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## Pennatulacea described by Sebastiano Richiardi present in the Cnidaria collection of the Zoological Museum “La Specola” in Florence (Italy)

**Abstract** - In this short note thirteen species of Pennatulacea described by Sebastiano Richiardi in 1869 and stored in the Zoological Museum “La Specola” of the University of Florence are listed. Data collection and the current location for each of them are reported. Unfortunately, two specimens have been lost, but eleven are still present and available to specialists.

**Key words:** type specimens, Richiardi, Pennatulacea.

**Riassunto** - Pennatulacei descritti da Sebastiano Richiardi presenti nella collezione di Cnidari del Museo Zoologico “La Specola” di Firenze (Italia).

In questa breve nota sono elencate tredici specie di Pennatulacea descritte da Sebastiano Richiardi nel 1869 e depositate nel Museo Zoologico “La Specola” dell’Università di Firenze. Per ognuna di queste sono riportati i dati di collezione e l’attuale disponibilità. Due campioni sono purtroppo andati perduti, ma undici sono ancora presenti e accessibili agli specialisti.

**Parole chiave:** tipi, Richiardi, Pennatulacea.

### Introduction

The Cnidaria collection of the Zoological Museum “La Specola”, University of Florence (MZUF) comprises several interesting type specimens. The collection includes material from the West Indian region donated to the Museum by Giovanni Michelotti in 1865 and described by Eduarde Placide Duchassaing and Michelotti in 1860 and 1864 (Volpi & Benvenuti, 2003), and specimens collected during the hydrographical expedition in the Red Sea of the R.N. “Ammiraglio Magnaghi” (1923-1924), described by Enrica Calabresi between 1926 and 1928 (Volpi & Innocenti, 2000).

Species of Pennatulacea studied by Sebastiano Richiardi and illustrated in his monograph on the order (Richiardi, 1869; reviewed by Verrill, 1870), some of which described as new ones, have been found while reorganising the specimens

belonging to that order. All the samples are recognizable from a parchment label handwritten by Richiardi tied by string to the pennatulaceans (Fig. 1).



Fig. 1 - Example of the handwritten parchment label, tied to the specimens studied by S. Richiardi.  
Fig. 1 - Esempio di etichetta di pergamena scritta a mano, legata agli esemplari studiati da S. Richiardi.

At present, none of the new species established by Richiardi seems to be valid, as listed by Williams (1999) and by López-González *et al.* (2000).

Sebastiano Richiardi (Lanzo Torinese, TO, 24.II.1834 - Pisa, 1.VIII.1904) was a professor of Zoology and Comparative Anatomy. From 1861 to 1871 he taught and was Director of the Museum of Comparative Anatomy in the Royal University of Bologna; from 1871 to 1904 he was the Director of the Museum of Zoology and Comparative Anatomy of Pisa University, and the Dean of the University from 1891 to 1893. His main areas of research were parasitic crustaceans and cetaceans, but he also published papers on the anatomy and natural history of both vertebrates and invertebrates (Ficalbi, 1904). He received from Prof. Adolfo Targioni Tozzetti the here below listed material, as assured in his monograph (Richiardi, 1869), in fact for some species it is declared in the text that they are from Florence (*Pennatula targionii*, *Pteroides grayi*, *Cavernularia haimeii*, *C. defilippii*), for the other species the origin is not evident.

Few species listed in the monograph are still present in the collection of the Natural History Museum of Pisa University, in Calci (PI). Unfortunately such collection has moved several times and many specimens have been lost or at present are unrecognizable (M. Dellacasa, pers. comm.).

### List of specimens

Thirteen species of Pennatulacea (Anthozoa, Alcyoniarina) are listed with the original name given by Richiardi and with the historical information found in the documents of La Specola Museum archive, such as catalogues and information sheets; of the latter, the Italian text is given and the English translation is given in

square brackets for pertinent remarks by A. Targioni Tozzetti and by Angelo Senna on Richiardi's specimens. These specimens are listed in the old catalogue dated 1843, where the cnidarians are indicated as present in the previous "Catalogo degli Zoofiti" compiled in 1825 (Fig. 2). The material before 1843 is unfortunately lacking of data regarding the precise locality (often indicated by "generalized" localities, for instance, "Mediterranean Sea"), date and collector. The catalogues and the information sheets were compiled first by Targioni Tozzetti and later on by Senna. They both studied the specimens after Richiardi and discussed their identification with the literature available at that time (Kölliker, 1872; Schultze, 1871). At present, it was possible to ascertain the current status of only few species, indicated in the present determination (Williams, 1995).

For further data on the old catalogues and on the information sheets, see Volpi & Benvenuti (2003).

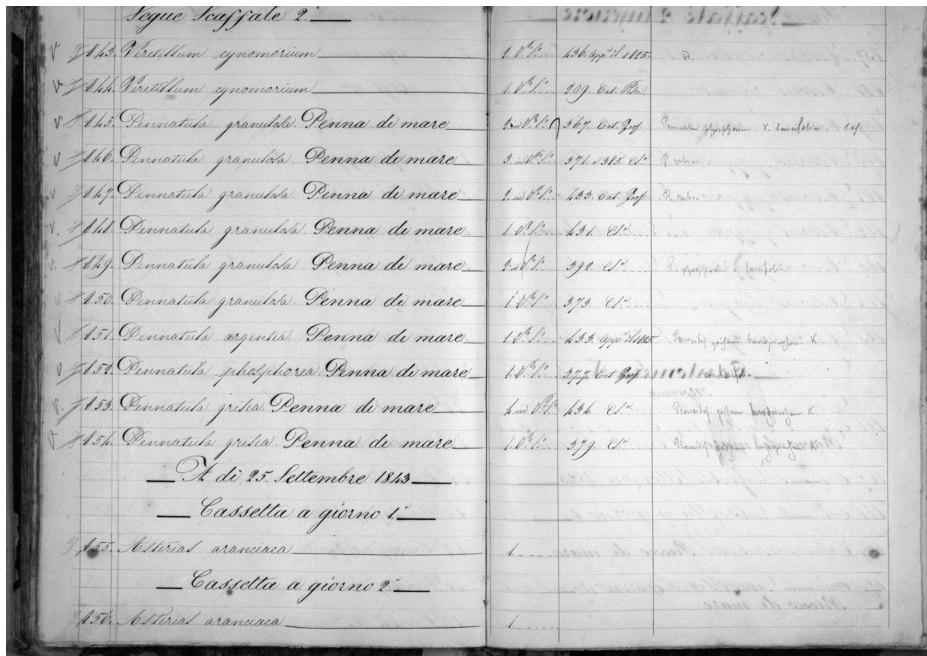


Fig. 2 - A page of the 1843 Catalogue, with the list of some pennatulaceans; among them, the specimens studied by S. Richiardi.

Fig. 2 - Una pagina del catalogo del 1843, con la lista di alcuni pennatulacei; tra loro, gli esemplari studiati da S. Richiardi.

#### Nomenclatural notes

When the monograph was published, the International Code of Zoological Nomenclature was not yet compiled. Consequently, Richiardi did not indicate the holotype and possible paratypes for each new species described. We presume that the species established by Richiardi, still extant in La Specola Museum, should be considered holotypes, as they were not found in the Pisa Museum and thus they were probably wholly deposited in Florence.

## Abbreviations, terms and acronyms

<=before; pur.=purchased; det.=determination/author; don.=donated by; loc. cit./l.c.=*locus citatus*; Patria?=unknown locality; R.=Royal; sp.=specimen/s; var.=*varietas*; MZUF=Florence University Zoology Museum Cnidaria catalogue collection number.

Class Anthozoa  
Subclass Octocorallia  
Order Pennatulacea  
Family Pennatulidae

*Pennatula phosphorea* L. 1758

Richiardi 1869: 19-24, tab. I, figs. 1-2 and tab. XIV, fig. 130-131.

Mediterranean Sea, <1843, 2 sp. (MZUF 772).

Present determination: *P. phosphorea* L. 1758.

*Pennatula rubra* Bohadsch 1761

Richiardi 1869: 24-29, tab. I, fig. 4, tab. II, figs. 11-13.

Mediterranean Sea, <1843, redetermined by A. Senna as *P. ?rubra* [sic!] Ellis, 1 sp. (MZUF 768).

Mediterranean Sea, <1843, redetermined by A. Senna as *P. rubra* Ellis, 2 sp. (MZUF 769).

Present determination: *P. rubra* (Ellis 1761).

*Pennatula targionii* Richiardi 1869

Richiardi 1869: 34-35, tab. I, figs. 8-10.

Patria? [Mediterranean Sea], <1843, 1 sp. (MZUF 1500).

From the information sheet, Targioni Tozzetti wrote: “[...] È la *Pennatula targionii* Richiardi” [It is *Pennatula targionii* Richiardi].

Present determination: unknown.

Family Pteroeididae

*Pteroeides spinosum* Ellis 1764

Richiardi 1869: 44-45, tab. XIV, fig. 129.

Mediterranean Sea, <1843, redetermined by A. Senna as *P. griseum* Bohadsch var. *brevispinosa* Kölliker, 1 sp. (MZUF 1072).

Present determination: *P. spinosum* (Ellis 1764).

*Pteroeides grayi* Richiardi 1869

Richiardi 1869: 54-55, tab. III, figs. 18, 19, 20.

Patria? [probably Mediterranean Sea or West Atlantic Ocean], <1843, redetermined by A. Senna as *P. griseum* Bohadsch var. *brevispinosa* Kölliker, 1 sp. (MZUF 1499).

From the information sheets, Targioni Tozzetti wrote: "[...] esemplare tipo descritto e figurato da Richiardi loc. cit. [...]" [type specimen described and represented by Richiardi]; Senna wrote: "È il tipo della specie del Prof. Richiardi" [It is the type [described] by Prof. Richiardi].

Present determination: unknown.

*Pteroeides cornaliae* Richiardi 1869

Richiardi 1869: 57-58, tab. V, figs. 37-39.

Mediterranean Sea, <1843, redetermined by A. Senna as *P. griseum* Bohadsch var. *longespinosa* Kölliker, 2 sp. (MZUF 1073).

Mediterranean Sea, <1843, unfortunately no material has been found and the only evidence of its past presence is in the old collection catalogue and in the information sheet, where it is reported as "*Pteroides griseum* Bohadsch var. *longespinosa* Kölliker, Sub: *P. cornaliae* Richiardi, 1 sp."

Present determination: unknown.

*Pteroeides clausii* Richiardi 1869

Richiardi 1869: 58-59, tab. VI, figs. 43-45.

Mediterranean Sea, <1843, redetermined by A. Senna as *P. griseum* Bohadsch var. *longespinosa* Kölliker, 1 sp. (MZUF 1077).

Present determination: unknown.

Family Veretillidae

*Cavernularia haimeii* Richiardi 1869

Richiardi 1869: 119-121, tab. XIII, fig. 110.

Patria?, probably <1843, 1 sp. (MZUF 1498), the specimen has longitudinal and transversal cuts also observed by Richiardi in his monograph.

From the information sheets, Targioni Tozzetti wrote: "[...] unico esemplare tipico dell'antica collezione del Museo di Firenze, v. Richiardi loc. cit. p. 120." [the only type specimen from the old collection of the Florence Museum ...]; Senna wrote: "Kölliker (Beschreibung der Alcyonarien) dice di non aver veduto questa specie" [Kölliker (Beschreibung der Alcyonarien) says he has not studied this species] (Fig. 3).

Present determination: considered as a probable member of the genus *Lituarina* by Kükenhal (1915) (López-González *et al.*, 2000).

*Cavernularia defilippii* Richiardi 1869

Richiardi 1869: 121, tab. XIII, fig. 111.

France, Nice?, probably <1843, unfortunately no material has been found and the only evidence of its past presence is in the old collection catalogue and in the information sheet, where it is reported as "*Cavernularia defilippii* Richiardi 1 sp., uno dei tipi di Richiardi, Nizza (?)" [...one among the types of Richiardi, Nice (?)].

From the information sheet, Targioni Tozzetti wrote: "[...] esemplare tipico descritto e figurato da Richiardi l.c. compagno ad un altro posseduto dallo stesso

autore, e venutogli da De Filippi che lo ebbe da Verany. Probabilmente l'uno e l'altro di Nizza. Kölliker registra questa specie [...] con dubbio [...]” [type specimens described and drawn by Richiardi, similar to another owned by the author, and originated from De Filippi, who received it from Verany. Probably both from Nice. Kölliker reports this species with doubts].

Present determination: considered as a probable member of the genus *Lituarina* by Kükenthal (1915) (López-González *et al.*, 2000).

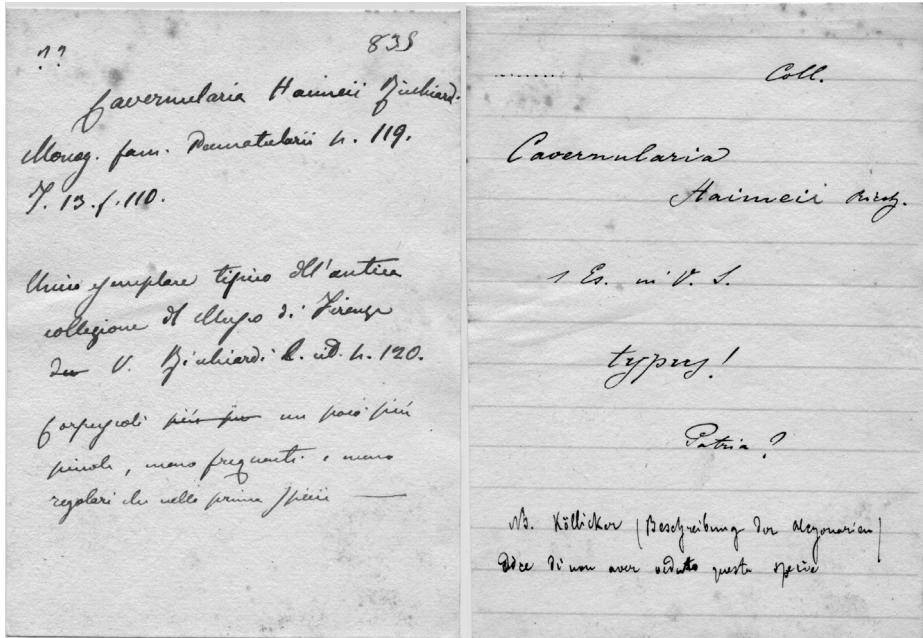


Fig. 3 - Informative sheets of *Cavernularia haimeii* Richiardi 1869. On the left, handwriting by A. Targioni Tozzetti, on the right, handwriting by A. Senna.

Fig.3 - Schede informative di *Cavernularia haimeii* Richiardi 1869. La scheda a sinistra è stata scritta da A. Targioni Tozzetti, quella a destra da A. Senna.

### Family Renillidae

#### *Renilla reniformis* Pallas 1766

Richiardi 1869: 133-134, tab. XIII, figs. 115-118, and tab. XIV, fig. 126.

Brazil, Rio de Janeiro, 1867, don. Max Schultze, redetermined by A. Senna and by A. Targioni Tozzetti as *R. mülleri* Schultze, 1 sp. (MZUF 766).

Present determination: *R. reniformis* (Pallas 1766).

#### *Renilla violacea* Quoy et Gaimard 1828

Richiardi 1869: 135-136, tab. XIV, figg. 127-128.

South America, 1867, pur. Schaufuss, redetermined by A. Senna as *Renilla deshayesii* Kölliker, 1 sp. (MZUF 765).

From the information sheet, Targioni Tozzetti wrote: "Kölliker riporta questa figura con dubbio alle *R. reniformis* ma Richiardi l'ha appunto disegnata su questo esemplare e la dà colà come indicato" [Kölliker reports the figure with doubt as *R. reniformis*, but Richiardi has just drawn this specimen, classifying it as *R. violacea*].

Present determination: unknown.

## Conclusion

Eleven among the specimens described by S. Richiardi are still present in the Museum Collection and are available for specialists. Unfortunately, two specimens are probably lost, and their presence is testified to only by the old information sheets.

This short note adds new data to the Cnidaria type catalogue of the specimens presently stored in the Florence Museum (Volpi & Innocenti, 2000; Volpi & Benvenuti, 2003). The types, in particular those established over the past centuries, are valued historical material; frequently time and events have destroyed part of the museum collections and unfortunately for some species it is quite hard to trace the taxonomic history and the exact synonymies used in the past. Thus, with the present note, we intend to give a contribution to the current research in pennatulaceans systematics.

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