Ocean and Coastal Research

Original Article
Special Article Collection
Di Domenico, M.; Andriguetto-Filho, J.M. and Lopes, R.M. (Eds)
An ocean of science, worms, and humaneness:
a tribute to Paulo Lana
http://doi.org/10.1590/2675-2824072.23138
ISSN 2675-2824

An annotated checklist of Hesionidae Grube, 1850 (Annelida: Errantia) from Brazil with a key to the genera

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Abstract

We present the first checklist of the Hesionidae family species along the Brazilian coast. The family includes approximately 196 nominal species belonging to 33 genera recorded worldwide. This taxonomic list includes synonymized taxa based on systematic revisions, type locality, Brazilian records, and GenBank accession number. We identified 17 species belonging to eight genera as valid occurrences. Hesionids are found along the entirety of the Brazilian coastline, except in the northern region of the country, in which their absence is likely attributed to limited studies in the area.

Keywords: Taxonomic list, Polychaete, Annelids, Brazilian coastline, Atlantic Ocean

INTRODUCTION

Hesionidae Grube, 1850, is a family of errant polychaetes that is widely distributed in various marine environments with diverse feeding strategies (Rouse and Pleijel, 2001). Most species have a small body the first segments of which are usually fused to the prostomium, uniramous, or biramous parapodia, diverse appendages, and chaetae (Rouse and Pleijel, 2001).

The earliest known hesionid species was described as *Nereis punctata* (now called *Nereimyra punctata*) by Otto Friedrich (Müller, 1776), and the family Hesionidae was designated in 1850 by Adolph Eduard Grube (referred to as "Hesionea" at the time). Currently, Hesionidae comprises 196 valid species in 33 genera and three subfamilies.

Hesionidae is one of the families with a challenging taxonomy due to the difficulty in observing and preserving appendages such as chaetae, antennae, and palps, which are crucial for identification (Glasby et al., 2000; Pleijel and Rouse, 2002). Additionally, Hesionidae are typically not abundant in benthic samples (Rouse and Pleijel, 2001), limiting the availability of specimens for taxonomic studies.

The study of the Hesionid fauna in Brazil began with Johann Friedrich Theodor Müller and Gerhard Henrik Armauer Hansen in 1858 and 1882, respectively. However, despite recent advancements in polychaete taxonomy research and oceanographic expeditions, knowledge about Hesionidae along the Brazilian coast remains limited. According to the species

Submitted: 30-Aug-2023
Approved: 22-Jul-2024

Associate Editor: Maikon Di Domenico

catalog by Amaral et al. (2022), only a few species have been recorded from Brazil, and most of these records originate from unpublished sources.

This study presents, for the first time, a comprehensive checklist of Hesionidae recorded in the literature and from museums in Brazil. Moreover, a key to the genera mentioned in this study is provided.

METHODS

This checklist is based on literature and Hesionid specimens found in museums. In addition to published papers, we also included data from unpublished reports, conference abstracts, theses, and dissertations. The species were listed alphabetically within their respective genera, which are further grouped into subfamilies, according to Pleijel (1998). For each taxon, we provided information on scientific names, subfamilies, tribes, synonyms, type localities, type materials, GenBank numbers, habitats, and distribution. Additional remarks, if necessary, have been included. A key to genera recorded in Brazil is also provided.

The following institutional acronyms are used for the depositories: the British Museum of Natural History (BMNH), United Kingdom; the Los Angeles County Museum of Natural History (LACM), United States of America; Museu de Zoologia da Universidade de São Paulo (MZUSP), Brazil; Museu do Centro de Estudos do Mar (MCEM–BPO), Universidade Federal do Paraná, Brazil, which has been incorporated into Museu de Diversidade Biológica da Universidade Estadual de Campinas (MDBio/ZUEC), Universidade Estadual de Campinas, Brazil; Muséum national d'Histoire naturelle (MNHN), France; "Paulo Young" Coleção de Invertebrados (CIPY), Universidade Federal da Paraíba, Brazil; the United States National Museum (USNM), United States of America; and the Zoological Museum Hamburg (ZMH), Germany.

Additionally, the following abbreviations refer to Brazilian states: Alagoas (AL), Bahia (BA), Ceará (CE), Paraíba (PB), Paraná (PR), Pernambuco (PE), Rio de Janeiro (RJ), Rio Grande do Norte (RN), Rio Grande do Sul (RS), Santa Catarina (SC), São Paulo (SP), and Sergipe (SE).

RESULTS

A total of 17 valid species, distributed among eight genera, have been recorded along the Brazilian coast. *Parahesione* Pettibone, 1956, has unidentified species of the genus in the literature from Brazil (Lana et al., 2006). According to Salazar-Vallejo et al. (2019), *Hesionides* Friedrich, 1937 is not a Hesionid. Herein, it is considered a member of the family *Microphtalmidae* (Hartmann-Shröder, 1971).

Among the 17 acknowledged species in the literature, five possess type localities in Brazil, specifically: *Hesione picta* Müller in Grube (1858), *Micropodarke pleijeli* (Rizzo and Salazar-Vallejo, 2014), *Syllidia amaralae* (Rizzo and Salazar-Vallejo, 2014), *Neogyptis nonatoi* (Rizzo and Salazar-Vallejo, 2014), and *Oxydromus lanai* (Rizzo and Salazar-Vallejo, 2014).

Hesionidae have been recorded along the Brazilian coast, except in the coastal areas of Amapá, Pará, and Maranhão, in which their absence is likely attributed to limited studies in the area. Most studies are ecological and have been conducted on the coasts of Rio de Janeiro and São Paulo.

Key to genera of Hesionidae recorded in Brazil

1. Median antenna absent 2
   Median antenna dorsally inserted 6
   Median antenna frontally inserted 7
2.(1) Palps absent ..... *Hesione*
   Palps present 3
3.(2) Ventral glands on neuropodial bases ..... *Micropodarke*
   Ventral glands absent on neuropodial bases 4
4.(3) Short palpophore; absence of notochaetae emerging from dorsal cirri 5
   Long palpophore; notochaetae emerging from dorsal cirri ..... *Nereimyra*
5.(4) Lip glands present; eversible pharynx with paired jaws ..... *Syllidia*
   Lip glands absent; eversible pharynx without jaws, tooth or plates ..... *Parahesione*
6.(1) Dark aciculae; eversible pharynx with tooth or plates with or without papillae ..... *Leocrates*
   Transparent aciculae; pharynx with 60 papillae without tooth or plates ..... *Neogyptis*
7.(1) Pharynx papillae and external acicular notochaetae absent ..... *Oxydromus*
   Pharynx papillae and external acicular notochaetae present ..... *Podarkeopsis*

Systematic account

Family Hesionidae Grube, 1850
Subfamily Hesioninae Grube, 1850
Tribe Hesionini Grube, 1850
Genus *Hesione* Lamarck, 1818
***Hesione splendida* Lamarck, 1818**

Synonymized names: *Hesione ehlersi* (Gravier, 1900); *Nereis splendida* (Lamarck, 1818).

Type locality: Gulf of Suez, Red Sea, Indian Ocean.

Holotype: Unknown.

Materials from Brazilian repositories: CIPY-POLY-UFPB176 – 185, CIPY-POLY-UFPB226, CIPY-POLY-UFPB239, CIPY-POLY-UFPB313 – 315, CIPY-POLY-UFPB454, CIPY-POLY-UFPB838, CIPY-POLY-UFPB889, CIPY-POLY-UFPB965 – 968.

GenBank: No data.

Habitat records in Brazil: No data.

Brazilian records: CE, RN, PB, PE, AL, SE (Costa et al., 2008).

Other records: Atlantic Ocean – Mediterranean Sea (Day, 1967; Sordino, 1989; Díaz and Liñero-Arana, 2002; Wehe and Fiege, 2002); South Africa (Day, 1967); Senegal (Day, 1967); Venezuela (Díaz and Liñero-Arana, 2002; Díaz and Liñero-Arana, 2006; Díaz et al., 2009). Indian Ocean – Persian Gulf (Díaz and Liñero-Arana, 2002; Wehe and Fiege, 2002); Suez Canal, Gulf of Aden (Wehe and Fiege, 2002); Red Sea (Lamarck, 1818; Day, 1967; Díaz and Liñero-Arana, 2002; Wehe and Fiege, 2002); Madagascar (Day, 1961), Mozambique (Day, 1967), South Africa (Quatrefages, 1866). Pacific Ocean – Australia (Monro, 1931; Hartmann-Schroder, 1971); New Zealand (Gibbs, 1972); New Caledonia (Pruvot, 1930); China (Wu et al., 1980); Japan (Hessle, 1925); Panama (Monro, 1933).

Remarks: *Hesione splendida* is the type species of Hesionidae. Reliable diagnostic features are quite problematic among *Hesione* nominal species because their bodies include highly contractile and fragile structures and features that can change during ontogeny (Salazar-Vallejo 2018). Poor fixation during sampling may also be a criterion for misidentification, as previously reported by Costa and Christoffersen (2016). These are reasons why the relationship between *Hesione* species remains unclear, requiring major revisions (Pleijel, 1998). *H. splendida* has two syntypes, one from the Gulf of Suez (MNHN-IA-TYPE0140) and another from Île-de-France (MNHN-IA-TYPE0139). According to the *Hesione* revision by Salazar-Vallejo (2018) *H. splendida* differs from the other species between genera by its laterally curved prostomium; parapodia with basally cylindrical dorsal cirri, dorsal cirrophore twice as long as wide; larger blackish acicula; single, long, blunt or slightly and distally swollen acicular lobe, missing lower tine; bidentate neurochaetal blades 5-9 times as long as wide; a subdistal tooth smaller than distal one with guards approaching its distal tooth.

***Hesione picta* Müller in Grube, 1858**

Synonymized names: *Fallacia proctochona* (Schmarda, 1861); *Hesione margaritae* (Hansen, 1882); *Hesione praetexta* **(**Ehlers, 1887); *Hesione proctochona* (Schmarda, 1861); *Hesione vittigera* (Ehlers, 1887).

Type locality: Brazil, Atlantic Ocean.

Holotype: Unknown.

Materials from Brazilian repositories: ZUEC-POL2183; ZUEC-POL2524.

GenBank: KF006978.1 (16S); KF006977.1 (28S).

Habitat records in Brazil: Intertidal to 100-m depth (Nonato and Luna, 1970; Amaral, 1980; Morgado and Amaral, 1984) and mixed bottom (Nonato and Luna, 1970).

Brazilian records: PE, RN (Rullier and Amoureux, 1979; Silva et al., 2021); AL, SE (Nonato and Luna, 1970); RJ, SP (Treadwell, 1932; Hansen, 1882; Amaral, 1980; Morgado and Amaral, 1984; Morgado and Tanaka, 2001); PR (Hansen, 1882); SC (Müller in Grube, 1858; Hansen, 1882); RS (Hansen, 1882).

Other records: Atlantic Ocean – Spain (San Martin and Gomez Esteban, 1992); Cape Verde (Rullier, 1964); Panama (Fauchald, 1977; Cubit and Williams, 1983); United States of America (Camp et al., 1998); Porto Rico (Treadwell, 1900); Mexico (Hartman, 1951; Uebelacker and Johnson, 1984); Cuba (Ibarzábal, 2006); Jamaica (Jones, 1962); Venezuela (Augener, 1933; Diaz et al., 2017); Pacific Ocean – Gulf of Thailand (Ngamniyom et al., 2014).

Remarks: Costa et al. (2008) proposed that the synonymized species for *H. splendida* were also used to refer to *H. picta*. However, this was not based on type material. Currently, *H. picta* is considered a valid species, characterized especially by the double acicular lobe; long, digitate tines; upper tine twice as long as its lower one; bidentate neurochaetal blades 4-5 times as long as wide; a smaller subdistal tooth; and guards approaching its distal tooth.

Genus *Leocrates* (Kinberg, 1866)
Leocrates atlanticus (McIntosh, 1885)

Synonymized names: *Dalhousia atlantica* (McIntosh, 1885); *Leocrates atlantica* (Roule, 1896); *Tyrrhena atlantica* (Roule, 1896).

Type locality: Canary Islands, Atlantic Ocean.

Holotype: BMNH (no register number available).

Materials from Brazilian repositories: Unknown.

GenBank: No data.

Habitat records in Brazil: 1600-m depth and soft bottom (Lavrado and Brasil, 2010).

Brazilian records: RJ (Lavrado and Brasil, 2010).

Other records: Atlantic Ocean – Mediterranean Sea (Fauvel, 1923; Sordino, 1989); France, Azores, Cape Verde (Fauvel, 1923); Equatorial Guinea (Amoureux, 1973).

Remarks: Lavrado and Brasil (2010) is the only study that reported this species in Brazil. Brazilian repositories have no available material.

Leocrates claparedii (Costa in Claparède, 1868)

Synonymized names: *Castalia claparedii* (Costa in Claparède, 1868); *Tyrrhena claparedii* (Costa in Claparède, 1868).

Type locality: Naples, Italy, Mediterranean Sea, Atlantic Ocean.

Holotype: Unknown.

Materials from Brazilian repositories: Unknown.

GenBank: OQ417223.1 (COI).

Habitat records in Brazil: Infralitoral (Rullier and Amoureux, 1979).

Brazilian records: BA (Rullier and Amoureux, 1979).

Other records: Atlantic Ocean – Mediterranean Sea (Fauvel, 1923; Tan and Chou, 1993). Indian Ocean – Singapore (Fauvel, 1953; Tan and Chou, 1993); Andaman Islands, Nankauri Harbour, Bay of Bengal, Gulf of Mannar, Sri Lanka (Fauvel, 1953); Red Sea (Monro, 1939; Day, 1967; Tan and Chou, 1993); India (Parulekar, 1981; Khan and Murugesan, 2005); Suez Canal, Red Sea, Arabian Gulf (Wehe and Fiege, 2002); Gulf of Aden (Tan and Chou, 1993; Wehe and Fiege, 2002); Madagascar (Day, 1961); Mozambique, South Africa (Day, 1967). Pacific Ocean – Vietnam (Fauvel, 1939); Tahiti (Monro, 1939).

Remarks: *Leocrates atlanticus* and *L. claparedii* are very similar to each other (Fauvel, 1923; Fauvel and Rullier, 1957). The global distribution of *L. claparedii* suggests a cosmopolitan pattern, whereas *L. atlanticus* is known to occur in the North Atlantic Ocean. In Brazil, only one study has reported the species on the coast of Bahia (Rullier and Amoureux, 1979). The specimens were unavailable, and the identification eludes confirmation (Salazar-Vallejo, 2020). Brazilian repositories have no available material.

Tribe Psamathinae Pleijel, 1998
Genus *Micropodarke* Okuda, 1938
Micropodarke pleijeli Rizzo and Salazar-Vallejo, 2014

Synonymized names: Not applicable.

Type locality: Rio de Janeiro, Brazil, Atlantic Ocean.

Holotype: MZUSP387.

Materials from Brazilian repositories: MZUSP387 – 388.

GenBank: No data.

Habitat records in Brazil: 138 – 146-m depth (Rizzo and Salazar-Vallejo, 2014).

Brazilian records: RJ (Rizzo and Salazar-Vallejo, 2014).

Other records: Only known on the Brazilian coast.

Remarks: *Micropodarke* includes three nominal taxa, *Micropodarke dubia* (Hessle, 1925), *Micropodarke fujianensis* (Wang et al., 2023), and *Micropodarke pleijeli* (Rizzo and Salazar-Vallejo, 2014). This species is the only representative of its genus in the Atlantic Ocean.

Micropodarke insignis nomen nudum

Synonymized names: Not applicable.

Type Locality: Not applicable.

Holotype: Unknown.

Materials from Brazilian repositories: Unknown.

GenBank: No data.

Habitat records in Brazil: 15 m depth and soft bottom (Petti, 1997).

Brazilian records: SP (Petti, 1997).

Other records: Only known on the Brazilian coast.

Remarks: *Micropodarke insignis* is a *nomen nudum* recorded in a conference abstract and an unpublished thesis by Petti and Nonato (1996) in Petti (1997). Brazilian repositories have no available material.

Genus *Nereimyra* Blainville, 1828
***Nereimyra punctata* (Müller, 1788)**

Synonymized names: *Castalia punctata* (Malmgren, 1867); *Halimede venusta* (Rathke, 1843); *Nereis punctata* (Müller, 1788); *Nereis rosea* (Fabricius, 1780).

Type locality: Straits of Drobak, Norway, Atlantic Ocean.

Holotype: Unknown.

Materials from Brazilian repositories: Unknown.

GenBank: GU672557.1; GU672539.1; GU672479.1; GU672435.1; DQ442566.1; AY644796.1; AY644795.1; AY644794.1; AY644793.1; AY644792.1; AY644791.1; AY644790.1; AY644789.1 (COI); DQ779626.1; DQ442577.1 (16S); DQ779661.1; DQ442591.1; AY176294.1 (18S); DQ779699.1; DQ442606.1 (28S).

Habitat records in Brazil: Unknown.

Brazilian records: RJ (Lavrado et al., 2017).

Other records: Atlantic Ocean – Italy (Sordino, 1989); Belgium (Zintzen and Massin, 2010); Iceland, Denmark, Sweden (Pleijel et al., 2012); Norway (Pleijel et al., 2012); White Sea (Khalaman and Naumov, 2009).

Remarks: *Nereimyra punctata* is one of the most common littoral and sublittoral polychaetes in northern European waters. It can be found on various rocky substrates and substrates composed of shell gravel, sand, and muddy sand. In addition to *N. punctata*, the genus includes *N. aphroditoides* (Fabricius, 1780) and *N. woodsholea* (Hartman, 1965), both restricted to North Atlantic and Arctic waters. Another species, *N. auripalpa* (Böggemann, 2009), occurs in the Atlantic Ocean near Africa. In their study of the Campos Basin, an oil basin, Lavrado et al. (2017) identified the only *Nereimyra* species in Brazilian waters, which inhabits depths from 700 to 1000 m. Brazilian repositories have no available material.

Genus *Syllidia* (Quatrefages, 1865)
***Syllidia amaralae* (Rizzo and Salazar-Vallejo, 2014)**

Synonymized names: Not applicable.

Type locality: Rio de Janeiro, Brazil, Atlantic Ocean.

Holotype: MZUSP506.

Materials from Brazilian repositories: MZUSP504 – 507.

GenBank: No data.

Habitat records in Brazil: 43 – 147-m depth.

Brazilian records: RJ, SP (Rizzo and Salazar-Vallejo, 2014); PB (Costa et al., 2008).

Other records: Atlantic Ocean – Argentina (Rizzo and Salazar-Vallejo, 2014).

Remarks: *Syllidia amaralae* closely resembles *S. armata* (Quatrefages, 1866), including similar prostomium shape, cirri, jaws, and distribution of eyes (Ruta and Pleijel, 2006). Nevertheless, the jaws of *S. amaralae* distinguish themselves from those of *S. armata* due to an indistinct denticulate margin and an outer projection reaching the denticulate margin. Additional distinguishing features include a quadrangular prostomium, the relative size and arrangement of the eyes, and a reduced number of chaetae (arranged in two bundles). Importantly, these characteristics remain consistent throughout ontogeny and sexual maturity (Rizzo and Salazar-Vallejo, 2014).

Subfamily Ophiodrominae (Pleijel, 1998)
Tribe Amphidurini (Pleijel et al., 2012b)
Genus *Neogyptis* (Pleijel et al., 2012b)
***Neogyptis nonatoi* (Rizzo and Salazar-Vallejo, 2014)**

Synonymized names: Not applicable.

Type locality: São Sebastião, São Paulo, Brazil, Atlantic Ocean.

Holotype: MZUSP386.

Materials from Brazilian repositories: MZUSP385; 386.

GenBank: No data.

Habitat records in Brazil: 23.4 – 39.3-m depth and fine sand bottom (Rizzo and Salazar-Vallejo, 2014).

Brazilian records: SP (Rizzo and Salazar-Vallejo, 2014).

Other records: It is known only from its type locality.

Remarks: Only two instances of this species have been recorded in Brazil, between Ubatuba and São Sebastião, São Paulo (Rizzo and Salazar-Vallejo, 2014).

Genus *Parahesione* (Pettibone, 1956)
Parahesione sp.

Synonymized names: Not applicable.

Type locality: Not applicable.

Holotype: Unknown.

Materials from Brazilian repositories: Unknown.

GenBank: No data.

Habitat records in Brazil: Silt Bottom (Lana et al., 2006).

Brazilian records: PR (Lana et al., 2006).

Other records: Not applicable.

Remarks: According to Lana et al. (2006), the specimens described in Lorenzi (1998) unpublished thesis were confirmed by Dr. Fredrik Pleijel. Brazilian repositories have no available material.

Tribe Ophiodromini (Pleijel, 1998)
Genus *Oxydromus* (Grube, 1855)
Oxydromus agilis (Ehlers, 1864)

Synonymized names: *Ophiodromus agilis* (Ehlers, 1864); *Podarke agilis* (Ehlers, 1864).

Type locality: Croatia, Adriatic Sea, Atlantic Ocean.

Holotype: Unknown.

Materials from Brazilian repositories: Unknown.

GenBank: No data.

Habitat records in Brazil: No data.

Brazilian records: RJ (Rullier and Amoureux, 1979).

Other records: Atlantic Ocean – Mediterranean Sea (Fauvel, 1923); Italy (Sordino, 1989); Croatia (Ehlers, 1864); Porto Rico (Treadwell, 1900); Venezuela (Díaz and Liñero-Arana, 2002); Portugal (Ravara and Moreira, 2013). Indian Ocean – Red Sea (Wehe and Fiege, 2002).

Remarks: Only three occurrences of this species have been recorded worldwide, one in Brazil and another in the Red Sea. The original description of the species (Ehlers, 1864) reports it from the Adriatic Sea (Croatia) in the region of the Mediterranean Sea. It is necessary to review the identified specimens. Brazilian repositories have no available material.

Oxydromus obscurus (Verrill, 1873)

Synonymized names: *Ophiodromus obscurus* (Verril, 1873); *Podarke obscura* (Verrill, 1873).

Type locality: Massachusetts, United States of America, Atlantic Ocean.

Holotype: USNM9695.

Materials from Brazilian repositories: MCEM–BPO: 1442.

GenBank: OQ323328.1; OQ323259.1; OQ323068.1; OQ323059.1; OQ322966.1; OQ322816.1; OQ322790.1; KJ855073.1 (COI); KJ855068.1 (16S); KJ855080.1 (28S).

Habitat records in Brazil: Intertidal to 197-m depth (Lana, 1984; 1993; Attolini and Tararam, 2000; Omena and Amaral, 2003; Omena et al., 2006; Santi and Tavares, 2009) and mixed bottom (Lana, 1984; Paiva, 1993; Attolini and Tararam, 2000; Santi and Tavares, 2009).

Brazilian records: RJ (Omena et al., 2006); SP (Paiva, 1993; Omena and Amaral, 2003); PR (Lana, 1984; Lana et al., 2006).

Other records: Atlantic Ocean – United States of America (Hunter, 1980; Camp et al., 1998; Pelletier et al., 2021); Panama (Fauchald, 1977; Cubit and Williams, 1983); Venezuela (Díaz and Liñero-Arana, 2002, 2006).

Remarks: Previously *O. obscurus* was only known from the North Atlantic and Caribbean Sea. The record of this species in Brazil extends its occurrence to the South Atlantic.

***Oxydromus pallidus* (Claparède, 1864)**

Synonymized names: *Ophiodromus pallidus* (Claparède, 1864); *Podarke pallida* (Claparède, 1864).

Type locality: Port-Vendres, France, Mediterranean Sea, Atlantic Ocean.

Holotype: Unknown.

Materials from Brazilian repositories: Unknown.

GenBank: DQ442579.1 (16S); DQ442593.1 (18S); DQ442608.1 (28S).

Habitat records in Brazil: Intertidal zone and sandy sediments (Amaral, 1977, 1979; Morgado et al., 1994).

Brazilian records: SP (Amaral, 1977, 1979; Morgado et al., 1994).

Other records: Atlantic Ocean – Mediterranean Sea (Fauvel, 1923; Ergen et al., 2006; Dağlı and Ergen, 2008); Italy (Sordino, 1989); Venezuela (Anker et al., 2005); Portugal (Ravara and Moreira, 2013).

Remarks: The literature about Brazil exclusively uses the name *Podarke pallida*. However, a comprehensive family revision by Pleijel (1998) determined that this name is invalid. Brazilian repositories have no available material.

***Oxydromus pugettensis* (Johnson, 1901)**

Synonymized names: *Ophiodromus pugettensis* (Johnson, 1901); *Podarke pugettensis* (Johnson, 1901).

Type locality: United States of America, Pacific Ocean (Johnson, 1901).

Holotype: LACM-AHF Poly 138.

Materials from Brazilian repositories: ZUEC-POL3120; ZUEC-POL4940.

GenBank: MN855132.1; HQ932669.1; HQ932635.1; HQ932578.1; MH242880.1; MF121003.1; HM473541.1; HM473540.1; HM473538.1; HM473537.1; HM473535.1; HM473534.1; HM473533.1; HM473532.1; HM473531.1; HM473530.1; HM473529.1; HM473528.1; HM473527.1; HM473526.1; HM473525.1; HM473524.1; HM473523.1; HM473522.1; HM473539.1; HM473536.1 (COI); HM473251.1; DQ790046.1; KJ855069.1 (16S); DQ790086.1 (18S); KJ855074.1; KJ855081.1 (28S).

Habitat records in Brazil: Intertidal to 100-m depth (Morgado and Amaral, 1989; Amaral et al., 1990, 2003; Morgado et al., 1990; Paiva 1993; Lopes, 1993); mixed bottom (Nonato, 1981; Morgado and Amaral, 1984, 1989; Amaral et al., 1990; Morgado et al., 1990; Paiva, 1993; Lopes, 1993; Duarte and Nalesco, 1996; Rizzo and Amaral, 2000, 2001a, 2001b).

Brazilian records: PB (Assis et al., 2012); RJ (Nonato, 1981; Morgado and Amaral, 1989); SP (Nonato, 1981; Morgado and Amaral, 1984; 1989; Amaral et al., 1990, 2003; Paiva, 1993; Lopes, 1993; Duarte and Nalesco, 1996; Morgado and Tanaka, 2001; Rizzo and Amaral, 2000, 2001a, 2001b).

Other records: Pacific Ocean – United States of America (Johnson, 1901; Highsmith, 1985); Mexico, Peru (Morgado and Amaral, 1984, 1989); China (Shin, 1982); Panama (Fauchald, 1977). Indian Ocean – Red Sea (Wehe and Fiege, 2002).

Remarks: *Oxydromus pugettensis* is widely distributed on the Brazilian coast, and its presence in the Pacific Ocean, encompassing North America and Asia coasts, indicates a widespread distribution.

***Oxydromus lanai* (Rizzo and Salazar-Vallejo, 2014)**

Synonymized names: Not applicable.

Type locality: São Sebastião, São Paulo, Brazil, Atlantic Ocean.

Holotype: MZUSP491.

Materials from Brazilian repositories: MZUSP390 – 394; MZUSP396; MZUSP398 – 466; MZUSP468 – 470; MZUSP472 – 478; MZUSP480 – 491; MZUSP493 – 496.

GenBank: No data.

Habitat records in Brazil: 0 – 110-m depth in rocky shores and algae (*Sargassum* sp. and *Dictyota* sp.), rarely on subtidal bottoms (Rizzo and Salazar-Vallejo, 2014).

Brazilian records: SP (Rizzo and Salazar-Vallejo, 2014).

Other records: It is known only from São Paulo coast.

Remarks: This is the only recorded occurrence of this species, located in Brazil between Ubatuba and Ilha Comprida, São Paulo (Rizzo and Salazar-Vallejo, 2014).

Genus *Podarkeopsis* (Laubier, 1961)
***Podarkeopsis arenicolus* (La Greca, 1946)**

Synonymized names: *Gyptis arenicola* (La Greca, 1946)*; Oxydromus arenicolus* (La Greca, 1946); *Podarkeopsis galangaui* (Laubier, 1961).

Type locality: Gulf of Naples, Italy, Mediterranean Sea, Atlantic Ocean.

Holotype: Unknown.

Materials from Brazilian repositories: Unknown.

GenBank: JN571827.1 (COI); JN571879.1; DQ442580.1 (16S); JN571889.1; DQ442594.1 (18S); DQ442609.1 (28S).

Habitat records in Brazil: 35-m depth and muddy sediments (Morgado and Amaral, 1989).

Brazilian records: SP (Morgado and Amaral, 1989).

Other records: Atlantic Ocean – Italy (La Greca, 1946).

Remarks: The only record of this species in Brazil was documented by Morgado and Amaral (1989). However, their documentation provides no information about the collected specimens or the deposited material.

***Podarkeopsis brevipalpa* (Hartmann-Schröder, 1959)**

Synonymized names: *Gyptis brevipalpa* (Hartmann-Schröder, 1959); *Oxydromus brevipalpa* (Hartmann-Schröder, 1959).

Type locality: El Salvador, Pacific Ocean.

Holotype: ZMH (no register number available).

Materials from Brazilian repositories: Unknown.

GenBank: No data.

Habitat records in Brazil: Intertidal and sandy bottom (Lopes, 1993).

Brazilian records: SP (Lopes, 1993).

Other records: Atlantic Ocean – Mexico (Lewis and Stoner, 1981; Uebelacker and Johnson, 1984); United States of America (Uebelacker and Johnson, 1984); Venezuela (Díaz and Liñero-Arana, 2002; 2006). Pacific Ocean – United States of America (Alaska) (Foster and Hoberg, 2003).

Remarks: The species in Brazil was reported in an unpublished thesis (Lopes, 1993). Brazilian repositories have no available material.

***Podarkeopsis capensis* (Day, 1963)**

Synonymized names: *Gyptis capensis* (Day, 1963); *Oxydromus capensis* (Day, 1963).

Type locality: South Africa, Cape Town, Atlantic Ocean.

Holotype: BMNH I963.I.28.

Materials from Brazilian repositories: Unknown.

GenBank: KT307681.1 (COI).

Habitat records in Brazil: Intertidal to 2-m depth (Amaral, 1977, 1980; Nonato, 1981) and mixed bottom (Amaral, 1977, 1980).

Brazilian records: RJ (Nonato, 1981; Brasil and Gonçalves, 2000); SP (Amaral, 1977, 1980).

Other records: Atlantic Ocean – Mediterranean Sea (Gravina and Giangrande, 1988); North Sea (Heip and Niermann, 1989); United Kingdom (Gibbs and Probert, 1973; Probert, 1981); South Africa (Day, 1967); Italy (Sordino, 1989). Pacific Ocean – New Zealand (Gibbs, 1972).

Remarks: Brazilian repositories have no available material.

***Podarkeopsis levifuscina* (Perkins, 1984)**

Synonymized names: Not applicable.

Type locality: United States of America, North Carolina, Atlantic Ocean.

Holotype: USNM52897.

Materials from Brazilian repositories: MZUSP497 – 503.

GenBank: OQ323143.1; OQ322795.1 (COI).

Habitat records in Brazil: 16 – 29-m depth and mixed bottom (Rizzo and Salazar-Vallejo, 2014).

Brazilian records: SP (Rizzo and Salazar-Vallejo, 2014).

Other records: Atlantic Ocean – United States of America (Perkins, 1984; Camp et al., 1998).

Remarks: Rizzo and Salazar-Vallejo (2014) redescribed this species based on paratypes from Florida and specimens collected from the São Paulo coast. In the original description, only two types of notochaetae (acicular and furcate) were described. However, the type material also had a third type of notochaetae (slender simple capillaries), which are almost twice as long as the others and are in median position.

Family Microphthalmidae (Hartmann-Shröder, 1971)
Genus *Hesionides* (Friedrich, 1937)
***Hesionides gohari* (Hartmann-Schröder, 1960)**

Synonymized names: Not applicable.

Type locality: Red Sea, Indian Ocean.

Holotype: ZMH (no register number available).

Materials from Brazilian repositories: Unknown.

GenBank: No data.

Habitat records in Brazil: Intertidal zone and sandy sediments (Di Domenico, 2007).

Brazilian records: BA (Westheide, 1974); SP (Westheide, 1974); PR (Westheide, 1974; Di Domenico, 2007); SC (Di Domenico, 2007).

Other records: Atlantic Ocean – Mediterranean Sea (Villora-Moreno et al., 1991; Schmidt and Westheide, 1999), Caribbean Sea (Salazar-Vallejo, 1996); France, United States of America (Schmidt and Westheide, 1999). Indian Ocean – Red Sea (Hartmann-Schröder, 1960; Schmidt and Westheide, 1999; Wehe and Fiege, 2002). Pacific Ocean – Thailand (Schmidt and Westheide, 1999).

Remarks: The global distribution points to the cosmopolitan nature of the species. Until recently, the genus *Hesionides* was classified as a subfamily within Hesionidae. However, its taxonomic classification has been revised, placing it in the family Microphthalmidae (Hartman-Schröder, 1971), as Salazar-Vallejo et al. (2019) proposed. Following this study, *Hesionides* is no longer considered a member of Hesionidae. Brazilian repositories have no available material.

DISCUSSION

Hesionidae plays a crucial role in coastal ecosystems. These organisms, often detritivores, significantly contribute to the recycling of detritus in marine sediments, thereby playing a fundamental role in maintaining ecosystem health and promoting local biodiversity (Rouse and Pleijel, 2001).

Regarding their biogeographical distribution, Hesionidae are found in a variety of regions, ranging from intertidal zones to deeper areas (Ruta et al., 2007). They adapt to different substrates, such as sandy, muddy, and rocky sediments, contributing to their presence in a wide range of marine habitats (Shimabukuro et al., 2019; Wang et al., 2020).

The notable morphological diversification over time within the Hesionidae is evident by distinct anatomical features among species such as median antenna; proboscis papillae; segment number in which notopodia, neuropodia, notochaetae, and neurochaetae start; and uniramous or biramous parapodia (Ruta et al., 2007). Morphological adaptations include variations in chaetal forms, specialized appendages, and body morphology modifications, reflecting different ecological life strategies adopted by these organisms throughout evolution (Rouse and Pleijel, 2001).

We observed that most studies published in Brazil on Hesionidae contained synonymy errors. We found that, of the 20 species previously recorded for the country, only 17 are considered valid.

Among the 17 valid species, 12 lack type localities in Brazil. Moreover, seven were documented from the 1970s to the early 2000s. These species, namely *Leocrates claparedii* (Costa *in* Claparède, 1868), *Oxydromus agillis* (Ehlers, 1864), *Oxydromus obscurus* (Verrill, 1873), *Oxydromus pallidus* Claparède, 1864, *Podarkeopsis arenicolus* (La Greca, 1946), *Podarkeopsis brevipalpa* (Hartmann-Schröder, 1959), and *Podarkeopsis capensis* (Day, 1963), were recorded using methodologies grounded in old technologies and European literature. Herein, we regard such records as dubious, emphasizing the imperative for more profound revisions.

In Brazil, information regarding the fauna of Hesionidae remains scarce. Studies usually involve species based on reviews of scientific collections or reports of species occurrence. Unfortunately, these studies often overlook crucial information about the organisms, such as morphological characteristics, species biology, and phylogeny, among other important aspects for in-depth family studies. As a result, the counting of valid genera and species for Brazil becomes confusing.

As other polychaete families, several species of Hesionidae show cosmopolitan distribution. However, the lack of more comprehensive studies has hindered a clear understanding of the actual distribution of these species.

Building upon the lack of Hesionid fauna studies in Brazil, the importance of conducting phylogenetic studies with Brazilian species is underscored by the need to enhance our understanding of their evolutionary relationships. Ruta et al. (2007) is pivotal for understanding the evolutionary dynamics within this family. Phylogenetic analyses employing multiple molecular markers and morphology contribute crucial insights into the genetic diversity and evolutionary studies on Hesionidae.

Studies such as this are essential as they mention valid species and their distribution along the Brazilian coast. Consequently, new species descriptions and other catalogs can be developed based on the current phylogeny of the group, contributing to a better understanding of the taxonomy and distribution of Hesionidae in Brazil. Additionally, the checklist contributes to the knowledge of the biodiversity of these bristle worms in Brazil and serves as a foundation for future taxonomic, ecological, and conservation studies. Understanding the diversity and distribution patterns of Hesionidae is crucial for the conservation and sustainable management of Brazilian marine ecosystems.

CONCLUSION

This study critically reviewed the status of the taxonomy and distribution of Hesionidae in Brazil. Taxonomic revisions and molecular studies are needed to resolve taxonomic uncertainties and explain the status of some species complexes within Hesionidae. Additionally, further ecological studies are necessary to understand the abundance, diversity, and ecological roles of these organisms in Brazilian marine ecosystems.

ACKNOWLEDGMENTS

We are grateful for Professor Paulo da Cunha Lana, a distinguished oceanographer, biologist, and ecologist who passed away in 2022. His invaluable and internationally acclaimed contributions to research on polychaetes in Brazil have left an indelible mark, shaping the landscape of scientific understanding in this field. CR specially thanks Dr. Lana for receiving her in 1995, when she was an undergraduate student, and for teaching her the first steps in polychaete taxonomy. CR is now a professor at UFRJ, and this study is co-authored with her two PhD students. Finally, we sincerely thank the two anonymous reviewers for carefully reading our manuscript.

AUTHOR CONTRIBUTIONS

V.H.M.: Investigation; Data Curation; Visualization; Methodology; Writing – Original Draft.

R.F.: Investigation; Visualization; Writing – Review and Editing.

C.R.: Conceptualization; Project Administration; Resources; Supervision; Writing – Review and Editing.

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