another line. We only use italics to report the specific name, while the location in the originals is often written in italics and a few times in typed print); (3) notes with the sex of the specimen and the determination of the name of the currently valid species (with author and date) and sometimes also other relevant information deemed important; and (4) the number present on the museum's cards. Our determinations, with all the taxonomic problems present today, are based on the macroscopic characters, given that we preferred not to alter the specimens (for example by extracting the male aedeagus), and given the historical importance of the specimens and their fragility due to their age. The determinations follow the world literature and the taxonomy in force, but the latter for some species (*e.g.*, *Luciola lusitanica*, which is a complex of species: Day et al. 2014) is not yet very stable and thus there is a concrete possibility that some specific names will go out of use (synonyms). The localities indicated on the labels by the author are easily identifiable; however, for any problems please refer to the work of Pantaleoni (2005).

## RESULTS

**Without specific name** (one specimen):  
"Barletta"

NOTE: 1 female. It is *Lampyris fuscata fuscata* Geisthardt, 1987.

N.° of card: 13 **sub** *Dictyopterus minutus*.

**Without specific name** (one specimen):

"Falde d. Sila" = Slopes of Sila

NOTE: 1 female. It is *Lampyris fuscata fuscata* Geisthardt, 1987 or *Lampyris brutia* A. Costa, 1881.

N.° of card: 17.

**Nyctophila reichei** (one specimen):

"reichei female symbol" "Brindisi" [in print]  
"[hexagonal white label identifying a Type]"

NOTE: 1 female. It is *Lampyris fuscata apuliae* Geisthardt, 1987. Today, the meaning of the hexagonal label indicating a presumed Type is totally unknown.

N.° of card: 18.

**Lampyris noctiluca** (six specimens):

"male symbol" "*Lampyris//noctiluca//splendidula* [plus an illegible letter or number]// Napoli."

NOTE: 1 male. It is *Lampyris vesuvius vesuvius* Geisthardt, 2007.

N.° of card: 26.

[without label]

NOTE: 1 female. Undetermined.

N.° of card: 27.

"Rionero" "M.°Zool.° N.° 44649"

NOTE: 1 female. It is *Lampyris fuscata fuscata* Geisthardt, 1987 or *Lampyris vesuvius vesuvius* Geisthardt, 2007.

N.° of card: 28.

"Abruzzi" "M.°Zool.° N.° 21350"

NOTE: 1 female. It is *Lampyris fuscata fuscata* Geisthardt, 1987

N.° of card: 29.

"Abruzzi"

NOTE: 1 female. It is *Lampyris fuscata fuscata* Geisthardt, 1987

N.° of card: 30.

"Abruzzi" "M.°Zool.° N.° 21351"

NOTE: 1 male. It is *Lampyris fuscata fuscata* Geisthardt, 1987.  
N.° of card: 31.

***Lampyris raymondi*** (one specimen):  
“*Lampyris*//*Raymondi* M.C.//female symbol Calabria”  
NOTE: 1 female. It is probably *Lampyris brutia* A. Costa, 1881.  
N.° of card: 32A.

***Luciola*** (one specimen):  
“*Luciola*//...//Caramanico” “M.°Zool.° N.° 15999”  
NOTE: 1 male. It is *Luciola lusitanica* (Charpentier, 1825).  
N.° of card: 1A.

**Without specific name** (five specimens):  
“Cava” [in print]  
NOTE: 1 female. It is *Lampyris vesuvius vesuvius* Geisthardt, 2007.  
N.° of card: 2.

“Sarno”  
NOTE: 1 female. It is *Lampyris vesuvius vesuvius* Geisthardt, 2007.  
N.° of card: 3.

“Nola”  
NOTE: 1 male. It is *Lampyris vesuvius vesuvius* Geisthardt, 2007.  
N.° of card: 4.

[without label]  
NOTE: 1 larva. It is *Lampyris* sp.  
N.° of card: 5.

“Barletta” “M.°Zool.° N.° 28446”  
NOTE: 1 female. It is *Lampyris fuscata fuscata* Geisthardt, 1987.  
N.° of card: 6.

***Lampyris molesta*** (two specimens):  
“Barletta” “*L. molesta*//j. du V.//female symbol”  
NOTE: 1 female. It is *Lampyris fuscata fuscata* Geisthardt, 1987.  
N.° of card: 7.

[without label]  
NOTE: 1 female. It is *Lampyris fuscata fuscata* Geisthardt, 1987.  
N.° of card: 8.

***Lampyris soror*** (two specimens):  
“Barletta” “*Lampyris*// variet.//*soror* Schaum// male symbol”  
NOTE: 1 male. It is *Lampyris fuscata fuscata* Geisthardt, 1987.  
N.° of card: 9.

“Barletta”  
NOTE: 1 male. It is *Lampyris fuscata fuscata* Geisthardt, 1987.  
N.° of card: 10.

**Without specific name** (three specimens):  
“Alburno” [in print]  
NOTE: 1 female. It is *Lampyris vesuvius vesuvius* Geisthardt, 2007.  
N.° of card: 11.

“Alburno” [in print]  
NOTE: 1 larva. It is *Lampyris vesuvius vesuvius* Geisthardt, 2007.  
N.° of card: 12.

“Persano” [in print] “M.° Zool.° N.° 24604”  
NOTE: 1 female. It is *Lampyris vesuvius vesuvius* Geisthardt, 2007.  
N.° of card: 13.

***C. italica*** (one specimen):  
“*C. italica*// larva.// Napoli.”  
NOTE: 1 larva. It is *Lampyris vesuvius vesuvius*.  
N.° of card: 14.

***Lampyris brutia*** (six specimens): (Figs. 3A-4A)  
“*Lampyris*//*brutia* m [written in pencil]//Calabria” “Cirò” “M.° Zool.° N.° 22608” (Fig. 3B)  
NOTE: 1 female. It is *Lampyris brutia* A. Costa, 1881.  
Geisthardt (1987) designated the Lectotype of this species based on a male specimen from the Ernest Olivier collection preserved in the National Museum of Natural History in Paris, which Costa himself had sent to Olivier for study (Olivier 1884

[“plusieurs exemplaires male symbol et female symbol. Type male symbol / female symbol !!”]).

Geisthardt, however, had not sought and was not interested (ICZN 1999 Recommendation 74D.) in the Achille Costa collection of the Zoological Museum of Naples, where six other specimens of the typical series are still preserved, with original labels “Cirò” (which is the type locality. Geisthardt’s Lectotype does not report localities, including probably the female illustrated in the original work (see: ICZN 1999 Recommendation 74B.). These specimens present in the Costa col-

lection, after the designation of the Lectotype made by Geisthardt, automatically became Paralectotypes (ICZN 1999 Art. 74.1.3.). Therefore, to each specimen, we add (which has not been done previously) a red card with typewritten “Paralectotypus” (ICZN 1999 Recommendation 74F.) to facilitate future finds.

N.° of card: 15A.

[without label]

NOTE: 1 male. It is *Lampyris brutia* A. Costa, 1881.

N.° of card: 16A.



Fig. 1. Achille Costa Collection (Zoological Museum of Naples). A: label of the entomological box containing the Lampyridae; B: overview of the entomological box containing the Lampyridae; C: detail of the specimens of the family Lampyridae. (The numbers are progressive and do not correspond to the card numbers.)

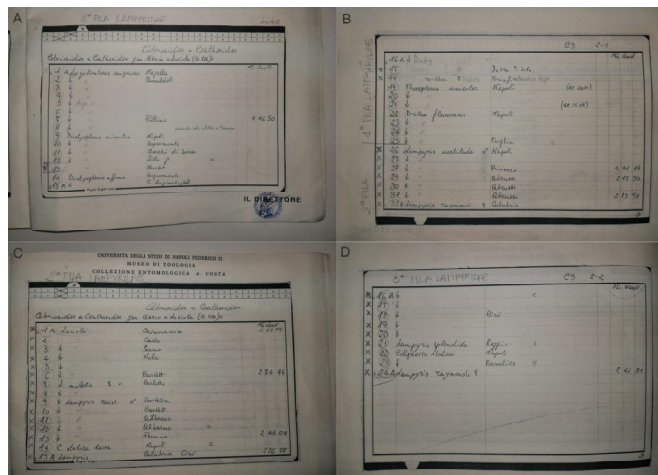


Fig. 2. Achille Costa Collection (Zoological Museum of Naples). ABCD: the four sheets of the cartaceous register (cards) of the Museum concerning the Lampyridae family.

[without label]  
NOTE: 1 female. It is *Lampyris brutia* A. Costa, 1881.  
N.° of card: 17.

“Cirò” (Fig. 4B)  
NOTE: 1 female. It is *Lampyris brutia* A. Costa, 1881.  
N.° of card: 18.

[without label]  
NOTE: 1 female. It is *Lampyris brutia* A. Costa, 1881.  
N.° of card: 19.

[without label]  
NOTE: 1 male. It is *Lampyris brutia* A. Costa, 1881.  
N.° of card: 20.

*Lampyris splendidula* (one specimen):  
“*Lampyris/splendidula/Reggio*  
[plus a letter not well decipherable:  
“L.” or “C.”]”

NOTE: 1 male. We attribute this specimen to *Lamprohiza morio* Baudi, 1875. At one time, the populations of Southern Italy were ascribed to *Lamprohiza splendidula* (Linnaeus, 1767), which is a species of Europe, present in Italy only in the North. The populations of Southern Italy probably must be referred to *Lamprohiza morio*, known from Etruria and the Ascoli Piceno Mountains (Baudi 1875), although taxonomic studies are underway on this genus and populations that could reveal the presence of cryptic species. *Lamprohiza morio* would therefore be new for Calabria; however, there are also reports of Sila such as *Lamprohiza splendidula* (Luigioni 1929; Angelini 1991). We

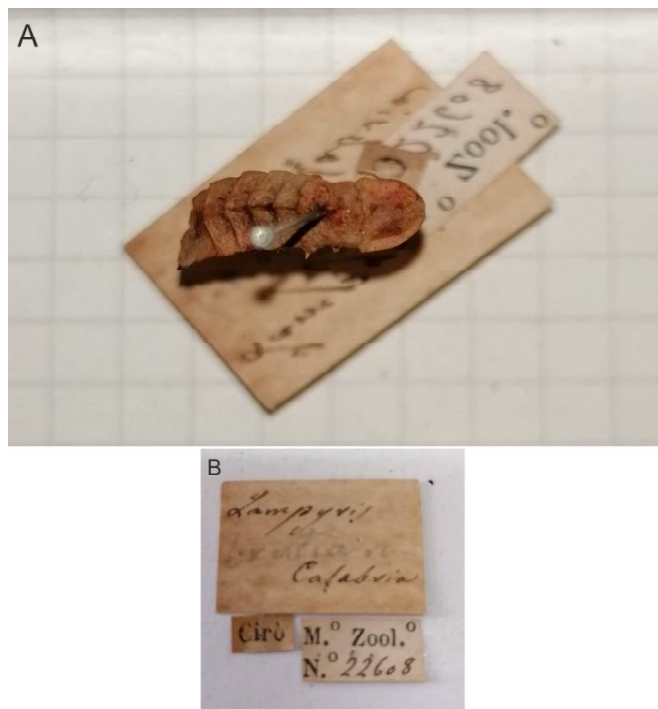


Fig. 3. Achille Costa Collection (Zoological Museum of Naples). A: *Paralectotypus*, habitus; B: *Paralectotypus*, original label.

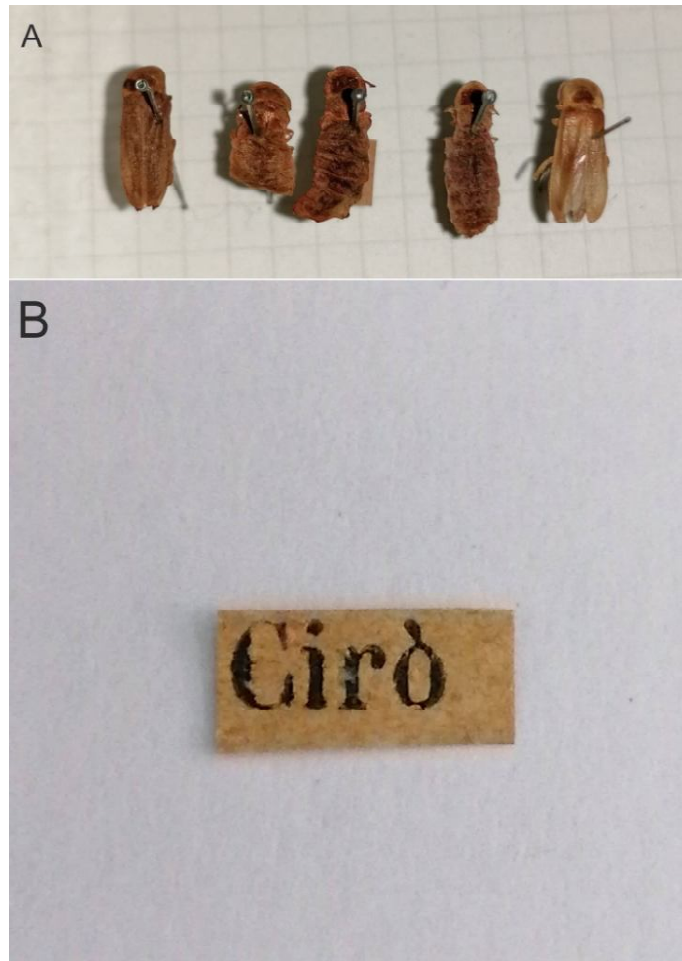


Fig. 4. Achille Costa Collection (Zoological Museum of Naples). A: *Paralectotypi*, habitus; B: *Paralectotypus* (card number: 18), original label.

have not carried out aedeagic-morphological studies in this regard, given the fragility of the specimen.

N.° of card: 21.

***Colophoita italica*** (two specimens):

“*Colophoita//italica*, L [L uncertain and not well decipherable]//Napoli.”

NOTE: 1 male. It is *Luciola lusitanica* (Charpentier, 1825). The genera *Colophotia* sic! and *Luciola* have been considered synonyms for a long time.

N.° of card: 22.

“Baselice”

NOTE: 1 male. It is *Luciola lusitanica* (Charpentier, 1825).

N.° of card: 23.

***Lampyris raymondi*** (one specimen):

“M.° Zool.° N.° 26281” “*Lampyris//Raymondi* Muls.// female symbol”

NOTE: 1 female. Undetermined.

N.° of card: 24A.

## DISCUSSION

The Lampyridae (Coleoptera) of the Achille Costa's collection turned out to contain 34 specimens, with three genera and six species / subspecies that roughly cover the main locations listed and mentioned in his works. Specimens from other countries or specimens collected by other naturalists are not present. The original determinations were clearly affected by the elapsed time but were certainly well executed if we consider the criteria of the time in which Costa worked. During that period, in fact, determinations were based only on the modifications of some structures (*e.g.*, pronotum, coloring, shape of the pygidium) which proved, in the following decades, to be insufficient characters for an adequate determination. Costa undoubtedly had a clear understanding of the genera he studied and the sex or stages of the specimens, which was not at all obvious for those years. As highlighted above, although not particularly rich in specimens, the collection still has an intrinsic importance for the age of the specimens and for any biogeographical studies. It also still preserves specimens of the typical series of *Lampyris brutia* A. Costa, 1881 (to be considered Paralectotypes), demonstrating the importance of good conservation and management of old collections, as is currently done by the Zoological Museum of Naples. The Lectotype of *Lampyris brutia* was, in fact, designated on the basis of typical specimens now preserved in the Museum of Paris (Geisthardt 1987), perhaps because the Costa collection had not been so usable or well-known. This demonstrates why all collections, and in particular the historical ones, should be guarded to protect their important national and world scientific heritage.

## ACKNOWLEDGEMENTS

We thank the Prof. Piergiulio Cappelletti (Director of the Museum Center of Natural and Physical Sciences) for allowing us to study the collection. We are very grateful to Maximilian and Mark Pankowski (Rockville, Maryland, USA) for their valuable linguistic revision of the text.

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Received: 15.06.2020

Accepted: 15.08.2020

Published: 31.08.2020