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Joachim Langeneck [1], Marco Lezzi [2], Michela Del Pasqua [3], Luigi Musco [1,4], Lorenzo Pacciardi [5], Andrea Vannucci [5], Maria Cristina Gambi [6], Adriana Giangrande [4], Alberto Castelli [7]

NEW RECORDS OF RARE AND POORLY KNOWN POLYCHAETES IN ITALIAN SEAS

Abstract - J. Langeneck, M. Lezzi, M. Del Pasqua, L. Musco, L. Pacciardi, A. Vannucci, M.C. Gambi, A. Giangrande, A. Castelli, *New records of rare and poorly known polychaetes in Italian Seas.*

Even though the Mediterranean Sea is one of the best known marine ecoregion in the world, the diversity and distribution of several groups of marine invertebrates, including polychaetous annelids, are still far from being completed. In the context of a revision of the Italian checklist, the latest version of which is updated to 2005, we provide new data, mainly based on environmental monitoring activities and revision of historical material, for 39 native polychaete species in Italian waters. Out of these species, *Myriochele danielsseni* represents the first record in the Mediterranean Sea, while other 11 species (*Aricidea katzmanni*, *Cirrophorus turcicus*, *Harmothoe gilchristi*, *Levinsenia demiri*, *Levinsenia kantauriensis*, *Levinsenia kosswigi*, *Levinsenia materi*, *Marphysa cinari*, *Paradoneis heterochaeta*, *Phyllodoce longipes*, and *Prionospio maciolekae*) are recorded for the first time in Italian waters. These data, together with recent taxonomic revisions in the region, highlight how, despite previous efforts, the diversity of polychaetes in the Mediterranean Sea is still partially unexplored, and stress the need for further detailed studies on this group.

Key words - polychaetes, biogeography, Italy, checklist

Riassunto - J. Langeneck, M. Lezzi, M. Del Pasqua, L. Musco, L. Pacciardi, A. Vannucci, M.C. Gambi, A. Giangrande, A. Castelli, *Nuove segnalazioni di policheti rari o poco noti nei mari italiani.*

Nonostante il Mar Mediterraneo sia una delle regioni biogeografiche meglio conosciute al mondo, i dati relativi a diversità e distribuzione di diversi gruppi di invertebrati marini, inclusi gli anellidi policheti, sono ancora largamente incompleti. Nel contesto di una revisione della checklist italiana, la cui versione più recente è aggiornata al 2005, in questo contributo riportiamo dati inediti, basati principalmente su materiale raccolto in occasione di attività di monitoraggio e sul riesame di materiale storico, per 39 specie indigene di policheti. Tra queste, *Myriochele danielsseni* è segnalata per la prima volta nel Mar Mediterraneo, mentre altre 11 specie (*Aricidea katzmanni*, *Cirrophorus turcicus*, *Harmothoe gilchristi*, *Levinsenia demiri*, *Levinsenia kantauriensis*, *Levinsenia kosswigi*, *Levinsenia materi*, *Marphysa cinari*, *Paradoneis heterochaeta*, *Phyllodoce longipes*, and *Prionospio maciolekae*) sono segnalate per la prima volta nelle acque italiane. Questi dati, insieme a recenti revisioni tassonomiche condotte in quest'area, sottolineano come, nonostante i numerosi studi pregressi, la diversità dei policheti nel Mar Mediterraneo sia ancora parzialmente inesplorata, e come sia necessario approfondire ulteriormente le conoscenze su questo gruppo.

Parole chiave - policheti, biogeografia, Italia, checklist

Introduction

Despite the high number of studies aimed at widening the knowledge of Mediterranean polychaetes, even shallow water species are poorly known both from the distributional and the ecological points of view, mainly because of the reduction in these last decades of skilled taxonomists along the majority of the Mediterranean coasts. This phenomenon was denominated "taxonomic impediment" by Taylor (1983) and may represent a serious problem in biodiversity monitoring and conservation (Giangrande, 2003). Although the Italian research has an old tradition of polychaete taxonomists and benefited from the Italian Polychaetological Group since 1985 (Castelli *et al.*, 1987), the current state of knowledge about polychaetes along the Italian coasts is still far from completion. As already stated by several authors, the strongly supported paradigm of taxonomic sufficiency, namely the hypothesis that working at higher taxonomic levels does not imply a relevant loss of information in describing biodiversity patterns, can reveal itself as inconsistent (Giangrande, 2003). In addition, the determination of organisms at species level can be critical in particular environments characterised by the massive presence of families with a high number of species, which can be useful as environmental indicators (Chatzigeorgiou *et al.*, 2012; Musco & Giangrande 2005). Lastly, recent

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research showed that several families and genera need a taxonomic revision and most likely still host several undescribed taxa (Lezzi *et al.*, 2016; Langeneck *et al.*, 2017a, 2018a, 2019a; Lezzi, 2017; Lezzi & Giangrande, 2018; Giangrande *et al.*, 2021).

In this work our purpose is to present new records and data about some uncommon and poorly known polychaetes that are reported for the first time from several Italian localities, also in the framework of a much-needed update of the checklist of polychaetes in Italian waters (Castelli *et al.*, 2008).

Materials and methods

Present data derive from ecological and faunistic surveys carried out between 2011 and 2021 in several localities along the Italian coasts, at depths ranging between 0 and 780 m; in addition, for some species additional material was obtained for comparison from historical collections (Fig. 1). The examined material is deposited in the polychaetological collection of the Natural History Museum of the University of Pisa (MSNP) and in the Museo Pietro Parenzan of the University of Salento (PCZL) and in the benthic collection of ARPAT records (Environmental Protection Agency of Tuscany Region) (dataset: http://sira.arpat.toscana.it). A part of the specimens, fixed directly in absolute ethanol for genetic analyses, is temporarily preserved with a provisional code in the Department of Biology of the University of Pisa. Nomenclature, unless explicitly stated otherwise, follows the World Register of Marine Species (WoRMS, 2024), while biogeographical sectors within Italian waters are defined in agreement with Bianchi (2004).

Results

Eunicidae Berthold, 1827

Marphysa cinari Kurt-Şahin, 2014

Marphysa disjuncta Simboura *et al.*, 2010: 345-346; Kurt-Şahin & Çinar 2009: 145-150, figs. 2, 3 [non *Marphysa disjuncta* Hartman, 1961]

Marphysa cinari Kurt-Şahin, 2014: 3-9, figs. 2-5.

Paucibranchia cinari Molina-Acevedo, 2018: 31-36, figs. 19-22.

Material examined. Off Viareggio, northern Tyrrhenian Sea (43.8686° N, 10.1583° E), 90 m, 2017: 2 specimens.

Distribution. Eastern Mediterranean (Kurt-Şahin, 2014), Tyrrhenian Sea (present data). Possibly elsewhere in the Mediterranean Sea. First record for Italian waters (sector 1).

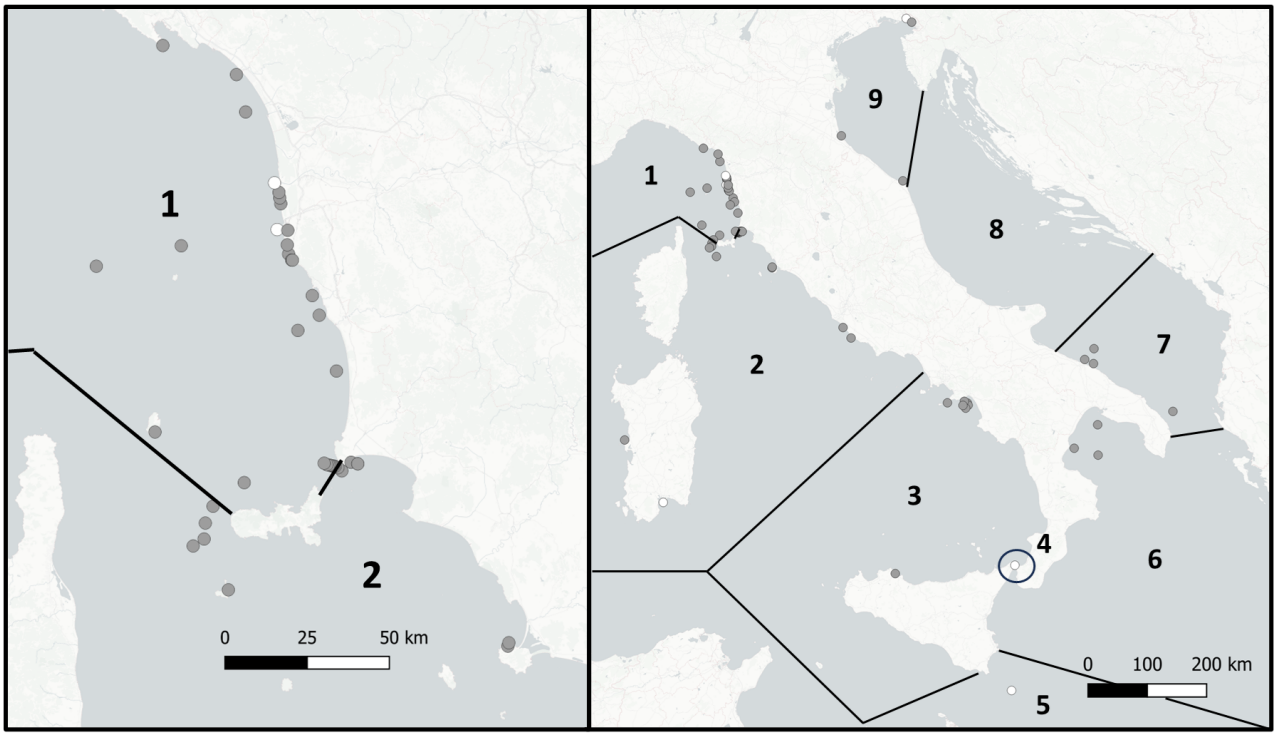

Figure 1. Geographical distribution of the sampling localities from which new polychaete records have been obtained. Gray dots: sites sampled between 2011 and 2021. White dots: localities of material re-examined from collections, sampled before 2011.

Ecology. This species was found on muddy bottom between 60 and 100 m depth (Kurt-Şahin, 2014, present data).
Remarks. The genus *Paucibranchia* Molina-Acevedo, 2018, with *Eunice bellii* Audouin & Milne-Edwards, 1833 as type species, was erected to accommodate species traditionally assigned to *Marphysa* showing few pairs of branchiae restricted to a certain number of midbody segments. However, molecular data do not entirely support the monophyly of this group, while at the same time the genus *Marphysa* shows a strong support from the morphological and molecular point of view (Zanol *et al.*, 2010; 2014). In agreement with Lavesque *et al.* (2022), we prefer to use the genus *Marphysa* for the species currently assigned to *Paucibranchia*. It should however be noted that, if further data would confirm the distinctness of *Paucibranchia*, there is a senior, potentially available genus, namely *Lysibranchia* Cantone, 1983, with *Lysibranchia paucibranchiata* Cantone, 1983 as type species. This taxon was considered synonymous with *Eunice bellii* (being *L. paucibranchiata* juvenile stages of *M. belli*) (Çinar, 2005), which is the type species of *Paucibranchia*. For priority rules, *Lysibranchia* Cantone, 1983 could be considered the correct genus for species assigned to *Paucibranchia*.
Marphysa cinari, compared to other species of the same genus with branchiae restricted to few anterior chaetigers, has unidentate subacicular hooks with terminal hood (Kurt-Şahin, 2014). This species, recently described, was probably identified as *Marphysa bellii* (Audouin & Milne Edwards, 1833) comb. nov., and up to now its presence may be underestimated due to its misidentification. Current data represent the first official records in the northern Tyrrhenian Sea. The distribution of *M. cinari* is possibly wider, and encompasses the whole Mediterranean Sea.

Acoetidae Kinberg, 1856
Polyodontes maxillosus (Ranzani, 1817)
Phyllodoce maxillosa Ranzani, 1817: 105-109, Pl. 4, figs. 2-9.
Polyodontes maxillosus Pettibone, 1989: 101-103, figs. 70-72; Ben-Eliahu & Fiege, 1994: 157-158, figs. 8d, 9d; Barnich & Fiege, 2003: 103-105, fig. 53; Palmero *et al.*, 2008: 58, figs. 6, 7c, 7e.
Panthalis lacazei Pruvot & Racovitza, 1895: 428, Pl. 19, figs. 84-104.

Material examined. Tirrenia, northern Tyrrhenian Sea (43.6252° N, 10.2875° E), beached, 24.xi.2015: 1 specimen (MSNP: Gr/005). St. 36B, Livorno, northern Tyrrhenian Sea (43.5565° N, 10.2742° E), 14 m, ii.1992: 1 specimen (MSNP: P/0242). Off Gorgona Island, northern Tyrrhenian Sea (43.4588° N, 9.6094° E), 430 m, xii.2013: 1 specimen (MSNP: Gr/003).
Distribution. North-eastern Atlantic Ocean, Mediterranean Sea, Red Sea (Pettibone, 1989). Castelli et al. (2008) reported this species for sectors 7, 8 and 9; new records extend the distribution to sector 1.
Ecology. On soft bottoms, between the surface and 430 m depth (Barnich & Fiege, 2003; present data).
Remarks. This species is commonly considered as one of the largest Mediterranean polychaetes, with complete specimens attaining a total length of over 100 cm (Pettibone, 1989). Current data represent the first official records of the species for the northern Tyrrhenian Sea (Castelli *et al.*, 2008), although the apparent scarcity of *P. maxillosus* might be due to its large size, that prevents its sampling with methods commonly employed for macrofauna. As for other large polychaete taxa, a thorough analysis of trawling bycatch might contribute to unravel their actual distribution (Yokes *et al.*, 2018).

Polynoidae Kinberg, 1856
Harmothoe gilchristi Day, 1960
Harmothoe gilchristi Day, 1960: 275, fig. 1a-f.; Day 1967: 68, fig. 1.10a-e.; Amoureux *et al.*, 1978: 65; Barnich & Fiege 2000: 1922, fig. 17A-D; Barnich & Fiege 2003: 43, fig, 19A-D.

Material examined. Tuscan Archipelago, northern Tyrrhenian Sea (43.5133° N, 9.9217° E), 110 m, 2019: 1 specimen (Department of Biology, University of Pisa: Gen/0303)
Distribution. Western, Central and Eastern Mediterranean, Adriatic Sea. North to south east Atlantic (Barnich and Fiege, 2003). South East Atlantic (Day, 1960; 1967) and Red Sea (Amoureux *et al.*, 1978), North East Atlantic (Brito *et al.*, 1991). Present data represents the first record for the Italian coast (sector 1).
Ecology. Harmothoe gilchristi is recorded in different substrata, in a bathyal range > 80 m (Barnich and Fiege 2003). This record confirms the circalittoral affinity of *H. gilchristi.*
Remarks. Harmothoe gilchristi may be confused with *Harmothoe goreensis* Augener, 1918 because both species have elytrae with the presence of rounded microtubercles and the absence of macrotubercle. *Harmothoe gilchristi* is characterized by microtubercles that become gradually larger and club shaped toward the posterior margin (Barnich and Fiege 2003) while in *Harmothoe goreensis* the elytrae microtubercles never become club-shaped.

Harmothoe goreensis Augener, 1918
Harmothoe goreensis Augener, 1918: 142, pl. 2, figs. 46, pl. 3, fig. 42, text, fig. 7.; Day, 1967: 69, fig. 1.9n-r.; Barnich & Fiege 2000: 1924, figs. I, 18A-D; Barnich & Fiege 2003:45, fig, 20,21 A-D.

Material examined. Piombino, northern Tyrrhenian Sea (42.9342° N, 10.5461° E), 1 m, 2017: 1 specimen.
Distribution. France, Western Mediterranean; Italy, Naples and Adriatic Sea. North to southeast Atlantic (Barnich and Fiege, 2003). Species missing from Castelli et al. (2008); literature and present data allow to extend its distribution to sectors 1 and 3. Although Barnich & Fiege (2003) reported a record based on a historical sample obtained from Grube's collection to Lesina (Italy), based on Grube's publications and biography and the ecology of the species it is more likely that this specimen was sampled off Hvar Island, Croatia (which coincidentally at Grube's time was mainly called with the Italian name, Lesina).
Ecology. Harmothoe goreensis is usually found on different substrata such as coralligenous, sand, mud and pebbles (Barnich and Fiege, 2003). The present data highlight the presence in a harbour fouling community.
Remarks. This species is similar to *Harmothoe gilchristi* Day, 1960: the main difference is the presence of rounded elytrae that are characterized by rounded conical microtubercles and a margin with short fringing papillae.

Phyllodocidae Ørsted, 1843
Eulalia ornata Saint-Joseph, 1888
Eulalia ornata Saint-Joseph, 1888: 291-292, Pl. XII, figs. 158-161; Pleijel, 1993: 103-104, figs. 73-74; Schimmenti *et al.*, 2016: 362-365, figs. 3-5.

Material examined. Marina di Pisa, northern Tyrrhenian Sea (43.6405° N, 10.2838° E), 1 m, *Sabellaria alveolata* reef, 12.x.2016: 4 specimens (MSNP: P/3913).
Distribution. North-eastern Atlantic Ocean (Pleijel, 1993), western Mediterranean Sea (Schimmenti *et al.*, 2016; Bonifazi *et al.*, 2018). Species missing from Castelli *et al.* (2008), currently reported from sectors 1 (present data), 2 (Bonifazi *et al.*, 2018) and 3 (Schimmenti *et al.*, 2016).
Ecology. Strictly associated with *Sabellaria* reefs, it probably preys on *Sabellaria* individuals (Schimmenti *et al.*, 2016; Bonifazi *et al.*, 2018).
Remarks. This species has been reported only recently for the Mediterranean Sea, possibly due to the similarity between fixed individuals of this species and other *Eulalia* species. Live specimens of *E. ornata* are instead unmistakable among Mediterranean Phyllodocidae due to their characteristic colour pattern (Schimmenti *et al.*, 2016).

Phyllodoce longipes Kinberg, 1866
Phyllodoce longipes Kinberg, 1866: 241 Viéitez *et al.*, 2004: 145-147, Fig. 47.
Phyllodoce cf. *longipes* Pleijel, 1993: 45-48, Figs. 28-30; Jirkov, 2001: 95 (with drawing).
?*Phyllodoce macropapillosa* Saint-Joseph, 1895: 224, Pl. XIII fig. 41; Fauvel, 1923: 149-150, fig. 52m.
?*Anaitis jeffreysii* McIntosh, 1908: 73-74, Pl. LVII, fig. 7, Pl. LXVIII figs. 16-17, Pl. LXXVII fig. 12.
Material examined. Cinquale, northern Tyrrhenian Sea (43.9674° N, 10.1246° E), fine sand, 9.5 m, 17.vii.2014: 4 specimens. Antignano, northern Tyrrhenian Sea (43.4913° N, 10.3163° E), on sedimented *Posidonia oceanica* mat, 6 m, 20.ix.2019: 2 specimens (Department of Biology, University of Pisa: Gen/0286). Calafuria, northern Tyrrhenian Sea (43.4752° N, 10.3276° E), coarse sand with *Posidonia* debris, 27 m, 14.ix.2019: 3 specimens (Department of Biology, University of Pisa: Gen/0287). Rosignano, northern Tyrrhenian Sea (43.3806° N, 10.4033° E), v.2018, 15 m: 1 specimen. Marina di Castagneto, northern Tyrrhenian Sea (43.1789° N, 10.4922° E), v.2017, 15 m: 1 specimen.
Distribution. Species with allegedly wide distribution, originally described from the southern Pacific Ocean (Kinberg, 1866) and known for the Antarctic region (Cantone *et al.*, 2000). Subsequently reported for the north-eastern Atlantic Ocean (Pleijel, 1993; Viéitez *et al.*, 2004) and the Mediterranean Sea (Mikac, 2015; Maidanou *et al.*, 2017). Present records represent the first record for the western Mediterranean Sea. Absent in Castelli *et al.* (2008), present records refer to sector 1.
Ecology. On soft bottoms with no or moderate enrichment at low to moderate depth.
Remarks. As stated by Pleijel (1993), *P. longipes* was described for the waters of Chile, and its type locality is in the southern Pacific Ocean. Nonetheless, two species described for European seas were synonymised with this species, which is currently considered as a widespread, native species in European waters. In case northern Atlantic specimens would turn out to represent a different species, the correct name would probably be *Phyllodoce macropapillosa* (Pleijel, 1993).

Phyllodoce maculata (Linnaeus, 1767)
Nereis maculata Linnaeus, 1767: 1086.
Phyllodoce maculata McIntosh, 1908: 89-91, Pl. XLV, fig. 2, Pl. XLVII fig. 2, Pl. LVII figs. 21, 24, Pl. LXVII figs. 7-8, LXXVIII figs. 23-24; Fauvel, 1923: 152, fig. 53a-c; Pleijel, 1993: 48-51, Figs. 31-32; Viéitez *et al.*, 2004: 154-156, Fig. 51.
Phyllodoce teres Malmgren, 1865: 97, Pl. XIV fig. 30.
Phyllodoce pulchella Malmgren, 1867: 144, Pl. III fig. 8; Saint-Joseph, 1895: 225.
Phyllodoce rinki Malmgren, 1867: 145, Pl. III fig. 11.

Material examined. Palmaria Island, Ligurian Sea (44.0442° N, 9.8539° E), on coralline algae, 0.5 m, 08.i.2013: 2 specimens (MSNP: P/2983). Marina di Pisa, northern Tyrrhenian Sea (43.6553° N, 10.2810° E), on *Sabellaria* reef, 0.5 m, 18.iv.2013: 1 specimen (MSNP: P/3027). Livorno port, northern Tyrrhenian

Sea (43.5474° N, 10.2948° E), on fouling assemblages, 1 m, 04.iv.2016: 1 specimen. Antignano, northern Tyrrhenian Sea (43.4913° N, 10.3163° E), on *Posidonia* mat, 5 m, 21.iii.2014: 1 specimen (MSNP: P/3394). Calafuria, northern Tyrrhenian Sea (43.4751° N, 10.3304° N), on coralline algae, 0.5 m, 25.xi.2012: 1 specimen; 0.2 m, 09.i.2013: 2 specimens (MSNP: P/2500). Porto Santo Stefano, northern Tyrrhenian Sea (42.4379° N, 11.1223° E), on fouling assemblages, 1 m, vi.2019: 2 specimens (MSNP: P/4668). Ancona, Adriatic Sea (43.6105° N, 13.5415° E), on sedimented canopy algae, 0.5 m, 19.ix.2013: 1 specimen (MSNP: P/3142).
Distribution. North-eastern Atlantic Ocean (Pleijel, 1993; Viéitez *et al.*, 2004), Arctic (Pleijel, 1988), Sea of Japan (Pleijel, 1988), Mediterranean Sea (Viéitez *et al.*, 2004; Castelli *et al.*, 2008; Çinar *et al.*, 2014; Faulwetter *et al.*, 2017). Reported by Castelli *et al.* (2008) for sectors 4, 5 and 6, current data extend their distribution to sectors 1 and 8.
Ecology. Mostly on mesolittoral to high infralittoral algal assemblages. Locally occurring in port environments, where it seems to tolerate moderate enrichment.
Remarks. Based on our data, this is a rather common species in shallow hard-bottom assemblages. The possibility that in ecological studies this species has been confused with *Phyllodoce mucosa* Ørsted, 1843 cannot be ruled out (Faulwetter *et al.*, 2017).

Phyllodoce rosea (McIntosh, 1877)
Anaitis rosea McIntosh, 1877: 215-216. McIntosh, 1908: 71-72, Pl. XLIII fig. 4, Pl. LXVIII fig. 13, Pl. LXXVII fig. 10.
Phyllodoce rosea Pleijel, 1993: 54-57, figs. 35-37; Viéitez *et al.*, 2004: 143-145, fig. 46.
Anaitides subulifera Eliason, 1962: 230-232, fig. 6.

Material examined. Cinquale, northern Tyrrhenian Sea (43.9674° N, 10.1246° E), on fine sand, 8.5 m, 12.vi.2014: 1 specimen (MSNP: P/3429). Strait of Otranto, southern Adriatic Sea (40.4501° N, 18.5333° E), on compact mud, 121 m, 12.iii.2015: 1 specimen.
Distribution. North-eastern Atlantic Ocean (Pleijel, 1993; Viéitez *et al.*, 2004), Mediterranean Sea (Viéitez *et al.*, 2004; Castelli *et al.*, 2008; Çinar *et al.*, 2014; Faulwetter *et al.*, 2017). Reported by Castelli *et al.* (2008) for sectors 8 and 9, present data extend its distribution to sectors 1 and 7.
Ecology. On soft bottoms, mainly fine sands, but also on mud.
Remarks. Phyllodoce rosea has been reported for the whole Mediterranean Sea, but it does not seem to be a very common species. Even though the present records extend its distribution to only a part of the biogeographical sectors defined by Bianchi *et al.* (2008), it is likely that this species occurs in all Italian biogeographical sectors.

Pilargidae Saint-Joseph, 1899
Glyphohesione klatti Friedrich, 1950
Glyphohesione klatti Friedrich, 1950: 171-173, figs. 1-2; Licher, 1994: 602-604, figs. 1-2; Viéitez *et al.*, 2004: 277-279, fig. 100.
Ancistrosyllis klatti Eliason, 1962: 29-32, fig. 3.
Synelmis klatti Pettibone, 1966: 190-191; Pearson, 1970: 74-75, fig. 2b, 2c; Katzmann *et al.*, 1974a: 27-28.

Material examined. Tuscan Archipelago, northern Tyrrhenian Sea (43.5133° N; 9.9217° E), 110 m, ix.2012: 1 specimen (MSNP: P/2661). Strait of Otranto, southern Adriatic Sea (40.4501° N, 18.5333° E), 121 m, 12.iii.2015: 1 specimen (MSNP: P/4759).
Distribution. North Sea (Friedrich, 1950), northeastern Atlantic Ocean (Friedrich, 1950, Licher, 1994, Howson & Picton 1997), Mediterranean Sea (Katzmann *et al.*, 1974a; Licher, 1994; Cantone & Di Pietro, 2002). Castelli *et al.* (2008) reported this species for sector 8 only; present data extend its distribution to sectors 1 and 7.
Ecology. The species has been recorded in sandy and muddy bottoms between 20 and 268 m depth in the North Sea and between 10 and 185 m depth in the Mediterranean Sea.
Remarks. The species was first described from Helgoland (North Sea) by Friedrich (1950), who identified it as a hesionid. Subsequently, the species was recorded from the Skagerrak and Öresund (North Sea) by Eliason (1962), who considered it to be a pilargid and moved it to the genus *Ancistrosyllis* McIntosh, 1879; however, afterwards, Pettibone (1966) transferred the species to the pilargid genus *Synelmis* Chamberlin, 1919. Licher (1994) re-established the pilargid genus *Glyphohesione* and provided the redescription of the European *G. klatti* based on differences in brain and neuropodial setae morphology with the genus *Synelmis*. The distribution of this species in the Mediterranean Sea is scarcely known. The first record by Katzmann *et al.* (1974a) refers to the Catalan Sea, a following record by Cantone & Di Pietro (2002) confirmed its occurrence in the central Adriatic Sea.

Pseudexogone dineti (Katzmann, Laubier & Ramos, 1974)
Synelmis dineti Katzmann *et al.*, 1974a: 28-31, fig. 11.
Litocorsa dineti Darbyshire & Mackie, 2003: 65.
Pseudexogone dineti Salazar-Vallejo *et al.*, 2007: 542-544, figs. 3-4.

Material examined. Bari Canyon, Southern Adriatic Sea (41.3257° N, 17.0743° E), coarse sand with subfossile shell grit, 217 m, iii.2015: 3 specimens (MSNP: P/4755).
Distribution. Mediterranean Sea (Katzmann *et al.*, 1974a), North Atlantic Ocean (Salazar-Vallejo *et al.*, 2007). Castelli *et al.* (2008) reported this species for sectors 8 and 9, present data extend its distribution to sector 7.

Ecology. Sandy sediments, from muddy sand to gravel at 120-650 m depth (Katzmann *et al.*, 1974a; Salazar-Vallejo *et al.*, 2007).
Remarks. The species was first described as *Synelmis dineti* by Katzmann *et al.*, (1974a) and later included as a member of *Litocorsa* by Darbyshire & Mackie (2003) despite the fact it has bidentate notospines and lacks neurospines. Salazar-Vallejo *et al.* (2007) redefined the genus *Pseudoexogone* with the apparent autapomorphy of having curved, bidentate notospines and transferred *S. dineti* to this genus. This species was only sporadically reported after its description (Castelli, 1990; Simboura, 1996); its occurrence is here confirmed for the southern Adriatic Sea.

Chrysopetalidae Ehlers, 1864
Arichlidon reyssi (Katzmann, Laubier & Ramos, 1974)
Bhawania reyssi Katzmann *et al.*, 1974b: 314-316, fig. 1.
Arichlidon reyssi Watson Russell, 1998: 173-175, figs. 4C, 6G-I; Watson Russell, 2000: fig. 1; Viéitez *et al.*, 2004: 438-440, figs. 159 D-F, 160.

Material examined. Tuscan Archipelago, northern Tyrrhenian Sea (43.5133° N; 9.9217° E), on live *Neopycnodonte cochlear* (Poli, 1795) shell, 110 m, 07.vi.2019: 1 specimen (Department of Biology, University of Pisa: Gen/0035); Secca del Capo, Aeolian Archipelago, Southern Tyrrhenian Sea (38.5462° N, 14.3319° E), on coarse and bioclastic muds with some rhodoliths, 55 m, 30.vi.2015: 1 specimen.
Distribution. Mediterranean Sea (Katzmann *et al.*, 1974b; Watson Russell, 1998), Cape Verde Islands (Watson Russell, 1998), Red Sea (Watson Russell, 1998). Castelli *et al.* (2008) reported this species for sectors 4, 5, 6, 7, and 8; the present records extend the distribution of this species to sectors 1 and 3.
Ecology. Katzmann *et al.* (1974) identified *A. reyssi* as a relatively shallow species, occurring between 10 and 77 m depth, mostly on soft bottoms. According to Watson Russell (1998), who studied a larger number of specimens, *A. reyssi* is characterised by rather broad ecological requirements, occurring on both hard and soft bottoms from the intertidal zone to the abyssal stage. The majority of specimens, however, has been sampled between the surface and 400 m depth, suggesting that the specimens collected in the eastern Mediterranean Sea at almost 4000 m depth might represent a different species (Ravara *et al.*, 2019). Although the species occurs also on soft bottoms, its presence is often related to shell debris or, as in the case of the present record, relatively large live bivalves.
Remarks. The examined individuals match perfectly with the original description (Katzmann *et al.*, 1974b) and subsequent redescriptions (Watson Russell, 1998; Viéitez *et al.*, 2004). According to Viéitez *et al.* (2004), the species occurs in two morphs, one with paleae completely dark brown, the other one with paleae light with small dark spots. In our material we identified both morphs, as the specimen from the Tuscan Archipelago has contrasted, dark paleae, while the individual from the Aeolian islands shows light, spotted paleae. This rather stable difference might represent a clue of pseudocryptic speciation, especially considering the scarcity of studies dealing with Chrysopetalidae in the Mediterranean Sea.

Nereididae Blainville, 1818
Neanthes nubila (Savigny, 1822)
Lycoris nubila Savigny, 1822: 32.
Heteronereis signata Baird, 1864: 8-10, Pl. I, fig. 1.
Heteronereis schmardaei Quatrefages, 1866: 569-571.
Praxithea irrorata Malmgren, 1867: 51-, Pl. IV, figs. 24A-D.
Nereis irrorata Fauvel, 1923: 340-341, fig. 132.
Neanthes irrorata Núñez, 1995: fig. 5H.
Neanthes nubila Viéitez *et al.*, 2004: 367-368, fig. 136; Le Garrec, 2012: 4-5, fig. 1.

Material examined. Arno River Mouth, Tyrrhenian Sea (43.6807° N, 10.2644° E), silty sand, 10 m, vi.1985: 2 specimens (MSNP: P/2161). Antignano, Tyrrhenian Sea (43.4913° N, 10.3163° E), on *Posidonia oceanica* root mat, 6 m, 05.vi.2019: 5 specimens (Department of Biology, University of Pisa: Gen/0149).
Distribution. Northeast Atlantic Ocean, North Sea (straits of Skagerrak and Kattegat), English Channel, Celtic Sea and Macaronesian islands (Viéitez *et al.*, 2004; Le Garrec, 2012). Mediterranean Sea: Alboran Sea (Viéitez *et al.*, 2004), Catalan Sea (Viéitez *et al.*, 2004), Tyrrhenian Sea (present data) and Adriatic Sea (Mikac, 2015). Castelli *et al.* (2008) reported both *N. nubila* and *Neanthes rubicunda* (Ehlers, 1868) under the name *Neanthes irrorata*, making impossible to reconstruct the actual distribution of this species. Nonetheless, *N. irrorata* was reported for all biogeographical sectors except sectors 4 and 5, while more updated literature allows to confirm the occurrence of *N. nubila* to sectors 1, 8 and 9.
Ecology. Neanthes nubila occurs on sandy and muddy bottom (Glémarec, 1969) and more sporadically on hard bottoms, especially on sciaphilous bottoms, seagrass meadows and coralligenous bottoms (Fauvel, 1923; Cabioch *et al.*, 1968; Viéitez *et al.*, 2004).
Remarks. Neanthes nubila is a species characterised by conical posterior notopodial lobes, and the areas VII and VIII of the pharynx with a row of consistent paragnaths and a second row of smaller ones. This species is similar to *Neanthes rubicunda* (Ehlers, 1868) in the paragnaths pattern, even though, the latter species have a single row of consistent paragnaths in the areas VII and VIII. Moreover both *N. nubila* and *N, rubi-*

cunda, can be distiguished from other congeneric with similar posterior notopodial lobe pattern, in having paragnaths with enlarged chone in the area IV.

Neanthes rubicunda (Ehlers, 1868)
Nereis rubicunda Ehlers, 1868: 529-533, Pl. XXI, figs. 5-9
Nereis irrorata Fauvel 1914: 170 (*partim*): Fauvel, 1923: 340-341 (*partim*) [non *Nereis irrorata* (Malmgren, 1867)]
?*Nereis gisserana* Horst, 1924: 151, Pl. XXX, figs. 6-7; Fauvel, 1953: 190-191, fig. 96e-i.
Neanthes rubicunda Núñez, 1995: 75-76, figs. 4E, 5G; Viéitez *et al*., 2004: 365-367, fig. 135.

Material examined. Antignano, Tyrrhenian Sea (43.4913° N, 10.3163° E), on *Halopythis incurva*, 4 m, vii.2018: 22 specimens (MSNP: P/4355; P/4364). Vada, Tyrrhenian Sea (43.3281° N, 10.4289° E), on sedimented canopy algae, 10 m: 1 specimen (Department of Biology, University of Pisa: Gen/0150). Piombino, northern Tyrrhenian Sea (42.9342° N, 10.5461° E), 1 m, 2018: 3 specimens (MSNP: P/4334). Taranto, Ionian Sea (40.4392° N, 17.2398° E), on mixed bottom under aquaculture cages, 12 m, 20.iii.2019: 1 specimen (Department of Biology, University of Pisa: Gen/0148).
Distribution. Neanthes rubicunda has an unclear distribution because it was synonymized with *Neanthes irrorata* (Malmgren, 1867) and *Neanthes nubila* (Savigny, 1822). Currently its distribution encompasses the Atlantic Iberian coasts up to the Alboran Sea and the western side of the Balearic Isles (Núñez, 1995; Viéitez *et al*., 2004), the Tyrrhenian Sea (present data), the Strait of Messina (Cosentino *et al.* 2014), the Ionian Sea (present data) and the northern Adriatic Sea (Ehlers, 1868). Most likely widespread in the whole Mediterranean Sea. Núñez & Brito (2006) suggest that *Neanthes gisserana*, described by Horst (1924) for the Indian Ocean, might be synonymous with *N. rubicunda*. Castelli *et al.* (2008) united this species and *N. nubila* under the name *N. irrorata*, but it is impossible to reconstruct which records refer to either species; present data allow to confirm the occurrence of *N. rubicunda* in sectors 1, 4 and 6.
Ecology. Coralligenous bottoms, coarse-medium sands and maerl (Vièitez *et al*., 2004; Nuñez & Brito, 2006; Cosentino *et al.* 2014). *N. rubicunda* shows a deeper bathymetric range and a different biotopic distribution with respect to the sympatric *N. nubila* (Muir *et al*., 2014). In Mediterranean environments this species seems to occur from 4 to 60 m depth (Cosentino *et al.* 2014) also in slightly enriched environments and port fouling assemblages.
Remarks. Neanthes rubicunda is characterised by a conical posterior notopodial lobe, and the areas VII and VIII of the pharynx with a row of smaller paragnaths. This species is similar to *Neanthes nubila* in the pattern of paragnates, even though the latter species is characterized by a double row of paragnaths in the areas VII and VIII (Viéitez *et al*., 2004).

Sphaerodoridae Malmgren, 1867
Geminofilum garciaalvarezi (Moreira, Cacabelos & Troncoso, 2004)
Sphaerodoropsis garciaalvarezi Moreira *et al*., 2004: 995-999, figs. 1-3, 4A, 4D; Parapar *et al*., 2012: 31-33, figs. 7-9.
Geminofilum garciaalvarezi Capa *et al*., 2019: 38-40, figs. 4Q-R, 5H, 13G-I.

Material examined. Ardenza, northern Tyrrhenian Sea (43.5158° N, 10.3115° E), 2 m, coarse sand with *Posidonia oceanica* debris, 18.ix.2019: 1 specimen (Department of Biology, University of Pisa: Gen/0341). Taranto, Ionian Sea (40.4392° N, 17.2398° E), 6 m, coarse sand with filamentous algae, 20.iii.2019: 1 specimen.
Distribution. Eastern Atlantic Ocean (Moreira *et al*., 2004); Mediterranean Sea: Tyrrhenian Sea (Ravaglioli *et al*., 2023; present data), Ionian Sea (present data). Species absent in Castelli *et al.* (2008), according to present data it is known for sectors 1 and 6.
Ecology. On shallow soft bottoms (2-28 m depth), often with some organic enrichment.
Remarks. This very small species has been described for shallow environments of the north-eastern Atlantic Ocean (Moreira *et al*., 2004). Capa *et al.* (2019) created the genus *Geminofilum* for the monophyletic group of species previously assigned to *Sphaerodoropsis* showing two rows of macrotubercles in each chaetiger, and suggested that this genus might include some undescribed species. The sequence of *Geminofilum* sp. from Italy published in Capa *et al.* (2019) comes from a compatible environment and could belong to *G. garciaalvarezi* as well. The examined specimens correspond well to the original description of this species.

Sphaerephesia philippi (Fauvel, 1911)
Sphaerodorum philippi Fauvel, 1911: 19-21, figs. 16-20.
Non *Sphaerodorum philippi* Hartmann-Schröder, 1971: 228; Hartmann-Schröder, 1996: 237, fig. 106.
Sphaerephesia philippi Capa *et al*., 2019: 55-59, figs. 5O, 8D, 15K, 15L, 20.
?*Sphaerodoridium longiparapodium* Katzmann, 1973b: 281-292, fig. 1.
?*Sphaerodoropsis artabrensis* Moreira & Parapar, 2007: 374-377, figs. 1, 2, 3A.
?*Sphaerephesia artabrensis* Capa *et al*., 2019: 42-45, figs. 5I, 14, 15A, 15B.

Material examined. Tuscan Archipelago, northern Tyrrhenian Sea (43.5133° N; 9.9217° E), 110 m, ix.2012: 2 specimens (MSNP: P/2660; P/3200); iii.2017: 1 specimen (MSNP: P/3881).

Distribution. Arctic Ocean and subarctic Atlantic Ocean (Fauvel, 1911; Capa *et al.*, 2019); possibly temperate Atlantic Ocean (Capa *et al.*, 2019), Mediterranean Sea (Katzmann, 1973a). Castelli *et al.* (2008) reported *S. philippi* for sector 8; current data extend its distribution to sector 1.
Ecology. On muddy bottoms at shallow to moderate depth. Mediterranean records mostly refer to infralittoral to circalittoral environments (20-110 m), but the species possibly also occurs deeper (Katzmann, 1973b).
Remarks. S. philippi remained until recently a scarcely known species, although the original description, referred to arctic specimens, appears clear enough to allow its identification (Fauvel, 1911). The brief redescription by Hartmann-Schröder (1971), describing *S. philippi* as a species in which the size of blades of compound chaetae gradually decreases, clearly refers to a different species, but this same interpretation has been likely maintained by Mediterranean authors reporting *S. philippi* (Katzmann, 1973a; Mollica, 1995). There is also uncertainty about the species identified as *S. philippi* in the Mediterranean Sea. The only known reports of *S. philippi* in the Mediterranean Sea are referred to the Adriatic Sea (Katzmann, 1973a; Katzmann, 1983); moreover, the identification is only tentative. A similar species, *Sphaerodoridium longiparapodium* Katzmann, 1973, differs from *S. philippi* mainly in of the higher number of chetae in each parapodium (8-10 in *S. philippi*, 20 in *S. longiparapodium*) (Katzmann, 1973b); however, in their detailed redescription, Capa *et al.* (2019) give a maximum number of 18-20 compound chaetae, making the redescription of *S. philippi* compatible with *S. longiparapodium*. The recently described *S. artabrensis* is almost identical with *S. philippi*, but shows a much smaller size (1.75 mm *vs* 3.5 mm); the absence of molecular data does not allow at present to understand if the two species are separated, or *S. artabrensis* just represents a southern ecotype of *S. philippi* (Capa *et al.*, 2019). Nonetheless, individuals morphologically identified as *S. philippi* from northern Europe were found to belong to two clearly separated lineages (Capa *et al.*, 2019), suggesting that *S. philippi* represents a species complex, and that Mediterranean individuals might not be conspecific with *S. philippi s.s.* The examined specimens match very well with the redescription, as regards size and morphological features. The only substantial difference consists in the presence of two little eyespots in the better preserved specimen. Eyespots are not very common in Sphaerodoridae, are often not very evident and easily fade with preservation. Therefore, awaiting further insights on Sphaerodoridae taxonomy, we tentatively identify these specimens as *S. philippi*.

Sphaerodorum cantoneae (Mollica, 1994) emend.
Ephesiella cantonei Mollica, 1994: 20, fig. 1.
Sphaerodorum cf. *cantonei* Capa *et al.*, 2018: figs. 3D, 4A, 4M-N, 6E, 7E, 8B

Material examined. Antignano, northern Tyrrhenian Sea (43.4913° N, 10.3163° E), 4 m, on *Halopythis incurva*, 16.vi.2014: 1 specimen (MSNP: P/3430); 6 m, coarse sand with vegetal debris, 05.vi.2019: 1 specimen (Department of Biology, University of Pisa: Gen/0343 - dubious). Calafuria, northern Tyrrhenian Sea (43.4752° N, 10.3276° E), 27 m, coarse sand with vegetal debris, 14.ix.2019: 1 specimen (Department of Biology, University of Pisa: Gen/0342).
Distribution. Mediterranean Sea: Ionian Sea (Mollica, 1994), Ligurian Sea (Mussat Sartor *et al.*, 2007), Tyrrhenian Sea (present data). Possibly also in the western Mediterranean Sea (Capa *et al.*, 2018). Castelli *et al.* (2008) reported this species for sector 6 only; according to literature and new data, its distribution should be extended to sector 1.
Ecology. At shallow depth on canopy algae or on coarse sand.
Remarks. The etymology of the species was not explicitly stated in the original description, but the species is evidently dedicated to prof. Grazia Cantone. For this reason, in agreement with the ICZN code (article 31.1.2) the name should be emended into *S. cantoneae.* After the original description, *S. cantoneae* has been reported only sporadically, possibly due to its small size (Mollica, 1994; Mussat Sartor *et al.*, 2007). The two smaller specimens examined (P/3430 and Gen/0342) perfectly correspond to the original description, especially as regards the size of eyes and the shape of chaetae, with short, wide blade. The larger specimen from Antignano (Gen/0343) is instead characterised by proportionally smaller eyes and chaetae with not very short, thin blade. A similar shape of chaetae is reported by Capa *et al.* (2018) in specimens from Banyuls, Gulf of Lion, and the Chafarinas Islands. Capa *et al.* (2018) suggest that compound chaetae can have longer blades in anterior parapodia in *Sphaerodorum* species; however, the identification of this material as *S. cantonei* by Capa *et al.* (2018) is only tentative, and the possibility that specimens with longer blades might represent a different species cannot be excluded. The identity of Gen/0343 is therefore currently uncertain.

Sphaerodoridium minutum (Webster & Benedict, 1887)
Ephesia minuta Webster & Benedict, 1887: 728-729, Pl. IV, figs. 64-66,
Sphaerodorum minutum Berkeley & Berkeley, 1948: 27-28, fig. 34.
Sphaerodoropsis minuta Imajima, 1969: 153-154, fig. 2; Sardá, 1983: 16, fig. 2; Hartmann-Schröder, 1996: 237; Parapar *et al.*, 2012: 39-41, fig. 13.
Sphaerodoridium minutum Capa *et al.*, 2016: 19-22, fig. 7.

Material examined. Pianosa Island, northern Tyrrhenian Sea (42.5903° N, 10.0948° E), 0.5 m, clean coarse sand, 27.iv.2015: 1 specimen (MSNP: P/3757).
Distribution. Described from the North-Western Atlantic Ocean (Webster & Benedict, 1887), subsequently reported for the Pacific Ocean (Berkeley & Berkeley, 1948; Imajima, 1969), the North-Eastern Atlantic Ocean (Hartmann-Schröder, 1996; Parapar *et al.*, 2012), and the Mediterranean Sea (Castelli *et al.*, 2008; Çinar *et al.*, 2014; Mikac, 2015; Faulwetter *et al.*, 2017). Castelli *et al.* (2008) reported this species for sectors 7 and 9; present data extend its distribution to sector 1.
Ecology. Mostly at shelf depth in the type area. Eastern Atlantic and Mediterranean material has been sampled from the mesolittoral zone to moderate depth (Sardá, 1983; Parapar *et al.*, 2012).
Remarks. Although this is one of the first Sphaerodoridae ever described, its very wide distribution, and the recent description of similar species (Moreira & Parapar, 2015) suggest that worldwide records include more than one species. More specifically, Mediterranean and Eastern Atlantic material possibly does not correspond to *S. minutum s.s.* The examined individual matches the shallow-water form described by Sardá (1983) for the western Mediterranean Sea, and is here referred to *S. minutum*, pending more detailed investigations on this taxon.

Apistobranchidae Mesnil & Caullery, 1898
Apistobranchus tullbergi (Théel, 1879)
Aricia tullbergi Théel, 1879: 45-48, Pl. III, figs. 40-43.
Apistobranchus tullbergi Levinsen, 1884: 117; Pettibone, 1963: 293-298, figs. 77-78; Imajima, 1974: 61, fig. 2; Hartmann-Schröder, 1996: 346, fig. 159; Kirkegaard, 1996: 35-37, fig. 14; Jirkov, 2001: 333-334 (with figure).
Skardaria fragmentata Wesenberg-Lund, 1951: 59; McIntyre, 1960: 358.
?*Apistobranchus tenuis* Orrhage, 1962: 429; 1964: 7; Hartmann-Schröder, 1996: 346.

Material examined. Tuscan Archipelago, Tyrrhenian Sea (43.5133° N, 9.9217° E), 110 m, iii.2017: 2 specimens; xii.2019: 3 specimens (MSNP: P/3886). Salivoli, Tyrrhenian Sea, St. SS07 (42.9109° N, 10.5119° E), 37 m, 2021: 1 specimen.
Distribution. North-eastern Atlantic Ocean (Théel, 1879; Levinsen, 1884; Eliason, 1962); North-western Atlantic Ocean (Pettibone, 1952; Pollock, 1998); Pacific Ocean (Imajima, 1974); Mediterranean Sea: Tyrrhenian Sea (present data), Adriatic Sea (Katzmann, 1973c), Aegean Sea (Simboura, 1996 – as *Apistobranchus* sp.; Çinar & Dağli, 2013). Castelli *et al.* (2008) reported *A. tullbergi* for sector 8 only; present data extend its distribution to sector 1.
Ecology. On muddy bottoms at shallow to moderate depth (Théel, 1879; McIntyre, 1960; Imajima, 1974; Kirkegaard, 1996; Jirkov, 2001). As several Atlantic species, it is relatively rare in the Mediterranean Sea, and mostly associated to circalittoral environments between 50 and 200 m depth (Katzmann, 1973c; Çinar & Dağli, 2013).
Remarks. This rather distinctive polychaete species has type locality in the Arctic, but it has been reported from a wide geographical range. The genus *Skardaria* was described by Wesenberg-Lund (1951) based on a misunderstanding of Theél's (1879) original description; *S. fragmentata* has a sub-Arctic distribution, as *A. tullbergi*, and the two taxa are currently considered synonymous (Eliason, 1962; Jirkov, 2001; Blake & Petti, 2015). The small *A. tenuis*, with type locality in the North Sea, has uncertain validity, as it might represent a pedomorphic species, or just juvenile individuals of *A. tullbergi* (Blake & Petti, 2015). It is possible that temperate records of *A. tullbergi* include different species, but the small size and the often bad preservation status of the specimens does not allow to reach sound conclusions (Eliason, 1962). In the Mediterranean Sea there are few, scattered records, suggesting however that this species is rather widespread and mainly associated with circalittoral environments.

Orbiniidae Hartman, 1942
Gesaschroederella laubieri (Badalamenti & Castelli, 1991)
Schroederella laubieri Badalamenti & Castelli, 1991: 95-96, figs. 1-2.

Material examined. Cesenatico, Adriatic Sea (44.2097° N, 12.4038° E), 3 m, sand, 2020: 3 specimens.
Distribution. Western Mediterranean Sea: Tyrrhenian Sea (islands of Sicily and Elba) (Badalamenti & Castelli, 1991), Adriatic Sea (present data); North-Eastern Atlantic Ocean: Canary Islands (Riera *et al.*, 2010). Castelli *et al.* (2008) report *G. laubieri* for sectors 1, 2, 3, and 4; present data extend its distribution to sector 9.
Remarks. Blake (2021) provided the genus *Gesaschroederella* as a replacement name for *Schroederella* Laubier, 1962; however, the same author found out that *Gesaschroederella berkeleyi* (Laubier, 1971) is actually based on juveniles of *Leitoscoloplos acutus* (Verrill, 1883), and suggested that the two remaining species of the genus might also represent juveniles of *Scoloplos* or *Leitoscoloplos* species. *Gesaschroederella laubieri* is a small, littoral, interstitial species with a strongly pointed prostomium, and differs from the other species of the same genus in the development of dorsal cirri and ventral cirri, which are longer than in the other species. This record confirms the affinity of the species to fine sand biocoenoses.

Paraonidae Cerruti, 1909
The taxonomy of the family Paraonidae is currently in need of a thorough restructuring (Langeneck *et al.*, 2019a). Here, awaiting more complete data, we decided to avoid implementing the nomenclatural changes proposed in that publication, and to maintain the names as they were used before, with the exception of the use of the subgenera of *Aricidea* Webster, 1879, which turned out to be polyphyletic and artificial (Langeneck *et al.*, 2019a).

Aricidea annae Laubier, 1967
Aricidea annae Laubier, 1967: 106-112, figs. 2-3.
Aricidea (Acmira) annae Erdoğan-Dereli & Çinar, 2020: 5-8, figs. 2-3.

Material examined. Gulf of Salerno, Tyrrhenian Sea (40.5680° N, 14.7337° E), 131 m, 28.ii.2018: 1 specimen (MSNP: P/4516). Malta Escarpment, Strait of Sicily (36.4167° N, 15.5500° E), 1800 m, v.2009: 3 specimens (MSNP: P/2422, P/2423, P/2424).
Distribution. Mediterranean Sea: Balearic Sea (Laubier & Ramos, 1974), Gulf of Lion (Laubier, 1967), Strait of Sicily (Langeneck *et al.*, 2017b – as *Aricidea quadrilobata* Webster & Benedict, 1887), Adriatic Sea (Katzmann & Laubier, 1975 – as *A. quadrilobata*), Aegean Sea (Çinar *et al.*, 2012), Sea of Marmara (Erdoğan-Dereli & Çinar, 2020). Castelli *et al.* (2008) reported this species (as *A. quadrilobata*) from sectors 8 and 9; present data extend its distribution to sectors 3 and 5.
Ecology. On muddy bottoms from the circalittoral to the bathyal stage (30-2900 m: Laubier & Ramos, 1974). Despite having been described for circalittoral environments (Laubier, 1967), it is in fact more frequent in bathyal muds (Katzmann & Laubier, 1975), although the extremely wide depth range might suggest that this taxon includes more than one species, as suggested for other polychaete taxa (Ravara *et al.*, 2019).
Remarks. Briefly after its description, *A. annae* together with other *Aricidea* species was put into synonymy with *Aricidea quadrilobata* Webster & Benedict, 1887 (Strelzov, 1973), an allegedly cosmopolitan species, often associated with bathyal environments. Strelzov (1973) assigned differences between different species to intraspecific variability and growth stage. Later on, Blake (1996) resurrected *Aricidea antennata* Annenkova, 1934 for Pacific individuals assigned to *A. quadrilobata*, although this species was reported also for the Atlantic Ocean (Aguirrezabalaga & Gil, 2009). As stated by Laubier (1967), *A. annae* should be considered close to *A. quadrilobata*, but the differences retrieved in size, number of branchiae and shape of buccal lips point at a distinction between the two species, that was sometimes maintained also after the synonymisation (Çinar *et al.*, 2012) and was confirmed by Erdoğan-Dereli & Çinar (2020). Unpublished molecular data confirm the distinction between *A. annae* and *A. quadrilobata*, even though the two species are closely related.

Aricidea katzmanni Erdoğan-Dereli & Çinar, 2020
Aricidea (Acmira) katzmanni Erdoğan-Dereli & Çinar, 2020: 28-36, figs. 17-22.

Material examined. Ardenza, northern Tyrrhenian Sea (43.5158° N, 10.3115° E), coarse sand with *Posidonia* debris, 2 m, 18.vi.2019: 3 specimens (Department of Biology, University of Pisa: Gen/0263). Capraia Island, northern Tyrrhenian Sea (43.0155° N, 9.8251° E), coarse sand, 11 m, v.2014: 1 specimen; 22 m, 20.x.2021: 2 specimens (Department of Biology, University of Pisa: Gen/0908). Sa Mesa Longa, Sea of Sardinia (40.0476° N, 8.3983° E), coarse sand, 3 m, iii.2011: 1 specimen (MSNP: P/2549). Strait of Messina (38.2548° N, 15.6118° E), coarse sand, 25 m, v.1992: 1 specimen (MSNP: P/3863).
Distribution. Mediterranean Sea: Sea of Marmara, Aegean Sea, Levantine Sea (Erdoğan-Dereli & Çinar, 2020), Sea of Sardinia, Tyrrhenian Sea, Strait of Messina (present data). Species described after the checklist by Castelli *et al.* (2008), present data confirm its occurrence in sectors 1, 2, and 4.
Ecology. Between 2 and 56 m depth on soft bottoms and on sedimented *Posidonia oceanica* rhizomes. In Italian waters all specimens have been sampled in coarse sand between 2 and 25 m depth.
Remarks. This recently described species was historically confused with *Aricidea catherinae* Laubier, 1967, an allegedly cosmopolitan taxon (Blake, 1996) that upon molecular examination turned out to be comprised of several lineages not directly related (Langeneck *et al.*, 2019a). The Mediterranean, shallow-water *A. katzmanni* corresponds to *Aricidea (Acmira) catherinae* 3 *sensu* Langeneck *et al.* (2019a).

Aricidea mariannae Katzmann & Laubier, 1975
Aricidea (Allia) mariannae Katzmann & Laubier, 1975: 575-578, fig. 3; Aguirrezabalaga *et al.*, 1986: 146, fig. 5.
Aricidea (Strelzovia) mariannae Parapar *et al.*, 2012: 197-199, fig. 78.
?*Aricidea (Allia) mirunekoa* Aguirrezabalaga & Gil, 2009: 665-661, figs. 18, 19C-D.
?*Aricidea (Strelzovia) mirunekoa* Parapar *et al.*, 2012: 199-201, figs. 79-80; Erdoğan-Dereli & Çinar, 2020: 67-70, figs. 47-49.

Material examined. Tuscan Archipelago, Tyrrhenian Sea (43.5133° N, 9.9217° E), 110 m, 05.xii.2018: 1 specimen; xii.2019: 5 specimens (Department of Biology, University of Pisa: Gen/0217). Gulf of Salerno, Tyrrhenian Sea (40.5918° N, 14.6780° E), 129 m: 2 specimens (Department of Biology, University of Pisa: Gen/0211); Gulf of Salerno, Tyrrhenian Sea (40.5680° N, 14.7337° E) 131 m: 4 specimens (Department of

Biology, University of Pisa: Gen/0215); Gulf of Salerno, Tyrrhenian Sea (40.5710° N, 14.3653° E), 223 m: 2 specimens (Department of Biology, University of Pisa: Gen/0212); Gulf of Salerno, Tyrrhenian Sea (40.5370° N, 14.7485° E), 225 m: 3 specimens (Department of Biology, University of Pisa: Gen/0213); Gulf of Salerno, Tyrrhenian Sea (40.4958° N, 14.7022° E), 343 m: 1 specimen (Department of Biology, University of Pisa: Gen/0214); Gulf of Salerno, Tyrrhenian Sea (40.5357° N, 14.7005° E), 358 m: 1 specimen (Department of Biology, University of Pisa: Gen/0216).

Distribution. Mediterranean Sea: Sea of Sardinia (Langeneck *et al.*, 2019b), Tyrrhenian Sea (present data), Ionian Sea (Castelli *et al.*, 2008), Adriatic Sea (Katzmann & Laubier, 1975). Possibly in the North-eastern Atlantic Ocean (Aguirrezabalaga *et al.*, 1986). Castelli *et al.* (2008) reported this species for sectors 5, 8, and 9; present data, together with literature, extend its distribution to sectors 1, 2, and 3.

Ecology. On circalittoral to bathyal environments, between 100 and 1200 m depth (Katzmann & Laubier, 1975; Langeneck *et al.*, 2019b), more frequent between 100 and 400 m (Katzmann & Laubier, 1975).

Remarks. Although *A. mariannae* has been only sporadically reported after the description, based on our data it is one of the most common *Aricidea* species in low circalittoral environments, and its apparent scarcity is most likely due to the low number of studies dealing with these habitats. The recently described *A. mirunekoa* is very similar to *A. mariannae*, and the differences highlighted by Aguirrezabalaga & Gil (2009) might fall within the intraspecific variability of the latter species. In which case *A. mirunekoa* would be synonymous with *A. mariannae*, and the distribution of the latter would encompass also the Northeastern Atlantic Ocean.

Aricidea meridionalis Laubier & Ramos, 1974

Aricidea suecica meridionalis Laubier & Ramos, 1974: 1128-1130, fig. 11.

Aricidea (Strelzovia) suecica meridionalis Parapar *et al.*, 2012: 216-218, fig. 91A.

Aricidea (Acmira) meridionalis Erdoğan-Dereli & Çinar, 2020: 43-46, figs. 29-32.

Material examined. Livorno, Tyrrhenian Sea (43.5565° N, 10.2742° E), 14 m, ii.1992: 1 specimen (MSNP: P/0293). Tuscan Archipelago, Tyrrhenian Sea (43.5133° N; 9.9217° E), 110 m, 07.vi.2019: 2 specimens; xii.2019: 1 specimen (Department of Biology, University of Pisa: Gen/0206). Gulf of Cagliari, Tyrrhenian Sea (39.1602° N, 9.1112° E), 20 m, 1982 (MSNP: P/1025). Monfalcone, Gulf of Trieste, Adriatic Sea (45.7418° N, 13.6036° E), 15 m, x.1995: 1 specimen (MSNP: P/3920).

Distribution. Mediterranean Sea: Balearic Sea (Laubier & Ramos, 1974); Tyrrhenian Sea (Castelli, 1987; present data); Adriatic Sea (Mikac, 2015; present data); Aegean Sea (Çinar *et al.*, 2014; Faulwetter *et al.*, 2017); Sea of Marmara (Çinar *et al.*, 2014; Erdoğan-Dereli & Çinar, 2020); Levantine Sea (Çinar *et al.*, 2014). Castelli *et al.* (2008) reported this species from sectors 1, 2 and 8; the data here presented do not extend the distribution of this species, but allow for a georeferencing of the occurrences reported in the checklist.

Ecology. On sand and muddy sand between 12 and 110 m depth (Castelli, 1987; present data). Often associated with other Paraonidae (e.g. *Aricidea assimilis* Tebble, 1959, *Aricidea claudiae* Laubier, 1967), always in small numbers.

Remarks. This species was described as a subspecies of *Aricidea suecica* Eliason, 1920, a Nordic species that had until recently uncertain identity. Although *A. suecica* was redescribed by both Strelzov (1973 – as *Aricidea nolani* Webster & Benedict, 1887) and Hartley (1984), neither of these authors examined the type material, and the original description seems to depict a different species, with short antenna and slightly different modified neurochaetae (Eliason, 1920), possibly corresponding to the species described as *Aricidea roberti* Hartley, 1984. Pending the examination of topotypic material, the actual identity of *A. suecica* is currently uncertain. Morphologically, *A. suecica meridionalis* is quite different from the original description, although it shows some similarity with Hartley's (1984) redescription; the differences towards the nominal subspecies led Erdoğan-Dereli & Çinar (2020) to raise this subspecies to the species rank.

Despite having been reported from the whole Mediterranean Sea, this large *Aricidea* is a rather uncommon species, and all records refer to few individuals. Moreover, in the Mediterranean Sea it has been confused with the cryptogenic *Aricidea fragilis* Webster, 1879 (Langeneck *et al.*, 2018b), a shallow-water species that occurs with high abundances on muddy sands at shallow depths (Langeneck *et al.*, 2018b; 2020). For instance, part of the drawing referred to *A. meridionalis* in Parapar *et al.* (2012) should be assigned to *A. fragilis*.

Aricidea wassi Pettibone, 1965

Aricidea wassi Pettibone, 1965: 135-138, figs. 9-11; Hobson, 1972: 552-553; Imajima, 1973: 265-267, fig. 6.

Aricidea (Aricidea) wassi Strelzov, 1973: 62-64, fig. 23C-E; Katzmann & Laubier, 1975: 582-584, fig. 5; Blake, 1996: 44-45, fig. 2.7; Parapar *et al.*, 2012: 229, figs. 98-99; Erdoğan-Dereli & Çinar, 2020: 52-56, figs. 36-38.

Material examined. Capraia Island, Tyrrhenian Sea (43.1000° N, 9.8083° E), 100 m, x.2016: 1 specimen; Elba Island, Tyrrhenian Sea, St. SN29 (42.8794° N, 10.1532° E), 113.5 m, 2021: 3 specimens; Elba Island, Tyrrhenian Sea, St. SN35 (42.8159° N, 10.0385° E), 87 m, 2021: 3 specimens; Elba Island, Tyrrhenian Sea, St. SN37 (42.7705° N, 10.0102° E), 87 m, 2021: 3 speci-

mens; Elba Island, Tyrrhenian Sea, St. SN39 (42.7276° N, 10.0056° E), 81.5 m, 2021: 1 specimen; Elba Island, Tyrrhenian Sea, St. SN41 (42.7088° N, 9.9654° E), 160 m, 2021: 1 specimen.
Distribution. Allegedly cosmopolitan. Described for the North-western Atlantic Ocean (Pettibone, 1965), subsequently reported for the Pacific Ocean (Hobson, 1972; Imajima, 1973; Blake, 1996) and the North-eastern Atlantic Ocean (Hartley, 1981; Parapar *et al.*, 2012; López & Sikorski, 2017). Few records in the Mediterranean Sea: Tyrrhenian Sea (present data), Adriatic Sea (Katzmann & Laubier, 1975), Aegean Sea (Simboura & Zenetos, 2005), Levantine Sea (Çinar *et al.*, 2014), Sea of Marmara (Erdoğan-Dereli & Çinar, 2020). Castelli *et al.* (2008) reported this species from sectors 8 and 9; present data extend its distribution to include sector 1.
Ecology. On muddy and sandy bottoms at moderate to bathyal depths (Pettibone, 1965; Strelzov, 1973; Blake, 1996). While in Oceanic environments this is often an abundant species (López & Sikorski, 2017), in the Mediterranean Sea it is a relatively rare species, mostly restricted to circalittoral muds between 50 and 150 m depth (Katzmann & Laubier, 1975; Simboura & Zenetos, 2005; Erdoğan-Dereli & Çinar, 2020).
Remarks. This species is easily recognised based on the multiarticulate antenna and the pseudoarticulate modified neurochaetae. Among Mediterranean species it resembles *Aricidea bansei* Laubier & Ramos, 1974, with which it shares the multiarticulate antenna; this species however has crochet-like, multidentate modified neurochaetae with a ventrally inserted arista and occurs in shallower environments, usually on clean fine sands (Castelli, 1985).
The extremely wide geographical range from which *A. wassi* has been reported could suggest that it represents a species complex. However, molecular data are needed to clarify this issue.

Cirrophorus nikebianchii Langeneck, Barbieri, Maltagliati & Castelli, 2017
Cirrophorus nikebianchii Langeneck *et al.*, 2017a: 872-876, fig. 1; Erdoğan-Dereli *et al.*, 2017: 138-142, figs. 2-4.
Cirrophorus furcatus Parapar *et al.*, 2012: 235-237, figs. 102-103 [non *Cirrophorus furcatus* (Hartman, 1957)]

Material examined. Fortezza Nuova, Livorno, Tyrrhenian Sea (43.5546° N, 10.3134° E), on sedimented serpulid reef, 1 m, 04.iv.2016: 3 specimens. Ardenza, Tyrrhenian Sea (43.5158° N, 10.3115° E), on coarse sand with *Posidonia* debris, 2 m, 18.ix.2019: 18 specimens (Department of Biology, University of Pisa: Gen/0229). Antignano, Tyrrhenian Sea (43.4913° N, 10.3163° E), on *Posidonia* mat, 6 m, 05.vi.2019: 1 specimen (Department of Biology, University of Pisa: Gen/0233). Gulf of Follonica, northern Tyrrhenian Sea (42.9300° N, 10.5706° E), 15 m, iv.2017: 17 specimens; on mixed bottoms close to fish farming cages, 33 m, 29.x.2019: 15 specimens (Department of Biology, University of Pisa: Gen/0230). Tuscan Archipelago (43.5133° N, 9.9217° E), 110 m, xi.2018: 1 specimen (MSNP: P/4567). Mar Grande of Taranto, Ionian Sea (40.2625° N, 17.1419° E), 12 m, iii.2018: 108 specimens; vii.2018: 86 specimens; 20.iii.2019: 9 specimens (MSNP: P/4496, P/4497, P/4498; Department of Biology, University of Pisa: Gen/0227, Gen/0228).
Distribution. Mediterranean Sea (Langeneck *et al.*, 2017a; Erdoğan-Dereli *et al.*, 2017). Possibly in the North-eastern Atlantic Ocean as well (see Parapar *et al.*, 2012). Species included by Castelli *et al.* (2008) under *C. furcatus*, together with *Cirrophorus turcicus* Erdoğan-Dereli, Çinar & Dağli, 2017; according to literature and present data, its occurrence is confirmed for sectors 1 and 6.
Ecology. Usually on soft bottoms in enriched sediments, between 0.5 and 5 m depth in brackish environments, deeper (up to 100 m depth) in marine environments (Langeneck *et al.*, 2017b; Erdoğan-Dereli *et al.*, 2017). Sporadically also on maerl beds, seagrass meadows (Erdoğan-Dereli *et al.*, 2017) and even sedimented fouling assemblages (Tempesti *et al.*, 2020).
Remarks. Cirrophorus nikebianchii was first described by Langeneck *et al.*, (2017a) based on both morphological and molecular data, and separated from the closely related *C. furcatus*. A redescription by Erdoğan-Dereli *et al.* (2017) extended its distribution to the Sea of Marmara. This species is easily distinguished from other *Cirrophorus* species because of its very short prostomial antenna, the very high number of branchiae (up to 90 pairs) and the presence of thickened neuropodial chaetae in the posterior part of the body. Nonetheless, molecular analyses confirm its closeness to *C. furcatus* (Langeneck *et al.*, 2017a; 2019a).

Cirrophorus turcicus Erdoğan-Dereli, Çinar & Dağli, 2017
Cirrophorus turcicus Erdoğan-Dereli *et al.*, 2017: 142-147, figs. 5-7.
Cirrophorus cf. *lyriformis* Laubier, 1966a: 474-476; Laubier & Ramos, 1974: 1138-1141 [not *Cirrophorus lyriformis* (Annenkova, 1934)].
Cirrophorus furcatus Katzmann & Laubier, 1975: 584-586, fig. 6 [not *Cirrophorus furcatus* (Hartman, 1957)]
Cirrophorus sp. B Langeneck *et al.*, 2017a: 875-876.

Material examined. Trieste, Adriatic Sea (45.6942° N, 13.7040° E), 17 m, 22.ii.2020: 1 specimen (Department of Biology, University of Pisa: Gen/0482).
Distribution. Mediterranean Sea: Balearic Sea (Laubier & Ramos, 1974 – as *C.* cf. *lyriformis*) Gulf of Lion (Laubier, 1966a – as *C.* cf. *lyriformis*), Adriatic Sea (Katzmann & Laubier – as *C. furcatus*; present data), Sea of Marmara (Erdoğan-Dereli *et al.*, 2017), Levantine Sea (Langeneck *et al.*, 2019a). Species included by Castelli *et al.* (2008) under *C. furcatus*, together with *C.*

nikebianchii, according to present data its occurrence is confirmed for sector 9.
Ecology. On slightly enriched soft bottoms between 3 and 500 m depth in marine environments (Erdoğan-Dereli *et al*., 2017; present data). Uncommon in the western part of the basin and in the Adriatic Sea, where *C. nikebianchii* is more frequent.
Remarks. This species has been historically confused with *C. lyriformis* and *C. furcatus* (Laubier, 1966a; Laubier & Ramos, 1974; Katzmann & Laubier, 1975). While describing *C. nikebianchii*, Langeneck *et al.* (2017a) pointed out that some descriptions of Mediterranean material could not be assigned to the latter species, and together with molecular data for a single specimen suggested the existence of another undescribed species, there provisionally named *Cirrophorus* sp. B. The species was formally described by Erdoğan-Dereli *et al.* (2017) as *C. turcicus*.

Levinsenia demiri Çinar, Dağli & Açik, 2011
Levinsenia demiri Çinar *et al*., 2011: 2124-2128, figs. 5-6; Erdoğan-Dereli & Çinar, 2021: 152-155, figs. 2-4.

Material examined. Viareggio, Tyrrhenian Sea (43.8686° N, 10.1583° E), 60 m, x.2017: 5 specimens (Department of Biology, University of Pisa: Gen/0242). Calafuria, Tyrrhenian Sea (43.4767° N, 10.3266° E), on coralligenous bottom, 30 m, xi.2014: 1 specimen (Department of Biology, University of Pisa: Gen/0239). Tuscan Archipelago, Tyrrhenian Sea (43.5133° N, 9.9217° E), 110 m, 29.xi.2014: 25 specimens; 07.iii.2015: 10 specimens; v.2017: 15 specimens; 28.v.2018: 25 specimens (MSNP: P/3680, P/3788, P/3924; Department of Biology, University of Pisa: Gen/0245). Gulf of Follonica, northern Tyrrhenian Sea (42.9300° N, 10.5706° E), 15 m, 2018: 1 specimen. Gulf of Salerno, Tyrrhenian Sea (40.5918° N, 14.6780° E), 129 m, 28.ii.2018: 25 specimens (Department of Biology, University of Pisa: Gen/0243, Gen/0244). Mar Grande di Taranto, Ionian Sea (40.2625° N, 17.1419° E), 12 m, vi.2018: 6 specimens (MSNP: P/4493). Strait of Otranto, Adriatic Sea (40.4501° N, 18.5333° E), 121 m, 12,iii.2015: 7 specimens (Department of Biology, University of Pisa: Gen/0241). Bari, Adriatic Sea (41.1757° N, 16.9021° E), 75 m, 15.iii.2015: 52 specimens (Department of Biology, University of Pisa: Gen/0240). Trieste, Adriatic Sea (45.6942° N, 13.7040° E), 17 m, 22.ii.2020: 12 specimens (Department of Biology, University of Pisa: Gen/0246). Lido Adriano, Adriatic Sea (44.243089° N 12.213866° E), 10 m, 2020: 30 specimens.
Distribution. Mediterranean Sea: Tyrrhenian Sea (present data), Adriatic Sea (present data), Aegean Sea (Çinar *et al*., 2014; Faulwetter *et al*., 2017), Sea of Marmara (Çinar *et al*., 2011), Levantine Sea (Çinar *et al*., 2014). Species described after Castelli *et al.*'s (2008) checklist, present data confirm its occurrence in sectors 1, 3, 6, 7, and 9.
Ecology. Mostly on muddy bottoms, or silty sand, between 15 and 200 m depth (Çinar *et al*., 2011). Sporadically on coralligenous outcrops, possibly in correspondence with crevices that fill with sediment (present data).
Remarks. This species has been described only recently for the eastern Mediterranean Sea, along with several other species of the genus *Levinsenia* (Çinar *et al*., 2011). The presence of the allegedly cosmopolitan *L. gracilis*, with which this species has been historically confused, is currently uncertain in the Mediterranean Sea. Based on current data, *L. demiri* seems to be the most common and widespread *Levinsenia* species in Italian waters; however, given the possibility of cryptic lineages in the genus *Levinsenia* (Langeneck *et al*., 2019a), integrative taxonomy is needed to understand if all individuals belong to the same species.

Levinsenia kantauriensis Aguirrezabalaga & Gil, 2009
Levinsenia kantauriensis Aguirrezabalaga & Gil, 2009: 636-639, figs. 4-5; Parapar *et al*., 2012:.
?*Levinsenia* cf. *demiri* Langeneck *et al*., 2017b: 148-149, fig. 5a-b.

Material examined. Gulf of Salerno, Tyrrhenian Sea (40.5370° N, 14.7485° E), 225 m, 28.ii.2018: 5 specimens; Gulf of Salerno, Tyrrhenian Sea (40.4958° N, 14.7022° E), 343 m, 28.ii.2018: 2 specimens. Gulf of Salerno, Tyrrhenian Sea (40.5357° N, 14.7005° E), 358 m, 28.ii.2018: 2 specimens. Gulf of Salerno, Tyrrhenian Sea (40.5348° N, 14.6522° E), 431 m, 28.ii.2018: 3 specimens (Department of Biology, University of Pisa: Gen/0235, Gen/0236, Gen/0237, Gen/0238). Bari Canyon, Adriatic Sea (41.3257° N, 17.0743° E), 217 m, 08.iii.2015: 1 specimen (Department of Biology, University of Pisa: Gen/0234).
Distribution. North-eastern Atlantic Ocean (Aguirrezabalaga & Gil, 2009); Mediterranean Sea (uncertain): Sea of Sardinia (Langeneck *et al*., 2019b – as *L.* cf. *demiri*), Tyrrhenian Sea (present data), Adriatic Sea (present data), Strait of Sicily (Langeneck *et al*., 2017b – as *L.* cf. *demiri*). This species was described after the checklist by Castelli *et al.* (2008); according to literature and present data it occurs in sectors 2, 3, 5, and 7.
Ecology. Low circalittoral to bathyal, occurring from approximately 200 down to 600 m (Aguirrezabalaga & Gil, 2009), possibly down to 1200 m (Langeneck *et al*., 2017b).
Remarks. This species is morphologically quite similar to *L. demiri*, sharing the presence of five pre-branchial and five branchial chaetigers; it differs however in the shape of neuropodial hooks and in the pattern of post-chaetal notopodial lobes (Çinar *et al*., 2011). The Mediterranean specimens here examined are larger than typical *L. demiri*, but show sometimes intermediate features between the two species (Langeneck *et al*., 2017b); moreover, molecular data suggest that in the

Mediterranean Sea occur at least two distinct lineages morphologically corresponding to *L. kantauriensis* (Langeneck *et al.*, 2019a).

Levinsenia kosswigi Çinar, Dağli & Açik, 2011
Levinsenia kosswigi Çinar *et al.*, 2011: 2129-2132, figs. 7-8; Erdoğan-Dereli & Çinar, 2021: 156-159, figs. 5-6.

Material examined. Off Viareggio, northern Tyrrhenian Sea (43.8686° N, 10.1583° E), 90 m, 2018: 1 specimen. Tuscan Archipelago, northern Tyrrhenian Sea (43.5133° N, 9.9217° E), 110 m, ix.2012: 1 specimen. 29.xi.2014: 1 specimen (MSNP: P/2659). Bari, Adriatic Sea (41.1183° N, 17.0647° E), 84 m, 02.viii.2017: 1 specimen (MSNP: P/4738). Cattolica, Adriatic Sea (43.5937° N, 12.4559° E), 11 m, 2019: 2 specimens.
Distribution. Mediterranean Sea: Tyrrhenian Sea (present data), Adriatic Sea (present data), Sea of Marmara (Çinar *et al.*, 2011), Levantine Sea (Çinar *et al.*, 2011). Species described after the publication of the checklist by Castelli *et al.* (2008), according to present data it occurs in sectors 1, 7, and 9.
Ecology. Circalittoral, on muddy bottoms between 10 and 110 m depth, usually in low number (Çinar *et al.*, 2011; Erdoğan-Dereli *et al.*, 2021).
Remarks. This is the largest Mediterranean *Levinsenia* species, and can be easily identified due to the number of pre-branchial chaetigers (8) and of branchiae (16-18 pairs). Mediterranean records of *Levinsenia oculata* (Hartman, 1965) most likely should be assigned either to this species or to *L. materi*, a close, smaller species that usually occurs in shallower environments. A third, undescribed species with similar features, but smaller size and a lower number of branchiae occurs in deep environments (Langeneck *et al.*, 2017b – as *Levinsenia* sp. 1; Langeneck *et al.*, 2019b – as *Levinsenia* sp. A) and its distinctness is confirmed by preliminary molecular data (Langeneck *et al.*, 2019a – as *Levinsenia* sp. A).

Levinsenia materi Çinar & Dağli, 2013
Levinsenia materi Çinar & Dağli, 2013: 941-945, figs. 11-12; Erdoğan-Dereli & Çinar, 2021: 162-166, figs. 9-11.

Material examined. Gulf of Follonica, northern Tyrrhenian Sea (42.9300° N, 10.5706° E), 15 m, 2019: 1 specimen; on mixed bottom close to fish cages, 33 m, 29.x.2019: 1 specimen (Department of Biology, University of Pisa: Gen/0247). Porto Santo Stefano, Tyrrhenian Sea (42.4472° N, 11.1259° E), 8 m, vi.2014: 1 specimen. Gulf of Palermo, Tyrrhenian Sea (38.1335° N, 13.4008° E), 10 m, xi.2014: 1 specimen.
Distribution. Mediterranean Sea: Tyrrhenian Sea (present data), Aegean Sea (Çinar & Dağli, 2013), Sea of Marmara (Çinar *et al.*, 2014; Erdoğan-Dereli & Çinar, 2021). Species described after the publication of the checklist by Castelli *et al.* (2008), it is currently known for sectors 1 and 3.
Ecology. On sand, often with some organic enrichment, and in *Posidonia oceanica* mat (Çinar & Dağli, 2013; present data).
Remarks. This species is morphologically close to *L. kosswigi*, but it is characterised by seven pre-branchial chaetigers (instead of eight) and fewer pairs of branchiae. Molecular data confirm both the closeness and the distinction between the two species (Langeneck *et al.*, 2019a). Moreover, *L. materi* occurs in shallower environments, often with some enrichment, while *L. kosswigi* is strictly circalittoral.

Paradoneis heterochaeta Erdoğan-Dereli & Çinar, 2019
Paradoneis heterochaeta Erdoğan-Dereli & Çinar, 2019: 470-481, figs. 4-11.

Material examined. Capraia Island, Tyrrhenian Sea (43.0155° N, 9.8251° E), gravel, 10 m, 07.iv.2018: 12 specimens (Department of Biology, University of Pisa: Gen/0255). Pianosa Island, Tyrrhenian Sea (42.5903° N, 10.0948° E), coarse sand, 0.5 m, 16.vii.2016: 15 specimens (Department of Biology, University of Pisa: Gen/0254). Porto Pozzo, Tyrrhenian Sea (41.1943° N, 9.2794° E), maerl, 0.8 m, 08.vii.2015: 2 specimens (Department of Biology, University of Pisa: Gen/0256).
Distribution. Mediterranean: Sea of Marmara (Erdoğan-Dereli & Çinar, 2019), Tyrrhenian Sea (present data).
Ecology. On sandy-muddy bottoms and maerl beds between the surface and 200 m depth, more frequently between 10 and 25 m (Erdoğan-Dereli & Çinar, 2019). Species described after the checklist by Castelli *et al.* (2008), current data confirm its occurrence in sectors 1 and 2.
Remarks. This species was described only recently for the Sea of Marmara; it is close to *Paradoneis ilvana* Castelli, 1985 for the presence of modified notochaetae with branches of different thickness, but it differs from this species in the co-occurrence with them of notochaetae with branches of similar thickness (Erdoğan-Dereli & Çinar, 2019). This species corresponds to the individual reported as *Paradoneis ilvana* 2 by Langeneck *et al.* (2019a); molecular data support the distinction between *P. heterochaeta* and *P. ilvana*. The actual distribution of *P. heterochaeta* probably covers the whole Mediterranean Sea, but it has most likely confused with *P. ilvana* until now.

Cirratulidae Carus, 1863
Chaetozone carpenteri McIntosh 1911
Chaetozone carpenteri McIntosh 1911: 166, pl. 6, fig. 5c-e; Chambers *et al.* 2011: 45, fig. 2.; Munari *et al.* 2017: 548, fig. 4.

Material examined. Off Viareggio, northern Tyrrhenian Sea (43.8686° N, 10.1583° E), 90 m, 2017: 4 specimens. Tuscan Archipelago, northern Tyrrhenian Sea

(43.5133° N, 9.9217° E), 110 m, vi.2019: 5 specimens. Amendolara, Ionian Sea (39.9307° N, 16.7083° E), 97 m, 28.vii.2017: 1 specimen (MSNP: P/4735).
Distribution. Coast of Algiers and Atlantic coast of Spain (McIntosh 1911); Tyrrhenian Sea, Procida Island, north-west Sardinia, Punta Tramontana; Croatia, Rovinj (Chambers *et al*., 2011); Central Adriatic Sea (Mikac, 2015); Sea of Marmara, Coasts of Turkey (Çinar *et al*., 2014). Northern Tyrrhenian Sea and Ionian Sea (present data). Species absent in Castelli *et al.* (2008), literature and present data refer to sectors 1, 6, and 8.
Ecology. Chaetozone carpenteri can be found on sandy mud as well as in mud, between 80 and 98 m depth (Chambers *et al*., 2011) and in the gravelly mud also at 20 m (Mikac, 2015), in the Central Adriatic Sea it was found mainly in silt and clayey silt (Munari *et al*., 2017). The present record confirms the presence in muddy substrates at 20 and 100 m depth.
Remarks. Chaetozone carpenteri is easily discernible from other Mediterranean species of the genus in having spines arising from chaetigers 7-10 (with 2-3 spines in anterior notopodia and neuropodia). Moreover *C. carpenteri*, in addition to the presence of eyespots on prostomium, has black speckles on the prostomium, peristomium and chaetiger 1 (Munari *et al*., 2017).

Spionidae Grube, 1850
Aurospio banyulensis (Laubier, 1966)
Prionospio banyulensis Laubier, 1966b: 258; Laubier, 1968: 99-105, figs. 10-15.
Prionospio ockelmanni Pleijel, 1985: 177-181, figs. 1-3.

Material examined. Castel Boccale, Calafuria, Tyrrhenian Sea (43.4767° N, 10.3266° E), on coarse sand at the basis of a coralligenous cliff, 34 m, 08.iv.2018: 1 specimen (MSNP: P/4330). Vada Shoals, Tyrrhenian Sea (43.2875° N, 10.3503° E), on fouling in the internal part of a shipwreck, 23 m, 26.x.2019: 1 specimen. Capraia Island, Tyrrhenian Sea (43.0415° N, 9.8464° E), among coralline algae, 0.5 m, 21.iii.2014: 1 specimen (MSNP: P/3364).
Distribution. Mediterranean Sea: Gulf of Lion (Laubier, 1966b); Tyrrhenian Sea (present data); Ionian Sea (Sigvaldadóttir, 1992); Adriatic Sea (Mikac, 2015); Aegean Sea (Dağli *et al.* 2011). North-eastern Atlantic Ocean: North Sea (Pleijel, 1985 – as *P. ockelmanni*; Sigvaldadóttir, 1992), Iceland (Sigvaldadóttir, 1992). Castelli *et al.* (2008) reported this species for sector 8 only; present data extend its distribution to sector 1.
Ecology. Aurospio banyulensis was described from coralligenous assemblages by Laubier (1966b). Eastern Mediterranean records came from dredgings from 18 to 140 meters depth (Sigvaldadóttir, 1992). Dagli *et al.* (2011) recorded *A. banyulensis* at depths between 5 and 85 meters in different substrates, reaching the highest abundances in *Posidonia* maedows and among algae. Present data confirm the affinity for coralligenous assemblages.
Remarks. Laubier first mentioned *A. banyulensis* as *Prionospio banyulensis* in his thesis of 1966, where he made some brief ecological descriptive notes. Morphological description was provided in a later study (Laubier, 1968). Because of the loss of type material, a neotype of *A. banyulensis* from the type locality was deposited at NHRM by Sigvaldadóttir (1992). This spionid can be assigned to the genus *Aurospio* because the branchiae start on chaetiger 3, even though a recent phylogenetic reconstruction by Hektoen *et al.* (2024) suggests that the genus *Aurospio* is an ingroup of *Prionospio* and should not be considered valid. Moreover, *Aurospio banyulensis* is a species with 3 pair of equal sized apinnate branchiae, a dorsal crest on chaetiger 7-8 and hooded hooks from chaetiger 12-13.

Prionospio maciolekae Dagli & Çinar, 2011
Prionospio maciolekae Dagli & Çinar, 2011: 42-44, (Figs 6-8, 13C)

Material examined. Off Crotone, North Ionian Sea (39.8333° N, 17.15 E), 90 m, 2005.
Distribution. Eastern Mediterranea Sea (Dagli & Çinar, 2011). In the Mediterranean, *P. maciolekae* was probably misidentified with *Prionospio multibranchiata* Berkeley, 1927, specimens of which from different areas of the Mediterranean require a re-examination. Species described after the checklist by Castelli *et al.* (2008), currently known for sector 6.
Ecology. Muddy substratum. Depth range 10-90 m (Dagli & Çinar, 2011; present data).
Remarks. Prionospio maciolekae is characterized by short, thin and densely ciliated apinnate branchiae on chaetigers 2-10. *Prionospio maciolekae* is similar to the recently described species *Prionospio sanmartini* Delgado-Blas, Díaz-Díaz & Viéitez, 2019. However, *P. sanmartini* differs from *P. maciolekae* in the shape of the prostomium and in the lack of notopodial postchaetal lamellae on chaetiger 1 (Delgado-Blas *et al*., 2019).

Maldanidae Malmgren, 1867
Leiochone tricirrata Bellan & Reyss, 1967
Leiochone tricirrata Bellan & Reyss, 1967: 200-203, figs. 1-3.

Material examined. Off Viareggio, northern Tyrrhenian Sea (43.8686° N, 10.1583° E), 90 m, 2017: 1 specimen; Salivoli, Tyrrhenian Sea, St. SN08 (42.9200° N, 10.4978° E), 37 m, 2021: 1 specimen; Salivoli, Tyrrhenian Sea, St. SN10 (42.9230° N, 10.4869° E), 41 m, 2021: 1 specimen; Salivoli, Tyrrhenian Sea, St. SN11 (42.9238°

N, 10.4815° E), 42.5 m, 2021: 1 specimen; Salivoli, Tyrrhenian Sea, St. SN12 (42.9247° N, 10.4755° E), 45 m, 2021: 1 specimen; Salivoli, Tyrrhenian Sea, St. SN13 (42.9257° N, 10.4695° E), 48 m, 2021: 1 specimen; Salivoli, Tyrrhenian Sea, St. SN14 (42.9268° N, 10.4641° E), 50 m, 2021: 1 specimen; Salivoli, Tyrrhenian Sea, St. SN15 (42.9278° N, 10.4572° E), 52 m, 2021: 1 specimen; Salivoli, Tyrrhenian Sea (42.9316° N, 10.4470° E), 60.8 m, 2021: 1 specimen.
Distribution. Mediterranean Sea: Gulf of Lion (Bellan & Reyss, 1967), Tyrrhenian Sea (present data), Adriatic Sea (Di Pietro & Cantone, 2002), Levantine Sea (Amoureux 1976; Çinar 2005). North-eastern Atlantic Ocean: Bay of Biscay (Amoureux 1985), English Channel (Godet *et al.* 2010). Castelli *et al.* (2008) reported this species for sector 8 only; present data extend its distribution to sector 1.
Ecology. Muddy and sandy mud at depth of 30 to 100 meters.
Remarks. The maldanid *Leiochone tricirrata* has a body composed by 19 chaetigers followed by up to five achaetous preanal segments, a weakly defined plate edge present adjacent cephalic keel. Moreover, the main trait is the presence of a pygidium with three cirri, although some specimens may have one or two cirri (Bellan & Reys, 1967).

Ampharetidae Malmgren, 1866
Adercodon pleijeli Mackie, 1994
Adercodon pleijeli Mackie, 1994: 243-245, figs. 1-2.

Material examined. Tuscan Archipelago, Tyrrhenian Sea (43.5133° N, 9.9217° E), 110 m, 29.xi.2014: 1 specimen; xii.2019: 1 specimen (MSNP: P/3676). Capraia, northern Tyrrhenian Sea (43.1000° N, 9.8083° E), 90 m, 2017: 1 specimen.
Distribution. Mediterranean Sea: Gulf of Lions (Mackie, 1994), Tyrrhenian Sea (present data), Ionian Sea (Mackie, 1994), Aegean Sea (Simboura & Zenetos, 2005). Castelli *et al.* (2008) reported this species for sector 6 only; present data extend its distribution to sector 1.
Ecology. Muddy and sandy sediments at a depth of 30-150 m, often with some organic enrichment (Mackie, 1994; Simboura & Zenetos, 2005). A single record for bathyal environments (Simboura & Zenetos, 2005).
Remarks. This species is characterized by 3 pairs or smooth branchiae, 13 thoracic segments, lacking paleae and thoracic uncini from chaetiger 4. Moreover, this species is characterized by the presence of a pharyngeal tooth in addiction to papillose tentacles. The most conspicuous difference from other Mediterranean Ampharetidae is represented by the trifid prostomium, with the medial part bell shaped and lateral lobes- curved, pointed and basally united with the medial part (Mackie, 1994).

Terebellidae Johnston, 1846
Pista labruneae Lavesque, Daffe, Londoño-Mesa & Hutchings, 2021
Pista labruneae Lavesque *et al.*, 2021: 40-42, fig. 18

Material examined. Antignano, northern Tyrrhenian Sea (43.4913° N, 10.3163° E), on *Posidonia oceanica* root mat, 6 m, 10.ix.2020: 1 specimen. Capraia Island, northern Tyrrhenian Sea (43.0155° N, 9.8251° E), coarse sand, 22 m, 20.x.2021: 4 specimens.
Distribution. Mediterranean Sea: Gulf of Lion (Lavesque *et al.*, 2021), Tyrrhenian Sea (present data), Levant Sea (Çinar *et al.*, 2022). Probably widespread in the Mediterranean Sea. Species described after the checklist by Castelli *et al.* (2008); it is possible that a part of the records of *Pista unibranchia* Day, 1963 (reported from all sectors except 4, 7, and 9) refers to this species. However, if the identification was based on the original record by Cantone (1981), Italian specimens of *P. unibranchia* belong to at least two different species (Langeneck *et al.*, 2020). According to current data, *P. labruneae* is known for sector 1.
Ecology. Originally described for fine sand at 17-20 m depth (Lavesque *et al.*, 2021), subsequently reported for deeper environments (66 m: Çinar *et al.*, 2022). Present data extend the distribution of this species in shallower environments.
Remarks. Pista labruneae is unmistakable among Mediterranean Terebellidae for the presence of a single, un-paired pompon-like branchia. However, this species was historically misidentified as *Pista unibranchia* Day, 1963, a species considered non-indigenous in the Mediterranean Sea, but later considered a questionable alien species (Langeneck *et al.*, 2020). It is likely that the vast majority of records of *P. unibranchia* in the Mediterranean Sea actually refers to this species (Lavesque *et al.*, 2021 – but see Langeneck *et al.*, 2020). The identity of the specimens examined in this study was confirmed by N. Lavesque (*pers. comm.*).

Trichobranchidae Malmgren, 1866
Terebellides mediterranea Parapar, Mikac & Fiege, 2013
Terebellides mediterranea Parapar *et al.*, 2013: 228-241, figs. 5-8, 12a, d, e, 13.

Material examined. Off Viareggio, northern Tyrrhenian Sea (43.8686° N, 10.1583° E), 90 m, 2017: 1 specimen.
Distribution. Mediterranean Sea: Adriatic Sea (Parapar *et al.* 2013); Tyrrhenian Sea (present data); Sea of Marmara (Çinar *et al.*, 2014). Species described after the publication of the checklist by Castelli *et al.* (2008), currently known for sector 1 and 9.
Ecology. Offshore in the northern Adriatic Sea on silty sand bottom at 31 m depth (Parapar *et al.* 2013); muddy substrate at 90 m depth (present data).

Remarks. Terebellides mediterranea is characterised by the presence of large notopodia provided with long notochaetae in the first thoracic chaetiger. This trait is a character employed to discriminate this species from other Mediterranean *Terebellides* (see Parapar *et al.* 2013; Lavesque *et al.* 2019). *Terebellides stroemi* Sars, 1835 is an allegedly cosmopolitan species that was found to include a high number of pseudocryptic lineages (Nygren *et al.*, 2018; Lavesque *et al.*, 2019). Most records of *T. stroemii* in the Mediterranean Sea should be re-evaluated upon re-examination of the available material, as they might correspond to *T. mediterranea* and/or to recently described *Terebellides* for the Atlantic-Mediterranean region (Parapar *et al.* 2013; Lavesque *et al.* 2019).

Oweniidae Rioja, 1917

Myriochele danielsseni Hansen, 1878

Myriochele danielsseni Hansen, 1878; Nilsen & Holthe 1985: 22-23, figs. 5,6,12a; Imajima & Morita 1987: 91-94, figs. 4, 5; Hartmann-Schroder 1996: 475.

Material examined. Tyrrhenian Sea, Off Pomezia (41.6182° N, 12.4350° E), 10 m, sand, 2014; off Anzio (41.4735° N, 12.5839° E) 10 m, sand, 2014.

Distribution. North Atlantic: Biscay Bay; Portuguese continental shelf; Artic Ocean; Japan (Nilsen & Holthe 1985; Aguirrezabalaga *et al.* 2000; Riera *et al.*, 2015). Species absent in Castelli *et al.* (2008), according to present data it occurs in sector 2.

Remarks. Myriochele danielsseni is characterised by the presence of a constriction in the prostomium and a sub-conical head region, ventral mouth and notopodial fascicles with both capillary and acicular chaetae, with rounded tip and dorsolateral sulcus; teeth of uncini arranged side by side. The other Atlanto-Mediterranean species *Myriochele heeri* Malmgren, 1867 differs in having teeth of uncini arranged one above the other (Parapar, 2003).

Discussion

The present work reports additional records of 39 native polychaete species, significantly extending their distributional range in Italian waters. Twelve of the newly reported species have been described after the last checklist of Italian polychaetes (Castelli *et al.*, 2008), and their recent record depends mostly on an increasing interest on Mediterranean polychaetes taxonomy and the activity of new specialists. Nonetheless, eleven species are here reported for the first time in Italian waters, and one of them (*Myriochele danielsseni*) represent the first Mediterranean record as well. The identity of some species (namely *Phyllodoce longipes*, *Sphaerephesia philippi,* and *Sphaerodoridium minutum*) is surrounded by some doubts. In particular, *P. longipes* is a Pacific species, and alleged synonymous taxa described for the North-Eastern Atlantic Ocean (*Phyllodoce macropapillosa* and *Phyllodoce jeffreysii*) are possibly better suited for Mediterranean material (Pleijel, 1993); also the type locality of *S. philippi* and *S. minutum* is in the Arctic and western Atlantic Ocean, respectively, and Mediterranean records might refer to new species, but as this group is only partially known in European water, we prefer to keep using these names. More detailed studies, possibly taking into account also molecular data, are needed to clarify the identity of these taxa in the Mediterranean Sea.

The frequency of new records and range extensions, along with relatively frequent description of new species even from well-known environments (Lezzi *et al.*, 2016; Langeneck *et al.*, 2017a, 2018a; Lezzi, 2017; Lezzi & Giangrande, 2018; Erdoğan-Dereli & Çinar, 2019; Lavesque *et al.*, 2019; 2021; Giangrande *et al.*, 2021; Sikorski *et al.*, 2021; Çinar *et al.*, 2022) suggest that our knowledge of diversity, taxonomy and ecology of Mediterranean polychaetes is still far from being complete. The apparently uneven distribution of polychaetes retrieved in several Mediterranean works reflects more the distribution of taxonomists, rather than that of polychaetes (Giangrande & Licciano, 2004), and the same can be suggested for the majority of the marine benthic taxa. Especially in the case of families characterised by high species diversity, and often the co-occurrence of several congeneric species in the same environment, as Syllidae, Spionidae and Paraonidae, a taxonomic sufficiency approach fails in accurately describing benthic assemblages (Musco *et al.*, 2009; Chatzigeorgiou *et al.*, 2012). Updated taxonomy is therefore important also for environmental monitoring, and a continuous exchange of information and expertise between research and monitoring groups is crucial to have comparable environmental data across different areas and countries. However, several environmental monitoring groups still rely on outdated literature, preventing the identification of recently described taxa. This highlights the need of updated literature, taxonomic revisions (Boero, 2015) as well as practical courses and exchanges between taxonomists and parataxonomists (Cirino *et al.*, 2016). The re-examination of poorly known and forgotten taxa, the availability of numerous individuals allowing insight into the intraspecific variability of organisms (Mazziotti & Lezzi, 2020), as well as the use of integrative taxonomy methods (Langeneck *et al.*, 2017a; Aguado *et al.*, 2019; Lavesque *et al.*, 2019; Sikorski *et al.*, 2021) are needed to give a more complete insight into the diversity of the Mediterranean marine biota.

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