

The Revision of the Crustacea Collection of the Museum of Zoology “P. Doderlein” under the Framework of the National Biodiversity Future Center

Carlo Pipitone ^{1,*}, Gianna Innocenti ², Paola Pepe ³, Maria Tumbiolo ³ and Sabrina Lo Brutto ^{3,4,5}

¹ CNR-IAS, Lungomare Cristoforo Colombo 4521, 90149 Palermo, Italy

² Museo di Storia Naturale dell’Università di Firenze, Sede La Specola, via Romana 17, 50125 Firenze, Italy

³ Museum of Zoology “P. Doderlein”, Sistema Museale d’Ateneo (SIMUA), University of Palermo, via Archirafi 16, 90123 Palermo, Italy

⁴ Department of Biological, Chemical and Pharmaceutical Sciences and Technologies (STeBiCeF), University of Palermo, via Archirafi 18, 90123 Palermo, Italy

⁵ NBFC, National Biodiversity Future Center, piazza Marina 61, 90133 Palermo, Italy

* Correspondence: carlo.pipitone@cnr.it

Abstract: The collection of Crustacea preserved in the Museum of Zoology “P. Doderlein” in Palermo (Italy) has been revised in the framework of the activities of the National Biodiversity Future Center. The main part of the collection is composed of Decapoda, while a smaller part includes Stomatopoda, Isopoda, Amphipoda, and Cirripedia. Overall the collection includes common species, some of which are now protected.

Keywords: natural history museum; Decapoda; Stomatopoda; Isopoda; Amphipoda; Cirripedia; Sicily; Mediterranean sea



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1. Introduction

Taxonomic studies on recent marine Crustacea from Sicily (central Mediterranean Sea) have a rather wide and consolidated tradition and date back to the early 19th century [1]. Starting from the late 1960s, the publications on this subject have increased progressively, mainly produced by Sicilian scientists based in the universities of Palermo, Catania and Messina and in the institutes of the National Research Council of Italy (CNR). Published accounts on Crustacea include both observations and records of single species (including non-indigenous species) and checklists (e.g., [2–12]). Crustacea have often been listed also among other invertebrate taxa in studies on the benthic fauna of hard- and soft-bottom habitats around Sicily (e.g., [13,14]).

The Museum of Zoology “P. Doderlein” belongs to the Museums System of the University of Palermo, Italy. It was established by Pietro Doderlein (1809, Ragusa, Dalmatia–1895, Palermo, Italy) in 1863 and has had a turbulent history, with a long neglect period. Recently, the University of Palermo has undertaken the decision to restore and enhance this historical zoological legacy, bringing a significant contribution to natural sciences.

Previous studies have revised some of the collections and published catalogues such as those regarding fishes [15], cetaceans [16], mammals [17], raptors [18] and the anatomical collection [19]. Recently, the museum has been re-evaluated thanks to the works of many researchers who have obtained interesting results, such as the revision of a specimen of *Cerna sicana* (Doderlein, 1882) [20] and the assignment of its geographical origin to an old lion skeleton [21]. All such activities have potential repercussions on conservation and education matters and on the dissemination of topics related to biodiversity.

A revision of the Crustacea collection, however, was still lacking.

There is no precise account of the history and development of the Crustacea collection. According to [22] the major portion of the marine invertebrates collection was collected and

prepared by the curator Eliodoro Catalano [23] and covered a couple of decades around the 1980s. A minor part is a heritage of the Doderlein era, a period that dates back to more than a century ago.

The kind of material and the low number of species suggests that specimens were provided by scientists and fishermen or other non-professional collectors on a random basis, and apparently no material came from scientific expeditions. Nonetheless, the collection holds some interesting samples, especially large-sized specimens of Astacidea and Achelata, which are not easily collected nowadays in this range of sizes.

The specimens are either dry, fixed with wire on wooden stands, or preserved in a preservation medium inside glass jars. In some cases, two labels are present, an older one likely written with a quill and a newer one. The labels include only in a few cases information on data and locality of collection and on the collector, and their content has been reported in this catalogue only when different from the mere current species name. In a few instances, the label contained a wrong species name; we have suggested in the Remarks that an identification mistake was made, possibly by someone without the necessary expertise.

Dry specimens were measured and sexed whenever allowed by their display arrangement. The same information could not be obtained from most of the specimens preserved in jars because the lids were often hard sealed and could not be opened.

Whenever possible, specimens were measured as carapace length (CL) or carapace width (CW, only Brachyura), and their sex was reported (M = male, F = female, F ov. = ovigerous female).

The following abbreviations were used: cat. no. (catalogue number), ind. (individual(s)), leg. (*legit*).

Decapod and cirriped taxa are presented in phylogenetic order according to [24] and [25], respectively; families, genera and species are arranged in alphabetical order. Information on the geographical distribution has been taken from [26] for the Decapoda and from [27] for the other taxa.

The Crustacea catalogue herein presented has been planned under the National Biodiversity Future Center (NBFC) agenda, which is focused *inter alia* on the enhancement of the Italian naturalistic collections.

2. Taxonomy

CRUSTACEA Brünnich, 1772

MALACOSTRACA Latreille, 1802

DECAPODA Latreille, 1802

DENDROBRANCHIATA Spence Bate, 1888

PENAEOIDEA Rafinesque, 1815

ARISTEIDAE Wood-Mason in Wood-Mason & Alcock, 1891

Aristaeomorpha foliacea (Risso, 1827)

Material examined: IM214 (1 ind.), CL 36 mm, name on labels *Penaeus kerathurus* (external), *P. trisulcatus* (in jar).

Distribution: Mediterranean, eastern Atlantic from Portugal to South Africa and Macaronesia, Indo-Pacific.

Remarks: the previous identification on the label was an error.

SICYONIIDAE Ortmann, 1898

Sicyonia carinata (Brünnich, 1768)

Material examined: IM177 (3 ind.); IM203 (2 ind.), CL 13 mm, CL 15 mm.

Distribution: Mediterranean, eastern Atlantic from Portugal to the Gulf of Guinea.

PLEOCYEMATA Burkenroad, 1963

STENOPODIDEA Spence Bate, 1888

STENOPODIDAE Claus, 1872

Stenopus spinosus Risso, 1827

Material examined: IM200 (1 ind.); IM416 (1 ind.), name on label Arthropoda (sic).

Distribution: Mediterranean, eastern Atlantic from Portugal to Congo and Macaronesia, western Atlantic from the Caribbean to Brazil.

CARIDEA Dana, 1852

PASIPHAEOIDEA Dana, 1852

PASIPHAEIDAE Dana, 1852

Pasiphaea multidentata Esmark, 1866

Material examined: IM168 (1 ind.), Porticello.

Distribution: Mediterranean, eastern Atlantic from Iceland and Norway to Mauritania and Macaronesia, north-western Atlantic.

PALAEMONOIDEA Rafinesque, 1815

PALAEMONIDAE Rafinesque, 1815

Gnathophyllum elegans (Risso, 1816)

Material examined: IM201 (2 ind.).

Distribution: Mediterranean, eastern Atlantic in Morocco and Macaronesia.

ALPHEOIDEA Rafinesque, 1815

ALPHEIDAE Rafinesque, 1815

Alpheus glaber (Olivi, 1792)

Material examined: IM169 (2 ind.), CL 10 mm, 15 mm, 19/10/1968, Gulf of Palermo, E. Catalano leg.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from the British Isles to Morocco.

ASTACIDEA Latreille, 1802

NEPHROPOIDEA Dana, 1852

NEPHROPIDAE Dana, 1852

Homarus gammarus (Linnaeus, 1758) (Figure 1)



Figure 1. *Homarus gammarus* IM185.

Material examined: IM176 (1 ind.), CL 235 mm, M; IM185 (1 ind.), CL 225 mm, M, Gulf of Palermo, name on label *Homarus vulgaris*; IM298 (1 ind.), CL 97 mm, M; IM538 (1 ind.).

Distribution: Mediterranean, Sea of Marmara and Black Sea, eastern Atlantic from Norway to Morocco.

Remarks: *Homarus vulgaris* H. Milne Edwards, 1837 is a junior synonym of *H. gammarus*. IM538 is a very small individual whose identity should be checked carefully.

Nephrops norvegicus (Linnaeus, 1758)

Material examined: IM178 (1 ind.), CL 52 mm, M; IM208 (1 ind.), CL 86 mm, M, Sicily; IM212 (1 ind.), CL 47 mm, M; IM219 (1 ind.), F ov.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from Iceland and Norway to Mauritania and Canary Islands.

ACHELATA Scholtz & Richter, 1995

PALINUROIDEA Latreille, 1802

PALINURIDAE Latreille, 1802

Palinurus elephas (Fabricius, 1787)

Material examined: IM196 (1 ind.), CL 200 mm; IM507 (1 ind.), CL 89 mm, M; IM540 (1 ind.), CL 54 mm, F, Isola delle Femmine, exuvia.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from the British Isles to Western Sahara.

Palinurus mauritanicus Gruvel, 1911

Material examined: IM206 (1 ind.), CL 187 mm, name on label *P. elephas*.

Distribution: western Mediterranean, eastern Atlantic from Ireland to southern Senegal.

Remarks: the previous identification on the label was an error.

SCYLLARIDAE Latreille, 1825

Scyllarides latus (Latreille, 1803) (Figure 2)

Figure 2. *Scyllarides latus* IM183.

Material examined: IM183 (1 ind.), CL 115 mm.

Distribution: Mediterranean, eastern Atlantic from Portugal to Senegal and Macaronesia.

Scyllarus arctus (Linnaeus, 1758)

Material examined: IM191 (1 ind.).

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from the British Channel to Mauritania and Macaronesia.

POLYCHELIDA Scholtz & Richter, 1995

ERYONOIDEA de Haan, 1841

POLYCHELIDAE Wood-Mason, 1874

Polycheles typhlops Heller, 1862

Material examined: IM199 (1 ind.), F ov., name on label *Polycheles doderlain* (sic). IM365 (2 ind.), CL 44 mm, F ov, CL 32 mm, name on label *Polycheles sculpus* (sic) *pacificus*.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from Iceland to Mauritania and Macaronesia, western Atlantic, Indo-Pacific.

Remarks: the two IM365 individuals have “crostaceo abissale cieco” (blind abyssal crustacean) as an additional note on the label. The previous identification on the label was an error. IM199 could be the female individual found by [28] at the fish market in Palermo, which he renamed *P. doderleini* after his mentor Pietro Doderlein. The new name was based on the idea that the name *typhlops* (= blind) used by [29] was not acceptable anymore because a more detailed observation had shown that *Polycheles* and other related genera do have eyes [28] (pp.102–103).

ANOMURA MacLeay, 1838

GALATHEOIDEA Samouelle, 1819

MUNIDIDAE Ahyong, Baba, Macpherson & Poore, 2010

Munida intermedia A. Milne-Edwards & Bouvier, 1899

Material examined: IM217 (1 ind.), CL 39 mm, M, name on label *Munida rugosa*; IM217 (1 ind.), name on label *Munida rugosa*.

Distribution: Mediterranean, eastern Atlantic from the south of the British Isles to Senegal and Macaronesia.

Remarks: the two specimens were given the same cat. no. The previous identifications were an error.

Munida tenuimana Sars, 1872

Material examined: IM166 (1 ind.).

Distribution: western Mediterranean, eastern Atlantic from Iceland and Norway to Spain, north-western Atlantic.

PORCELLANIDAE Haworth, 1825

Pisidia bluteli (Risso, 1816)

Material examined: IM180 (4 ind.), CL 4.3 mm, CW 4.1, F ov, CL 4.2 mm, CW 4 mm, F ov, CL 3.6 mm, CW 3.4 mm, F, CL 3.7 mm, CW 3.5 mm, F ov, name on label *Pisidia longicornis*.

Distribution: Mediterranean, eastern Atlantic (Morocco).

Remarks: the previous identification on the label was an error.

PAGUROIDEA Latreille, 1802

CALCINIDAE Fraaije, Van Bakel & Jagt, 2017

Dardanus arrosor (Herbst, 1796) (Figure 3)



Figure 3. *Dardanus arrosor* IM359.

Material examined: IM221 (1 ind.); IM359 (1 ind.), CL 30 mm, name on label *Pagurus striatus*.

Distribution: Mediterranean, eastern Atlantic from the Bay of Biscay to South Africa and Macaronesia, Indo-Pacific.

Remarks: *Pagurus striatus* Latreille, 1803 is a junior synonym.

Dardanus calidus (Risso, 1827)

Material examined: IM165 (1 ind.); IM172 (1 ind.), CL 21 mm, name on label *Eupagurus callidus*.

Distribution: Mediterranean, eastern Atlantic (Portugal and Macaronesia).

DIOGENIDAE Ortmann, 1892

Paguristes eremita (Linnaeus, 1767)

Material examined: IM506 (1 ind.), name on label *Poruristes* (sic) *oculatus*.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from Portugal to Spain.

Remarks: *Paguristes oculatus* (Fabricius, 1775) is considered a junior synonym.

PAGURIDAE Latreille, 1802

Pagurus forbesii Bell, 1845

Material examined: IM11 (1 ind.); IM18 (1 ind.); IM358 (1 ind.), CL 10 mm, Sicily, name on older label *Pagurus angulatus*, on newer label *Pagurus angulatum*.

Distribution: Mediterranean, eastern Atlantic from the British Isles to Senegal and Macaronesia.

Remarks: the labels of IM11 and IM18 report only *Suberites domuncula* because of the sponge on the shell of both specimens. The previous identification on the label of IM358 was an error. Furthermore, *Pagurus angulatus* Risso, 1816, is now recognized as a junior synonym of *P. excavatus* (Herbst, 1791). All three lots examined, however, belong to *P. forbesii*.

Pagurus prideaux Leach, 1815

Material examined: IM171 (1 ind.), CL 9 mm, April 1921, Gulf of Palermo.

Distribution: Mediterranean, eastern Atlantic from Norway to the Gulf of Guinea and Macaronesia.

BRACHYURA Latreille, 1802

PODOTREMATA Guinot, 1977

DROMIOIDEA De Haan, 1833

DROMIIDAE De Haan, 1833

Dromia personata (Linnaeus, 1758)

Material examined: IM294 (1 ind.), F; IM295 (1 ind.), CW 68 mm, M, with sponge on carapace; IM479a (1 ind.), CW 23 mm, F.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from the British Isles to Western Sahara and Macaronesia.

Remarks: IM479a arranged in the same stand with other species (IM479b, IM479c, IM479d and IM479e).

HOMOLOIDEA De Haan, 1839

HOMOLIDAE De Haan, 1839

Homola barbata (Fabricius, 1793)

Material examined: IM174 (1 ind.), CW 29 mm, F, Sicily.

Distribution: Mediterranean, eastern Atlantic from the Bay of Biscay to South Africa and Macaronesia, western Atlantic from Massachusetts to Brazil.

Paromola cuvieri (Risso, 1816)

Material examined: IM198 (1 ind.); no cat. no. (1 ind.), CW 130 mm, F.

Distribution: Mediterranean, eastern Atlantic from Iceland to Norway to South Africa and Macaronesia.

HETEROTREMATA Guinot, 1977

CALAPPOIDEA De Haan, 1833

CALAPPIDAE De Haan, 1833

Calappa granulata (Linnaeus, 1758)

Material examined: IM175 (1 ind.), CW 97 mm, F, Sicily; IM182 (1 ind.), CW 44 mm, Gulf of Palermo; IM187 (1 ind.); IM296 (1 ind.) CW 94 mm, M; no cat. no. (1 ind.), CW 80 mm; no cat. no. (1 ind.), CW 104 mm; no cat. no. (1 ind.).

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from the Bay of Biscay to Western Sahara and Macaronesia.

DORIPPOIDEA MacLeay, 1838

DORIPPIDAE MacLeay, 1838

Medorippe lanata (Linnaeus, 1767)

Material examined: IM207 (1 ind.), CW 35 mm, M, Gulf of Palermo, name on older label *Dorippe lanata*; IM220 (1 ind.), F.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from Portugal to South Africa and Canary Islands.

Remarks: *Dorippe lanata* is considered a superseded combination.

ETHUSIDAE Guinot, 1977

Ethusa mascarone (Herbst, 1785)

Material examined: IM479b (1 ind.), CW 11 mm, M.

Distribution: Mediterranean, eastern Atlantic from Portugal to Western Sahara and Canary Islands.

Remarks: specimen arranged in the same stand with other species (IM479a, IM479c, IM479d and IM479e).

ERIPHIOIDEA MacLeay, 1838

ERIPHIIDAE MacLeay, 1838

Eriphia verrucosa (Forskål, 1775)

Material examined: IM167 (1 ind.), F, with *Sacculina* sp.; IM195 (1 ind.), CW 52 mm, M, Sicily; IM222 (1 ind.), CW 50 mm, F, 18/08/1969, Gulf of Palermo, E. Catalano leg., with *Sacculina* sp.; IM509 (1 ind.), CW 46 mm, M, dissected.

Distribution: Mediterranean, Sea of Marmara and Black Sea, eastern Atlantic from the British Channel to Mauritania and Macaronesia.

GONEPLACOIDEA MacLeay, 1838

GONEPLACIDAE MacLeay, 1838

Goneplax rhomboides (Linnaeus, 1758)

Material examined: IM192 (1 ind.).

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from the British Isles to Morocco, Madeira and Canary Islands.

LEUCOSIOIDEA Samouelle, 1819

LEUCOSIIDAE Samouelle, 1819

Ilia nucleus (Linnaeus, 1758)

Material examined: IM194 (1 ind.), 21/09/1969, Gulf of Palermo, E. Catalano leg.; IM479c (1 ind.), CW 17 mm, F.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic (south-western Spain, Cape Verde).

Remarks: IM479c arranged in the same stand with other species (IM479a, IM479b, IM479d and IM479e).

MAJOIDEA Samouelle, 1819

EPIALTIDAE MacLeay, 1838

Anamathia rissoana (Roux, 1828)

Material examined: IM181 (1 ind.), CW (spines excluded) 15 mm, M.

Distribution: Mediterranean, eastern Atlantic from Portugal to Morocco and Macaronesia.

Pisa armata (Latreille, 1803)

Material examined: IM188 (1 ind.), M, name on label *Pisa nodipes*; IM189 (1 ind.), CW 22 mm, F.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from the British Isles to Angola and Macaronesia.

Remarks: the previous identification on the label of IM188 was an error.

Pisa tetraodon (Pennant, 1777)

Material examined: IM197 (1 ind.), CW 38 mm, M, Sicily.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from the British Isles to Mauritania and Canary Islands.

MAJIDAE Samouelle, 1819

Maja crispata Risso, 1827

Material examined: IM186 (1 ind.), CW56 mm, Gulf of Palermo, name on label *Cancer pagurus*; IM190 (2 ind.), F, M; IM297 (1 ind.), CW 63 mm, M; IM504 (2 ind.), CW 54 mm, F, CW 39 mm, M, name on label *M. verrucosa*.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from the Bay of Biscay to Morocco, Canary Islands and Cape Verde.

Remarks: the previous identification on the label of IM186 was an error. *Maja verrucosa* H. Milne Edwards, 1834 (IM504) is a junior synonym.

Maja squinado (Herbst, 1788)

Material examined: IM210 (1 ind.), CW 160 mm, M; IM215 (1 ind.), CW 120 mm, M, name on label *Maja crispata*.

Distribution: Mediterranean and Sea of Marmara.

Remarks: the previous identification on the label of IM215 was an error.

PARTHENOPOIDEA MacLeay, 1838

PARTHENOPIDAE MacLeay, 1838

Spinolambrus macrochelos (Herbst, 1790)

Material examined: IM173 (2 ind.), CW 43 mm, CW 50 mm, Sicily, name on older label *Lambrus mediterraneus*, name on recent label *Parthenope massena*

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from Portugal to Morocco, Azores and Canary Islands.

Remarks: *Lambrus mediterraneus* Roux, 1828 is a junior synonym; *Parthenope massena* (Roux, 1830) was an error.

PILUMNOIDEA Samouelle, 1819

PILUMNIDAE Samouelle, 1819

Pilumnus hirtellus (Linnaeus, 1761)

Material examined: IM204 (1 ind.).

Distribution: Mediterranean, Sea of Marmara and Black Sea, eastern Atlantic from Norway to Morocco and Macaronesia.

PORTUNOIDEA Rafinesque, 1815

CARCINIDAE MacLeay, 1838

Portumnus latipes (Pennant, 1777)

Material examined: IM202 (1 ind.), CW 18 mm, M, name on label *Acanthonyx lunulatus*.

Distribution: Mediterranean, Sea of Marmara and Black Sea, eastern Atlantic from the British Isles to Morocco, Azores and Canary Islands.

Remarks: the name on the label glued to the stand (*Acanthonyx lunulatus*) is hardly comprehensible due to the striking morphological difference between the two species. Maybe a stand swap occurred at some time in the past, but in such case, the stand would likely belong to a lost jar, since no *A. lunulatus* is currently present in the collection.

POLYBIIDAE Ortmann, 1893

Liocarcinus corrugatus (Pennant, 1777)

Material examined: IM184 (1 ind.), CW 45 mm, F, Sicily, names on a single older label *Portunus corrugatus*, *Cancer corrugatus*.

Distribution: Mediterranean, eastern Atlantic from the British Isles to Angola and Macaronesia.

Remarks: both names on the older label are superseded combinations.

Liocarcinus depurator (Linnaeus, 1758)

Material examined: IM209 (1 ind.), CW 36 mm, M, Gulf of Palermo; IM213 (1 ind.), F ov; IM508 (2 ind.), M, F ov.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from Norway to Mauritania and Canary Islands.

PORTUNIDAE Rafinesque, 1815

Achelous hastatus (Linnaeus, 1767)

Material examined: IM179 (1 ind.), CW53 mm, Sicily, names on a single older label *Lupa* (sic) *hastata* and *Lupa Dufouri* (sic), on recent label *Portunus hastatus*.

Distribution: Mediterranean, eastern Atlantic from Mauritania to Angola and Macaronesia.

Remarks: *Lupea hastata* (Linnaeus, 1767) and *Lupa dufourii* Desmarest, 1825 are junior synonyms of *A. hastatus*.

XANTHOIDEA MacLeay, 1838

XANTHIDAE MacLeay, 1838

Xantho hydrophilus (Herbst, 1790)

Material examined: IM479e (1 ind.), CW 24 mm, M, name on label *Xantho incisus incisus*.

Distribution: Mediterranean and Sea of Marmara, eastern Atlantic from the British Isles to the Gulf of Guinea and Macaronesia.

Remarks: specimen arranged in the same stand with other species (IM479a, IM479b, IM479c and IM479d). *Xantho incisus* (Leach, 1814) is a junior synonym.

Xantho poessa (Olivi, 1792)

Material examined: IM193 (1 ind.), Gulf of Palermo, E. Catalano leg., name on label in the jar *Xantho hydrophilus*; IM378 (1 ind.), CW 39 mm, M, Gulf of Palermo, name on label *Xantho floridus*.

Distribution: Mediterranean, Sea of Marmara and Black Sea, eastern Atlantic (Spain and Canary Islands).

Remarks: the name on the label in the jar of IM193 was an error, as was the name on the label of IM378. *Xantho floridus* (Linnaeus, 1767) is a junior synonym of *X. hydrophilus* (Herbst, 1790).

THORACOTREMATA Guinot, 1977

GRAPSOIDEA MacLeay, 1838

GRAPSIDAE MacLeay, 1838

Pachygrapsus marmoratus (Fabricius, 1787)

Material examined: IM205 (1 ind.), CW 32 mm; IM479d (1 ind.), CW 18 mm, F.

Distribution: Mediterranean, Sea of Marmara and Black Sea, eastern Atlantic from the British Channel to Morocco and Macaronesia.

Remarks: IM479d is arranged in the same stand with other species (IM479a, IM479b, IM479c and IM479e).

STOMATOPODA Latreille, 1817

UNIPELTATA Latreille, 1825

SQUILLOIDEA Latreille, 1802

SQUILLIDAE Latreille, 1802

Squilla mantis (Linnaeus, 1758)

Material examined: IM170 (1 ind.); IM223 (2 ind.), CL 41 mm, M, CL 36 mm, F; IM474 (1 ind.); IM505 (1 ind.); no cat. no., M, dry dissected specimen.

Distribution: Mediterranean, eastern Atlantic from Bay of Biscay to Angola and Canary Islands.

ISOPODA Latreille, 1816

CYMOTHOIDA Wägele, 1989

CYMOTHOOIDEA Leach, 1814

CYMOTHOIDAE Leach, 1814

Anilocra physodes (Linnaeus, 1758)

Material examined: IM224 (1 ind.).

Distribution: Mediterranean, north-eastern Atlantic.

Remarks: in jar, presumably collected in the 1980s.

AMPHIPODA Latreille, 1816

HYPERIIDEA H. Milne Edwards, 1830

PHYSOCEPHALATA Bowman & Gruner, 1973

PHRONIMOIDEA Rafinesque, 1815

PHRONIMIDAE Rafinesque, 1815

Phronima sedentaria (Forskål, 1775)

Material examined: IM225 (1 ind.).

Distribution: cosmopolitan in temperate, subtropical and tropical areas.

- THECOSTRACA Gruvel, 1905
 SCALPELLOMORPHA Buckeridge and Newman, 2006
 SCALPELLOIDEA Chan, Dreyer, Gale, Glenner, Ewers-Saucedo, Pérez-Losada, Kolbasov, Crandall & Høeg, 2021
 SCALPELLIDAE Pilsbry, 1907
Scalpellum scalpellum (Linnaeus, 1767)
Material examined: IM161 (5 ind.).
Distribution: Mediterranean Sea, Atlantic coasts of Africa.
- LEPADOIDEA Chan, Dreyer, Gale, Glenner, Ewers-Saucedo, Pérez-Losada, Kolbasov, Crandall & Høeg, 2021
 LEPADIDAE Darwin, 1852
Lepas anatifera Linnaeus, 1758
Material examined: IM158 (1 ind.), IM64 (4 ind.), IM164 (10 ind.), IM399 (8 ind.).
Distribution: cosmopolitan.
- Conchoderma auritum* (Linnaeus, 1767)
Material examined: IM158 (1 ind.), IM160 (8 ind.).
Distribution: cosmopolitan.
- Conchoderma virgatum* Spengler, 1789
Material examined: IM162 (3 ind.).
Distribution: cosmopolitan.
- BALANOMORPHA Pilsbry, 1916
 CORONULOIDEA Leach, 1817
 CORONULIDAE Leach, 1817
Tubicinella sp.
Material examined: IM375 (1 ind.).
Remarks: The individual is dry preserved. This genus includes parasites of whales.
- Xenobalanus globicipitis* Steenstrup, 1852
Material examined: IM159 (1 ind.).
Distribution: cosmopolitan.
Remarks: this individual was probably sampled from the dolphins in the Cetacea collection of the Museum.
- RHIZOCEPHALA Müller, 1862
 SACCULINIDAE Lilljeborg, 1861
Sacculina sp.
Material examined: IM167 (1 ind.), on *Eriphia verrucosa*; IM222 (1 ind.), on *Eriphia verrucosa*, 18/08/1969, Gulf of Palermo, E. Catalano leg.
- BRANCHIOPODA Latreille, 1817
 NOTOSTRACA Sars, 1867
 TRIOPSIDAE Keilhack, 1909
Triops cancriformis Schaeffer, 1756
Material examined: IM500 (2 ind.).
Distribution: Europe, Asia from Middle East to India.

3. Discussion

The Decapoda collection in the Museum of Zoology “P. Doderlein” hosts species that are very common and are frequently found in the seas around Sicily, as suggested by the published checklists. Some of them (*Homarus gammarus*, *Palinurus elephas*, *Scyllarides latus*, *Scyllaus arctus* and *Maja squinado*) are presently protected species (<https://www.isprambiente.it>).

gov.it/it/banche-dati/atlante-delle-specie-marine-protette/animali/invertebrati/crostacei (accessed on 17 January 2023)). The Stomatopoda and Peracarida (Isopoda and Amphipoda) collection hosts a very small number of common species. The Cirripedia collection is composed of cosmopolitan species and of a peculiar parasite of cetaceans, *Xenobalanus globicipitis*, the only known species in its genus. A specimen of *Limulus* sp. (Chelicerata, Merostomata, Limulidae) is also present in the museum's collection with catalogue no. IM522: we mention it here only to complete the list of Arthropoda.

Zoological collections are the main archive of biodiversity for a specific geographical area or a specific taxon [17,30], although they are often not well enhanced and consequently are often poorly known to the general public.

The current overall situation of natural history museums in Italy is dramatic, making up a fragmented reality in which a multitude of small institutions cope with a scarcity of funds by focusing on events and sometimes forgoing research and study activities. The situation is exacerbated in southern Italy, where private funds are particularly scarce [31–33].

Fortunately, a growing interest in natural history museums is leading to reorganizing, revising and cataloguing the old collections also in museums that were excluded by the main international networks until recently. Museum specimens can provide a spatiotemporal window of biodiversity changes. Further, despite the degradation processes of genetic Material through time [21], in recent years methodological advances have allowed to obtain precious genetic inferences from degraded samples, such as the ones from museums and archives. However, despite their huge potentiality, natural collections remain largely untapped, especially because until now no agreement on lists was available, and an easy to consult, open-access database containing the list of all the specimens from Italian museums is still lacking.

The census herein presented may contribute to the interconnection of the institutions involved in the activities of the National Biodiversity Future Center (NBFC, <https://www.nbfc.it/> (accessed on 23 January 2023)), recently established in Italy. Such activities will address the digitalization of naturalistic museum collections and the development of national molecular information repositories.

The NBFC aims at monitoring the biodiversity at a national level with the support of natural history museums. Publishing museum checklists is thus a prerequisite to facilitate the access of the international community to scientific collections.

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