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ARTICLE

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Type material and new occurrences of marine mites (Halacaridae) from São Paulo State, Brazil, housed at "Centro de Coleções Taxonômicas da UFMG", and notes on its taxonomy

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Short title: São Paulo State Halacarids at CCT-UFMG

Abstract

Halacarid mites are a diversified secondarily marine clade comprising more than one thousand species. Despite recent progress, it may be regarded as a neglected group of animals in Brazil, with only 36 species reported from Brazilian coastline, 26 of them from São Paulo State, belonging to 12 genera. Original description and records included material deposited in personal collections now housed at the Acarological Collection at "Centro de Coleções Taxonômicas da UFMG", acronym UFMG-AC. In addition to individuals employed in taxonomical studies, other individuals deposited in this collection are reported, specially those obtained by researchers of BIOTA/FAPESP program, making the information available to the scientific community. Problems related to the identity of *Agauopsis brevipalpus* (Trouessart, 1889), *Copidognathus floridensis* (Newell, 1947) and *Rhombognathus levigatoides* Pepato & Rocha, 2007 are presented, and distribution of *Simognathus fuscus* Viets, 1936 is discussed under the light of molecular data. We concluded that Brazilian occurrences of *Agauopsis brevipalpus* must be rejected, and confirmed that *Simognathus platyaspis* Otto, 2000 must be regarded as a junior synonym of *S. fuscus*.

Keywords:BIOTA/FAPESP program; *Copidognathus; Rhombognathus*; *Agauopsis*; *Simognathus*, Meiofauna.

Introduction

The family Halacaridae is an ancient marine secondary taxon that diverged from its sister group, Pezidae, a small family of freshwater mites restricted to the southern part of Australia, during the Paleozoic era (Pepato et al., 2022a). It includes more than 1200 species, most of them free-living, that inhabit macroalgae, seagrasses, sponges, mussels, barnacles and other colonial animals (Bartsch, 2009, 2023, WORMS, 2024). They are also common inhabitants of interstitial spaces on sandy beaches (e.g. Pepato et al, 2011), abyssal depths including hydrothermal vents (Bartsch, 2023), brackish water environments such as mangroves (Chatterjee et al., 2018) and few, although locally abundant, species that occupied freshwater habitats (Pepato et al., 2022a). Four genera feed on algae (Abé, 1998), and few species are known to be associated or suspected to be parasites of other animals, such as crabs, sponges, ascidians, and sea urchins (Chatterjee, 2021a-c, 2022).

Until 2003, only seven halacarids had been reported to the Brazilian coast.

Hans Lohmann (1893) reported among specimens collected by the research vessel "National" crew, during the "Plankton Expedition" (from July to November, 1889) from Brazilian coast or near off coast waters: *Copidognathus lamellosus* (Lohmann, 1893), *Copidognathus speciosus* (Lohmann, 1893), *Agauopsis brevipalpus* (Trouessart, 1889), *Agaue*

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nationalis (Lohmann, 1893), and *Agaue panopae setifera* (Lohmann,1893).

In that study, individuals belonging to *A. nationalis* (= *Halacarus nationalis*) were reported from Brazilian Coast and Bermudas, but all drawings were based on Brazilian material, hence it must be regarded as the type material. *Copidognathus lamellosus* (= *Halacarus lamellosus*) was obtained from Sydney, Bermudas and Brazil, with drawings based on Bermudas and Brazilian materials, the latter being regarded as its type locality, since the main figures are based on individuals from there. *Copidognathus speciosus* obtained from off coast floating material at approximately 6.7° N, 43.3° W, with additional specimens recorded at the Amazonas River mouth according to Piersig & Lohmann (1901), being reasonable regard Brazil as its *locus typicus* too. In the case of *A. panopae*, Lohmann (1893) distinguished two varieties, *squamifera* and *setifera*, occurring in Cabo Verde and Sydney, and Brazil and Sydney, respectively. This subspecies had its description based on six specimens, five collected in Sydney (Australia) and one at the mouth of the Amazon River, being the holotype for *Agaue panopae* from Cape Verde Islands, where the female employed to draw the main figure of the new species was collected. The distinction between the setae on the second palpal segment in the *squamifera* and *setifera* is the same as that on the palpal setae between males and females in *A. parva*, a sexually dimorphic trait according to Newell (1984), and hence the division into subspecies should be abandoned. Piersig & Lohmann (1901) mistakenly assigned the variety *squamifera* to Brazil. Finally, *A. brevipalpus* had its original description based on specimens obtained from Atlantic and Mediterranean coast of France (Trouessart,1889), while André (1942) observed that two slides identified as "*Agauopsis brevipalpus* n. sp. TYPE", one containing two individuals from *Ostrea edulis* at Arcachon, and another from red algae at Port-lin Bay, both localities in the Gulf of Biscay, French Atlantic coast. Lohmann (1893) identified individuals obtained from Bermudas, Sydney and near to the mouth of the Amazon River as *A. brevipalpus*.

Later, *Copidognathus basidentatus* (Trouessart, 1900), and *Copidognathus caulifer* (Trouessart, 1900) were described based on donated specimens obtained among algae from Bahia by "von Ihering" (probably Hermann von Ihering, head at Museu Paulista by that time) and sent to the author at Muséum National d'Histoire Naturelle, Paris (Trouessart, 1900).

In the meanwhile, several studies reported marine mites, without describing or identifying them to the species level. For example, Masunari (1983) found mites in *Amphiroa beauvoisii* J.V. Lamouroux, 1816 samples from rocky shores at Palmas island, Guarujá municipality, Medeiros (1987), in sand beaches meiofaunal samples at Anchieta, Island, Ubatuba municipality, and Curvelo & Corbisier (2000), among phytal meiofauna on *Sargassum cymosum* C. Agardh, 1820 at Lázaro Beach, Ubatuba municipality, restricting our examples to localities in the São Paulo state coast (Pepato & Tiago, 2004a).

From 2003 onward, new species and occurrences were added to Brazillian fauna due the sampling effort made by the BIOTA/FAPESP program project "Benthic Marine Biodiversity in the São Paulo State" and the first author's activities. The following 19 new species were described: one species in *Acarochelopodia* Angelier, 1954 (Pepato, Tiago & Rocha, 2011), one species in *Acaromantis* Trouessart & Neumann, 1983 (Pepato & Tiago, 2004b), three species in *Agauopsis* Viets, 1927 (Pepato & Tiago, 2003, 2005a), one species in *Atelopsalis* Trouessart, 1896 (Pepato & Tiago, 2004c), six species in *Copidognathus* Trouessart, 1988 (Pepato et al., 2005, Pepato & Tiago, 2005b), one species in *Halacaroides* Bartsch, 1981 (Pepato, Tiago & Rocha, 2011), two species in *Halacarus* Gosse, 1855 (Pepato & Silveira, 2013), three species in *Rhombognathus* Trouessart, 1888 (Pepato & Rocha, 2007, Pepato & Silveira, 2015), and one species in *Simognathus* Trouessart, 1889 (Pepato & Tiago, 2004b). Seven previously described species were reported: three species in *Copidognathus* (Pepato & Tiago, 2005b), one species in *Scaptognathides* Monniot, 1972 (Pepato, Tiago & Rocha, 2011), two species in *Scaptognathus* Trouessart, 1889 (Pepato, Tiago & Rocha, 2011), and one species in *Simognathus* (Pepato & Tiago, 2004b). Consequently, summing up to 26 species were currently reported from São Paulo State.

Abé & Fernandes (2011) described two new species and reported a new occurrence belonging to the genus *Rhombognathus* from Recife, Pernambuco state, Northeast region. In recent articles on phylogeography of Marine mites, Pepato and colleagues (Pepato et al., 2019, 2022b, 2024) reported the species *Agauopsis legionium* Pepato & Tiago,

2005 for localities from Pará to Santa Catarina states; *Agauopsis bilophus* Pepato & Tiago, 2003, despite probably a complex of two cryptic species, from Piauí to Santa Catarina states; and *Rhombognathus levigatoides* Pepato & Rocha, 2007, also a putative species complex from Piauí to Rio Grande do Sul states (See remarks on taxonomical status of *R. levigatoides* below).

Despite the above mentioned recent progress, marine mite fauna is understudied in Brazil. Currently, 36 species are formally reported from the Brazilian littoral that comprises three biogeographic provinces — North Brazil Shelf, Tropical Southwestern Atlantic, Warm Temperate Southwestern Atlantic, see Pepato et al. (2019, 2022b, 2024) for further discussion. Better studied provinces count almost three times as many species, for example Mediterranean Sea with 103 spp., and Northern European Seas with 119 spp. (Rubio-López et al, 2022).

According to the articles containing most species descriptions, some individuals designed as paratypes were kept by the first author as his personal collection. It is at odds with Recommendation 72F of the International Code of Zoological Nomenclature (ICZN, 1999), according to which "Every institution in which name-bearing types are deposited should: 1 - ensure that all are clearly marked so that they will be unmistakably recognized as name-bearing types; 2 - take all necessary steps for their safe preservation; 3 - make them accessible for study; 4 - publish lists of name-bearing types in its possession or custody; and 5 - so far as possible, communicate information concerning name-bearing types when requested." These recommendations can be met only by an institutional collections, the case for the Acarological collection (acronym UFMG-AC) at CCT-UFMG – "Centro de Coleções Taxonômicas da Universidade Federal de Minas Gerais" (Zhang, 2018).

Hence, this article aims at making available the collection numbers for type material previously stored with the author and now publicly available, record additional specimens from São Paulo State, and discuss some nomenclatural problems related to Brazilian marine mites. It also honors the efforts of Dr. Fernando Amaral da Silveira in establishing the CCT-UFMG and fostering the expansion of its collections.

Material and Methods

Study Area

All individuals reported herewith were the product of sampling carried out by the BIOTA/FAPESP Program within the scope of the Marine Benthic Biodiversity Project in the State of São Paulo, by doctors Rita R. Curvelo (Department of Biological Oceanography, IOUSP), Cynthia Santos (Department of Zoology, IBUSP), and Edisa F. I. Nascimento (Department of Ecology, IBUSP), during their respective doctoral projects, for the sampling activities by Dr. Jon Norenburg (Smithsonian Institution) and collaborators, in addition to those made by the author alone or with Cláudio G. Tiago (Cebimar-USP), and Carlos E. F. Rocha (Department of Zoology, IBUSP). The sampling localities are summarized in Fig. 1. All type localities are in the northern portion of São Paulo state littoral, comprising the municipalities of São Sebastião, Ilhabela, Caraguatatuba and Ubatuba. A single sampling locality, resulting in additional specimens of already described species, is in the southern portion of São Paulo state coast, in Cananeia municipality.

Due its vicinity to Serra do Mar (a range that belongs to the crystalline platform that forms Eastern Brazil), the São Paulo state north coast is cut by spurs of crystalline rocks that advance towards the sea and alternate with numerous sand beaches. The distribution of coastal marine environments reflects the geomorphology of the region. Given the small extent of the coastal plain, the absence of large rivers and the great development of urbanization, the north coast has few mangroves. In relation to the state's coastline, it has only 1% of mangroves areas, which are restricted to the mouths of some rivers, the most developed being those of Praia da Fazenda (Núcleo Picinguaba of the Serra do Mar State Park) and Praia Dura, in Ubatuba, and Juqueriquerê, in Caraguatatuba (Lamparelli, 1998).

To the same extent that it restricts the occurrence of mangroves, the relief favors the presence of rocky shores: 75.89% of the state's rocky shores occur on the north coast. The contribution of islands and slabs to the occurrence of this environment is very significant, making up 230 km in length, or 70% of the rocky shores occurring in the region. As for beaches, the north coast has the largest number of beaches (63% of the state total), which accounts for

the smallest extension of this environment (30.1% or 128.4 km). The beaches, therefore, are on average the smallest on the coast of São Paulo (Lamparelli, 1998).

From a zoogeographic point of view, São Paulo state coast is included in the Warm Temperate marine province, with its northern limit leveling to Vitória-Trindade Ridge and Doce River mouth at approximately 20°S and extending southward (Pepato et al., 2019, 2022b, 2024). The coastal waters in this province are enriched by the diffusion of nutrients or resurgence from South Atlantic Central Waters (SACW), with its low salinity and temperature, and high nutritive content. The main surface transport is due the southwestward flow of the Brazilian Current as far as 33°S–38°S, and the region has a wider continental platform if compared to Brazilian northeast.

Sampling methods

The subproject "Meiofauna" in the project "Marine benthic diversity of the São Paulo State" (Program BIOTA/FAPESP Proc nº 1998/07090-3) brought together meiofauna material, which was partially – given the non-completion of sorting activities – handled to the first author. This project found mites on the rocky shores in beaches of Fazenda (Fig. 1, pt. 1, Ubatuba), Massaguaçu Island, Cambiri Point, and Martim de Sá (Fig. 1, pts 6–8, Caraguatatuba), Toque-toque Grande and Baleia (Fig. 1, pts 18–19, São Sebastião); and on the sandy beaches of Picinguaba and Fazenda (Fig. 1, pt. 1, Ubatuba) and São Francisco (Fig. 1, pt. 11, São Sebastião).

According to Rocha et al. (2011), meiofauna associated with biological substrates along the vertical

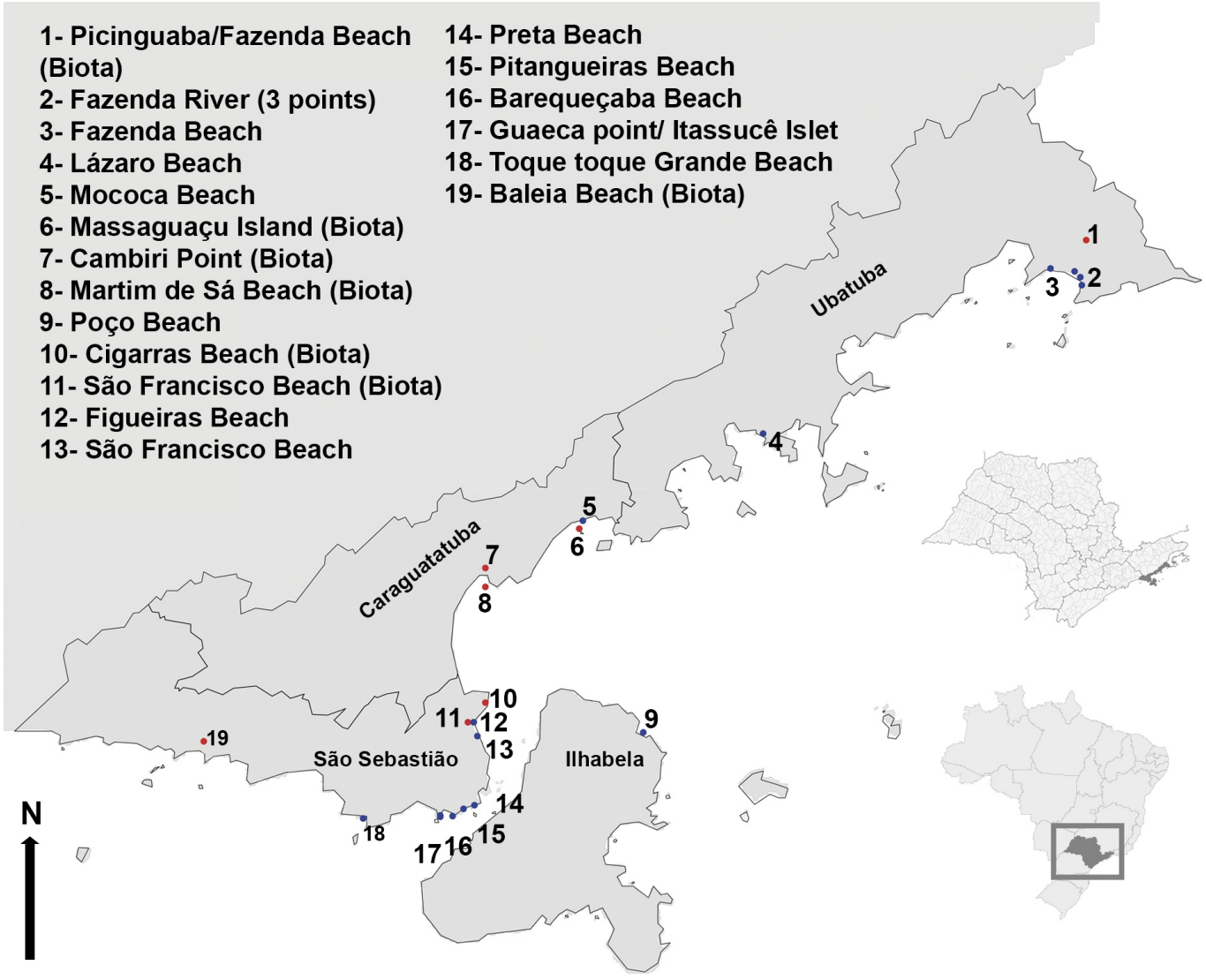

Figure 1: Map displaying sampling localities. Red dots are localities of BIOTA/FAPESP program, they were reported to authors with low accuracy; Blue Dots, sampling localities as reported by other researchers. Inserts show the São Paulo state with northern São Paulo state coast municipalities in darker shadows of gray, and location of São Paulo state in the Brazilian map (inserts adapted from https://commons.wikimedia.org/wiki/File:SaoPaulo_Municip_SaoSebastiao.svg, author: Raphael Lorenzeto de Abreu).

zonation of rocky shores – such as banks of mussels, polychaetes, barnacles, sponges and algae – of the six selected shores was collected along transects ranging the entire intertidal to the supralittoral zones, during low tide, by scraping an area of 200 cm^2 for which dominance zone. The meiofauna associated with sublittoral (approximately 3 m depth) *Sargassum* sp. and *Dyctiota* sp. from Massaguaçú Island (Fig. 1, pt. 6, Caraguatatuba), and with *Sargassum* sp. from Martim de Sá (Fig. 1, pt. 8, Caraguatatuba) and Baleia (Fig. 1, pt. 19, São Sebastião) beaches were collected by removing fronds previously wrapped in a fabric bags (0.25 mm mesh pore).

Still according to Rocha et al. (2011), interstitial meiofauna were obtained at Picinguaba and Fazenda (Fig. 1, pt. 1, Ubatuba), from nine sectors along Caraguatatuba Bay (Fig. 1, pt. 8, Caraguatatuba) and the Toque-Toque Grande and Baleia (Fig. 1, pt. 18–19, São Sebastião), with additional samples not handled to authors taken at Barra do Sahy (São Sebastião) sandy beaches. The samples were taken as described in Amaral & Steiner (2011): during spring tides over autumn-winter period (March, April, May and August 2001) and spring-summer period (September, October and November 2001). For each beach, sectors were defined according a preliminary assessment of the environmental conditions, with regard to natural (morphodynamics, different types of sediment and freshwater inputs) and anthropic (dumping of waste of different origins and sewage). Depending on terrain slope, each sector was divided in up to three levels, corresponding to the high-tide, low-tide and an intermediary level. Substrates were collected using a transparent acrylic cylinder with a base area of 0.007 m^2, inserted up to 20 cm deep. Each sample, measuring around 100 ml, was fixed in 6% formaldehyde and animals were sorted under a stereo microscope.

Special attention was paid to the sample collection in São Francisco beach (Fig. 1, pt. 11, São Sebastião) due the right meiofaunal diversity previously found there. According to Rocha et al. (2011), samples were taken at two levels during low tides, inferior level, one meter above the water line, and intermediary level, at two points separated by 100 m, near to the São Francisco church (23°45'37.06" S, 45°24'32.83" W). At each collection point, a rectangular hole measuring approximately 50 x 20 cm was dug until groundwater was reached. In the collections carried out in August, October/2001 and January/2002, sand samples were taken according to the apparent sediment stratification. Therefore, the thickness of the layers varied at each collection point and date. To sample the fauna, the cylinder was introduced just above the upper surface of the layer being sampled, the sediment aliquot was transferred to a bottle and fixed in formaldehyde at 4 %, the sand layer carefully removed, and the procedure repeated until the groundwater level was reached (approximately 10 cm from the surface at the lower level, and approximately 40 cm at the intermediate level). Additionally, two procedures for qualitative sampling were employed, which proved similar efficiency in faunal recovery. In the first, a hole was dug with a shovel, until the water level was reached. The water accumulated at the bottom was collected with a bottle and filtered through a 0.04 mm mesh net. In the second, around five liters of sediment were collected from the surface 30 cm. Then, the sediment was packed in a plastic bag and transported to the laboratory in a thermal container. There, the sediment was divided into three parts, which were processed as follows: each part of the sediment was transferred to a bucket, seawater was added, the sediment was stirred to release the fauna into the water; the water was decanted after waiting approximately 30 seconds to precipitate larger particles and then the water was filtered through a 0.04 mm mesh sieve. The material obtained from both procedures was transferred to a flask with seawater for subsequent analysis. The fixative (commercial formaldehyde to a concentration of approximately 4% or alcohol to a concentration of approximately 70%) was added after analyzing the living material.

The material provided by Dr. Rita R. Curvelo and Dr. Thaïs N. Corbisier was obtained at intervals of one to two months between December 1990 and July 1991 at Lázaro beach (Fig. 1, pt. 4, Ubatuba). At each sampling, five fronds of *Sargassum cymosum* C. Agardh, 1820 were randomly collected in the shallow infralittoral (with the fronds submerged) and immediately placed them in plastic bags. The algae were washed in buckets containing formaldehyde solution. The solution containing the animals was filtered through a series of sieves with mesh sizes of 500, 200, 120 and 60 μm in order to separate organisms of different size categories. The organisms were fixed in 4% buffered formalin, stained with rose Bengal, identified and counted. Edisa F. I. Nascimento

obtained mites in exploratory samplings for her doctoral project, collected at the north and south shores of Cigarras Beach (Fig. 1, pt. 10, São Sebastião). The collected algae fronds had their fauna extracted, separated into size classes and sorted in the same way as described for the collections made by Dr. Rita R. Curvelo and Prof. Dr. Thaïs N. Corbisier. The algae fronds were also identified to the species level.

Sampling by the first author were made by washing algae, mussels, barnacles and colonial animals scratched from rocks or other hard substrates. Further, the interstitial animals were collected by putting sand in a bucket with seawater, stirring it up and filtering the suspension thorough a 43–100 μm mesh sieve. The first author added sampling localities in the mangrove at Fazenda River (Fig. 1, pt. 2, Ubatuba), and rocky shores at Mococa beach (Fig. 1, pt. 5, Caraguatatuba), Preta, Pitangueiras, Barequeçabas beaches, and Guaecá point/Itassucê Islet (Fig, 1 pts 14–17, São Sebastião).

In addition to the aforementioned samples, Thirty-three males and fifty-four females (forty-three ovigerous) of *Libinia spinosa* H. Milne Edwards, 1934 (Decapoda, Pisidae) and six males and twenty-five females of *Menippe nodifrons* Stimpson, 1859 (Decapoda, Menippidae) (fourteen ovigerous) were examined in order to verify the occurrence of mites, leading to the discovery of two *Copidognathus* species. *Libinia spinosa* (Fig. 2 A) individuals were collected by trawl net off Poço Beach (Fig. 1, pt. 9, Ilhabela) during the months of September 2002, January, July and September 2003, and *Menippe nodifrons* (Fig. 2 B) were collected manually on the rockshore at Figueira Beach (Fig. 1, pt. 12, São Sebastião), in July 2003 and January 2004.

Slide mounting

Mites were cleared in lactic acid and mounted in glycerin jelly (Green & MacQuitty, 1987). Originally, mites were mounted between two cover-slides, in order to make it easier to observe ventral and dorsal features. For storage, mites were mounted directly on a slide, and sealed using varnish. The DNA extraction in the case of voucher material of sequences deposited in GenBank were performed using the QIAamp® DNA Micro Kit (Qiagen). This method includes Proteinase K digestion of soft tissues that makes the lactic acid clearing unnecessary. When reporting on GenBank accession numbers the genetic markers are referred as COI, for mitochondrial *cytochrome c oxidase subunit I*; SSU, for *nuclear small ribosomal subunit RNA gene;* LSU, for *nuclear large ribosomal subunit RNA gene*; HSP70 for *Hsc70-5 heat shock protein cognate 5*; SRP54 for *signal recognition particle protein 54 k*; and ITS for *Internal transcribed spacer 1*.

Results

Systematics

Family Halacaridae Murray, 1877
Genus *Acarochelopodia* Angelier, 1954
Acarochelopodia caissara Pepato, Tiago & Rocha, 2011

Acarochelopodia caissara Pepato, Tiago & Rocha, 2011: 57–59, Fig: 8.

Type Material at CCT-UFMG: Paratypes: Female (UFMG-AC 240313) and two males (UFMG-

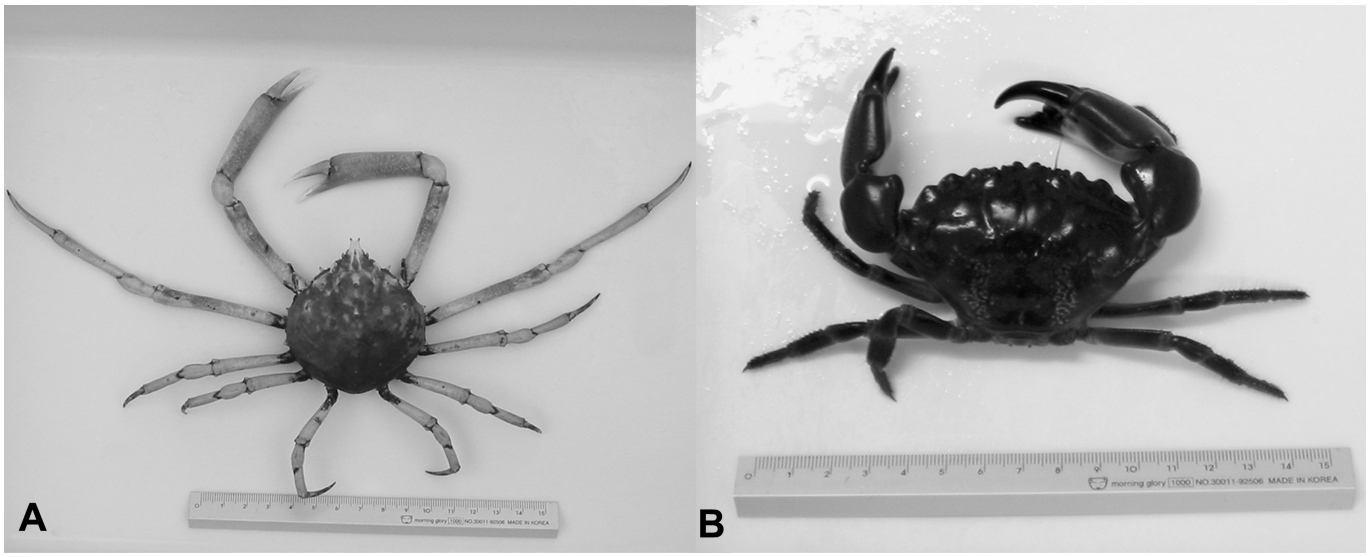

Figure 2: *Libinia spinosa*, Male. B- *Menippe nodifrons*, Female.

AC 240314-5), from intertidal sand at Fazenda and Picinguaba Beaches (23°20’ S, 44°50’ W), Ubatuba municipality, 28 May 2001, coll. BIOTA/FAPESP.

Additional material at CCT-UFMG: Male (UFMG-AC 1200001) from intertidal sand at Fazenda and Picinguaba Beaches (23°20’ S, 44°50’ W), Ubatuba municipality, 28 May 2001, coll. BIOTA/FAPESP; Larva (UFMG-AC 1200002), from intertidal sand at Fazenda and Picinguaba Beaches (23°20’ S, 44°50’ W), Ubatuba municipality, 28 May 2001, coll. BIOTA/FAPESP; Protonymph (UFMG-AC 1200003), from intertidal sand at Fazenda and Picinguaba Beaches (23°20’ S, 44°50’ W), Ubatuba municipality, 28 May 2001, coll. BIOTA/FAPESP; Deutonymph (UFMG-AC 1200013), from intertidal sand at Fazenda and Picinguaba Beaches (23°20’S, 44°50’ W), Ubatuba municipality, 28 May 2001, coll. BIOTA/FAPESP; Five females (UFMG-AC 1200006, 1200008-11), and four males (UFMG-AC 1200005, 1200007, 1200012, 1200014) from intertidal sand at Fazenda and Picinguaba Beaches (23°20’ S, 44°50’ W), Ubatuba municipality, 22 August 2001, coll. BIOTA/FAPESP; Larva (UFMG-AC 1200004), from intertidal sand at São Francisco Beach (23°45’ S, 45°25’ W), São Sebastião municipality, 27 May 2001, coll. BIOTA/FAPESP.

Genus *Acaromantis* Trouessart & Neumann, 1893

Acaromantis vespucioi Pepato & Tiago, 2004

Acaromantis vespucioi Pepato & Tiago, 2004b: 3–7, Figs: 1–3.

Type Material at CCT-UFMG: Paratypes: All Mites collected from intertidal sand at São Francisco Beach (23°45’ S, 45°25’ W), São Sebastião municipality, by BIOTA/FAPESP program researchers. Deutonymph (UFMG-AC 1200347), 10–20 cm below surface, 15 March 2002; Deutonymph (UFMG-AC 1200345), 14 January 2002, collector note: “Poste inferior”; Protonymph (UFMG-AC 1200346), 15 March 2002, collector note: “Convento inferior”; Female (UFMG-AC 1200355), 10–20 cm below surface, 15 March 2002, collector note: “Convento inferior”; Male (UFMG-AC 1200459), 14 January 2002, collector note: “Poste inferior”; Male (UFMG-AC 240316), 30–40 cm below surface, 27 May 2002, collector note: “Poste Médio”; Larva (UFMG-AC 1200351), 15–32 cm below surface, 15 October 2001, collector note: “Poste médio”.

Additional material at CCT-UFMG: Male (UFMG-AC 1200400), from intertidal sand, 0–20 cm below surface, at São Francisco Beach (23°45’ S, 45°25’ W), São Sebastião municipality, 15 March 2002, collector note: “Poste inferior”, coll. BIOTA/FAPESP; Female (UFMG-AC 1200348), from intertidal sand, 20–30 cm below surface, at São Francisco Beach (23°45’ S, 45°25’ W), São Sebastião municipality, 27 May 2002, collector note: “Poste Médio”, coll. BIOTA/FAPESP; Female (UFMG-AC 160641), from intertidal sand at São Francisco Beach (23°45'42.83" S, 45°24'29.03" W), São Sebastião municipality, 10 March 2016, coll. A. R. Pepato, T. H. D. A. Vidigal, and P. B. Klimov; Male (UFMG-AC 160642), from intertidal sand at São Francisco Beach (23°45'42.83" S, 45°24'29.03" W), São Sebastião municipality, 10 March 2016, coll. A. R. Pepato, T. H. D. A. Vidigal, and P. B. Klimov, GenBank accession to sequences from this individual: MG696247 (COI), MG751466 (SSU), MG751440 (LSU); Female (UFMG-AC 172595), from intertidal sand at São Francisco Beach (23°45'42.83" S, 45°24'29.03" W), São Sebastião municipality, 10 March 2016, coll. A. R. Pepato, T. H. D. A. Vidigal, and P. B. Klimov, GenBank accession to sequences from this individual: OM471533 (SRP54) OM432077 (HSP70).

Genus *Agauopsis* Viets, 1927

Agauopsis bilophus Pepato & Tiago, 2003

Agauopsis bilophus Pepato & Tiago, 2003: 369–373, Figs: 1–2.

Type Material at CCT-UFMG: Female (UFMG-AC 240322), on *Sargassum cymosum* C. Agardh, 1820 from intertidal rocky shore at Lázaro Beach (23°30’04.5’’ S, 45°08’17.2’’ W), Ubatuba municipality, November 1990, coll. R. Curvêlo; Deutonymph (UFMG-AC 1200506), on *Sargassum cymosum* from intertidal rocky shore at Lázaro Beach (23°30’04.5’’ S, 45°08’17.2’’ W), January 1991, Coll. R. Curvêlo;

Additional Material at CCT-UFMG: Male (UFMG-AC 1200507), from intertidal coarse shell debris and gravel, at south end of Barequeçaba Beach faced to the Itassucê Islet (Guaeca Point) (23°49'49.81" S, 45°26'35.42" W), São Sebastião municipality, 30 April 2004, coll. J. Norenburg, C. Santos; Male (UFMG-AC 240318), on algae at Martim de Sá Beach (23°38'00" S, 45°24´00" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Male (UFMG-AC 1200508), on

algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 27 September 2001, coll. BIOTA/FAPESP; Male (UFMG-AC 1200509), on algae at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), São Sebastião municipality, 22 January 2004, coll. A. R. Pepato, C. G. Tiago, C. Santos; Protonymph (UFMG-AC 1200460), on algae at Baleia Beach (23°46'00" S, 45°40'00" W), São Sebastião municipality, 12 December 2001; coll. BIOTA/FAPESP; Female (UFMG-AC 1300492), on algae at Baleia Beach (23°46'49.54" S, 45°39'51.62" W), São Sebastião municipality, 18 May 2007, coll. A. R. Pepato; Male (UFMG-AC200396), on algae at Preto Beach (23°49'19.10" S, 45°24'38.58" W), São Sebastião municipality, 09 March 2016, coll. A. R. Pepato, T. H. D. A. Vidigal, and P. B. Klimov, GenBank accession to sequences from this individual: PP297331 (COI), PP309682 (28S), PP319733 (HSP70). Following individuals with the same collection data: Female (UFMG-AC200397), sequences: PP297332 (COI), PP309683 (28S), PP319734 (HSP70); Female (UFMG-AC 200398), sequences: PP309684 (28S), PP319735 (HSP70); Female (UFMG-AC200400), sequences: PP297334 (COI), PP309686 (28S), PP319737 (HSP70); Female (UFMG-AC 200401), sequences: PP297335 (COI), PP309687 (28S), PP319738 (HSP70).

***Agauopsis itassussensis* Pepato & Tiago, 2005**

Agauopsis itassussensis Pepato & Tiago, 2005a: 2–5, Fig: 1.

Type Material at CCT-UFMG: Paratypes: Four females (UFMG-AC 1200510–3), from intertidal coarse shell debris and gravel, at south end of Barequeçaba Beach faced to the Itassucê Islet (Guaeca Point) (23°49'49.81" S, 45°26'35.42" W), São Sebastião municipality, 30 April 2003, coll.: J. Norenburg.

Additional material at CCT-UFMG: Two females (UFMG-AC 200251, 200257), from subtidal coarse shell debris and gravel, near to Itassucê Islet (23°49'54.34" S, 45°26'34.47" W), São Sebastião municipality, 19 June 2019, coll. G.Y. Kawagushi.

***Agauopsis legionium* Pepato & Tiago, 2005**

Agauopsis legionium Pepato & Tiago, 2005: 5–11, Figs: 2–4.

Type Material at CCT-UFMG: Paratypes: Three females (UFMG-AC 1200420, UFMG-AC 1200423, UFMG-AC 1200443) from intertidal rock shore at Baleia Beach (23°46′S 45°40′W), São Sebastião municipality, 12 December 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1200441) on *Pterocladiella capillacea* (S.G.Gmel.) Santel. and Hommers, 1997 from intertidal rock shore at Cigarras Beach (23°44' S, 45°24' W), São Sebastião municipality, 24 November 2000, coll. E. Nascimento; Female (UFMG-AC 1200442) on *Hypnea musciformes* (Wulfen) Lamouroux, 1813 from intertidal rock shore at Cigarras Beach (23°44′S 45°24′W), São Sebastião municipality, 25 November 2000, coll. E. Nascimento; three females (UFMG-AC 1200444-6) from intertidal rock shore at Preta Beach (23°49'19.10" S" S, 45°24'38.58" W), São Sebastião municipality, 12 October 2001, coll. A. R. Pepato; Female (UFMG-AC 1200456) from intertidal rock shore at Toque Toque Grande Beach (23°50′ S, 45°31 ′ W), São Sebastião municipality, 10 April 2001, coll. BIOTA/FAPESP; Four males (UFMG-AC 1200425-8) from intertidal rock shore at Baleia Beach (23°46′ S, 45°40′ W), São Sebastião municipality, 12 December 2001, coll. BIOTA/FAPESP; Deutonymph (UFMG-AC 1200422) from intertidal rock shore at Baleia Beach (23°46′ S, 45°40′ W), 12 December 2001, coll. BIOTA/FAPESP; Male within a quiescent deutonymph (UFMG-AC 1200421) from intertidal rock shore at Baleia Beach (23°46′ S, 45°40′ W), São Sebastião municipality, 12 December 2001, coll. BIOTA/FAPESP; Female within a quiescent deutonymph (UFMG-AC 1200431) from intertidal rock shore at Massaguaçú Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Four deutonymphs (UFMG-AC 1200432-4, 1200449) from intertidal rock shore at Martim de Sá Beach (23°38′ S 45°24′ W), Caraguatatuba municipality, 19 September 2001, coll. BIOTA/FAPESP; Deutonymph (UFMG-AC 1200451) from intertidal rock shore at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), São Sebastião municipality, 22 January 2004, coll. C. Santos, C. G. Tiago and A. R. Pepato; Deutonymph (UFMG-AC 1200447) from intertidal rock shore at Preta Beach (23°49'19.10" S, 45°24'38.58" W), São Sebastião municipality, 12 October 2001, coll. A. R. Pepato; Deutonymph (UFMG-AC 1200430) from intertidal rock shore at Martim de Sá Beach (23°38′ S 45°24′ W), Caraguatatuba municipality, 13 March

2001, coll. BIOTA/FAPESP; Protonymph (UFMG-AC 1200440) from intertidal rock shore at Massaguaçú Island (23°34'59.17" S" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Two prototonymphs (UFMG-AC 1200436, UFMG-AC 1200450) from intertidal rock shore at Martim de Sá Beach (23°38′ S, 45°24′ W), Caraguatatuba municipality, 20 September 2001, coll. BIOTA/FAPESP; Two protonymphs (UFMG-AC 1200419, UFMG-AC 1200424) from intertidal rock shore at Baleia Beach (23°46′ S 45°40′ W), São Sebastião municipality, 12 December 2001, coll. BIOTA/FAPESP; protonymph (UFMG-AC 1200437) from intertidal rock shore at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), São Sebastião municipality, 22 January 2004, coll. C. Santos, C. G. Tiago and A. R. Pepato; Protonymph (UFMG-AC 1200457) from intertidal rock shore at Toque Toque Grande Beach (23°50′ S 45°31′ W), São Sebastião municipality, 10 April 2001, coll. BIOTA/FAPESP; protonymph (UFMG-AC 240317) from intertidal rock shore at Cambiri Point (23°37′ S, 45°24′ W), Caraguatatuba municipality, 15 March 2001, coll. BIOTA/FAPESP; Two larvae (UFMG-AC 1200452–3) from intertidal rock shore at Baleia Beach (23° 46′S 45°40′W), São Sebastião municipality, 12 December 2001, coll. BIOTA/FAPESP; larva (UFMG-AC 1200455) from intertidal rock shore at Figueiras Beach (23°45'0.70" S" S, 45°24'41.55" W), São Sebastião municipality, 22 January 2004, coll. C. Santos, C. G. Tiago and A. R. Pepato.

Additional material at CCT-UFMG: Female (UFMG-AC 1200439), from intertidal rockshore at Picinguaba beach (23°20’ S, 44°50’ W), Ubatuba municipality, 09 May 2001, coll. BIOTA/FAPESP; Male quiescent within a deutonymph (UFMG-AC 1200448) from intertidal rock shore at Picinguaba beach (23°20’ S, 44°50’ W), Ubatuba municipality, 09 May 2001, coll. BIOTA/FAPESP; Protonymph (UFMG-AC 1200454) from intertidal rock shore at Baleia beach (23°46′ S, 45°40′ W), São Sebastião municipality, 12 December 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1300873), from a intertidal rock shore at Preta Beach (23°49'19.10" S, 45°24'38.58" W), São Sebastião municipality, 12 October 2001, coll. A. R. Pepato; Deutonymph (UFMG-AC 1300878) from a intertidal rock shore at Baleia Beach (23°46'00" S, 45°40'00" W), São Sebastião municipality, 08 April 2001, coll. BIOTA/FAPESP; Four males (UFMG-AC 1301018 sequence: MH999790 (COI), UFMG-AC 1301021, UFMG-AC 1301025, UFMG-AC 1301151 sequences: MH999791 (COI), PP314340 (ITS)), Female (UFMG-AC 1301150), two deutonymphs (UFMG-AC 1301152 sequences: MH999792 (COI), PP314341 (ITS), UFMG-AC 1301153 sequences: MH999793 (COI)) from a intertidal rock shore near to Marujá Village (25°12'7.00" S, 47°59'3.86" W), Cardoso Island, Cananéia municipality, 02 January 2012, coll. A. R. Pepato; Deutonymph (UFMG-AC 170733) from a intertidal rock shore at Pitangueiras beach (23°49'19.10" S, 45°24'38.58" W), São Sebastião municipality, 09 March 2016, coll. A. R. Pepato; Two deutonymphs (UFMG-AC 174277 sequences: MH999786 (COI), PP314336 (ITS), PP319821 (HSP70), UFMG-AC 174278 sequences: MH999787 (COI), PP314337 (ITS), PP319822 (HSP70)), Male (UFMG-AC 174279 sequences: MH999788 (COI), PP314338 (ITS), PP319823 (HSP70)), Female (UFMG-AC 174280 sequences: MH999789 (COI), PP314339 (ITS), PP319824 (HSP70)), Female (UFMG-AC 174386 sequences: MH999781 (COI), PP319819 (HSP70)), Quiescent male within deutonymph (UFMG-AC 174387 sequence: MH999782 (COI)), Female (UFMG-AC 174389 sequences: MH999783 (COI), PP314333 (ITS)), Male (UFMG-AC 174390 sequences: MH999784 (COI), PP314334 (ITS)), Deutonymph (UFMG-AC 174391 sequences: MH999785 (COI), PP314335 (ITS), PP319820 (HSP70)) from intertidal rock shore at Preta Beach (23°49'19.10" S, 45°24'38.58" W), São Sebastião municipality, 09 March 2016, coll. A. R. Pepato, T. H. D. A. Vidigal, and P. B. Klimov; Female (UFMG-AC 174366 sequences: MH999779 (COI), PP314331 (ITS), PP319817 (HSP70)), Male (UFMG-AC 174367 sequences: MH999780 (COI), PP314332 (ITS), PP319818 (HSP70)) from a intertidal rock shore near at Mococa beach (23°34'33.65" S, 45°18'28.85" W), Caraguatatuba municipality, 07 March 2016, coll. A. R. Pepato, T. H. D. A. Vidigal, and P. B. Klimov; Three males (UFMG-AC 240714, 240775-6), female (UFMG-AC 240772), Two protonymphs (UFMG-AC 240769, 240774), quiescent deutonymph within protonymph (UFMG-AC 240773), Deutonymph (UFMG-AC 240770–1) from intertidal rock shore with algae (specially *Enteromorpha* sp. and *Bosthrichia* sp.), barnacles and oysters, salinity 22 ‰ at Fazenda River mouth

(23°22'20.1" S 44°50'13.4" W), Ubatuba municipality, 12 March 2005, coll. M. L. Silva, C. G. Tiago and A. R. Pepato; Two males (UFMG-AC 240715, 240777), from algae *Bosthrichia* sp. growing on *Rizophora mangle*, salinity 6‰ at Fazenda River (23°21'55.5" S 44°50'18.6" W), Ubatuba municipality, 12 March 2005, coll. M. L. Silva, C. G. Tiago, and A. R. Pepato.

Genus *Atelopsalis* Trouessart, 1896

***Atelopsalis atlantica* Pepato & Tiago, 2004**

Atelopsalis atlantica Pepato & Tiago, 2004c: 145–148, Fig. 1–2.

Additional Material at CCT-UFMG: Female (UFMG-AC 240319), on *Pterocladiella capillacea* (S.G.Gmelin, 1768) Santelices & Hommersand, 1997 from intertidal rocky shore at Cigarras beach (23°44' S, 45°24'W), São Sebastião municipality, 22 January 2001, coll. E. Nascimento.

Genus *Copidognathus* Trouessart, 1888

***Copidognathus ditadii* Pepato & Tiago, 2005**

Copidognathus ditadii Pepato & Tiago, 2005b: 24–28, Figs: 13–15

Type Material at CCT-UFMG: Two females (UFMG-AC 1200070-1), on sediment among stones from rocky shore at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), São Sebastião municipality, 22 January 2004, coll. A. R. Pepato, C. G. Tiago and C. Santos; Female (UFMG-AC 1200073), on *Sargassum* sp. from rocky shore at Island of Massaguaçu, (23°34'59.17" S" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP.

***Copidognathus floridensis* (Newell, 1947)**

Copidognathus angustus floridensis, Newell, 1947: 155–158, Fig: 245–252; *C. floridensis*, Bartsch & Iliffe, 1985: 310; Pepato & Tiago, 2005b: 8–13, Figs: 4–6.

Voucher Material at CCT-UFMG: Female (UFMG-AC 1200356), on *Dictyota cervicornis* Kützing, 1859 from intertidal rocky shore at Cigarras Beach (23°44' S, 45°24' W), São Sebastião municipality, 25 November 2000, coll. E. Nascimento; Five females (UFMG-AC1200084, 1200086-7, 1200417, 1200458), on *Sargassum* sp. from shallow infralitoral rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Two females (UFMG-AC 1200475, 1200481), on epibionts from rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 27 September 2001, coll. BIOTA/FAPESP; Male (UFMG-AC 1200076), on epibionts from rocky shore at Cigarras Beach (23°43' S, 45° 23' W), São Sebastião municipality, 12 October 2001, coll. A. R. Pepato; Male (UFMG-AC 1300618), on epibionts from rocky shore at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), São Sebastião municipality, 22 January 2004, coll. A. R. Pepato, C. G. Tiago and C. Santos; Male (UFMG-AC 1200410), on epibionts from rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 27 September 2001, coll. BIOTA/FAPESP; Two males (UFMG-AC 1200074, 1200482), on epibionts from rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Two males (UFMG-AC 1200085, 1200416), on *Sargassum* sp. from shallow infralitoral rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; protonymph (UFMG-AC 1200075), on epibionts from rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP.

Additional Material at CCT-UFMG: Two females (UFMG-AC 1200411, 1300844), from intertidal rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP.

***Copidognathus libiniensis* Pepato, Santos & Tiago, 2005**

Copidognathus libiniensis Pepato, Santos & Tiago, 2005: 71–75, Fig. 1–4.

Type Material at CCT-UFMG: Three eggs (UFMG-AC 240324), Quiescent male within protonymph (UFMG-AC 1200034), Seven females (UFMG-AC 1200028, 1200030-3, 1200037) and Male (UFMG-AC 1200029), on *Libinia spinosa* from 25 m depth at Poço Beach (23°45' S, 45°17' W), São Sebastião Island, Ilhabela municipality, 18 July 2003, coll. C. Santos; Two larvae (UFMG-AC 1200039, 240323), protonymph, (UFMG-AC 1200358), on *Libinia spinosa* from 25 m depth at Poço Beach (23°45' S, 45°17' W), São Sebastião Island, Ilhabela

municipality, 02 September 2003, coll. C. Santos; Female (UFMG-AC 1200038), among phytal samples from Martim de Sá Beach (23°38' S, 45°24' W), Caraguatatuba municipality, 27 September 2001, coll. BIOTA/FAPESP.

Additional Material at CCT-UFMG: Two males (UFMG-AC 1200035-6), on *Libinia spinosa* from 25 m depth at Poço Beach (23°45' S, 45°17' W), São Sebastião Island, Ilhabela municipality, 18 July 2003, coll. C. Santos; Female (UFMG-AC 1200040), on *Libinia spinosa* from 25 m depth at Poço Beach (23°45' S, 45°17' W), São Sebastião Island, Ilhabela municipality, 15 August 2003, coll. C. Santos; Female (UFMG-AC 1200349), on *Libinia spinosa* from 25 m depth at Poço Beach (23°45' S, 45°17' W), São Sebastião Island, Ilhabela municipality, 16 September 2002, coll. C. Santos, and L.F. Netto; Female (UFMG-AC 200275), and male (UFMG-AC 200276), on *Libinia spinosa* from infralittoral at Poço Beach (23°45' S, 45°17' W), São Sebastião Island, Ilhabela municipality, 01 September 2002, coll. A. R. Pepato;

Copidognathus longispinus Bartsch & Iliffe, 1985

Copidognathus longispinus Bartsch & Iliffe, 1985: 315–318, Figs: 45–55; Chatterjee, 1996: 31–34, Fig. 1; Pepato & Tiago, 2005b: 28–33, Figs: 16–17.

Voucher Material at CCT-UFMG: Female (UFMG-AC 1200068), on phytal from rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 27 September 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1200066), on *Sargassum* sp. from shallow infralitoral rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; protonymph (UFMG-AC 1200065), on *Sargassum* sp. from shallow infralitoral rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; female (UFMG-AC 1200069), on phytal from rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 13 March 2001, coll. BIOTA/FAPESP; protonymph (UFMG-AC 1200067), on epibionts from rocky shore at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), São Sebastião municipality, 22 January 2004, coll. A. R. Pepato, C. G. Tiago and C. Santos.

Additional Material at CCT-UFMG: Female (UFMG-AC 1200064), from intertidal rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1200357), from shell debris at a depth of 8 m near Itassucê Islet (23°49'52.67" S, 45°26'34.35" W), São Sebastião municipality, 08 September 2005, coll. J. M. E. Sebroeck; Female (UFMG-AC 1200462), from intertidal rocky shore at Martim de Sá Beach (23°38'00" S, 45°24´00" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Two female (UFMG-AC 200253, 200259), from shell debris at a depth of 8 m near Itassucê Islet (23°49'52.67" S, 45°26'34.35" W), São Sebastião municipality, 19 June 2019, coll.: G. Y. Kawagushi.

Copidognathus menippensis Pepato, Santos & Tiago, 2005

Copidognathus menippensis Pepato, Santos & Tiago, 2005b: 75–77, Fig. 5–7.

Type Material at CCT-UFMG: Paratypes: Three females (UFMG-AC 1200041, 1200044 1200409), two males (UFMG-AC 1200042, 1200045), protonymph (UFMG-AC 1200043); on an ovigerous *Menippe nodifrons* from intertidal rock shore at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), São Sebastião municipality, 28 July 2003, coll. C. Santos.; Female (UFMG-AC 1200046), on a post-ovigerous *Menippe nodifrons* from intertidal rock shore at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), São Sebastião municipality, 22 January 2004, coll. A. R. Pepato, C. G. Tiago and C. Santos.

Copidognathus modestus Bartsch, 1984

Copidognathus modestus, Bartsch, 1984b: 5–8, Figs. 7–15; Bartsch, 1999: 318; Pepato & Tiago, 2005b: 13–17, Figs 7–8.

Voucher Material at CCT-UFMG: Female (UFMG-AC 1200404), on *Pterocladiella capillacea* (S.G. Gmelin) Santelice & Hommersand, 1997, from intertidal rocky shore at Cigarras Beach (23°44' S, 45°24' W), São Sebastião municipality, 24 November 2000, coll. E. Nascimento; Female (UFMG-AC 1200081), on *Gymnogongrus grifftisiae* (Turner, 1808) C.F.P. Martius, 1828, from intertidal rocky shore at Cigarras Beach (23°43' S, 45°23' W), São Sebastião municipality, 24 November 2000, coll. E. Nascimento; protonymph (UFMG-AC 1200077), on *Sargassum cymosum* C. Agardh, 1820, from intertidal

rocky shore at Lázaro Beach, (23°30’04.5’’ S, 45°08’17.2’’ W), Ubatuba municipality, November 1990, coll. R. Curvêlo; Female (UFMG-AC 1200344), on *Sargassum cymosum* C. Agardh, 1820, from intertidal rocky shore at Lázaro Beach, (23°30’04.5’’ S, 45°08’17.2’’ W), Ubatuba municipality, November 1990, coll. R. Curvêlo; Male (UFMG-AC 1200079), on epibionts from rocky shore at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), 22 January 2004, coll. A. R. Pepato, C. G. Tiago and C. Santos; male (UFMG-AC 1200406), on epibionts from intertidal rocky shore at Martim de Sá Beach, (23°30’ S, 45°08’ W), 16 March 2001, coll. BIOTA/FAPESP.

Additional material at CCT-UFMG: Protonymph (UFMG-AC 1200078), on *Sargassum cymosum* C. Agardh, 1820, from intertidal rocky shore at Lázaro Beach, (23°30’ S, 45°08’ W), Ubatuba municipality, November 1990, coll. R. Curvêlo; Female (UFMG-AC 1200080), from rocky shore at Island of Massaguaçu, (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 19 September 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1200407), on *Sargassum cymosum* C. Agardh, 1820, from intertidal rocky shore at Lázaro Beach, (23°30’04.5’’ S, 45°08’17.2’’ W), Ubatuba municipality, July 1991, coll. R. Curvêlo.

Copidognathus sophiae Pepato & Tiago, 2005

Copidognathus sophiae Pepato & Tiago, 2005b: 21–24, Figs: 11–12

Type Material at CCT-UFMG: Paratype: Male (UFMG-AC 1200496), on *Sargassum cymosum* C. Agardh, 1820, from intertidal rocky shore at Lázaro Beach, (23°30’04.5’’ S, 45°08’17.2’’ W), March 1991, coll. R. Curvêlo.

Copidognathus tupinamborum Pepato & Tiago, 2005

Copidognathus tupinamborum Pepato & Tiago, 2005b: 3–7, Figs 1–3.

Type Material at CCT-UFMG: Paratypes: Two females (UFMG-AC 1200342, 1200340) and male (UFMG-AC 1200334), from intertidal rocky shore at Cigarras Beach (23°44’ S, 45°24’ W), 12 October 2001, coll. A. R. Pepato; Two females (UFMG-AC 1200051), from intertidal rocky shore at Cambiri Point (23°37’ S, 45°24’ W), 15 March 2001, coll. BIOTA/FAPESP; Four females (UFMG-AC 1200049, 1200052, 1200059–60) and three males (UFMG-AC 1200048, 1200056-7), from intertidal rocky shore at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), 22 January 2004, coll. A. R. Pepato, C. G. Tiago and C. Santos; Female (UFMG-AC 1200061), Male (UFMG-AC 1200054), from intertidal rocky shore at Baleia Beach (23° 46’S 45° 40’W), 08 April 2001, coll. BIOTA/FAPESP; two females (UFMG-AC 1200335, 1200339), on *Acanthophora spicifera* (M. Vahl,1802) Børgesen, 1910 from intertidal rocky shore at Cigarras Beach (23°44’ S, 45°24’ W), 25 November 2000, coll. E. Nascimento; male (UFMG-AC 1200063), on *Hypnea musciformis* (Wulfen) J. V. Lamouroux, 1813 from intertidal rocky shore at Cigarras Beach (23°44’ S, 45°24’ W), 25 November 2000, coll. E . Nascimento; protonymph (UFMG-AC 12000336), on *Padina gymnospora* (Kützing, 1859) Sonder, 1871, from intertidal rocky shore at Cigarras Beach (23°44’ S, 45°24’ W), 24 November 2000, coll. E. Nascimento; four protonymphs (UFMG-AC 1200058, 1200047, 1200050, 1200053), from intertidal rocky shore at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), 22 January 2004, coll. A. R. Pepato, C. G. Tiago and C. Santos.

Additional material at CCT-UFMG: Protonymph (UFMG-AC 1200055), from intertidal rocky shore at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), São Sebastião municipality, 22 April 2001, coll. A. R. Pepato, C. Santos and C. G. Tiago; Protonymph (UFMG-AC 1200062), on *Sargassum cymosum* C. Agardh, 1820, from intertidal rocky shore at Lázaro Beach, (23° 30’S, 45° 08’W), Ubatuba municipality, January 1991, coll. R. Curvelo; Male (UFMG-AC 1200063), on *Hypnea musciformes* (Wulfen, 1791) J. V. Lamouroux, 1813, from intertidal rocky shore at Cigarras Beach, (23°44’ S, 45°24’ W), 25 November 2000, coll. E. Nascimento; Protonymph (UFMG-AC 1200337), on intertidal rockshore at Picinguaba beach (23° 20' 00" S, 44° 50' 00" W), Ubatuba municipality, 17 October 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1200338), on intertidal algae at Preta beach (23°49'19.10" S, 45°24'38.58" W), São Sebastião municipality, 12 October 2000, coll. A. R. Pepato; Male (UFMG-AC 1200341), on *Acanthophora spicifera* (M. Vahl,1802) Børgesen, 1910 from intertidal rocky shore at Cigarras Beach (23°44’ S, 45°24’ W), 24 November 2000, coll. E. Nascimento; Female (UFMG-AC 1200343), from intertidal rocky shore at Figueiras Beach (23°45'0.70" S, 45°24'41.55" W), São Sebastião municipality, 22

January 2004, coll. A. R. Pepato, C. G. Tiago, and C. Santos; Six Females (UFMG-AC 1200396–7, 1200399, 1300620, 1300622, 1300625, 1300631, 240768), Male (UFMG-AC 1300619, 1300629, 1300632-6), Protonymph (UFMG-AC 1300621, 1300623–4, 1300627-8) from intertidal rock shore with algae (specially *Enteromorpha* sp. and *Bosthrichia* sp.), barnacles and oysters, salinity 22 ‰ at Fazenda River mouth (23°22'20.1"S 44°50'13.4"W), Ubatuba municipality, 12 March 2005, coll. M. L. Silva, C. G. Tiago, and A. R. Pepato; Female (UFMG-AC1300626), on algae associated to *Rhizophora mangle* pneumatophores, water salinity: 6 ‰, at Fazenda River (23°21'55.5"S 44°50'18.6"W), 12 March 2005, coll. M. L. Silva, C. G. Tiago, & A. R. Pepato; Male (UFMG-AC 1301189), from a intertidal rock shore near to Marujá Village (25°12'7.00" S, 47°59'3.86" W), Cardoso Island, Cananéia municipality, 02 January 2012, coll. A. R. Pepato.

Genus *Halacaroides* Bartsch, 1981

***Halacaroides antoniazziae* Pepato, Tiago & Rocha, 2011**

Halacaroides antoniazziae Pepato, Tiago & Rocha, 2011: 55–57, Fig. 6-7.

Type Material at CCT-UFMG: Paratypes: Two males (UFMG-AC 240337–8), Female (UFMG-AC 240339), interstitial coarse sand under freshwater influence at Pitangueiras Beach (23°49'28.92" S, 45°25'13.40" W), São Sebastião Municipality, 01 August 2004, coll. A. R. Pepato.

Additional material: Male (UFMG-AC 172597 sequences: OM471534 (SRP54), OM432078 (HSP70)), Female (UFMG-AC 172598), interstitial coarse sand at Massaguaçu beach (23°35'19.85" S, 45°19'59.8" W), Caraguatatuba municipality, 07 March 2016, coll. A. R. Pepato, T. H. D. A. Vidigal, and P. B. Klimov.

Genus *Halacarus* Gosse, 1855

***Halacarus omului* Pepato & Silveira, 2013**

Halacarus omului Pepato & Silveira, 2015: 592–597, Figs: 1–2.

Type Material at CCT-UFMG: Holotype: Female (UFMG-AC1200163), on *Sargassum cymosum* C. Agardh, 1820 at Lázaro Beach (23°30'04.5'' S, 45°08'17.2'' W), Ubatuba municipality, July 1991, coll. R. Curvelo. Paratypes: Seventeen females (UFMG-AC 1200088–96, 1200110–6, 1200155), on algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 27 September 2001, coll. BIOTA/FAPESP; Six females (UFMG1200144–7, 1200153–4), on algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 28 September 2001, coll. BIOTA/FAPESP; Three females (UFMG-AC 1200136–8) on algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Two females (UFMG-AC 1200162, 1200166), on *Sargassum cymosum* C. Agardh, 1820 at Lázaro Beach (23°30'04.5'' S, 45°08'17.2'' W), Ubatuba municipality, July 1991, coll. R. Curvelo; Seventeen males (UFMG-AC 1200097–103, 1200117–26), on algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 27 September 2001, coll. BIOTA/FAPESP; Six males (UFMG-AC1200130–5), on algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Nine males (UFMG-AC1200152, 1200160–1, 1200168, 1200170–1, 1200173–5), on *Sargassum cymosum* C. Agardh, 1820at Lázaro Beach (23°30'04.5'' S, 45°08'17.2'' W), Ubatuba municipality, July 1991, coll. R. Curvelo; Quiescent male (UFMG-AC1200109), on algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 27 September 2001, coll. BIOTA/FAPESP; Eight deutonymphs (UFMG-AC1200104–8, 1200127–9), on algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 27 September 2001, coll. BIOTA/FAPESP; Three deutonymphs (UFMG-AC1200143, 1200149–50), on algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba, 16 March 2001, coll. BIOTA/FAPESP; Four deutonymphs (UFMG-AC 1200151, 1200159, 1200167, 1200172), on *Sargassum cymosum* C. Agardh, 1820 at Lázaro Beach (23°34'59.17" S, 45°18'41.65" W), Ubatuba municipality, July 1991, coll. R. Curvelo; Deutonymph (UFMG-AC1200148), on algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 28 September 2001, coll. BIOTA/FAPESP; quiescent deutonymph (UFMG-AC1200139), on algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Three protonymphs (UFMG-

AC1200140–2), on algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba, 16 March 2001, coll. BIOTA/FAPESP.

Halacarus todaroi Pepato & Silveira, 2013

Halacarus todaroi Pepato & Silveira, 2015: 597–599, Figs: 3–4.

Type Material at CCT-UFMG: Holotype: Female (UFMG-AC1200178), from shell debris at a depth of 8 m near Itassucê Islet (23°49'49.81" S, 45°26'35.42" W), São Sebastião Municipality, 19 March 2007, coll. M. A. Todaro. Paratype: Male (UFMG-AC1200177), from shell debris at a depth of 8 m near Itassucê Islet (23°49'49.81" S, 45°26'35.42" W), São Sebastião Municipality, 25 August 2008, coll. A. R. Pepato.

Genus *Rhombognathus* Trouessart, 1888

Rhombognathus abirus Pepato & Silveira, 2015

Rhombognathus abirus Pepato & Silveira, 2015: 501–507 Figs 1–2.

Type Material at CCT-UFMG: Holotype. Female (UFMG-AC1200653), on algae associated to *Rhizophora mangle* pneumatophores, water salinity: 6 ‰, at Fazenda River (23°21'55.5" S 44°50'18.6" W), 12 March 2005, coll. M. L. Silva, C. G. Tiago and A. R. Pepato. Paratypes. Female (UFMG-AC1200642), collecting data same as holotype; eleven males (UFMGAC1200643, UFMG-AC1200647, UFMG-AC1200654–9, UFMG-AC1200661–3) on algae associated to *Rizophora mangle* L. and *Avicennia schaueriana* Stapf & Leechm. ex Moldenke, water salinity: 2‰, at Fazenda River (23°21'38.5"S 44°50'38.5"W), 12 March 2005, coll. M. L. Silva, C. G. Tiago and A. R. Pepato; male (UFMG-AC1200660), collecting data same as holotype; Protonymph (UFMG-AC1200664–5) on algae associated to *Rizophora mangle* L. and *Avicennia schaueriana* Stapf & Leechm. ex Moldenke, water salinity: 2‰, at Fazenda River (23°21'38.5"S 44°50'38.5"W), 12 March 2005, coll. M. L. Silva, C. G. Tiago and A. R. Pepato.

Rhombognathus levigatoides Pepato & Rocha, 2007

Rhombognathus levigatoides Pepato & Rocha, 2007: 2435–2440, Figs 1–3.

Type Material at CCT-UFMG: Paratypes: Three females (UFMG-AC 1300655, 1300666, 1300675), on intertidal algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Twelve females (UFMG-AC 1300679, 1300681, 1300683-4, 1300686-7, 1300697-8, 1300705-6, 1300711, 1300877), on intertidal algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Fourteen males (UFMG-AC 1300643, 1300649, 1300661, 1300672-3, 1300677-8, 1300680, 1300685, 1300694, 1300702, 1300704, 1300707, 1300709), on intertidal algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Six tritonymphs (UFMG-AC 1300656-8, 1300668, 1300671, 1300713), on intertidal algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba, 16 March 2001, coll. BIOTA/FAPESP; female (UFMG-AC 1300642), on intertidal rock shore at Martim de Sá Beach (23°38'00" S, 45°24´00" W), Caraguatatuba municipality, 19 September 2001, coll. BIOTA/FAPESP; female (UFMG-AC 1300651), on intertidal rocky shore at Baleia Beach (23°46´ S 45°40´ W), São Sebastião municipality, 16 October 2001, coll. BIOTA/FAPESP; tritonymph (UFMG-AC 1300640), on *Sargassum cymosum* C. Agardh, 1820 at Lázaro Beach, (23°30'04.5'' S, 45°08'17.2'' W), Ubatuba municipality, July 1991, coll. R. Curvelo; female (UFMG-AC 1300638), on *Sargassum cymosum* C. Agardh, 1820 at Lázaro Beach, (23°30'04.5'' S, 45°08'17.2'' W), Ubatuba municipality, July 1991, coll. R. Curvelo.

Additional Material at CCT-UFMG: Female (UFMG-AC 1200408), on intertidal rockshore algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1300454), on intertidal rockshore algae at Barequeçaba beach (23°49'52.12" S, 45°25'53.51" W), São Sebastião municipality, 26 August 2004, coll. A. R. Pepato; Tritonymph (UFMG-AC 1300641), Eight females (UFMG-AC 1300645-8, 1300662-4, 1300710), on intertidal rockshore algae at Pitangueiras beach (23°49'32.61" S, 45°25'19.08" W), São Sebastião municipality, 16 November 2005, coll. A. R. Pepato; Four males (UFMG-AC 1300644, 1300669, 1300692-3), Four females (UFMG-AC 1300659, 1300670, 1300676, 1300701), Tritonymph (UFMG-AC 1300682, 1300714), Protonymph (UFMG-AC 1300660) on intertidal algae at Massaguaçu Island

(23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Six males (UFMG-AC 1300650, 1300653, 1300674, 1300691, 1300695, 1300712), Three females (UFMG-AC 1300689, 1300696, 1300715), on intertidal algae at Martim de Sá (23°38'1.56" S, 45°23'13.98" W), Caraguatatuba municipality, 19 September 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1300667), Three males (UFMG-AC 1300654, 1300703, 1300708), on intertidal algae at Martim de Sá (23°38'1.56" S, 45°23'13.98" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Tritonymph (UFMG-AC 1300688), female (UFMG-AC 1300716), on intertidal algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 19 September 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1300690), on *Sargassum* sp. at Martim de Sá (23°38'1.56" S, 45°23'13.98" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1300699), on intertidal algae at Baleia beach (23°46'49.54" S, 45°39'51.62" W), São Sebastião municipality, 12 December 2001, coll. BIOTA/FAPESP; Five Female (UFMG-AC 160615-8, 200281, 160620 sequences: MH999666 (COI), PP309789 (28S)), Male (UFMG-AC 160619), on intertidal rockshore at Preta beach (23°49'19.10" S, 45°24'38.58" W), São Sebastião municipality, 09 March 2016, coll. A. R. Pepato, T. H. D. A. Vidigal, and P. B. Klimov; Female (UFMG-AC 160631), on intertidal algae at Picinguaba beach (23°22'40.96" S, 44°50'17.94" W), Ubatuba municipality, 08 March 2016, coll. A. R. Pepato, T. H. D. A. Vidigal, and P. B. Klimov; Female (UFMG-AC 170734 sequences: MH999667 (COI), PP309790 (28S), 170735 sequence: MH999668), Male (UFMG-AC 170736 sequence: MH999669 (COI), PP309791 (28S), 170737 sequences: MH999670 (COI), PP309792 (28S), PP319875 (HSP70), 174321 sequences: MH999671 (COI), PP309793 (28S)), Male 174323 MH999672 (COI), PP309794 (28S) on intertidal rockshore algae at Pitangueiras beach (23°49'19.10" S, 45°24'38.58" W), São Sebastião, 09 March 2016, coll. A. R. Pepato, T. H. D. A. Vidigal, and P. B. Klimov; Female (UFMG-AC 1300665), on intertidal rockshore algae at Martim de Sá Beach (23°38'00" S, 45°24´00" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Two females (UFMG-AC 1300652, 1300700), on shallow infralitoral *Sargassum* near to Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1300639), on intertidal rockshore algae at Fazenda Beach (23°20' S, 44°50' W), Ubatuba municipality, 16 October 2001, coll. BIOTA/FAPESP.

***Rhombognathus picinguabensis* Pepato & Silveira, 2015**

Rhombognathus picinguabensis Pepato & Silveira, 2015: 507–509, Fig: 3

Type Material at CCT-UFMG: Holotype. Female (UFMG-AC1200645) on algae associated to *Rizophora mangle* L. and *Avicennia schaueriana* Stapf & Leechm. ex Moldenke, water salinity: 2‰, at Fazenda River (23°21'38.5" S 44°50'38.5" W), 12 March 2005, coll. M. L. Silva, C. G. Tiago, & A. R. Pepato. Paratypes. Female (UFMG-AC1200674) and male (UFMG-AC1200675) collecting data same as holotype.

Genus *Scaptognathides* Monniot, 1972

***Scaptognathides delicatulus* Bartsch, 2004**

Scaptognathides delicatulus Bartsch, 2004: 6, Figs: 17–25; Pepato, Tiago & Rocha, 2011: 48–50, Figs: 1–2

Material at CCT-UFMG: Female (UFMG-AC 240361), Two protonymphs (UFMG-AC 240362-3), interstitial in sand beach, 20–30 cm deep, São Francisco Beach (23°45' S, 45°25' W), São Sebastião municipality, 27 May 2002. coll. BIOTA/FAPESP; Two females (UFMG-AC 240364–5), interstitial in sand beach, 10–20 cm deep, São Francisco Beach (23°45' S, 45°25' W), São Sebastião municipality, 27 May 2002, coll. BIOTA/FAPESP; Female (UFMG-AC 240366), interstitial in sand beach, 23–37 cm deep, São Francisco Beach (23°45' S, 45°25' W), São Sebastião municipality, 14 January 2002, coll. BIOTA/FAPESP; Female (UFMG-AC 240367), interstitial in sand beach, 40–50 cm deep, São Francisco Beach (23°45' S, 45°25' W), São Sebastião municipality, 15 March 2002, coll. BIOTA/FAPESP.

Additional Material at CCT-UFMG: Two females (UFMG-AC 1200019, 1200023), interstitial in sand beach at São Francisco Beach, (23°45' S, 45°25' W), São Sebastião municipality, 7 May 2002, coll. BIOTA/FAPESP.

Genus *Scaptognathus* Trouessart, 1889

Scaptognathus gibbosus Bartsch, 1977

Scaptognathus gibbosus Bartsch, 1977: 82, Fig: 343–356; Morselli & Mari, 1986: 147, Fig: G–I; Pepato, Tiago & Rocha, 2011: 50– 52, Fig: 3

Voucher Material at CCT-UFMG: Two males (UFMG-AC 240368–9), from intertidal sand, 37–45 cm deep, at São Francisco Beach (23°45' S, 45°25' W), São Sebastião municipality, 27 May 2002. coll. BIOTA/FAPESP.

Additional Material at CCT-UFMG: Female (UFMG-AC 1200016), from intertidal sand at São Francisco Beach (23°45' S, 45°25' W), São Sebastião municipality, 15 May 2002, coll. BIOTA/FAPESP.

Scaptognathus insularis Otto, 2000

Scaptognathus insularis Otto, 2000a: 543, Fig: 6; Pepato, Tiago & Rocha, 2011: 52– 54, Fig: 4–5.

Voucher Material at CCT-UFMG: Female (UFMG-AC 240372), from intertidal sand at São Francisco Beach (23°45' S, 45°25' W), São Sebastião municipality, 14 January 2002, coll. BIOTA/FAPESP; Two females (UFMG-AC 240373–4), from intertidal sand, 23–37 cm deep, at São Francisco Beach (23°45' S, 45°25' W), São Sebastião municipality, 14 January 2002, coll. BIOTA/FAPESP; Female (UFMG-AC 1200015), 10–20 cm, same locality, 15 March 2002; Five females (UFMG-AC 240370–1, UFMG-AC 240377–9), from intertidal sand, 20–30 cm deep, at São Francisco Beach (23°45' S, 45°25' W), São Sebastião municipality, 27 May 2002, coll. BIOTA/FAPESP; Female (UFMG-AC 240380), from intertidal sand, 10–20 cm deep, at São Francisco Beach (23°45' S, 45°25' W), São Sebastião municipality, 30 July 2002, coll. BIOTA/FAPESP.

Additional Material at CCT-UFMG: Four females (UFMG-AC 1200017, 1200020–2), Deutonymph (UFMG-AC 1200018), from intertidal sand at São Francisco Beach (23°45' S, 45°25' W), São Sebastião municipality, 27 May 2002, coll. BIOTA/FAPESP.

Genus *Simognathus* Trouessart, 1889

Simognathus euphractus Pepato & Tiago, 2004

Simognathus euphractus Pepato & Tiago, 2004b: 8–11, Figs: 4–5.

Type Material at CCT-UFMG: Deutonymph (UFMG-AC 1200504), on *Sargassum cymosum* C. Agardh, 1820, from intertidal rocky shore at Lázaro Beach, (23°30’ S, 45°08’ W), Ubatuba municipality, November 1990, coll. R. Curvêlo.

Simognathus fuscus Viets, 1936

Simognathus fuscus Viets, 1936: 421–423, Figs: 50–54; Bartsch & Iliffe, 1985: 318; Bartsch, 1994c: 148–151; Pepato & Tiago, 2004b: 11–15, Figs: 6–7; Bartsch, 2009: 194–196, Fig: 91–97; *Simognathus platyaspis* Otto, 2000b: 519–521, Figs: 14A–D, 15 A–D; Bartsch, 2003a: 36–37, Figs: 9A–F;

Voucher Material at CCT-UFMG: Three females (UFMG-AC 1200350, 1200397 [idiosoma], 1200399 [gnathosoma], 1200398), on *Sargassum cymosum* C. Agardh, 1820 from intertidal rocky shore at Lázaro Beach (23°30’04.5’’ S, 45°08’17.2’’ W), Ubatuba municipality, July 1991, coll. R. Curvêlo; Female (UFMG-AC 1200500), on *Sargassum cymosum* C. Agardh, 1820 from intertidal rocky shore at Lázaro Beach (23°30’04.5’’ S, 45°08’17.2’’ W), March 1991, coll. R. Curvêlo; one deutonymph (UFMG-AC 1200502), on *Sargassum cymosum* C. Agardh, 1820 from intertidal rocky shore at Lázaro Beach (23°30’04.5’’ S, 45°08’17.2’’ W), July 1991, coll. R. Curvêlo; Females (UFMG-AC 1200501), on *Sargassum cymosum* C. Agardh, 1820 from intertidal rocky shore at Lázaro Beach, 23°30’S, 45°08’W, June 1992, coll. R. Curvêlo; Larva (UFMG-AC 1200503), on *Sargassum cymosum* C. Agardh, 1820 from intertidal rocky shore at Lázaro Beach (23°30’ S, 45°08’ W), November 1990, coll. R. Curvêlo; Larva (UFMG-AC 1200488), on rocky shore at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), Caraguatatuba municipality, 16 March 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1200483), on rocky shore associated algae at Massaguaçu Island (23°34'59.17" S, 45°18'41.65" W), 16 March 2001, coll. BIOTA/FAPESP.

Additional Material at CCT-UFMG: Female (UFMG-AC 1200497), on *Sargassum cymosum* C. Agardh, 1820 from intertidal rocky shore at Lázaro Beach (23°30’04.5’’ S, 45°08’17.2’’ W), July 1991, coll. R. Curvêlo; Deutonymph (UFMG-AC 1200485), on rocky shore associated algae at Martim de Sá Beach (23°38'00" S, 45°24′00" W), 16 March 2001, coll. BIOTA/FAPESP; Female (UFMG-AC 1200461), on rocky shore associated algae at Baleia

Discussion

As above mentioned, the list of Halacaridae

species counts 36 names in 12 genera in Brazil. Even the number being modest when compared with other regions, a number of taxonomical problems were revealed, which we will outline below.

Agauopsis brevipalpus* and *Agaue panopae

Hans Lohmann (1893)'s descriptions allow species identification in their type localities, but are not complete enough to distinguish them from closely related species described since 1893. Occurrences further from type locality in this case must be seen with caution or may be rejected under the light of more recent studies (Bartsch, 2009).

The occurrence of *Agauopsis brevipalpus*, originally described from the Gulf of Biscay, is among those that must be discarded. Certainly, the individuals studied by Hans Lohmann belong to *Agauopsis legionium* Pepato & Tiago, 2005. Pepato et al. (2019, 2022b, 2024) reported *A. legionium* from localities spanning from Pará (0°35' 47" S, 47° 19' 51" W) to Santa Catarina (27°44' 54" S, 48°29' 57" W) states, hence with occurrences for localities close to those visited by the Plankton Expedition, and with a strong support from molecular data to be a single species, without cryptic species detected, despite genetically structured (Pepato et al, 2019, 2022b, 2024). Furthermore, COI sequences of mites identified as *Agauopsis brevipalpus* obtained in the Black Sea, near the municipality of Vesna, Krai of Krasnodar, Russia (approximately 44°04' N, 39°06'E, UFMG-AC 190592, GenBank: OM401598) and *A. legionium* from a locality very close to Lohmann's sampling locality, Salinópolis municipality, Pará State (approximately 0°36' S, 47°20' W, UFMG-AC 1300497, GenBank: OM945720) proved differ enough to support the conclusion that they belong to different species (p-distance = 0.1807). Indeed, Pepato et al. (2022a) recovered *A. brevipalpus* as a sister group to an unidentified *Agauopsis* species from Australia (UFMG-AC 200351), with *A. legionium* sister to them.

More likely, similar taxonomic situation can be applied to *A. panopae*. The type locality of this species is regarded as Cape Verde, with occurrences in Mediterranean Sea, but the Lohmann (1893)'s occurrences from the mouth of the Amazon remains to be confirmed (Bartsch, 2016).

Copidognathus lamellosus

Copidognathus lamellosus (Lohmann, 1893) has as type locality the mouth of Amazon River and an intricate taxonomical history, intermingled with four other species, *C. tabelio* (Trouessart, 1894), *C. angustus* Viets, 1936, *C. floridensis* (Newell, 1947), and *C. lamelloides* Bartsch, 2000. A short time after Lohmann (1893)'s publication, a similar species, *C. tabelio*, was described by Trouessart (1894) from the French coast (English Canal). Later, Trouessart (1901) recorded *C. lamellosus* from Saint-Vaast-la-Hougue, also on the north french coast, while André (1928) and Viets (1940) added Mediterranean occurrences. The later study brought a redescription that was employed for identifying mites collected in the northeastern Atlantic in Bartsch (1979) that also concluded that *C. tabelio* should be regarded as *C. lamellosus* junior synonymous.

Copidognathus angustus was originally described by Viets (1936) based on the specimens from Curaçao. Thereafter, Newell (1947) identified *Copidognathus* specimens obtained from Florida as *C. angustus* on the ground of the taxonomic key presented by Viets (1940). However, characteristics of Newell's specimens were somewhat different from those in the original description in the relative length of costae (strips of porose ornamentation) on Posterior Dorsal plate; distance between anterior border of genital opening and margin of genitoanal plate; and relative length of rostrum to palp. These differences led him to establish a new subspecies *C. angustus floridensis* Newell, 1947. Bartsch (1984) redescribed *C. angustus* based on female holotype and nearly collected male near to Miskito Cays, off Nicaragua coast. According to her, *C. angustus* has very elaborate lamellae on legs, including huge dorsal lamellae on the telofemur of the fourth legs, ventral lamellae on basifemora of third and fourth legs, and long dorsal lamellae on trochanters of third and fourth legs. On the other hand, conspicuous lamellae are lacking from Newell (1947)'s subspecies, which led her to raise it to species rank as *C. floridensis*. Bartsch & Iliffe (1985) found *C. floridensis* in samples from anchialine caves on the Bermuda Islands, hence near to the source of some individuals studied by Lohmann (1983), and found no relevant differences except for subtle differences in gnathosoma ornamentation. Finally, Bartsch (2000a) redescribed individuals assigned to *C. lamellosus* from Europe, including material newly collected, from Trouessart's and Viets' collections to a new species, *C. lamelloides*.

Pepato & Tiago (2005) identified mites collected

along the north coast of São Paulo state as *C. floridensis*. Their specimens of *C. floridensis* had different characteristics from *C. lamellosus* in Lohmann's figures in the shape of anterior margin of Posterior Dorsal plate and extension of the ring of perigenital setae and spermatophorotype in males.

It is remarkable that Newell (1947) mentioned on the subspecies *C. a. floridensis*: "In the opinion of the writer, *C. lamellosus* as described by Viets (1940) (Adriatic) differs more markedly from *C. lamellosus* as described by Lohmann (1893a) than does *C. angustus* Viets 1936. Unless more intensive work can show that reliable subspecific characters exist, it will probably be necessary to consider *C. lamellosus*, *C. angustus angustus*, *C. angustus floridensis* and *C. simonis* as different forms of a highly variable species, or at most as subspecies." As sampling from regions near to the type locality progresses, it is expected that the identity of *C. floridensis* and *C. lamellosus* will be settled.

Rhombognathus levigatus* and *Rhombognathus levigatoides

Abé & Fernandes (2011) identified mites collected in Recife, Pernambuco State, Northeast Brazil, as *R. levigatus* Bartsch, 2000, a species with previous occurrences reported to Australia (Great Barrier Reef and Dampier Archipelago, Bartsch, 2000b, 2003b). The authors also suggest that *R. levigatoides* Pepato & Rocha, 2007, described from São Paulo State by Pepato & Rocha (2007) possibly is conspecific with *R. levigatus*.

In fact, *R. levigatoides* was originally distinguished from *R. levigatus* by subtle metric characters, the most important being the length of anterior pair of dorsal setae (12 µm in *R. levigatus* vs 19–25 µm in *R. levigatoides* from São Paulo state). Individuals morphologically indistinguishable from *R. levigatoides*, or *R. levigatus* according to Abé & Fernandes (2011), could be obtained along the Brazilian coast, ranging from the Parnaíba River Delta, Piauí (2°48'12" S, 41°43'45" W) to Torres, Rio Grande do Sul (29°21'30" S, 49°44'01" W). Interestingly, molecular data supported the existence of two sibling species, a northeast species from Piauí to Barra Seca, near the mouth of Doce River (19°03' 53" S, 39°43'21" W), and a southeast clade from Santa Cruz de Cabrália municipality (16°20'27" S, 39°00'04" W) to Torres (Pepato et al., 2019, 2022b, 2024).

The identification of mites from Northeast Brazil as *R. levigatus* by Abé & Fernandes (2011) highlights an important biogeographic pattern. It is possible to mention other cases of species regarded as distributed over South America and Australia based on morphological data. *Scaptognathus insularis* Otto, 2000, with *locus typicus* in the Queensland Plateau, Coral Sea, morphologically indistinguishable from specimens reported above. *Simognathus fuscus* is an even more impressive example. *Simognathus platyaspis* Otto, 2000, described from Queensland, Australia was declared its junior synonymous by Bartsch (2009). It was confirmed in Pepato et al. (2022a), that revealed a very small molecular divergence between the individuals from Brazil (Espirito Santo State, UFMG-AC 172593, approximately 20º02' S, 40º10' W) and Australia (UFMG-AC 200355, Gnoorea Point, approximately 20º50' S, 116º21' E). The distance between COI sequences (GenBank accessions MG696248 and OM401623, respectively) is just p = 0.0054. These data on *S. fuscus* makes the distribution implied by Abé & Fernandes (2011) possible and the hypothesis that *R. levigatoides* is a junior synonymous of *R. levigatus* something to be examined through molecular delimitation species techniques.

Conclusion

Regarding the species names registered for the Brazilian coast *Agauopsis brevipalpus* must be discarded and replaced by *A. legionium*, the identity of *A. panopae* must be verified, *C. floridensis* likely is a junior synonym of *C. lamellosus*, and the relationships between *R. levigatus* and *R. levigatoides* must be investigated as well if there are morphological differences between cryptic species detected along the Brazilian coast.

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