Rev. Mus. Argentino Cienc. Nat., n.s.
27(1): 157-181, 2025
ISSN 1514-5158 (impresa)
ISSN 1853-0400 (en línea)

Asteroidea (Echinodermata) from Uruguay (SW Atlantic): an annotated checklist and zoogeographic considerations

Susana MAYTÍA ROMERO[1], Fabrizio SCARABINO[2,1], Mariela V. ROMANELLI[3], Wilson S. SERRA[1,2], Martin I. BROGGER[4], Mariano I. MARTINEZ[5], Romina TRINCHIN[6,1], Ariel DE LEÓN-MACKEY[2,6], Gabriela M. VÉLEZ-RUBIO[6,2], Angel SEGURA[2], Leonardo Santos de SOUZA[7], Alvar CARRANZA[8,1], Rosario QUINTERO[1], Leonardo ORTEGA[9], Pablo E. PENCHASZADEH[5] & Alejandro TABLADO[3]

[1] Museo Nacional de Historia Natural, C.C. 399 – C.P. 11.000, Montevideo, Uruguay. [2] Centro Universitario Regional del Este, Sede Rocha, Universidad de la República, Ruta 9 esq. Ruta 15, Rocha, Uruguay; e-mail: fabrizioscarabino@gmail.com; corresponding author. [3] División Invertebrados, Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (MACN-CONICET), Buenos Aires, Argentina. [4] Laboratorio de Reproducción y Biología Integrativa de Invertebrados Marinos, Instituto de Biología de Organismos Marinos (CONICET-CENPAT), Puerto Madryn, Argentina. [5] Laboratorio de Ecosistemas Marinos, Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (MACN-CONICET), Buenos Aires, Argentina. [6] Facultad de Ciencias, Universidad de la República, Uruguay. [7] Departamento de Zoologia, Instituto de Biociências, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil. [8] Centro Universitario Regional del Este, Sede Maldonado, Universidad de la República, Maldonado, Uruguay. [9] Dirección Nacional de Recursos Acuáticos, Montevideo, Uruguay

Abstract: The diversity of Asteroidea from the Southwestern Atlantic between 30° S and 40° S (southern Brazil, Uruguay, and northern Argentinean waters) has been studied since the late 19thcentury. However, like many other benthic metazoans, the existing knowledge of species particularly reported from Uruguayan waters has remained dispersed and scarcely considered until now. This work aims to compile, analyze, and discuss all published records of sea stars from Uruguay. These correspond to 42 species for which detailed locations are available. Some of these localities were originally vague and are clarified here. Based on current knowledge, this asteroid fauna includes mostly tropical and subtropical as well as Antarctic and subantarctic shelf and deepwater species, with three deepwater endemisms standing out in the Argentine Basin (*Psilaster herwigi, Dytaster grandis nobilis* and *Pythonaster murrayi*). Future research should focus on analyzing the abundant unstudied material available in collections and developing deep-sea sampling and integrative taxonomy.

Key words: Uruguayan waters, Argentina, southern Brazil, deep-sea

Resumen: La diversidad de Asteroidea del Atlántico Sudoccidental entre los 30° S y 40° S (sur de Brasil, Uruguay y norte de las aguas argentinas) ha sido estudiada desde fines del siglo XIX. Sin embargo, como ocurre con varios otros grupos de metazoarios bentónicos, el conocimiento existente sobre las especies reportadas específicamente para aguas uruguayas ha permanecido disperso y escasamente considerado hasta ahora. Este trabajo apunta a compilar, analizar y discutir todos los registros publicados de estrellas de mar de Uruguay. Estos corresponden a 42 especies para las cuales localidades detalladas están disponibles. Algunas de estas localidades eran originalmente vagas y son aclaradas aquí. Sobre la base del conocimiento actual, esta fauna de asteroideos incluye mayormente especies tropicales y subtropicales así como antárticas y subantárticas de plataforma y aguas profundas, destacándose además tres endemismos de aguas profundas en la Cuenca Argentina (*Psilaster herwigi*, *Dytaster grandis nobilis* y *Pythonaster murrayi*). Investigaciones futuras deberían focalizarse en analizar el abundante material inédito presente en colecciones así como en desarrollar muestreos de aguas profundas y taxonomía integrativa.

Palabras clave: Aguas uruguayas, Argentina, sur de Brasil, aguas profundas

INTRODUCTION

Asteroidea is one of the most speciose classes of echinoderms, found worldwide in every marine environment (Mah & Blake, 2012). They have long been recognized as key components of benthic communities. In several coastal and oceanic regions, megafaunal predatory sea stars are considered apex predators (Amiraux *et al*., 2023), playing a crucial role in modeling and regulating marine ecosystem structure and function. Recent studies have proposed that sea stars are among the most negatively impacted by global warming within the echinoderms in terms of thermal response to climate change (Lang *et al*., 2023). In this context, it is fundamental to understand their diversity and establish an accurate baseline of their current identities and presence to reliably assess potential faunal losses.

The diversity of Asteroidea from the southwestern Atlantic between 30°S and 40°S (southern Brazil, Uruguay and northern Argentina) has been studied since the late 19th century (e.g., Tommasi, 1970; Brogger *et al*., 2013). However, as is the case of several other benthic metazoans (e.g., Scarabino *et al*., 2018; 2019; Ramalho *et al*., 2022), the existing knowledge of species from Uruguayan waters has remained disperse and scarcely considered until now (e.g., Martínez, 2013).

The history of the study of the asteroideans in Uruguay began with the publications by Studer (1883; 1889) and Sladen (1889) resulting from the campaigns of the research vessels SMS *Gazelle* and HMS *Challenger* since some stations were made in Uruguayan bottoms.

Prof. Luis P. Barattini (1903-1965) was a Uruguayan zoologist (see Mones, 2015) who conducted a pioneer on Uruguayan echinoderms (Barattini, 1938), describing two new species now considered synonyms. Prof. Irene Bernasconi (1896-1989, see Ferraro *et al*., 2020) was a worldwide recognized Argentinean echinodermologist who did extensive work on southwestern Atlantic and Antarctic asteroideans. Indeed, if only Uruguayan localities are considered, she reported over more than 40 years on the extensive collections assembled by the Museo Argentino de Ciencias Naturales as well as two foreign vessels (RV *Vema* and *Walther Herwig*) that operated in southernmost Brazilian, Uruguayan and Argentinean waters (e.g. Bernasconi, 1937; 1941a; 1941b; 1943; 1955; 1962; 1964; 1966; 1972; 1973; 1979; 1980).

The former Instituto Nacional de Pesca (Uruguay) also made several cruises in the early eighties of the XX century, during which asteroideans were collected. An initial analysis of these collections documented the largest species recorded to date in the region (Tablado & Maytía, 1988), as well as other species (Quintero, 1986). Aside from these contributions, a variety of Uruguayan and Brazilian researchers have provided several records, mostly in general benthic surveys (e.g. Milstein *et al*., 1976; Juanicó & Rodríguez-Moyano, 1976) and a few specifically concerning echinoderms (Tommasi *et al*., 1988a; 1988b).

Clark and Downey (1992), in their classic monograph on the asteroideans of the Atlantic Ocean, gathered many references for Uruguayan waters, notably the report of samples collected by the American research vessel *Atlantis II*.

The objective of this work is to compile, analyze, and discuss all published records of asteroideans from Uruguay. We aim to make the knowledge on asteroid fauna from this area more readily available as a basis for future studies, hoping to stimulate further research within the group. This is particularly critical, given the interest in exploring and exploiting offshore deposits of mineral resources (Scarabino *et al*., 2019). This contribution is part of a series updating the faunistic knowledge of the benthic fauna from the Uruguayan shelf, slope and abyssal plain (Scarabino *et al*., 2016; 2018; 2019; Ramalho *et al*., 2022).

METHODOLOGY

The region of interest comprises the Uruguayan coast and the Uruguayan Exclusive Economic Zone, including shallow coastal areas, outer shelf, slope and abyssal plain. The latter belongs to the Argentine Basin. The bathymetric zonation is considered as follows: shelf (0–200 m), upper slope (200–1500 m), lower slope (1500–3000 m), and abyssal plain (3000–5500 m). A general oceanographic, geomorphological, and sedimentological outline of the zone can be found in Burone *et al*. (2021); some distribution correlations with oceanographic features detailed there are discussed here.

An inventory of species was compiled from papers, book chapters, theses, and meeting abstracts. In the case of theses such as Quintero (1986), additional validation of the records is advisable, mainly because the material is not illustrated; this process is currently underway. These records are included here considering this fact,

as they result from the work of two of us (SMR and RQ) and have undergone taxonomic verification by Prof. Irene Bernasconi.

The current systematic and taxonomic status of all species follows WoRMS (2024). For each species the following information is indicated: 1) original combination and description, 2) geographic and bathymetric distribution, 3) Uruguayan records and references (Appendix 1 includes the details of all oceanographic/fishing stations referred) and 4) remarks, that include comments and/ or discussions on the status of the species or the Uruguayan records. Due to their geographic proximity and the possibility of their presence in Uruguayan waters, the species reported from southern Brazil and the northern Argentine regions are mentioned and included under Remarks made on the corresponding taxon. Station 320 of the HMS *Challenger* falls exactly on the maritime boundary between Argentina and Uruguay; therefore, such species are considered as part of the faunistic inventory of both countries.

The following abbreviations are considered: MACN: Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (Buenos Aires, Argentina); USNM: National Museum of Natural History, Smithsonian Institution (Washington D. C., USA); FV: Fishing vessel; RV: Research vessel; FRV Fishing and research vessel; HMS: Her Majesty Ship. SMS: Seine Majestäts Schiff (Her Majesty Ship); A.R.A.: Armada de la República Argentina (Argentine Navy).

SYSTEMATICS

Phylum Echinodermata Bruguière, 1791
Subclass Ambuloasteroidea Blake and Hagdorn, 2003
Class Asteroidea de Blainville, 1830
Infraclass Neoasteroidea Gale, 1987
Order Velatida Perrier, 1893

Family Myxasteridae Perrier, 1885

Genus *Pythonaster* Sladen *in* Thomson and Murray, 1885

***Pythonaster murrayi* Sladen, 1889**

Pythonaster murrayi Sladen, 1889: 532, pl. 95, figs. 1-5.

Geographic and bathymetric distribution: Only known from the Argentine Basin (Uruguay), abyssal plain (Sladen, 1889; Mah *et al*., 2012).

Uruguayan records and references: Station 323 of the HMS *Challenger*, 3477 m (Sladen, 1889).

Remarks: Mah *et al*. (2012) indicate that up until that date, only the type material of this species (the type of the genus *Pythonaster*) was known or at least reported. This has also been addressed by A. H. Clark (1948) and Downey (1979) when describing the other two species of the genus (*Pythonaster atlantidis* and *P. pacificus*, respectively).

Family Pterasteridae Perrier, 1875

Remarks: Bernasconi (1935; 1937) described two new species of the genus *Pteraster* from the continental shelf, off the coast of the Province of Buenos Aires (Argentina), south of 37°40´S: *Pteraster marplatensis* and *Pteraster argentinus*. Clark and Downey (1992) considered them synonyms of *Pteraster affinis lebruni* Perrier, 1891. These authors also indicate that *P. affinis* could be considered a subspecies of *P. militaris* (O. F. Müller, 1776), a species from the North Atlantic, but they did not make this decision as they had not examined the type material of both species. The northernmost distribution in the Southwestern Atlantic indicated by these authors for *P. affinis lebruni* ("Argentina (c.35°S)…"), implying its presence in Uruguayan waters, has no support in the literature nor in the archives of the USNM.

Genus *Hymenaster* Wyville Thomson, 1873

***Hymenaster* spp.?**

Geographic and bathymetric distribution: Argentine Basin (Uruguay), lower slope (Clark & Downey, 1992).

Uruguayan records and references: "off Uruguay" (Clark & Downey, 1992): station 245 of the cruise 60 of the R/V *Atlantis II* (see below), 2707 m.

Remarks: Referring to the biology and distribution of the genus *Hymenaster*, Clark and Downey (1992) mention: "A specimen of *Hymenaster* in the USNM, from off Uruguay,,.." and "…two specimens of *H. rex* collected by *Atlantis II* off Uruguay.", without mentioning geographic or taxonomic information on these when later addressing the thirteen species they refer to for the Atlantic Ocean. The USNM holds two specimens from the Uruguayan slope (station 245 of cruise 60 of the *Atlantis II*) that were deter-

mined by M. E. Downey: USNM E 15949, as *Hymenaster* cf. *crucifer* Sladen, 1882 and USNM E 15969, as *Hymenaster pellucidus* Thomson, 1873 though containing another identification *Hymenaster membranaceus* Wyville Thomson, 1878. Considering this situation, and the high diversity and taxonomic problems within this genus (e.g., Sibuet, 1976; Clark & Downey, 1992; Jossart *et al*., 2020), we leave the nomenclature open for the Uruguayan materials pending further research.

Genus *Diplopteraster* Verrill, 1880

Remarks: *Diplopteraster verrucosus* (Sladen, 1889) was reported off the coast of Buenos Aires Province (Argentina) at a depth of 110 m by Bernasconi (1937).

Diplopteraster clarki Bernasconi, 1937

Diplopteraster Clarki Bernasconi, 1937: 177, pls 3-6.

Geographic and bathymetric distribution: Southern Southwestern Atlantic, Uruguay-Argentina, between 36°S and 47°S, from the outer shelf to the abyssal plain (Bernasconi, 1937; 1966; Clark & Downey, 1992; Rivadeneira 2020; Hurtado-García & Manjón-Cabeza, 2022).
Uruguayan records and references: 36°02´S-53°25´W, 133.5 m (Bernasconi, 1937, as *Diplopteraster Clarki*); FRV *Lerez* cruise 8203, stations 20 and 21 (200 m); FRV *Lerez* cruise 8204, station 38 (800 m) (Quintero, 1986).

Superorder Forcipulatacea Blake, 1987
Order Forcipulatida Perrier, 1884

Family Asteriidae Gray, 1840

Remarks: *Bernasconiaster pipi* Rivadeneira and Brogger, 2020 was described for the slope off the coast of Buenos Aires Province (Argentina) (Rivadeneira *et al*., 2020).

Genus *Psalidaster* Fisher, 1940

Psalidaster mordax Fisher, 1940

Psalidaster mordax Fisher, 1940: 229-231, fig. K2, 3, pl. 18, figs. 1-2.

Geographic and bathymetric distribution: Southern southwestern Atlantic, from Uruguay (ca. 36°30´S) to Cape Horn, including Malvinas Islands, from the middle shelf to the upper slope (Fisher, 1940; Bernasconi, 1973; Quintero, 1986; Hurtado-García & Manjón-Cabeza, 2022).
Uruguayan records and references: FRV *Lerez* cruise 8204, station 42, 200 m; FRV *Torre Blanca* cruise 8401, Station 1, 400 m (Quintero, 1986).
Remarks: The validity of the subspecies *Psalidaster mordax rigidus* Clark, 1962 (type locality: 67°38´S-64°-52´W, MacRobertson Land, Antarctica) requires revision. Romanelli (2014) indicated that the variability of characteristics of South American specimens does not support the existence of morphological differences between the Antarctic and South American specimens that would justify distinguishing two subspecies.

Genus *Anasterias* Perrier, 1875

Anasterias antarctica (Lütken, 1857)

Asteracanthion antarcticus Lütken, 1857: 105.

Geographic and bathymetric distribution: Southwestern Atlantic south from 36°S (Uruguay) to Argentina, including the Malvinas Islands; Southeastern Pacific Ocean (Chile), south of ca. 32°S; Antarctic Peninsula, from the intertidal to the upper slope (Fisher, 1940; Madsen, 1956; Bernasconi, 1966; 1973; Codoceo & Andrade, 1978; Hernández & Tablado, 1985; Romanelli, 2014).
Uruguayan records and references: Station 450 of the *Walther Herwig* (1966), 100 m [Bernasconi, 1973, as *Anasterias pedicellaris* (Koehler, 1923)]. See Romanelli (2014).
Remarks: Clark and Downey (1992) acknowledged that there are numerous problems when determining the taxonomic diversity of this genus in southern South America. However, they suggested the existence of only one species: *Anasterias antarctica*. Romanelli (2014) reviewed the species of this genus in the Southwest Atlantic, recognizing *A. antarctica* along with *Anasterias studeri* Perrier, 1891.

Genus *Diplasterias* Perrier, 1891

Diplasterias brandti (Bell, 1881)

Asterias brandti Bell, 1881: 91, pl. 9.

Geographic and bathymetric distribution: Southwestern Atlantic south from ca. 34°40'S (Uruguay) to Argentina, including Burwood

Bank and Malvinas Islands; Southeastern Pacific Ocean (Chile) to 50°S; South Georgia Islands, South Shetland Islands, Antarctic Peninsula, from the intertidal to the upper slope (Fisher, 1940; Bernasconi, 1973; Clark & Downey, 1992; Romanelli, 2014; Hurtado-García & Manjón-Cabeza, 2022).

Uruguayan records and references: ESE Lobos Island, 120-130 m (Barattini, 1938, as *Diplasterias Brandti*); 34°38'S-52°15'W, 82-101 m, 36°02'S-53°25'W, 133 m (Romanelli, 2014).

Remarks: Clark and Downey (1992) attribute the following distribution, if the unillustrated specimens of Barattini (1938), as well as those of Ludwig (1903) and Bernansconi (1956; 1970) belong to this species: Uruguay to the Malvinas and Magellanic region, South Georgia Islands, South Shetland Islands, Antarctic Peninsula, and Bellingshausen Sea, considering that the Antarctic reports require further revision. Reports made by Tommasi (1970) and Carrera-Rodríguez and Tommasi (1977) were questioned by Clark and Downey (1992) due to the length of the illustrated abactinal spines.

Genus *Perissasterias* H. L. Clark, 1923

Perissasterias polyacantha H. L. Clark, 1923

Perissasterias polyacantha H. L. Clark, 1923: 307-309, pl. 18, fig. 3.

Geographic and bathymetric distribution: South Africa (28-36°S); Southwestern Atlantic (Uruguay-Argentina) between ca. 34°25´S and 39°50´S, from the middle shelf to the upper slope (H. L. Clark, 1923; Tablado & Maytía, 1988; Clark & Downey, 1992; Atkinson *et al*., 2018).

Uruguayan records and references: FRV *Santa María Magdalena* cruise 8201 station 11 and FRV *Torre Blanca* cruise 8401 station 2, 480-760 m (Tablado & Maytía, 1988).

Remarks: Tablado and Maytía (1988) reported the first specimens of this species in the Southwest Atlantic, which was originally described for South Africa. They established that while the characteristics of the materials from both areas perfectly coincide, the limited known material makes it necessary to expand observations to reaffirm the disjunct distribution of this species. Romanelli (2014) reported differences in one specimen that was smaller than those previously reported, which could precisely be ontogenetic. However, a review of the genus is necessary considering the new materials obtained in recent decades, both in Uruguay and Argentina as well as in South Africa. Furthermore, the presence of this species in Australia reported by Hurtado-García and Manjón-Cabeza (2022) seems to refer to another species of the genus. It must be noted that the number of the cruise of the FRV *Santa María Magdalena* is 8201 and not 8301 as stated by Tablado and Maytía (1988).

Subfamily Pycnopodiinae Verrill, 1914

Genus *Sclerasterias* Perrier, 1891

Sclerasterias contorta (Perrier, 1881)

Asterias contorta Perrier, 1881: 1.

Geographic and bathymetric distribution: Western Atlantic: Florida, Gulf of Mexico, West Indies, Venezuela; Brazil and Uruguay (between ca. 23°30´S and 36°35´S), shelf (Tommasi, 1970; Carrera-Rodríguez & Tommasi, 1977; Bernasconi, 1979; Clark & Downey, 1992).

Uruguayan records and references: 36°34´S-53°40´W (182 m), 35°30´S-52°50´W (108-144 m), 35°08´S-52°35´W (depth not indicated), 34°38´S-52°15´W (117-126 m) (Bernasconi, 1979, as *Sclerasterias subangulosa* Verrill, 1914). See Clark and Downey (1992).

Remarks: The disjunct distribution of records of this species has been explicitly stated by Bernasconi (1979) and could imply the existence of two species.

Genus *Smilasterias* Sladen, 1889

Smilasterias triremis (Sladen, 1889)

Asterias (Smilasterias) triremis Sladen, 1889: 570, pl. 101, figs. 5-6, pl. 102, figs. 5-6.

Geographic and bathymetric distribution: Argentine Basin (Uruguay); Prince Edward and between Kerguelen and Heard Islands (subantarctic Indian Ocean); Palmer Archipelago (Antarctic Peninsula), from the middle shelf to the lower slope (Fisher, 1940; Clark & Downey, 1992; Stampanato & Jangoux, 2004).

Uruguayan records and references: Station 245, cruise 60 of the RV *Atlantis II*, 2707 m (Clark & Downey, 1992).

Remarks: Romanelli (2014) confirmed the identity of the material reported for Uruguayan waters (USNM E 15963).

Family Heliasteridae Viguier, 1879

Genus *Labidiaster* Lütken, 1871

***Labidiaster radiosus* Loven *in* Lütken, 1871**

Labidiaster radiosus Loven *in* Lütken, 1871: 293.

Geographic and bathymetric distribution: Southern Southwestern Atlantic from Rio de Janeiro (Brazil) or Uruguay (see below), Argentina, including the Malvinas Islands; Southeastern Pacific up to ca. 41°30´S, from the shelf to the upper slope (Fisher, 1940; Bernasconi, 1941a; 1973; Madsen, 1956; Tommasi & Oliveira, 1976; Carrera-Rodríguez & Tommasi, 1977; Clark & Downey, 1992; Mutschke & Mah, 2009; Hurtado-García & Manjón-Cabeza, 2022).
Uruguayan records and references: East of Rouen Bank (Barattini, 1938); FRV *Lerez* cruise 8203, station 20, 200 m; FRV *Lerez* cruise 8204, stations 45 and 49, 200-260 m (Quintero, 1986).
Remarks: Clark and Downey (1992) commented that the report by Barattini (1938), based on more or less disintegrated samples could also correspond, albeit doubtfully, to *Coronaster biareus* (Verrill, 1882) (Asteriiidae), as they considered for the reports by Tommasi and Oliveira (1976) and Carrera-Rodríguez and Tommasi (1977). This aspect has not been revisited and requires attention through analyses of existing material in the Brazilian and Uruguayan collections.

Family Stichasteridae Perrier, 1885

Genus *Allostichaster* Verrill, 1914

***Allostichaster hartii* (Rathbun, 1879)**

Leptasterias harttii Rathbun, 1879: 145.

Geographic and bathymetric distribution: Southwestern Atlantic from Brazil (23°20´S) to the northern Argentine shelf (ca. 36°25'S), shelf (Romanelli, 2014).
Uruguayan records and references: 35°24'S-53°10'W, 128 m; 34°38'S-52°15'W, 119-128 m; 34°47'S-52°20'W; 35°00' S-52°45W (Romanelli, 2014)
Remarks: Clark and Downey (1992) and Romanelli (2014) discussed the taxonomy of this genus in the South Atlantic. While all these authors made valuable considerations and observations, the genus clearly needs revision through both morphological and molecular approaches, including direct examination of type and non-type material from Brazil, Uruguay, Argentina, and South Africa. In this sense the records of Studer (1883; 1884, as *Asterias Harttii*) from Gazelle Expedition 1874-1876, station LX (34°43´7 S-52°36´1 W, 80 m), Quintero (1986, as *Allostichaster inaequalis*) from FRV *Lerez* cruise 8203 station 17 (200 m) and Tommasi *et al*. (1988b, as *Allostichaster. hartii*) from RV *Almirante Saldanha* station 1382 (35°06´S-52°33´W, 136 m) are all considered as *Allostichaster* sp. If still extant, analyzing that material is necessary to resolve its identity.

***Allostichaster hebes* (Verrill, 1915)**

Stephanasterias hebes Verrill, 1915: 26, pl. 9, fig 3.

Geographic and bathymetric distribution: Ca. 23°S (Rio de Janeiro, Brazil), Uruguay, Argentina, including the Malvinas Islands, down to Strait of Magellan (southernmost Argentina and Chile), shelf (Romanelli, 2014).
Uruguayan records and references: 35°42'S-54°40'W, 128-137 m (Romanelli, 2014).
Remarks: *Allostichaster inaequalis* Koehler, 1923 is considered a synonym of *A. hebes*, both having type localities in the northern Argentinean shelf (Romanelli, 2014).

Genus *Cosmasterias* Sladen, 1889

***Cosmasterias lurida* (Philippi, 1858)**

Asteracanthion luridum Philippi, 1858: 256.

Geographic and bathymetric distribution: Southwestern Atlantic Ocean south of approximately 35°30'S (Uruguay), Argentina including the Malvinas Islands; South Georgia Islands; Southeastern Pacific Ocean (Chile) up to La Serena (approximately 30°S), from the intertidal to the upper slope (Fischer, 1940; Madsen, 1956; Codoceo & Andrade, 1978; Hernández & Tablado, 1985; Clark & Downey, 1992; Mutschke & Mah, 2009; Romanelli, 2014).
Uruguayan records and references: 35°34'S-52°48'W, 143 m (Romanelli, 2014).
Remarks: *Cosmasterias tomidata* has been placed in synonymy with this species without further justification but it represents a valid species (see Romanelli, 2014 and below).

***Cosmasterias tomidata* (Sladen, 1889)**

Asterias (*Cosmasterias*) *tomidata* Sladen, 1889: 576, pl. 105, figs. 8-10.

Geographic and bathymetric distribution: Southwest Atlantic south of 36°S (Uruguay), Argentina; Southeast Pacific (Chile) between Puerto Lagunas (45°20´S and Puerto Bueno (50° 56´S), shelf (Romanelli, 2014).
Uruguayan records and references: 36°S-54°W, 70 m (Romanelli, 2014).
Remarks: In agreement with Sladen (1889) and Verrill (1914), and in disagreement with other authors who do not argue on this matter, Romanelli (2014) considers *C. tomidata* a valid species, different from *C. lurida*. Due to the previously assumed synonymy between the two, *C. tomidata* has been infrequently reported in literature, and several records of *C. lurida* may possibly correspond to *C. tomidata*, as well as material deposited in collections.

Superorder Spinulosacea Blake, 1987
Order Spinulosida Perrier, 1884

Family Echinasteridae Verrill, 1867

Genus *Othilia* Gray, 1840

***Othilia brasiliensis* (Müller and Troschel, 1842)**

Echinaster (*Othilia*) *brasiliensis* Müller and Troschel, 1842: 22, pl. 1, fig. 4.

Geographic and bathymetric distribution: Espirito Santo (Brazil, ca. 22°S) to San Matías Gulf (Argentina, ca. 42°S), from the intertidal to the middle shelf (Clark & Downey, 1992; Cunha *et al*., 2021).
Uruguayan records and references: ca. 35°15´S-53°27´W, 35-50 m (Juanicó & Rodríguez-Moyano, 1976, as *Echinaster* sp.).
Remarks: Cunha *et al*. (2021) indicate the current status of *Othilia* in relation to *Echinaster*. Walenkamp (1979), Avila-Pires (1983), Clark and Downey (1992), Lopes *et al*. (2016), and Cunha *et al*. (2021) discussed the significant variation in characters attributed to the various species described in this genus for the Southwestern Atlantic, which are considered synonymous with *O. brasiliensis*. Currently, this is the only species recognized for southern Brazil and Argentina; therefore, we consider the record of Juanicó and Rodríguez-Moyano (1976) as belonging to *O. brasiliensis* as was previously suggested by Martínez (2008).

Genus *Henricia* Gray, 1840

***Henricia obesa* (Sladen, 1889)**

Cribella obesa Sladen, 1889: 544-545, pl. 96, figs. 3-4; pl. 98, figs. 5-6.
Henricia australis Barattini, 1938: 28-29, pls. 5 (down) and 6.

Geographic and bathymetric distribution: Southwestern Atlantic south of 35°30°S (Uruguay), Argentina including the Malvinas Islands; Southeastern Pacific up to 41°S (Chile) and Peru (17°S); South Atlantic (Tristan da Cunha archipelago); Macquarie Island (subantarctic Pacific, Australia), from the intertidal to the upper slope (Fisher, 1940; Madsen, 1956; Bernasconi, 1966; 1980; Hernández & Tablado, 1985; Clark & Downey, 1992; O´Hara, 1999; McNight, 2006; Paredes & Gamarra, 2006; Mutschke & Mah, 2009; Hurtado-García & Manjón-Cabeza, 2022).
Uruguayan records and references: Barattini (1938, as *Henricia australis*, see Clark and Downey, 1992) [Not explicitly mentioned, here and by Clark and Downey (1992) assumed to be from the outer Uruguayan shelf]; 36°40´S-54°20´W (97 m), 35°30´S-53°10´W (Bernasconi, 1980).
Remarks: Based on biogeography, Clark and Downey (1992) synonymized *Henricia australis* Barratini, 1938 with *H. obesa* in the following terms: "Since Bernasconi (1980) has recorded *H. obesa* from as far as north as the Rio de la Plata, there can be little doubt that the holotype of *H. australis* Barattini, from Uruguay, is conspecific, as suspected by Fisher (1940)". Bernasconi (1980) does not discuss the referred synonymy, while Fisher (1940) indicated, without listing it in synonymy: "*H. australis* Barattini (1938) off Uruguay, closely resembles *obesa* and may be one of its numerous variants."

Superorder Valvatacea Blake, 1987
Order Notomyotida Ludwig, 1910

Family Benthopectinidae Verrill, 1899

Remarks: *Cheiraster* (*Luidiaster*) *planeta* (Sladen, 1889) was reported from the upper slope off the coast of Buenos Aires Province (Bernasconi, 1973).

Genus *Gaussaster* Ludwig, 1910

***Gaussaster antarticus* (Sladen, 1889)**

Pararchaster antarcticus Sladen, 1889: 11.

Geographic and bathymetric distribution: Antarctica (Indian Sector); off the coast of South Africa; Argentine Basin (Uruguay), from the upper slope to the abyssal plain (Clark, 1962; Clark & Downey, 1992).
Uruguayan records and references: Station 259, cruise 60 of the RV *Atlantis II*, 3305 m (Clark & Downey, 1992).

Genus *Pectinaster* Perrier, 1885

***Pectinaster filholi* Perrier, 1885**

Pectinaster filholi Perrier, 1885: 71.

Geographic and bathymetric distribution: Widely distributed in the Atlantic Ocean (Argentine, Angola, Guinea, North American, Iceland, West European and Canary basins), for the upper slope to the abyssal plain (Clark & Downey, 1992).
Uruguayan records and references: "off the River Plate" (Clark & Downey, 1992): (Stations 240 and 262, cruise 60 of the RV *Atlantis II* (see below), 2195-2440 m.
Remarks: This species was recorded by Clark and Downey (1992) as "off the River Plate" without further details, among several other localities. As there are two specimens (USNM E 19167 and USNM E 22670) in the collections of the USNM identified by M. E. Downey from the above-mentioned localities, it seems evident that these specimens form the basis of that undetailed record.

Order Paxillosida Perrier, 1884

Remarks: *Prionaster elegans* Verrill, 1899 (Goniopectinidae) is known from 208 m depth off Rio Grande do Sul State (Brazil) through the record of its junior synonym *Pectinidiscus aliciae* Carrera-Rodríguez and Tommasi, 1977 (Carrera-Rodríguez & Tommasi, 1977; Clark & Downey, 1992).

Family Astropectinidae Gray, 1840

Remarks: *Tethyaster vestitus* (Say, 1825) is known from the continental shelf off Rio Grande do Sul (Brazil) (e.g. Carrera-Rodríguez & Tommasi, 1977). *Dytaster grandis* (Verrill, 1884), *Dytaster* n. sp., *Leptychaster kerguelenensis* E. A. Smith, 1876, *Plutonaster* n. sp. and *Psilaster* n. sp. have been reported for deep waters off the coast of Buenos Aires Province (Argentina) (Rivadeneira, 2020; Rivadeneira et al. in this volume).

Genus *Astropecten* Gray, 1840

Remarks: Gondim *et al*. (2014) expressed: "The genus *Astropecten* represents one of the most complex taxa within the class Asteroidea, in which species exhibit great morphological plasticity, making identification of species difficult". Moreover, Zulliger and Lessios (2010) showed molecular evidence for morphological convergence, species-complexes, and possible cryptic speciation in this genus. Considering all these aspects, major challenges for establishing the identity of southwestern Atlantic species of *Astropecten* remain to be assessed. Cunha *et al*. (2021) provided an updated and fully illustrated treatment of the species of the genus occurring in the State of Bahia (Brazil), highlighting the large number (105) of species described for the genus and the complexity involved the identifying some of these species.

***Astropecten brasiliensis brasiliensis* Müller and Troschel, 1842**

Astropecten brasiliensis Müller and Troschel, 1842: 68.

Geographic and bathymetric distribution: Caribbean Sea (Colombia) to Argentina (ca. 39°S), shelf (Clark & Downey, 1992; Cunha *et al*., 2020; 2021).
Uruguayan records and references: 10-12 miles south of Punta Negra, Depto. Maldonado (Barattini, 1938); 35°14´S-52°36´W (100 m) (Castellanos & Fernández, 1974); ca. 35°15´S-53°27´W (35-50 m) (Juanicó & Rodríguez-Moyano, 1976); station 1449 of the RV *Almirante Saldanha* (56 m) (Tommasi *et al*., 1988a). All as *Astropecten brasiliensis*; RV *Holmberg* cruise 12/93, station RDP 5 (20 m) (Roux & Bremec, 1996, as *Astropecten brasiliensis brasiliensis*).
Remarks: The station on the Uruguayan shelf that this species is cited for by Tommasi (1988b) remains unclear.

***Astropecten cingulatus* Sladen, 1883**

Astropecten cingulatus Sladen, 1883: 266.

Geographic and bathymetric distribution: Widely distributed in the Western Atlantic, from North Carolina (USA), Bahamas, Gulf of Mexico, Caribbean Sea to Argentina (ca. 39°S), shelf (Bernasconi 1973; Walenkamp, 1979; Carrera-Rodríguez & Tommasi 1977; Clark and Downey, 1992; Lawrence & Cobb, 2017; Cunha *et al*., 2020; 2021).

Uruguayan records and references: Stations 275, 277, 405 and 406 of RV *Wladimir Besnard* (1968) (21-65 m) (Carrera-Rodríguez & Tommasi, 1977); station 11, A.R.A. *Comodoro Rivadavia* (1938), 100 m (Bernasconi, 1941a); station 42, cruise V-18 of the RV *Vema*, 40 m (Bernasconi, 1966); stations 246, 428, 433, 442 and 450 of the RV *Walther Herwig* (1966), 60-500 m (Bernasconi, 1973); ca. 35°15´S-53°27´W (35-50 m) (Juanicó & Rodríguez-Moyano, 1976); stations 1382 and 1452 of the RV *Almirante Saldanha* (50-136 m) (Tommasi *et al*., 1988a)

Remarks: Apparently by mistake, Clark and Downey (1992) indicated that the distribution of this species in the Western Atlantic ranges from North Carolina to Northern Brazil. However, it was mentioned by many authors before and after that work, as occurring down to Argentina. Lawrence and Cobb (2017) established that the species present in Western Africa is *Astropecten jarli* Madsen, 1950, different from *A. cingulatus*.

***Astropecten marginatus* Gray, 1840**

Astropecten marginatus Gray, 1840: 181.

Geographic and bathymetric distribution: Gulf of Mexico to Uruguay, shelf (Downey, 1973; Walenkamp, 1979; Carrera-Rodríguez & Tommasi 1977; Clark & Downey, 1992; Cunha *et al*., 2021).

Uruguayan records and references: Station 1437, RV *Almirante Saldanha*, 100 m (Tommasi *et al*., 1988a).

Remarks: Although this species has been reported for the Brazilian coast north of 27°S by Clark and Downey (1992), it has been recorded all along the Brazilian coast (see Cunha *et al*., 2021) and specifically at numerous stations on the shelf of the state of Rio Grande do Sul. Indeed, it represents the second most abundant species in the samples analyzed by Carrera-Rodríguez and Tommasi (1977).

Genus *Bathybiaster* Danielssen and Koren, 1883

***Bathybiaster loripes* Sladen, 1889**

Bathybiaster loripes Sladen, 1889: 240-242, pl. 36, figs 1-2; pl. 42, figs 1-2.

Geographic and bathymetric distribution*:* southern Southwestern Atlantic, from off Rio Grande do Sul (Brazil, ca. 33°S), Uruguay and Argentina, including the Malvinas Islands; Southernmost Pacific up to 52°45´S (Chile), from the outer shelf to the lower slope (Sladen, 1889; Fisher, 1940; Bernasconi 1966; 1973; Tommasi *et al*., 1988b; Rivadeneira 2020; Hurtado-García & Manjón-Cabeza, 2022; Rivadeneira et al. in this volume).

Uruguayan records and references: FRV *Lerez* cruise 8203, station 8, 400 m; FRV *Lerez* cruise 8204, stations 47 and 48, 400 m; FRV *Lerez* cruise 8205, station 6, 700 m; FRV *Torre Blanca* cruise 8401, station 1, 400 m (Quintero, 1986); Station 2869, "*Almirante Saldanha*", 400-430 m (Tommasi *et al*., 1988b).

Remarks: Tommasi *et al*. (1988b) mapped *B. loripes* for a station difficult to detail, but located on the Uruguayan shelf. However, the information in that text indicates that it was actually collected on the Uruguayan slope, which is in accordance with the known occurrence of this species in the region (see Bernasconi, 1966; 1973, and records by Quintero, 1986, mentioned above). That station on the Uruguayan slope corresponds to number 2869 of the vessel "*Almirante Saldanha*" (36°23´S-53°13´W, 400-430 m).

Bathybiaster obesus Sladen, 1889, described and widely reported for Antarctica, has been considered as a different species, a subspecies, a variety, or a synonym of *B. loripes* (e.g. Sladen, 1889; Fisher, 1940; Clark, 1962; Bernasconi, 1970; 1971; Clark & Downey, 1992; Danis et al. 2012; Moreau et al. 2021), indicating the need for a specific integrated taxonomical study to resolve the matter.

Genus *Psilaster* Sladen, 1885

***Psilaster herwigi* (Bernasconi, 1972)**

Bathybiaster herwigi Bernasconi, 1972: 10, figs. 4-5.

Geographic and bathymetric distribution: Restricted to the outer shelf and slope of southernmost Rio Grande do Sul State (Brazil) and Uruguay (Bernasconi, 1972; 1973; Clark & Downey, 1992).

Uruguayan records and references: Stations 246, 412, 413 and 428 of the *Walther Herwig* (cruise 1966), 400-1000 m (Bernasconi, 1972; 1973; Castellanos & Fernández, 1974); FRV *Lerez*, cruise 8203, stations 8 and 10 (400 m); FRV *Lerez*, cruise 8204, stations 38, 41 and 43 (200-800 m); FRV *Lerez*, cruise 8205, stations 2, 3, 5, 6, 7, 8, 10, 14 and 17 (400-700 m); FRV *Lamatra*, cruise 8214, stations 2 and 3 (500-510 m); FRV *Caçao* cruise 8301, station 1, 650 m; FRV *Torre Blanca* cruise 8401, station 2, 700 m (Quintero, 1986). All as *Bathybiaster herwigi*.

Remarks: The station 412 of the *Walther Herwig* (1966 cruise), on the Uruguayan slope (35°48´S-52°48´W, 800 m) is the type locality of this species (Bernasconi, 1972; 1973). Clark and Downey (1992), in addition to justifying the inclusion of this species in *Psilaster*, indicated that up to that moment, the only known material was the type series. This is a very frequent species of the Uruguayan slope that has been poorly documented to date (e.g., Scarabino, 1983; Quintero, 1986; Calliari *et al*., 2003). The station 228 of the R/V "*Walther Herwig*" (34°05´S-51°52´W, 100 m), for which Bernasconi (1973) also recorded this species, is situated on the shelf off the state of Rio Grande do Sul (Brazil), very close to the Uruguay-Brazil border. This species has not been reported for the rest of the continental shelf and slope off Rio Grande do Sul (see Carrera-Rodríguez & Tommasi, 1977; Capítoli & Bemvenuti, 2004; 2006).

Clark and Downey (1992) indicate that the reference for the Uruguayan shelf by Studer (1884) for *Astropecten mesactus* (*Gazelle* Expedition 1874-1876, station LX, 34°43´7 S-52°36´1 W, 80 m) might belong to *P. herwigi*. It is necessary to track and examine this material to reach a definitive conclusion, considering that several species of Astropectinidae are known in the area. *Astropectinides mesactus* (Sladen, 1883), the type species of the genus *Astropectinides* Verrill, 1914, is known with certainty only through its holotype (illustrated by Clark and Downey, 1992), which comes from Tristan da Cunha Island.

Genus *Dytaster* Sladen, 1889

Dytaster grandis nobilis Sladen, 1889

Dytaster nobilis Sladen, 1889: 73, pl. 3, figs. 1-2; pl. 32, figs. 3-4.

Geographic and bathymetric distribution: Only known with certainty from Argentine Basin (Uruguay-International waters), abyssal plain (Sladen, 1889; Clark & Downey, 1992) (but see remarks).

Uruguayan records and references: Station 259, cruise 60 de the RV *Atlantis II*, 3305 m (Clark & Downey, 1992).

Remarks: Described by Sladen (1889) as *Dytaster nobilis* for the station 325 of the HMS *Challenger* (36°44´S-46°16´W, 4846 m, international waters off Brazilian Economic Exclusive Zone), this taxon was considered by Clark and Downey (1992) as a subspecies of *Dytaster grandis* (Verrill, 1884). It must be noted that the correct longitude of station 259 of cruise 60 of the RV *Atlantis II* is 52°45´W and not 42°05´W as stated by Clark and Downey (1992). Perez *et al*. (2020) registered this subspecies for the Brazil Basin based solely on phototographs, which, for a poorly known species in deep waters, implies the need for verification with physical evidence, i.e., specimens.

Family Ctenodiscidae Sladen, 1889

Genus *Ctenodiscus* Müller and Troschel, 1842

Ctenodiscus australis Loven *in* Lütken, 1871

Ctenodiscus australis Loven *in Lütken, 1871: 238.*

Geographic and bathymetric distribution: southern Southwestern Atlantic, from Uruguay (ca. 35°20´S) to eastern Tierra del Fuego and the Malvinas Islands, form the middle shelf to the abyssal zone (Fisher, 1940; Bernasconi, 1966; 1973; Clark & Downey, 1992; Hurtado-García & Manjón-Cabeza, 2022).

Uruguayan records and references: Station 320 of the HMS *Challenger*, 1098 m (Sladen, 1889); *Ca*. 35°20´S-52°20´W (Barattini, 1938); Station 7, cruise V-18 of the RV *Vema*, 141 m (Bernasconi, 1966); FRV *Lerez*, cruise 8204, stations 36, 41, 42, 43, 44, 45, 46, 47, 48, 49 and 51 (146-400 m) (Quintero, 1986).

Remarks: Clark and Downey (1992) indicated a distribution in the Southwestern Atlantic from "Southern Brazil, near Rio de Janeiro (c. 23'S)" to Tierra del Fuego, apparently based on Tommasi (1970) for the Brazilian locality. However, Tommasi (1970) erroneously included this species in the Brazilian fauna, mistakenly referring to the coordinates of station 320 of the Challenger as 32°17'S-53°52'W, which would place it within the interior of Rio Grande do Sul (Brazil). He also did not mention this species for

Brazil in his later works (e.g., Tommasi *et al*., 1988a; 1988b; Carrera-Rodríguez & Tommasi, 1977). Madsen (1956) also mentions it from Rio de Janeiro (without further details) towards the south, but we have not been able to track any reference that documents this species in detail in Brazil.

Clark and Downey (1992) also questioned the abyssal record of this species reported by Bernasconi (1966). However, the record by Danis *et al*. (2012) at 4489 m indicates that Bernasconi's report should be considered valid.

Family Luidiidae Sladen, 1889

Genus *Luidia* Forbes, 1839

Remarks: Carrera-Rodríguez and Tommasi (1977) reported three species of this genus for the shelf off the coast of Rio Grande do Sul, Brazil, in addition to those considered here for Uruguay: *Luidia sarsii* Düben and Koren *in* Düben, 1845, *Luidia barbadensis* Perrier, 1881 and *Luidia clathrata* Say, 1825 (see Clark, 1982; Clark & Downey, 1992).

Luidia alternata alternata (Say, 1825)

Asterias alternata Say, 1825: 144.

Geographic and bathymetric distribution: Widely distributed in the Western Atlantic and Caribbean Sea, from North Carolina (USA), Gulf of Mexico and West Indies, to Argentina (ca. 39°S), shelf (Bernasconi, 1943; Downey, 1973; Walenkamp, 1979; Carrera-Rodríguez & Tommasi, 1977; Clark & Downey, 1992; Godim *et al*. 2014; Cunha *et al*., 2020).
Uruguayan records and references: Ca. 35°15´S-53°27´W (35-50 m) (Juanicó & Rodríguez-Moyano, 1976, as *Luidia quequenensis* Bernasconi, 1942). See Clark (1982) and Clark and Downey (1992).
Remarks: Clark (1982) and Clark and Downey (1992) established the current concept of this species (and its typical subspecies), where *Luidia quequenensis* is considered a junior synonym.

Luidia ludwigi scotti Bell, 1917

Luidia scotti Bell, 1917: 8-9.

Geographic and bathymetric distribution: Widely distributed in the Western Atlantic from North Carolina (USA), Gulf of Mexico to Argentina (ca. 39°S), shelf (Bernasconi, 1943; Downey, 1973; Walenkamp, 1979; Carrera-Rodríguez & Tommasi, 1977; Clark & Downey, 1992; Godim *et al*., 2014).
Uruguayan records and references: station 9, A.R.A. *Comodoro Rivadavia* (1938), 54 m (Bernasconi, 1943, as *Luidia doello-juradoi*. See Clark, 1953; 1982); Stations 277 and 406 of the RV *Wladimir Besnard* (1968) (60-65 m) (Carrera-Rodríguez & Tommasi, 1977, as *Luidia scotti*).
Remarks: Clark (1982) and Clark and Downey (1992) established the concept of subspecific differentiation of *L. scotti* from *L. ludwigi*, which needs an updated revision with an integrative taxonomy approach. They also confirmed the synonymization made by Clark (1953) of *Luidia doellojuradoi* Bernasconi, 1941, with *L. scotti*.

Luidia patriae Bernasconi, 1941

Luidia patriae Bernasconi, 1941b: 117-118; 1943: 11-13, pl. 1, figs 1, 2.

Geographic and bathymetric distribution: Southwestern Atlantic from southernmost Brazil (33°S) or Uruguay (ca. 34°40´S) to Buenos Aires Province (37°35°S), outer continental shelf (Bernasconi, 1943; Clark, 1982; Clark & Downey, 1992).
Uruguayan records and references: 34°38´S-52°15´W (117-126 m) (Bernasconi, 1943).
Remarks: Clark (1982) and Clark and Downey (1992) discussed the characters attributed to this species and indicated that it might be a synonym of *Luidia ludwigi scotti*. Clearly, the identity of *L. patriae* needs to be reevaluated. Bernasconi (1943) suspected that the specimen reported as *Luidia africana* Sladen, 1889 (a synonym of *Luidia sarsii sarsii* Düben and Koren *in* Düben, 1845, see Clark and Downey, 1992) by Koehler (1923) for station 1 of the Swedish Südpolar Expedition (33°00'S, 51°10'W, 80 m, i.e., the continental shelf off Rio Grande do Sul State, Brazil, sometimes referred to as from Uruguay) might correspond to *L. patriae*, listing this citation in synonymy of *L. patriae*. Clark (1982) noted this uncertainty, but the record by Koehler (1923) is not mentioned by Clark and Downey (1992).

Family Porcellanasteridae Sladen 1883

Genus *Eremicaster* Fisher, 1905

***Eremicaster crassus* (Sladen, 1883)**

Porcellanaster crassus Sladen, 1883: 227.

Geographic and bathymetric distribution: Atlantic Ocean: Argentine Basin (Uruguay); widely distributed in the Pacific Ocean, and also present in the Indian Ocean, from the lower slope to the hadal zone (Clark & Downey, 1992; Mironov *et al*., 2023).
Uruguayan records and references: Station 256, cruise 60 of the RV *Atlantis II*, 3906–3917 m (Clark & Downey, 1992).

Family Pseudarchasteridae Sladen, 1889

Genus *Pseudarchaster* Sladen, 1889

***Pseudarchaster discus* Sladen, 1889**

Pseudarchaster discus Sladen, 1889: 110, pl. 19, figs. 1-2; pl. 42, figs. 3-4.

Geographic and bathymetric distribution: Southern southwestern Atlantic south of 35°50´S (Uruguay), Argentine including the Malvinas Islands; southeastern Pacific up to ca. 32´S (Chile); Prince Edward Islands (subantarctic Indian Ocean, South Africa), from the outer shelf to the upper slope (Fisher, 1940; Bernasconi, 1963; Codoceo & Andrade, 1978; Clark & Downey, 1992; Stampanato & Jangoux, 2004; Hurtado-García and Manjón-Cabeza, 2022).
Uruguayan records and references: 35°50´S-53°30´W (117 m) (Bernasconi, 1963).
Remarks: The record from Uruguayan waters was overlooked by Clark and Downey (1992).

Superorder Valvatida Perrier, 1884

Remarks: Tommasi (1970) and Carrera-Rodríguez and Tommasi (1977) recorded three species of Ophidiasteridae from the shelf off the coast of Rio Grande do Sul (Brazil).

Family Asterinidae Gray, 1840

Genus *Asterina* Nardo, 1834

***Asterina stellifera* (Möbius, 1859)**

Asteriscus stellifer Möbius, 1859: 4.

Geographic and bathymetric distribution: Southwestern Atlantic between Rio de Janeiro (ca. 23°S, Brazil) and Buenos Aires Province, Argentina (38°S); Southeastern Atlantic between Senegal and Namibia, from the intertidal to the upper slope (Bernasconi, 1973; Clark & Downey, 1992; Hurtado-García & Manjón-Cabeza, 2022).
Uruguayan records and references: Cabo Polonio, Depto. Rocha (Rossello, 1922, as *Asteria marginata* -sic-); Coast of Department of Rocha [Barattini, 1938, as *Asterina marginata,* see Bernasconi (1973)]; station 42, cruise V-18 of the RV *Vema*, 40 m (Bernasconi, 1966, as *Patiria stellifer*); Lobos Island, Depto, Maldonado (6 m) (Amaro-Padilla, 1967, as *Enoplopatiria marginata*); La Paloma/Cabo Santa María, Depto. Rocha (Bernasconi, 1955; 1973 and Demicheli & Scarabino, 2006 as *Enoplopatiria marginata*, *Patiria stellifer* and *Asterina stellifera* respectively); stations 2, 17, 19 and 22, cruise 72-3A of the RV *Hero* (8-12 m) (Milstein *et al*., 1976, as *Patiria stellifer*); station 1452 of the RV *Almirante Saldanha*, 50 m (Tommasi *et al*., 1988a, as *Asterina stellifera*); Lobos and Gorriti islands, Depto. Maldonado, 3-10 m (Riestra *et al*., 1992); La Salina beach, Punta del Este, Depto. Maldonado and Cabo Polonio, Depto. Rocha (Riestra *et al*. 1998, as *Asterina stellifer*); 34°46'S-53°50'W (23 m) (Bremec & Giberto, 2004, as *Patiria stellifer*); between Punta Palmar and Canal Andreoni, Depto. Rocha, 2-13 m (Segura *et al*., 2008).
Remarks: This is the shallowest-occurring species of sea star in the Uruguayan coast and the only one occurring in the low intertidal (Demicheli & Scarabino, 2006; FS pers. obs). Rossello (1922) published an interesting and pioneering, though almost unknown work, in which he included photographs taken *in vivo* (at the Uruguayan Faculty of Medicine) of this species collected in Cabo Polonio (Rocha, Uruguay). He specifically states (free translation from Spanish): "Its identification has been kindly made by Prof. R. Koehler of the Faculté des Sciences de Lyon, to whom we sent several specimens through Mr. Doello Jurado, director of the Museo de Historia Natural de Buenos Aires". However, it should be noted that several other illustrated, undetermined species of echinoderms in that work appear to have been included for educational purposes, and the indicated collection depth does not seem accurate. The origin is also not directly indicated for these other species, despite mentioning that he made observations at various locations along the coast of Rocha, particularly in Cabo Polonio.

Apparently reluctant to accept the depth of the record, Clark and Downey (1992) doubted the report of this species for the outer shelf (128 m) off the coast of Rio Grande do Sul (Brazil) made by Carrera-Rodríguez and Tommasi (1977), suggesting that it may correspond to *C. verrucosa* since Bernasconi (1973) recorded it for the area. However, the latter author also recorded *A. stellifera* for the slope (500 m) of the area, and even for the same station as *C. verrucosa* (RV *Walther Herwig*, st. 220). It should be noted, however, that according to the campaign report obtained, station 220 was conducted between 320 and 380 m, not at 500 m. The latter depth corresponds to station 319. Hurtado-García and Manjón-Cabeza (2022) recorded *A. stellifera* for the Argentine slope between 561 and 1530 m.

Subfamily Ganeriinae Sladen, 1889

Remarks: Clark and Downey (1992) recorded specimens of the abyssal species *Vemaster sudatlanticus* Bernasconi, 1965 collected in the Argentine Basin by the RV "*Atlantis II*" in 1971. This material was collected at the station 247 (43°33´S-48°58.1´W, 5208 m depth), i.e., in international waters off Puerto Madryn, Argentina, and not off Uruguay as stated by Clark and Downey (1992).

Genus *Ganeria* Gray, 1847

***Ganeria falklandica* Gray, 1847**

Ganeria falklandica Gray, 1847: 83.

Geographic and bathymetric distribution: Southern southwestern Atlantic south of ca. 34°30´S (Uruguay), Argentine including Malvinas Islands; Southeastern Pacific (Chile) up to ca. 41°S, from intertidal to the outer shelf (Fisher, 1940; Madsen 1956; Bernasconi, 1964; 1973; Hernández & Tablado, 1985; Clark & Downey, 1992; Mutschke & Mah, 2009).
Uruguayan records and references: 34°38´S-52°15´W (126 m), 34°50´S-52°20´W (104-117 m) (Bernasconi, 1964).

Genus *Cycethra* Bell, 1881

***Cycethra verrucosa* (Philippi, 1857)**

Goniodiscus verrucosus Philippi, 1857: 132.

Geographic and bathymetric distribution: Ca. 33°S (Rio Grande do Sul State, Brazil), Uruguay, Argentina including Malvinas Islands and Burwood Bank; Southeastern Pacific up to ca. 33°S (Chile); subantarctic islands (Isla Macquarie, Kerguelen Islands, South Orkney Islands, Islas South Georgia Islands, Shag Rocks, South Shetland Islands) and Antarctica (Antarctic Peninsula; Victoria Land); for the intertidal to the upper slope (Fisher, 1940; Madsen 1956; Bernasconi, 1973; Hernández & Tablado, 1985; Clark & Downey, 1992; Mutschke & Mah, 2009; Hurtado-García & Manjón-Cabeza, 2022).
Uruguayan records and references: 34°24´S-53°10´W (126-135 m), 34°38´S-52°15´W (117 m), 34°50´S-52°20´W (104-117 m), 35°30´S-52°50´W, 108-144 m (Bernasconi, 1964, as *Cycethra verrucosa verrucosa* and *C. nitida*); 35°42´S-54°40´W, 126 m (Bernasconi, 1964, as *Cycethra pinguis* and *C. nitida*), 35°34´S-52°48´W (140 m), 35°44´S-53°00´W (140 m), 35°50´S-53°30´W (117 m) (Bernasconi, 1964, as *C. nitida*).
Remarks: Clark and Downey (1992) discussed the characters considered for the variety (e.g., Bernasconi, 1973) of species of the genus recorded for Uruguayan and Argentinean waters and concluded that only one species is involved.

Family Goniasteridae Forbes, 1841

Remarks: Several species of this family have been reported for the shelf and upper slope off Rio Grande do Sul and Buenos Aires Province, frequently, but incorrectly quoted as collected in Uruguayan waters. *Pawsonaster parvus* (Perrier, 1881), *Mediaster pedicellaris* (Perrier, 1881), and *Ceramaster patagonicus* (Sladen, 1889) were reported for localities situated in the slope and/or shelf off Rio Grande do Sul (Bernasconi, 1973; Tommasi, 1970; Carrera-Rodríguez & Tommasi, 1977, but see Tortonese, 1986 for *C. patagonicus*). Bernasconi (1973) also reported *Hippasteria falklandica* Fisher, 1940, for the slope (500 m) off Buenos Aires Province (Argentina).

Genus *Hippasteria* Gray, 1840

***Hippasteria phrygiana* (Parelius, 1768)**

Asterias phrygiana Parelius, 1768: 425, pl. 14, figs 1-2.

Geographic and bathymetric distribution: Widely distributed worldwide, mostly anti-tropically: North Atlantic (USA and northern Europe);

Southwestern Atlantic (from Rio Grande do Sul, Brazil to off Argentina); Southeastern Atlantic (South Africa); South Pacific Ocean; Southern Ocean (Bouvet Island); Southern Indian Ocean (Kerguelen Islands); North Pacific Ocean, from shallow subtidal to upper slope (Bernasconi, 1961; 1973; Clark & McKnight, 2001; Mah *et al*., 2010; 2014; Foltz *et al*., 2013; Hurtado-García & Manjón-Cabeza, 2022).

Uruguayan records and references: FRV *Lerez*, cruise 8204, station 38, 800 m (Quintero, 1986).

Remarks: *Hippasteria argentinensis*, a synonym of *H. phrygiana* according to Mah *et al*. (2010; 2014), was described by Bernasconi (1961) for the outer shelf off Buenos Aires Province. Bernasconi (1973) also reported five specimens from the upper slope (500-600 m) off Rio Grande do Sul and Buenos Aires Province. These latter records were overlooked by Clark and Downey (1992), who claimed that only the holotype was known and considered the species described by Bernasconi as a subspecies of *H. phrygiana*. Foltz *et al*. (2013) carried out a molecular analysis characterizing the populations of *H. phrygiana* based on the COI and ATPSa markers and found that they are genetically very similar. This reaffirms the idea that the populations of the Northern Pacific, Southern Hemisphere and Northern Atlantic are conspecific. However, the South Atlantic area is only represented by one sample from southern Chile and another from Bouvet Island, with populations from the southwestern area not having been analyzed. Future work integrating morphological and molecular evidence from new specimens from the area cited for *H argentinensis*, including topotypes, is necessary to clarify its taxonomic status.

Genus *Peltaster* Verrill, 1899

Peltaster placenta (Müller and Troschel, 1842)

Goniodiscus placenta Müller & Troschel, 1842: 59.

Geographic and bathymetric distribution: Amphi-Atlantic in Northern Hemisphere: in Eastern Atlantic Norway and Iceland to the northern coast of Africa, also in the Mediterranean; in the Western Atlantic and Caribbean Sea, from off Massachusetts, Gulf of Mexico and West Indies; also, in southernmost Brazil and Uruguay, from the shelf to the upper slope (Halpern, 1970; Downey, 1973; Bernasconi, 1973; Quintero, 1986; Tortonese, 1986; Clark & Downey, 1992).

Uruguayan records and references: FRV *Lerez* cruise 8203, station 25, 200 m (Quintero, 1986).

Remarks: The widely disjunct distribution of this species in the Western Atlantic deserves special attention. Tortonese (1986) commented that the record of *Ceramaster patagonicus* made by Tommasi (1970), and also detailed by Carrera-Rodríguez and Tommasi (1977), from RV *Wladimir Besnard* station 300 (off Rio Grande do Sul, Brazil, 31°02´S-49°07´W, 150 m) probably belongs to *P. placenta*.

Genus *Anthenoides* Perrier, 1881

Anthenoides piercei Perrier, 1881

Anthenoides piercei Perrier, 1881: 23.

Geographic and bathymetric distribution: Western Atlantic and Caribbean Sea, from North Carolina, Gulf of Mexico and West Indies to Surinam; Rio de Janeiro (Brazil) to Uruguay, from the shelf to the upper slope (Halpern, 1970; Bernasconi, 1966; 1973; Downey, 1973; Walenkamp, 1976; 1979; Carrera-Rodríguez & Tommasi, 1977; Clark & Downey, 1992).

Uruguayan records and references: FRV *Santa María Magdalena* cruise 8201, stations 2 and 10 (298-568 m) (Quintero, 1986).

Remarks: *Anthenoides brasiliensis* Bernasconi, 1956, is considered a junior synonym of *A. piercei* according to several authors (see Walenkamp, 1979 and Clark & Downey, 1992). However, an approach including molecular data is needed. The current known disjunct distribution may suggest the existence of twin species.

Genus *Cladaster* Verrill, 1899

Cladaster analogus Fisher, 1940

Cladaster analogus Fisher, 1940: 123, fig. D, 2; pl. 4, figs. 1-3.

Geographic and bathymetric distribution: Southern southwestern Atlantic (Uruguay and Argentina including the Malvinas Islands and Burdwood Bank); subantarctic sector south of New Zealand near Auckland and Antipodes Islands, from the outer shelf to the upper slope (Fisher, 1940; Bernasconi, 1973; Clark & Downey, 1992; Mah, 2011; Hurtado-García &

Manjón-Cabeza, 2022).
Uruguayan records and references: Station 237 of the RV *Walther Herwig* (1966), 800 m (Bernasconi, 1973).
Remarks: The record from Uruguayan waters made by Bernasconi (1973) was overlooked by most subsequent authors.

Family Odontasteridae Verrill, 1899

Remarks: *Diplodontias singularis* (Müller and Troschel, 1843) was recorded from the shelf off the coast of Buenos Aires Province, Argentina (Bernasconi, 1962; Orovitz & Tablado, 1990).

Genus *Acodontaster* Verrill, 1899

***Acodontaster elongatus granuliferus* (Koehler, 1912)**

Acodontaster granuliferus Koehler, 1912: 77, pl. 6, figs. 7 and 10.
Odontaster glaber Barattini, 1938: 22-23, pl. 4 (up).

Geographic and bathymetric distribution: Southern southwestern Atlantic south of 35°50´S (Uruguay), Argentina including the Malvinas Islands; Southeastern Pacific up to ca. 32´S (Chile), from the shelf to the upper slope (Fisher, 1940; Bernasconi, 1962; 1973; Clark & Downey, 1992; Hurtado-García & Manjón-Cabeza, 2022).
Uruguayan records and references: ESE Lobos Island, 120-130 m (Barattini, 1938, as *Odontaster glaber*); 35°50´S-53°30´W (117 m), 36°02´S-53°25´W (133.5 m) (Bernasconi, 1962); FRV *Lerez* cruise 8204, station 38, 800 m; FRV *Torre Blanca* cruise 8401, station 1, 400 m (Quintero, 1986).
Remarks: *Odontaster glaber* Barattini, 1938 was included in the synonymy of *A. elongatus granuliferus* by Fisher (1940) without further discussion as did Clark and Downey (1992). However, Fisher (1940) commented in relation to its distribution: "…north to Uruguay where *A. glaber* (Barattini) may constitute a recognizable race". Bernasconi (1962) did not discuss the identity of *O. glaber*.
Acodontaster elongatus elongatus (Sladen, 1889), known from various subantarctic and Antarctic locations (e.g. Kerguelen, Marion, and Heard Islands and from the Palmer Archipelago, Clark, 1962) represents the typical subspecies and another example of why taxa present in the Patagonian region (i.e. *A. e. granuliferus*) require further revision.

Genus *Odontaster* Verrill, 1880

***Odontaster penicillatus* (Philippi, 1870)**

Goniodiscus penicillatus Philippi, 1870: 268.

Geographic and bathymetric distribution: Southern southwestern Atlantic south of 35°50´S (Uruguay), Argentina including Malvinas Islands; Southeastern Pacific up to ca. 30´S (Chile); Prince Edward Islands (subantarctic Indian Ocean, South Africa); Macquarie Island (subantarctic Pacific, Australia), from the intertidal to the upper slope (Fisher, 1940; Madsen, 1956; Bernasconi, 1962; Codoceo & Andrade, 1978; Clark & Downey, 1992; O´Hara, 1999; Stampanato & Jangoux, 2004; Hurtado-García & Manjón-Cabeza, 2022).
Uruguayan records and references: 35°50´S-53°30´W, 117 m; 36°02´S-53°25´W, 133.5 m (Bernasconi, 1962); FRV *Lerez* cruise 8204, station 43, 400 m (Quintero, 1986).

Family Poraniidae Perrier, 1894

Genus *Glabraster* A. H. Clark, 1916

***Glabraster antarctica* (E. A. Smith, 1876)**

Porania antarctica E. A. Smith, 1876: 108; 1879: 275, pl. 17, fig. 1.

Geographic and bathymetric distribution: Southwestern Atlantic south of 33°S (Rio Grande do Sul, Brazil), Uruguay and Argentina including Malvinas Islands; Southeastern Pacific up to ca. 30°S (Chile); circum-antarctic and adjacent subantarctic islands, from the intertidal to the lower slope (Fisher, 1940; Madsen, 1956; Bernasconi, 1973; Tablado, 1982; Clark & Downey, 1992; O´Hara, 1999; Stampanato & Jangoux, 2004; Mah & Foltz, 2014; Hurtado-García & Manjón-Cabeza, 2022).
Uruguayan records and references: Off Río de la Plata, at great depths (Barattini, 1938, as *Porania magellánica* -sic-); 36°02´S-53°25´W (133.5 m) (Madsen, 1956); 35°30´S-53°10´W (108-162 m) (Tablado, 1982, as *Porania magellanica magelllanica*).
Remarks: Clark and Downey (1992) indicated that the record of Carrera-Rodríguez and Tommasi (1977) for *Marginaster pectinatus* Perrier, 1881 on the outer shelf off the coast of Rio Grande do Sul, Brazil, might belong to *G. antarc-*

tica (*P. magellanica magellanica*). Mah and Foltz (2014) reported the specimen USNM E38720 as "SE of Montevideo, Urugay (sic), South Atlantic. 110 m. Coll. R/V Undine". Web database (http://n2t.net/ark:/65665/378756be2-e3c2-4534-a146-5a03f0be626d) indicate as centroid coordinates -37.5, 54.67 (37°30´S-54°40´W), i.e. in the Argentinean waters off Buenos Aires Province. This specimen may come from the lot MACN 16046 from 37°14´S-55°00´W (102.4 m) collected by Captain Alexanderson onboard the Fishing Vessel *Undine*.

Genus *Poraniopsis* Perrier, 1891

***Poraniopsis echinaster* Perrier, 1891**

Poraniopsis echinaster Perrier, 1891: K106–107, pl. 10, fig. 2.

Geographic and bathymetric distribution: Southwestern Atlantic south of 33°S (Rio Grande do Sul, Brazil), Uruguay and Argentina including the Malvinas Islands; Southeastern Pacific up to ca. 32°S Chile); Bouvet Island, west coast of South Africa, Southern Indian Ocean (Coral Seamount), from the inner shelf to the upper slope (Madsen, 1956; Codoceo & Andrade, 1978; Bernasconi, 1973; 1980; Clark & Downey, 1992; Mah & Foltz, 2014).
Uruguayan records and references: "south of Banco Inglés" (Barattini, 1938, but see Scarabino, 2006); ca. 34°38´S-52°15´W, 150 m (Doello-Jurado, 1938); 34°50´S-52°20´W (104-117 m), 34°38´S-52°15´W (120 m), 35°08´S-52°35´W (Bernasconi, 1980), all as *Poraniopsis mira* (de Loriol 1904), but see Mah and Foltz (2014); [off] Cabo Santa María (119-128 m) (Mah & Foltz, 2014).
Remarks: Mah and Foltz (2014) synonymized *P. mira* with *P. echinaster*.

Family Solasteridae Viguier, 1878

Genus *Solaster* Forbes, 1839

***Solaster regularis* Sladen, 1889**

Solaster regularis Sladen 1889: 454, pl. 70, fig. 1; pl. 72, figs. 5-6.

Geographic and bathymetric distribution: Southern southwestern Atlantic south of 36°S (Uruguay), Argentina including the Malvinas Islands and Burdwood Bank; Southeastern Pacific up to ca. 32°S (Chile); circum-antarctic and adjacent subantarctic islands: Bellinghausen Sea, South Shetland Islands, Enderby Land eastwards to Wilhelm II Land, Coulman Island (Ross Sea), Kerguelen Islands, Crozet Islands, Prince Edwards & Marion Island, Heard Island, from shallow subtidal to lower bathyal (Fisher, 1940; Bernasconi, 1973; Codoceo & Andrade, 1978; Clark & Downey, 1992; Stampanato & Jangoux, 1993; 2004; Mutschke & Mah, 2009; Hurtado-García & Manjón-Cabeza, 2022; Mah, 2023).
Uruguayan records and references: Station 237 of the RV *Walther Herwig* (1966), 800 m (Bernasconi, 1973); FRV *Torre Blanca* cruise 8401, station 2, 700 m (Quintero, 1986).
Remarks: Fisher (1940) and Clark (1962) discussed the existence of an Antarctic subspecies, *Solaster regularis subarcuatus* Sladen, 1889, which Mah (2023) synonymized with *S. regularis*.

Faunistic and zoogeographic considerations

Total literature records of asteroideans from Uruguayan waters include 42 species, for which detailed locations are available (Table 1). These species belong to 35 genera and 17 families. Another 22 species have been reported for the waters off the coasts of Rio Grande do Sul (Brazil) and the Province of Buenos Aires (Argentina), potentially being present in Uruguayan waters.

The outstanding work of Prof. Irene Bernasconi contributed 12 first records for Uruguayan waters between 1937 and 1979. Her disciples reported five other species. The pioneering national work of Barattini (1938) added seven first records. Miscellaneous Uruguayan (several aided by Bernasconi) and Brazilian researchers added 10 species. The expeditions of the HMS *Challenger* and the RV *Atlantis II* contributed first records of eight species through the reports of Sladen (1889) (three species) and Clark and Downey (1992) (five species) respectively.

The distribution patterns of asteroid species reported so far for Uruguayan waters allow for the identification of several groups and subgroups of species (Table 1) that match to a greater or lesser extent with those previously established (see Scarabino *et al*., 2018; 2019; Ramalho *et al*., 2022, and references therein):

Table 1. Asteroidea recorded from Uruguayan waters indicating bathymetric (S: Shelf, US: Upper Slope (200–1500 m), LS/AP: Lower Slope-Abyssal Plain (1500-5500 m)) and biogeographical distribution (TSS: Tropical and Subtropical Shelf and Slope Species; ASS: Antarctic and Subantarctic shelf and deep-sea species; DPE: Deep-sea endemic species; DWD: Deep sea widely distributed species). Bathymetric ranges here are only those known for Uruguayan records.

Species	**S**	**US**	**LS/AP**	**TSS**	**ASS**	**DPE**	**DWD**
Pythonaster murrayi			x			x	
Hymenaster spp.?		x					
Diplopteraster clarki	x				x		
Psalidaster mordax		x			x		
Anasterias antarctica	x				x		
Diplasterias brandti	x	x			x		
Perissasterias polyacantha		x			x		
Sclerasterias contorta	x			x			
Smilasterias triremis			x		x		
Labidiaster radiosus	x				x		
Allostichaster hartii	x			x			
Allostichaster hebes	x			x	x		
Cosmasterias lurida	x				x		
Cosmasterias tomidata	x				x		
Othilia brasiliensis	x			x			
Henricia obesa	x				x		
Guassaster antarcticus			x		x		
Pectinaster filholi			x				x
Astropecten brasiliensis	x			x			
Astropecten cingulatus	x			x			
Astropecten marginatus	x			x			
Bathybiaster loripes		x			x		
Psilaster herwigi		x				x	
Dytaster grandis nobilis			x			x	
Ctenodiscus australis	x				x		
Luidia alternata alternata	x			x			
Luidia ludwigi scotti	x			x			
Luidia patriae	x			x			
Eremicaster crassus			x		x		
Pseudarchaster discus	x				x		
Asterina stellifera	x			x			
Ganeria falklandica	x				x		
Cycethra verrucosa	x				x		
Hippasteria phrygiana		x			x		
Peltaster placenta		x		x			
Anthenoides piercei	x	x		x			
Cladaster analogus		x			x		
Acodontaster elongatus granuliferus	x				x		
Odontaster penicillatus	x				x		
Glabraster antarctica	x				x		
Poraniopsis echinaster	x				x		
Solaster regularis		x			x		

Tropical and Subtropical shelf and slope species: This is a heterogeneous group with four subgroups:

1- Amphi-Atlantic species (*Asterina stellifera, Peltaster placenta*). Although relatively known from certain perspectives, these species with an apparently amphi-Atlantic distribution require revision.

2- Species that are widely distributed in the Western North Atlantic, from North America and/or the Caribbean (*Astropecten cingulatus, Astropecten marginatus, Astropecten brasiliensis, Luidia alternata alternata, Luidia ludwigi scotti*). Although there is somewhat of a consensus on the identities of these species, they are taxonomically complex groups. This, in addition to their wide distribution, indicates the need for molecular studies to test their current concepts.

3- Species with disjunct distribution (*Sclerasterias contorta, Anthenoides piercei*). These species supposedly having a large distribution over the Western Atlantic, actually have a disjunct distribution which may indicate that sibling species are involved. A rampant recent example of this pattern involves the black drum (*Pogonias* spp.) (Azpelicueta *et al*., 2019). Its presence in the study area is associated with the Tropical Water/ Subtropical Shelf Water/South Atlantic Central Water.

4- Species only known for the Southwestern Atlantic, with four types of distributions: one typical of the Argentine Biogeographic Province (*Othilia brasiliensis*), another more restricted to the northern part of this province (*Allostichaster hartii*), and another that includes both the Argentine and Magellanic Provinces (*Allostichaster hebes*). *Labidiaster radiosus* might also be placed alongside the latter if the identifications by Tommasi and Oliveira (1976), discussed by Clark and Downey (1992), are correct. Finally, an uncertain species *(Luidia patriae)* could be distributed from southern Brazil to northern Argentina.

Antarctic and Subantarctic shelf and deep-sea species: One group includes mainly shelf species with circum-Antarctic distribution or with distribution including an Antarctic sector (*Glabraster antarctica, Poraniopsis echinaster, Henricia obesa, Smilasterias triremis, Cycethra verrucosa, Cladaster analogus* and *Solaster regularis*). Another group (*Pseudarchaster discus, Cosmasterias lurida, Cosmasterias tomidata, Psalidaster mordax, Anasterias antarctica, Bathybiaster loripes, Ctenodiscus australis, Ganeria falklandica, Acodontaster elongatus granuliferus, Odontaster penicillatus* and *Diplopteraster clarki*), also typical of cold waters, is present in the Magellanic and/or Patagonian regions; a few species are also found on some sub-Antarctic islands. In all cases, they appear exclusively in deeper waters towards the northern part of their distribution, represented by Uruguayan waters, marking the northernmost extent of the range of most of these species. Their presence is associated with Subantarctic Water and the Antarctic Intermediate Water. An extreme case is *S. triremis*, which would be associated with Lower Circumpolar Deep Water. *Hippasteria phrygiana* also has a singular wide anti-tropical distribution, but its presence in the Southwestern Atlantic is also related with these two former water masses. A poorly known singular case is *Perissasterias polyacantha*, inhabiting cold waters also from South Africa. In several situations, the differentiation between Magellanic and Antarctic taxa has not been correctly analyzed. Finally, a group of deep-water species with a circum-Antarctic distribution (*Gaussaster antarcticus* and *Eremicaster crassus*) reaches Uruguayan waters as well, whose bathymetric distribution matches the occurrence of the Lower Circumpolar Deep Water.

Deep-sea widely distributed species: This group can only be recognized with certainty in the study area by *Pectinaster filholi*. Its bathymetric distribution matches the occurrence of the North Atlantic Deep Water.

Deep-sea endemic species: *Psilaster herwigi* is essentially endemic to the Uruguayan upper slope, with a very marginal presence in southern Brazil and no reported presence on the Buenos Aires slope despite recent sampling and analyses of the asteroid fauna (e.g., Rivadeneira, 2020). *Dytaster grandis nobilis* needs to be analyzed in more detail, although in its current concept, it is endemic to the deep waters of the Argentine Basin, associated with a widely distributed species in the Atlantic Ocean (Clark & Downey, 1992; Rivadeneira, 2020). *Pythonaster murrayi* is known only from the Uruguayan abyssal plain, not having been recorded in recent or historical samples from Argentine deep waters or other Atlantic basins (Mah *et al*., 2012; Rivadeneira, 2020).

General discussion and perspectives

The compilation, analysis, and discussion of reports made to date on various groups of marine metazoans from Uruguay, or a subset of them, have demonstrated the variety of sources and the degree of dispersal of the existing information (e.g. Scarabino, 2006; Scarabino *et al*., 2016, 2018, 2019; Ramalho *et al*., 2022). This is also the case of asteroideans, emphasizing the importance of creating checklists like this one as essential resource to advance our understanding of Uruguayan biodiversity and to use the existing information. Specifically, in the case of asteroideans, their size and attractive shape, the sustained work and access to Uruguayan samples by regional researchers, as well as the analysis of samples from the *Atlantis II* vessel, have facilitated a more balanced understanding at bathymetric levels of the existing fauna. This contrasts with that of other groups such as Bryozoa, Pycnogonida, and Ascidiacea (e.g., Scarabino *et al*., 2018, 2019; Ramalho *et al*., 2022).

Nevertheless, as is the case with all benthic metazoan groups in Uruguay, the analysis of the important collection of the Museo Nacional de Historia Natural de Montevideo, obtained mostly alongside the Dirección Nacional de Recursos Acuáticos (formerly Instituto Nacional de Pesca), will allow first records or significantly expand the knowledge on their distribution in Uruguayan waters. The original analysis of part of this material (e.g. Maytía de Scarabino, 1985; Quintero, 1986; Tablado & Maytía, 1988) was novel but remained limited for various reasons, including lack of support for national marine zoology and mainly lack of development of national zoological collections. Additionally, various novel records for Uruguayan waters extant in the USNM collections (*Benthopecten semisquamatus* (Sladen 1889), *Eremicaster vicinus* (Ludwig, 1907), *Porcellanaster ceruleus* Wyville Thomson, 1878) are already available in online databases, but it is desirable that they receive additional validation. For example, most of these records were not considered in the major work of the researcher who made the identifications (M.E. Downey), and in some cases, they are also outright questionable (e.g. *Ctenodiscus crispatus* (Bruzelius, 1805) for the upper slope) or require comparison with related species (*D. verrucosus* with *D. clarki*).

The majority of the material considered here was previously fixed in formalin without prior *in vivo* photography, limiting the potential for necessary integrative taxonomy. Deeper zones, reefs (coral or rocky), and smaller species are far from adequately sampled. In this regard, new surveys that consider these aspects, along with the training of national specialists, are undoubtedly necessary.

ACKNOWLEDGEMENTS

FS is grateful to Inés Pereyra for her continuous support and to Luciana Alonso for her great and friendly help during one stay at Buenos Aires. He also acknowledges the Departamento Interdisciplinario de Sistemas Costeros y Marinos, Centro Universitario Regional del Este (UdelaR) as well as the support to him of the Uruguayan Ministry of Environment, notably Mariana Rios, and the Gaia Foundation when developing this work. Che-Wirapitá-Mar Azul Uruguayo and their funding institutions supported an important meeting between some coauthors, as also generously made the Fundación Azara. Support of the following projects are also acknowledged: POS_NAC_2023_1_177843 "Moduladores metabólicos y estresores ambientales en la estructura y dinámica de las comunidades del intermareal rocoso" (to Ariel de León-Mackey); Proyecto ANII-Fondo Clemente Estable "Mecanismos determinantes de la estructura comunitaria y la variabilidad espacio-temporal en comunidades acuáticas" (to Dr. Angel Segura, 2021-2022); Proyecto de investigación Fondo Carlos Vaz Ferreira (Ministerio de Educación y Cultura, Uruguay) 2019 "*Grateloupia tuturutu* especie invasora: causas y efectos de su invasión en la costa atlántica de Uruguay" financiado por la convocatoria 2019 (to Dr. Gabriela Vélez-Rubio, 2020-2022); Rufford Small Grants for Nature Conservation "Potential effects of an invasive species on the foraging ecology of green turtle in a relevant feeding and developmental area in the Southwestern Atlantic Ocean" (to Dr. Gabriela Vélez-Rubio, 2018-2020). We also acknowledge our institutions for general or specific support, as well as to Biodiversity Heritage Library for making important literature available. We also very are grateful for the detailed revisions of two anonymous referees and Dr. Sergio Martínez.

For their generosity, encouragement, literature, or notes provided we are eternally grateful to Lobo Orensanz, Victor Scarabino and Irene Bernasconi, to whom we all warmly dedicate this work.

BIBLIOGRAPHY

Amaro-Padilla, J. 1967. El mejillón de la Bahía de Maldonado. *Revista del Instituto de Investigaciones Pesqueras*, 2(1): 81–93.

Amiraux, R., D.J. Yurkowski, P. Archambault, M. Pierrejean & C.J. Mundy. 2023. Top predator sea stars are the benthic equivalent to polar bears of the pelagic realm. *Proceedings of the National Academy of Sciences of the United States of America*, 120(1): e2216701120.

Atkinson, L.J., C. Mah, Z. Filander, J. Olbers & A. Thandar. 2018. Phylum Echinodermata. Pp. 393-476. In: Atkinson, L.J. and K.J. Sink (Eds.). *Field guide to the offshore marine invertebrates of South Africa*. Malachite Marketing and Media, Pretoria.

Avila-Pires, T.C.S. 1983. Contribuição ao estudo do gênero *Echinaster* Müller & Troschel, 1840 (Echinodermata: Asteroidea) no litoral Brasileiro. *Anais da Academia Brasileira de Ciências*, 55(4): 431–448.

Azpelicueta, M.M., S.M. Delpiani, A.L. Cione, C. Oliveira, A.P. Marceniuk & J.M. Díaz de Astarloa. 2019. Morphology and molecular evidence support the validity of *Pogonias courbina* (Lacepède, 1803) (Teleostei: Sciaenidae), with a redescription and neotype designation. *PLoS ONE* 14(6): e0216280.

Barattini, L.P. 1938. Equinodermos uruguayos (Contribución al conocimiento de las especies que viven en nuestras aguas). *Boletín del Servicio Oceanográfico y de Pesca*, 1(1): 17–29, 8 pls.

Bell, F.J. 1881. Account of the Echinodermata collected during the Survey of H.M.S. "Alert" in the Straits of Magellan and on the Coast of Patagonia. *Proceedings of the Zoological Society of London*: 87–101, pls. VIII & IX.

Bell, F.J. 1917. Echinoderma, Part I. Actinogonidiata. *Natural History Reports of the British Antarctic "Terra Nova" Expedition, Zoology*, 4(1): 1–10.

Bernasconi, I. 1935. Dos nuevas especies de *Pteraster* en la Argentina. *Physis* 11: 482–483.

Bernasconi, I. 1937. Asteroideos argentinos I: Familia Pterasteridae. *Anales del Museo Argentino de Ciencias Naturales*, 39: 167–187, 1-9 pl.

Bernasconi, I. 1941a. Los equinodermos de la expedición del Buque oceanográfico "Comodoro Rivadavia" A.R.A. *Physis*, 19:37–49, 8 pl.

Bernasconi, I. 1941b. Dos nuevas especies argentinas de "'Luidia'". *Physis*, 19: 117–118.

Bernasconi, I. 1942. Los Asteroideos sudamericanos de la familia "Luidiidae". Physis, 19: 252–253.

Bernasconi, I. 1943. Los Asteroideos sudamericanos de la familia Luidiidae. *Anales del Museo Argentino de Ciencias Naturales* 16(7): 1–20, 5 pls.

Bernasconi, I. 1955. Equinoideos y asteroideos de la colección del Instituto Oceanográfico de la Universidad de San Pablo. Primera contribución. *Boletim do Instituto Oceanográfico*, 6: 51–77, 7 pls.

Bernasconi, I. 1956. Algunos asteroideos de Antártida. *Anales de la Sociedad Científica Argentina*, 161: 7-30, 6 pls.

Bernasconi, I. 1962. Asteroideos argentinos III. Familia Odontasteridae. *Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" e Instituto Nacional de Investigación de Ciencias Naturales, Ciencias Zoológicas* 8(3): 27–51, 8 pls.

Bernasconi, I. 1963. Asteroideos argentinos IV. Familia Goniasteridae. *Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" e Instituto Nacional de Investigación de Ciencias Naturales, Ciencias Zoológicas* 9(1): 1–25, 5 pls.

Bernasconi, I. 1964. Asteroideos argentinos V. Familia Ganeriidae. *Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" e Instituto Nacional de Investigación de Ciencias Naturales, Ciencias Zoológicas* 9(4): 59–89, 1-6 pl.

Bernasconi, I. 1966. Los equinoideos y asteroideos colectados por el buque oceanográfico R/V "Vema", frente a las costas argentinas, uruguayas y sur de Chile. *Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" e Instituto Nacional de Investigación de Ciencias Naturales, Zoología* 9(7): 147–175, 2 pls.

Bernasconi, I. 1970. Equinodermos Antarticos, II. Asteroideos, 3. Asteroideos de la extremidad norte de la Peninsula Antártica. *Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" e Instituto Nacional de Investigación de Ciencias Naturales, Zoología* 9(10): 211–281, 19 pls.

Bernasconi, I. 1972. Nuevas especies de Asteroidea: *Bathybiaster herwigi* sp. nov. (Astropectinidae) y *Calyptraster vitreus* sp. nov. (Pterasteridae). *Physis*, 31(82): 9–14.

Bernasconi, I. 1973. Los equinodermos colectados por el "Walther Herwig" en el Atlántico Sudoeste. *Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" e Instituto Nacional de Investigación de Ciencias Naturales, Hidrobiología* 3(3): 287–334, 7 pls.

Bernasconi, I. 1979. Asteriidae, Coscinasteriidae de la Argentina y Antártida. *Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" e Instituto Nacional de Investigación de Ciencias Naturales, Hidrobiología* 5(11): 241–246, 3 pls.

Bernasconi, I. 1980. Asteroideos argentinos VII. Familia Echinasteriidae. *Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" e Instituto Nacional de Investigación de Ciencias Naturales, Hidrobiología* 5(12): 247–258, 4 pls.

Bremec, C.S. & D.A. Giberto. 2004. New records of two species of *Sabellaria* (Polychaeta: Sabellariidae) from the Argentinean Biogeographic Province. *Revista de Biología Marina y Oceanografía,* 39(2): 101–105.

Brogger, M.I., D.G. Gil, T. Rubilar, M.I. Martinez, M.E. Díaz de Vivar, M. Escolar, L. Epherra, A.F. Pérez & A. Tablado. 2013. Echinoderms from Argentina: biodiversity, distribution and current state of knowledge. Pp. 359−402. In: Alvarado, J.J. and F. Solís-Marín (Eds.). *Echinoderm research and diversity in Latin America*. Springer, Berlin.

Burone, L., Franco-Fraguas, P., Carranza, A., Calliari, D., Michaelovitch de Mahiques, M., Gómez, M., Marin, Y., Gutiérrez, O. & Ortega, L. 2021. Physi-

cal drivers and dominant oceanographic processes on the Uruguayan Margin (Southwestern Atlantic): a review and a conceptual model. *Journal of Marine Science and Engineering*, 9: 304.

Calliari, D., O. Defeo, G. Cervetto, M. Gómez, L. Giménez, F. Scarabino, A. Brazeiro & W. Norbis. 2003. Marine life of Uruguay: critical update and priorities for future research. *Gayana*, 67 (2): 341–370.

Capítoli, R.R. & C.E. Bemvenuti. 2004. Distribuição batimétrica e variaçôes de diversidade dos macroinvertebrados bentônicos da plataforma continental e talude superior no extremo sul do Brasil. *Atlântica*, 26: 27–43.

Capítoli, R.R. & C.E. Bemvenuti. 2006. Associações de macroinvertebrados bentônicos de fundos inconsolidados da plataforma continental e talude superior no extremo sul do Brasil. *Atlântica* (Rio Grande), 28(1): 47–60.

Castellanos, Z.A. de & D. Fernández. 1974. Nuevas *Rissoa* Freminuille (sic) 1813 del Atlántico Sudoccidental (Moll. Rissoacea). *Neotrópica*, 20 (63): 153–155.

Carrera-Rodríguez, C.J. & L.R. Tommasi. 1977. Asteroidea de la plataforma continental de Rio Grande do Sul (Brasil), coleccionados durante los viajes del N/Oc. "Prof. W. Besnard" para el Proyecto Rio Grande do Sul. *Boletim do Instituto Oceanográfico*, 26: 51–130.

Clark, A.H. 1948. Some interesting starfishes and brittle-stars dredged by the Atlantis in mid-Atlantic. *Journal of the Washington Academy of Science*, 38: 75–85.

Clark, H.E.S. & D.G. McKnight. 2001. The marine fauna of New Zealand Echinodermata: Asteroidea (Sea-stars). Order Valvatida. *NIWA Biodiversity Memoir* 117: 270 pp.

Clark, A.M. 1953. Notes on asteroids in the British Museum (Natural History). III. *Luidia*. IV. *Tosia* and *Pentagonaster*. *Bulletin of the British Museum (Natural History) Zoology*. 1(12): 379-411.

Clark, A.M. 1962. Asteroidea. B.A.N.Z. *Antarctic Research Expedition* 1929-1931. B9: 1–104.

Clark, A.M. 1982. Notes on Atlantic Asteroidea. 2. Luidiidae. *Bulletin of the British Museum (Natural History) (Zoology)*, 42: 157–184.

Clark, A.M. & M.E. Downey. 1992. *Starfishes of the Atlantic*. Chapman & Hall Identification Guides, 3. Chapman & Hall. London, UK. Xxvi + 794 pp.

Clark, H.L. 1923. The Echinoderm fauna of South Africa. *Annals of the South African Museum*, 13(7): 221–435, 23 pls.

Codoceo, M. & H. Andrade. 1978. Asterozoos arquibentónicos de Chile central. *Anales del Museo de Historia Natural, Valparaíso*, 11: 153–174.

Cunha, R., M. Tavares & J.B. de Mendonça. 2020. Asteroidea (Echinodermata) from shallow-waters of the remote oceanic archipelago Trindade and Martin Vaz, southeastern Atlantic, with taxonomic and zoogeographical notes. *Zootaxa*, 4742 (1): 31–56.

Cunha, R., L. Martins, C. Menegola & C. Souto. 2021. Taxonomy of the sea stars (Echinodermata: Asteroidea) from Bahia State, including ontogenetic variation and an illustrated key to the Brazilian species. *Zootaxa*, 4955 (1): 1–78.

Danis, B., M. Jangoux & J. Wilmes. 2012. Antarctic starfish (Echinodermata, Asteroidea) from the ANDEEP3 expedition. *ZooKeys*, 185: 73–78.

Demicheli, M. & F. Scarabino. 2006. Invertebrados bentónicos de La Paloma (Rocha, Uruguay). Pp. 523-534 *In*: R. Menafra, L. Rodríguez-Gallego, F. Scarabino and D. Conde (Eds.). *Bases para la conservación y el manejo de la costa uruguaya*. VIDA SILVESTRE URUGUAY (Sociedad Uruguaya para la Conservación de la Naturaleza), Montevideo, Uruguay.

Doello-Jurado, M. 1938. Nuevos datos sobre la fauna marina de la meseta continental de la Argentina y del Uruguay. *Physis*, 12 (44): 279-292, 2 láms.

Downey, M.E. 1973. Starfishes from the Caribbean and the Gulf of Mexico. *Smithsonian Contributions Zoology*, 126: 1–158.

Downey, M.E. 1979. *Pythonaster pacificus* n. sp., a new starfish of the family Myxasteridae (Echinodermata: Asteroidea. *Proceedings of the Biological Society of Washington*, 92: 70–74.

Ferraro, D.P., L.I. de Cabo, M.M. Libertelli, M.L. Quartino, L. Chornogubsky, S. Tancoff, Y. Davies & L.E. Cruz. 2020. Mujeres científicas del Museo Argentino de Ciencias Naturales: "Las Cuatro de Melchior". *Revista del Museo Argentino de Ciencias Naturales (n.s.)*, 22 (2): 249–264.

Fisher, W.K. 1940. Asteroidea. *Discovery Reports*, 20: 69–306.

Foltz, D.W., S.D. Fatland, M. Eléaume, K. Markello, K.L. Howell, K. Neil & C. Mah. 2013. Global population divergence of the sea star *Hippasteria phrygiana* corresponds to onset of the last glacial period of the Pleistocene. *Marine Biology*, 160: 1285–1296.

Gondim, A., M. Christoffersen & T. Dias. 2014. Taxonomic guide and historical review of starfishes in northeastern Brazil (Echinodermata, Asteroidea). *ZooKeys*, 449: 1–56.

Gray, J.E. 1840. A synopsis of the genera and species of the class Hypostoma (*Asterias* Linnaeus). Annals of the *Magazine of Natural History*, 6: 175–184 + 275–290.

Gray, J.E. 1847. Descriptions of some new genera and species of Asteriadae. *Proceedings of the Zoological Society of London*: 72–83.

Halpern, J.A. 1970. Goniasteridae (Echinodermata: Asteroidea) of the Straits of Florida. *Bulletin of Marine Science,* 20(1): 193–286.

Hernández, D.A. & A. Tablado. 1985. Asteroidea de Puerto Deseado (Santa Cruz, Argentina). *Contribuciones del Centro Nacional Patagónico del Consejo Nacional de Investigaciones*, 104: 1–16.

Hurtado-García, J. & E. Manjón-Cabeza. 2022. Species composition of sea stars (Echinodermata: Asteroidea) in the Patagonian Argentinian deep sea, including seven new records: connectivity with sub-Antarctic and Antarctic fauna. *Polar Biology*, 45: 1211–1228.

Jossart, Q., M. Kochzius, B. Danis, T. Saucède & C.V.E. Moreau. 2021. Diversity of the Pterasteridae (Asteroidea) in the Southern Ocean: a molecular and morphological approach. *Zoological Journal of the Linnean Society*, 192(1): 105–116.

Juanicó, M. & M. Rodríguez-Moyano. 1976 (1975). Composición faunística de la comunidad de *Mytilus edulis platensis* d'Orbigny, 1846, ubicada a unas 55 millas al SE de La Paloma. *Comunicaciones de la Sociedad Malacológica del Uruguay* 4(29): 113–116

Koehler, R. 1912. *Echinodermes (Asteries, Ophiures et Echinides)*. Deuxième Expèdition Antarctique Francaise 1908-1910 J. Charcot. Masson et cie, Paris. 277 pp.

Koehler, R. 1923. Astéries et Ophiures recueillies par l'Expédition Antarctique Suédoise (1901-1903). Further Zoological Results of the Swedish Antarctic Expedition 1901-1903 under the direction of Dr. *Otto Nordenskjold,* 1(1): 1–145.

Lawrence, J. & J. Cobb. 2017. Validation of *Astropecten jarli* Madsen, 1950 and implications for *A. cingulatus* Sladen, 1883 (Paxillosida: Astropectinidae). *Zootaxa*, 4269(1): 101–114.

Lang, B.J., J.M. Donelson, K.R. Bairos-Novak, C.R. Wheeler, C.F. Caballes, S. Uthicke & M.S. Ptratchett. 2023. Impacts of ocean warming on echinoderms: A meta-analysis. *Ecology and Evolution*, 13(8): e10307.

Lopes, E.M., R. Pérez-Portela, P.C. Paiva & C.R.R. Ventura. 2016. The molecular phylogeny of the sea star *Echinaster* (Asteroidea: Echinasteridae) provides insights for genus taxonomy. *Invertebrate Biology*, 135: 235–244.

Ludwig, H. 1903. *Seesterne. Résultats du voyage du S.Y. Belgica en 1897-1898-1899. Rapports sciéntifiques*. 72 pp., 7 pls.

Lütken C. 1857. De ved Danmarks kyster levende Pighude. *Videns kabelige Meddelelser fra den naturhist* 1856: 88–110.

Lütken, C. 1871. Fortasatte kritiske og beskrivende Bidrag til Kundskab om Sostjernerne (Asteriderne). *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening*. 1871: 227–304.

Madsen, F.J. 1956. Reports of the Lund University Chile Expedition 1948-49. 24. Asteroidea, with a survey of the Asteroidea of the Chilean Shelf. *Acta Universitatis Lundensis*, 52(2): 1–53.

Mah, C.L. 2011. Taxonomy of high-latitude Goniasteridae (Subantarctic & Antarctic): one new genus and three new species with an overview and a key to taxa. *Zootaxa*, 2759: 1–48.

Mah, C.L. 2023. New genera, species, and observations on the biology of Antarctic Valvatida (Asteroidea). *Zootaxa*, 5310 (1): 1–88.

Mah, C.L. & D.B. Blake. 2012. Global diversity and phylogeny of the Asteroidea (Echinodermata). *PLoS One*, 7(4): e35644.

Mah, C.L. & D.W. Foltz. 2014. New taxa and taxonomic revisions to the Poraniidae (Valvatacea; Asteroidea) with comments on feeding biology. *Zootaxa*, 3795 (3): 327–372.

Mah, C.L., M. Nizinski & L. Lundsten. 2010. Phylogenetic revision of the Hippasterinae (Goniasteridae; Asteroidea): systematics of deep sea corallivores, including one new genus and three new species. *Zoological Journal of the Linnean Society*, 160: 266–301.

Mah, C., J.-F.Hamel & M. Nizinski. 2012. Range extensions and taxonomic notes on Atlantic Myxasteridae (Velatida: Asteroidea). *Zootaxa*, 3572: 55–72.

Mah, C.L., K. Neill, M. Eleaume & D. Foltz. 2014. New Species and global revision of *Hippasteria* (Hippasterinae: Goniasteridae; Asteroidea; Echinodermata). *Zoological Journal of the Linnean Society*, 171: 422-456.

Martínez, S. 2008. Shallow water Asteroidea and Ophiuroidea of Uruguay: composition and biogeography. *Revista de Biología Tropical*, 56(3): 205–214.

Martínez S. 2013. Echinoderm research in Uruguay. Pp. 345-358. In: Alvarado J. & F. Solís-Marín (Eds.). *Echinoderm Research and Diversity in Latin America*. Springer, Berlin, Heidelberg.

Maytía de Scarabino, S. 1985. Asteroidea (Echinodermata) de aguas uruguayas hasta 800 m de profundidad. *Actas de las Jornadas de Zoología del Uruguay* 1985: 7.

McKnight, D.G. 2006. The marine fauna of New Zealand: Echinodermata: Asteroidea (Sea-stars). 3. Orders Velatida, Spinulosida, Forcipulatida, Brisingida with addenda to Paxillosida, Valvatida. *NIWA Biodiversity Memoirs*, 120: 1–187.

Milstein, A., M. Juanicó & J. Olazarri. 1976. Algunas asociaciones bentónicas frente a las costas de Rocha, Uruguay. Resultados de la campaña del R/V "Hero", viaje 72-3A. *Comunicaciones de la Sociedad Malacológica del Uruguay* 4(50): 143–164.

Mironov, A.N., A.B. Dilman, N.B. Petrov & I.P. Vladychenskaya. 2023. Taxonomic status and composition of the genera *Caulaster*, *Porcellanaster* and *Eremicaster* (Asteroidea) based on juvenile morphology and molecular phylogenetic data. *Diversity* 2023, 15, 1032. https://doi.org/10.3390/d15101032

Möbius, K. 1859. Neue Seesterne des Hamburger und Kieler Museums. *Abhandlungen und Verhandlungen Naturwissenschaftlicher Verein in Hamburg*, 4(2): 1–14.

Mones, A. 2015. *Bio-bibliografía de Luis P. Barattini*. 10 pp. https://www.mna.gub.uy/innovaportal/file/3672/1/barattini-biobiblio.pdf

Moreau, C., Jossart, Q., Danis, B., Eléaume, M., Christiansen, H., Guillaumot, C., Downey, R. & Saucède, T. 2021. The high diversity of Southern Ocean sea stars (Asteroidea) reveals original evolutionary pathways. *Progress in Oceanography*, 190: 102472.

Müller, J. & F.H. Troschel. 1842. System der Asteriden.1. Asteriae. 2. Ophiuridae. Vieweg: Braunschweig. xxx+134 pp., 12 pls.

Mutschke, E., & C. Mah. 2009. Asteroidea-Starfish. Pp. 802-830. In: Häussermann, V. and G. Fösterra (Eds.) *Marine Benthic Fauna of Chilean Patagonia*. Nature in Focus, Santiago, Chile.

O'Hara, T.D. 1999. Systematics and biology of Macqua-

rie Island echinoderms. *Memoirs of Museum Victoria*, 57(2): 167–223.

Orovitz, B. & A. Tablado. 1990. *Asterodon singularis* (Müller y Troschel 1843), única especie del género *Asterodon* Perrier 1891 (Asteroidea, Odontasteridae). *Gayana, Ser. Zool., Chile*, 54 (1): 21–32.

Paredes, C. & A. Gamarra. 2006. Primer hallazgo de *Henricia obesa* (Sladen, 1889) (Asteroidea: Echinasteridae) en el mar peruano. *Revista Peruana de Biología*, 13(1): 117–118.

Parelius, J. 1768. Beskrivelse over Nogle Korstrold. *Kongelige Norske Videnskabers Selskab Skrifter*, 4: 423–428, pl. 14.

Perez, J.A.A., L. Gavazzoni, L.H.P. de Souza, P.Y.G. Sumida & H. Kitazato. 2020. Deep-sea habitats and megafauna on the slopes of the São Paulo Ridge, SW Atlantic. *Frontiers in Marine Science*, 7: 572166.

Perrier, E. 1881. Report on the Results of dredging in the Gulf of Mexico and in the Caribbean Sea, 1877-79, by the United States Coastal Survey Steamer Blake. 14. Description sommaire des espèces nouvelles d'Astéries. *Bulletin of the Museum of Comparative Zoology*, 9: 1–31.

Perrier, E. 1885. Premiére note Préliminaire des les Echinodermes, recueillis durant les campagnes de dragages sous-marines du Travailleur et du Talisman. *Annales des sciences naturelles*, Zoologie, 22(8): 1–72.

Perrier, E. 1891. Echinoderma I. Stellérides. Mission Scientifique du Cap Horn, 1882-83. 6. Zoologie (3), Paris. 198 pp.

Philippi, R.A. 1857. Vier neue Echinodermen des Chilenischen Meeres. *Archiv für Naturgeschichte*, 23: 130–148.

Philippi, A. 1858. Beschreibungen einiger neuer Seesterne aus dem Meere von Chiloe. *Archiv für Naturgeschichte*, 24(1): 264–268.

Philippi, R.A. 1870. Neue Seesterne aus Chile. *Archiv für Naturgeschichte*, 36: 268–275.

Quintero, R. 1986. *Contribución al estudio de la macrofauna de invertebrados bentónicos batiales del frente marítimo uruguayo*. Tesis para optar a la Licenciatura en Oceanografia Biológica, Facultad de Humanidades y Ciencias, Universidad de la República, 72 pp.

Ramalho, L.V., J. López Gappa & F. Scarabino. 2022. Checklist of the marine Bryozoa from Uruguay (Southwest Atlantic). *Revista del Museo Argentino de Ciencias Naturales (n.s.)*, 24 (1): 109–134.

Rathbun, R. 1879. A list of the Brazilian echinoderms, with notes on their distribution. *Transactions of the Connecticut Academy of Arts and Sciences*, 5 (3): 139–158.

Riestra, G., J.L. Giménez & V. Scarabino. 1992. Análisis de la comunidad macrobentónica infralitoral de fondo rocoso en Isla Gorriti e Isla de Lobos (Maldonado, Uruguay). *Frente Marítimo* 11: 123–127.

Riestra, G., G. Fabiano, R. Foti & O. Santana. 1998 (1997). Mortandad de organismos bentónicos en la costa atlántica del Uruguay. *Comunicaciones Sociedad Malacológica del Uruguay,* 8(72/ 73): 73–79.

Rivadeneira, P.R. 2020. *Diversidad y aspectos reproductivos en estrellas de mar (Asteroidea: Echinodermata) del bentos profundo de Argentina (hasta 3500 m de profundidad)*. Tesis presentada para optar al Título de Doctor/a de la Universidad de Buenos Aires en el área de Ciencias Biológicas., 159 pp. Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires.

Rivadeneira, P.R., M.I. Martinez, P.E. Penchaszadeh & M.I. Brogger. 2020. Reproduction and description of a new genus and species of deep-sea asteriid sea star (Echinodermata; Asteroidea) from the southwestern Atlantic. *Deep Sea Research Part I: Oceanographic Research Papers*, 163: 103348

Romanelli, M.V. 2014. *Revisión taxonómica de las estrellas de mar de la familia Asteriidae Gray, 1840 (Asteroidea: Forcipulatida) del Atlántico Sudoccidental*. Tesis presentada para optar al Título de Doctor/a de la Universidad de Buenos Aires en el área de Ciencias Biológicas., 229 pp. Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires.

Rossello, H.J. 1922. Sobre biología marina. *Anales de la Facultad de Medicina*, 7: 139–165.

Roux, A. & C. Bremec. 1996. Comunidades bentónicas relevadas en las transecciones realizadas frente al Río de la Plata (35°15´S), Mar del Plata (38°10´S) y Península Valdés (42°35´S), Argentina. *INIDEP Informe Técnico* (11): 13 pp.

Say, T. 1825. On the species of the Linnean genus *Asterias* inhabiting the coast of the United States. *Journal of the Academy of Natural Sciences of Philadelphia*, 5: 151–154.

Scarabino, F. 2006. Faunística y taxonomía de invertebrados bentónicos marinos y estuarinos de la costa uruguaya. Pp 113–142 *In*: Menafra, R., L. Rodríguez-Gallego, F. Scarabino and D. Conde (Eds.). *Bases para la conservación y el manejo de la costa uruguaya. VIDA SILVESTRE URUGUAY (Sociedad Uruguaya para la Conservación de la Naturaleza)*, Montevideo, Uruguay.

Scarabino, F., D. Zelaya, J.M. (Lobo) Orensanz, L. Ortega, O. Defeo, E. Schwindt, A. Carranza, J. C. Zaffaroni, G. Martínez, V. Scarabino & F. García-Rodríguez. 2016. Cold, warm, temperate and brackish: Bivalve biodiversity in a complex oceanographic scenario (Uruguay, southwestern Atlantic). *American Malacological Bulletin*, 31(2): 284–301.

Scarabino, F., R.A. Lucena, T. Munilla, A. Soler-Membrives, L. Ortega, E. Schwindt, G. López, J.M. (Lobo) Orensanz & M.L. Christoffersen. 2019. Pycnogonida (Arthropoda) from Uruguayan waters (Southwest Atlantic): annotated checklist and biogeographic considerations. *Zootaxa*, 4550(2): 185–200.

Scarabino, F., T. Maggioni, A. Taverna, C. Lagger, E. Schwindt, L. Orensanz, G. López, L. Ortega, F. García-Rodríguez & M. Tatián. 2018. Ascidiacea (Chordata, Tunicata) from Uruguay (SW Atlantic): checklist and zoogeographic considerations. *Revista del Museo Argentino de Ciencias Naturales, n.s.,* 20(2): 251–270.

Scarabino, V. 1983. Contenido estomacal de *Bathybiaster herwigi* (Bernasconi, 1972), asteroideo batial del Atlántico Sudoccidental. *Resúmenes y Comunicaciones de las Terceras Jornadas de Ciencias Naturales*: 13.

Segura, A.M., E. Delgado & A. Carranza. 2008. La pesquería de langostino en Punta del Diablo (Uruguay): un primer acercamiento. *Panamerican Journal of Aquatic Science*, 3(3): 232–236.

Sibuet, M. 1976. Le genre *Hymenaster* (Asterides) dans l'ocean Atlantique. *Bulletin du Museum national d'Histoire naturelle,* 3(368): 305–324.

Sladen, W.P. 1883. The Asteroidea of HMS Challenger Expedition—Part II. Astropectinidae. *Zoological Journal of the Linnean Society*, 17: 214–269.

Sladen, W.P. 1889. Report on the Asteroidea. Report on the Scientific Results of the Voyage of H.M.S. Challenger during the years 1873–1876, Zoology, 30(51): xlii + 893 pp., 118 pls.

Stampanato, S. & M. Jangoux. 1993. Les astérides (Echinodermata) de la Baie Breid (Côte de la Princesse Ragnhild, quartier Enderby, Antarctique), avec la description d'une nouvelle espèce de *Solaster*. *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique*, 63: 175–184.

Stampanato, S. & M. Jangoux. 2004. The asteroid fauna (Echinodermata) of Marion and Prince Edward Islands. *Annals of the South African Museum* 112(1): 1–16.

Studer, T. 1883. Über der Asteriden, welche während der Reise S.M.S. Gazelle um die Erde gesammelt wurden. Sitzungsberichte der Gesellschaft Naturforschender Freunde zu Berlin, 1883(8): 128–132.

Studer, T. 1889. Die Forschungsreise S.M.S. "Gazelle" in den Jahren 1874 bis 1876 unter Kommando des Kapitän zur See Freiherrn von Schleinitz, herausgegeben von dem Hydrographischen Amt des Reichs-Marine-Amts. III. *Zoologie und Geologie*: 1–322.

Tablado, A. 1982. Asteroideos argentinos. Familia Poraniidae. *Comunicaciones del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" e Instituto Nacional de Investigación de Ciencias Naturales, Hidrobiología* 2(8): 87–105.

Tablado, A. & S. Maytía. 1988. Presencia de *Perissasterias polyacantha* H. L. Clark, 1923 (Echinodermata, Asteroidea) en el Océano Atlántico Sudoccidental. *Comunicaciones Zoológicas del Museo de Historia Natural de Montevideo*, 12(169): 1–11.

Tommasi, L.R. 1970. Lista dos asteroides recentes do Brasil. *Contribuições Avulsas do Instituto Oceanográfico*, 18: 1–61, 38 pls.

Tommasi, L.R. & E. Oliveira. 1976. Equinodermes do Brasil. V. Sobre algumas espécies coletadas durante viagens do N/Oc. ''Prof. Besnard''. *Boletim do Instituto Oceanográfico, Universidade de São Paulo*, 25: 77–100.

Tommasi L.R., S.M. de Castro & E.C.P.M. de Sousa. 1988a. Echinodermata coletados durante as campanhas oceanográficas do N/Oc. "Almirante Saldanha" no Atlântico Sul Ocidental. *Relatorio Interno de Instituto Oceanográfico*, 21: 1–11.

Tommasi, L.R., M.C.W. Cernea & M.C.G. Condeixa. 1988b. Equinodermes coletados pelo N/Oc. "Almirante Saldanha", entre 26°59 e 38°39´S. *Relatorio Interno de Instituto Oceanográfico*, 22: 1–11.

Tortonese, E. 1986 (1984). Notes on the Mediterranean sea-star *Peltaster placenta* (M. Tr.) (Echinodermata, Asteroidea). *Bollettino del Museo civico di Storia Naturale di Verona*, 11: 99–112.

Verrill, A.E. 1914. Monograph of the shallow-water starfishes of the North Pacific coast from the Arctic Ocean to California. *Harriman Alaska series: US National Museum*, 14: 408 pp.

Verrill, A.E. 1915. Report on the starfishes of the West Indies, Florida, and Brazil, including those obtained by the Bahama Expedition from the University of Iowa in 1893. *Bulletin of the State of University of Iowa*, 7: 1–232, 29 pls.

Walenkamp, J.H.C. 1976. The asteroides of the coastal waters of Surinam. *Zoologische Verhandelingen*, 147: 1–91, 18 pls.

Walenkamp, J.H.C. 1979. Asteroidea (Echinodermata) from the Guyana shelf. *Zoologische Verhandelingen*, 170: 1–97.

WoRMS (World Register of Marine Species). 2024. Asteroidea. Accessed at: https://marinespecies.org/aphia.php?p=taxdetails&id=123080 on 2024-07-18

Zulliger, D.E. & H.A. Lessios. 2010. Phylogenetic relationships in the genus *Astropecten* Gray (Paxillosida: Astropectinidae) on a global scale: molecular evidence for morphological convergence, species-complexes and possible cryptic speciation. *Zootaxa*, 2504: 1–19.

Doi: 10.22179/REVMACN.27.881

Recibido: 13-VIII-2024
Aceptado: 6-II-2025

Appendix 1. List of oceanographic stations mentioned in the text.

HMS *Challenger* (February 1876):
Station 320. 37°17´S–53°52´W, 1097 m
Station 323. 35°39´S-50°47´W, 3475 m

SMS *Gazelle* (February 1876):
Station LX. 34°43´7 S-52°36´1 W, 80 m

Comodoro Rivadavia A.R.A. (September 1938):
Station 9. 36°25´S-54°38´W, 54 m
Station 11. 34°40´S-52°18´W, 100 m

RV *Vema* Cruise V-18 (February-April 1962):
Station 7. 35°57´S-53°07´W, 141 m
Station 42. 34°15´S-52°22´W, 40 m

RV *Walther Herwig* (June 1966):
Station 237. 36°04´S-52°58´W, 800 m
Station 246. 36°48´S-54°03´W, 500 m
Station 412. 35°48´S-52°48´W, 800 m
Station 413. 35°43´S-52°43´W, 1000 m
Station 428. 34°48´S-52°02´W, 400 m
Station 433. 34°37´S-52°49´W, 60 m
Station 442. 34°33´S-52°30´W, 65 m
Station 450. 36°05´S-53°45´W, 100 m

RV *Wladimir Besnard* (1968)
Station 275. 33°55´S-53°20´W, 21 m
Station 277. 34°32´S-52°22´W, 60 m
Station 405. 34°32´S-52°27´W, 65 m
Station 406. 34°14´S-52°53´W, 65 m

RV *Almirante Saldanha* (1966-1972)
Station 1382. 35°06´S-52°33´W, 136 m
Station 1437. 36°00´S-53°36´W, 100 m
Station 1449. 35°10´S-53°08´W, 56 m
Station 1452. 34°29´2S-52°37´W, 50 m
Station 2869. 36°23´S-53°13´W, 400-430 m

RV *Atlantis* II, cruise 60 (March 1971)
Station 240. 36°53.4´S-53°10.2´W, 2195-2323
Station 245. 36°55.7´S–53°01.4´W, 2707 m
Station 256. 37°40.9´S–52°19.3´W, 3906–3917 m
Station 259. 37°13.3´S–52°45´W, 3305 m
Station 262. 36°05.2´S–52°17.9´W, 2440 m

RV *Hero*, cruise 72-3A (July 1972)
Station 2. 33°56´S-53°28´W, 8 m
Station 17. 33°55´S-53°28´W, 11 m
Station 19. 33°47´S-53°23´W, 10 m
Station 22. 34°12´S-53°40´W, 12 m

FRV *Lerez* cruise 8203 (February 1982)
Station 8. 36°11´S-53°09´W, 400 m
Station 10. 36°06´S-53°02´W, 400 m
Station 17. 35°31´S-52°37´W, 200 m
Station 20. 35°22´S-52°33´W, 200 m
Station 21. 35°14´S-52°23´W, 200 m
Station 25. 34°58´S-52°13´W, 200 m

FRV *Lerez* cruise 8204 (March 1982)
Station 36. 36°13´S-53°31´W, 200 m
Station 38. 36°18´S-53°23´W, 800 m
Station 41. 36°23´S-53°35´W, 200 m
Station 42. 36°34´S-53°44´W, 200 m
Station 43. 36°37´S-53°40´W, 400 m
Station 44. 36°46´S-53°47´W, 400 m
Station 45. 36°44´S-53°55´W, 200 m
Station 46. 36°50´S-53°58´W, 200 m
Station 47. 36°52´S-53°55´W, 400 m
Station 48. 37°01´S-54°03´W, 400 m
Station 49. 36°59´S-54°07´W, 200-260
Station 51. 36°46´S-54°07´W, 146 m

FRV *Lerez* cruise 8205 (March 1982)
Station 2. 35°12´S-52°08´W a 35°15´S-52°15´W, 450 m
Station 3. 35°15´S-52°20´W a 35°22´S-52°25´W, 600 m
Station 5. 35°13´S-52°07´W a 35°15´S-52°15´W, 600 m
Station 6. 35°16´S-52°20´W a 35°20´S-52°25´W, 700 m
Station 7. 35°25´S-52°30´W a 35°22´S-52°28´W, 500 m
Station 8. 35°16´S-52°25´W a 35°12´S-52°23´W, 500 m
Station 10. 35°12´S-52°07´W a 35°13´S-52°08´W, 500 m
Station 14. 35°23´S-52°30´W a 35°24´S-52°31´W, 400 m
Station 17. 35°33´S-52°33W, 500 m

RV *Lamatra cruise 8214* (July 1982)
Station 2. 35°18´S-52°30´W, 500-400 m
Station 3. 35°59´S-52°57´W, 510 m

FRV *Santa María Magdalena* cruise 8201 (September 1982)
Station 2. 34°43´S-52°00´W a 34°50´S-52°04´W, 298-335 m
Station 10. 35°15-S-52°27´W a 35°11´S-52°22´W, 425-568 m
Station 11. 35°23´S-52°31´W, 480-760 m

FRV *Caçao* cruise 8301 (August 1983)
Station 1. 35°06´S-52°21´W, 650 m

FRV *Torre Blanca* cruise 8401 (September 1984)
Station 1. 36°58´S-54°11´W, 400 m
Station 2. 37°01´S-54°08´W, 700 m

RV *Holmberg* cruise 12/93 (October-November 1993)
Station RDP 5. 35°46´S-55°26´W, 20 m