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Gastropoda (Mollusca) associated to *Sargassum* sp. beds in São Sebastião Channel - São Paulo, Brazil

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LONGO, P.A.S., FERNANDES, M.C., LEITE, F.P.P., PASSOS, F.D. Gastropoda (Mollusca) associated to *Sargassum* sp. beds in São Sebastião Channel - São Paulo, Brazil. *Biota Neotropica*. 14(4): 1–10. <http://dx.doi.org/10.1590/1676-06032014011514>

Abstract: The phytal is characterized by the formation of seaweed beds and a great diversity of associated species, the malacofauna being one of its main components. Aiming to record the species of Gastropoda associated to the brown algae *Sargassum* sp. C. Agardh, 1820, this study was carried out in São Sebastião Channel, northern coast of São Paulo, and nearby areas. A total of 13945 individuals were identified, belonging to 35 families and 62 species. Cerithiidae, Phasianellidae and Columbelloidae were the most abundant families, represented by 34, 33 and 17% of the total collected individuals, respectively. *Bittium varium* (Pfeiffer, 1840) (Cerithiidae) and *Eulithidium affine* (C. B. Adams, 1850) (Phasianellidae) are the dominant species, followed by the columbellids *Mitrella dichroa* (G. B. Sowerby I, 1844), *Anachis fenneli* Radwin, 1968 and *Costoanachis sertulariarium* (d'Orbigny, 1839). Among the least abundant species, some of them may be considered as of fortuitous occurrences, while others seem to be typical in those habitats, although rare. The presence of juvenile specimens was recurrent, this indicating that the algae can function as a nursery for most of these species. The expressive values found, for both abundance and number of species, illustrate the great ecological importance of the phytal habitats for the gastropod species.

Keywords: Biodiversity, marine gastropods, phytal.

LONGO, P.A.S., FERNANDES, M.C., LEITE, F.P.P., PASSOS, F.D. Gastropoda (Mollusca) associados a bancos de *Sargassum* sp. no Canal de São Sebastião – São Paulo, Brasil. *Biota Neotropica*. 14(4): 1–10. <http://dx.doi.org/10.1590/1676-06032014011514>

Resumo: O fital é caracterizado pela formação de bancos de algas marinhas e uma grande diversidade de espécies associadas, estando a malacofauna entre seus principais componentes. Com o objetivo de registrar as assembleias de gastrópodes associadas à alga parda *Sargassum* C. Agardh, 1820, este estudo foi realizado no Canal de São Sebastião, litoral norte do estado de São Paulo, e áreas próximas. Um total de 13945 indivíduos foram identificados, pertencentes a 35 famílias e 62 espécies. Em termos de abundância, Cerithiidae, Phasianellidae e Columbelloidae foram as famílias mais representativas, com 34, 33 e 17% do total de indivíduos coletados, respectivamente. *Bittium varium* (Pfeiffer, 1840) (Cerithiidae) e *Eulithidium affine* (C. B. Adams, 1850) (Phasianellidae) foram as espécies dominantes, seguidas pelos columbelídeos *Mitrella dichroa* (G. B. Sowerby I, 1844), *Anachis fenneli* Radwin, 1968 e *Costoanachis sertulariarium* (d'Orbigny, 1839). Entre as espécies pouco abundantes, algumas podem ser consideradas como de ocorrência ocasional, enquanto outras parecem ser típicas deste ambiente, porém raras. A presença de formas juvenis mostrou-se muito recorrente para a maioria das espécies, o que parece indicar que a alga pode atuar como berçário. Os valores expressivos encontrados, tanto para a abundância de indivíduos como para o número de espécies, ilustram a grande importância ecológica apresentada por este ambiente para as espécies de gastrópodes.

Palavras-chave: Biodiversidade, gastrópodes marinhos, fital.

Introduction

Seaweed beds carrying an associated fauna form a singular community known as the phytal, a generally rich assemblage of organisms regulated by both biotic (e.g. predation, competition,

recruitment and migration) and abiotic factors (e.g. hydrodynamics, nutrients availability, habitat structure, light incidence and temperature) (Chemello & Milazzo 2002, Jacobucci & Leite 2002, Leite et al. 2009). In these communities, algae provide several advantages for invertebrate and vertebrate animals

inhabiting their fronds, including protection against desiccation, wave action and predators, better temperature and salinity conditions, as well as food resources (Jacobucci & Leite 2002, Jacobucci et al. 2006, Leite et al. 2009). Among macroalgae groups composing the phytal, those of *Sargassum* can be considered one of the most representative in some localities of the Brazilian coast (Széchy & Paula 2000), with the malacofauna standing out both in abundance and diversity (Montouchet 1979, Schézy & Paula 2000, Chemello & Milazzo 2002, Jacobucci & Leite 2002, Leite et al. 2009, Veras 2011).

Gastropods, in particular, are an important part of the phytal fauna. Studies highlighting and describing the diversity of phytal molluscan assemblages are scarce in Brazil, especially in the coast of São Paulo state, some of which are Montouchet (1979), Jacobucci et al. (2006) and Leite et al. (2009). Furthermore, illustrated inventories are practically absent in the literature, this kind of work being an important tool to the development of future studies of the phytal gastropod assemblages, as it can facilitate the species identification.

The aim of this study is to provide such an inventory of the gastropod fauna associated to *Sargassum* sp. beds from São Sebastião Channel and nearby areas, thereby increasing knowledge on the biodiversity of this environment, as well as illustrating its species.

Material and Methods

This study was carried out in the northern part of the coast of São Paulo State, southeastern Brazil (23°43'–23°52'S; 45°20'–45°27'W), where algae bed samples were obtained from thirteen sites in March, September and December of 2007, and in February of 2008. Two of these sites are placed in Caraguatatuba and Ubatuba municipalities (at Tabatinga and Ubatumirim beaches, respectively) and eleven are distributed in the São Sebastião Channel. In this channel, six sites were chosen from its insular part (São Sebastião Island, Ilhabela

municipality) and five from the continental part (São Sebastião municipality) (Figure 1).

At each site, a horizontal transect was established, where ten fronds were randomly collected, each of them with its holdfast being detached from the substratum. These fronds were enclosed in a bag of 0.2 mm mesh size and at the laboratory were washed in seawater in order to separate the associated animals from algae, and to sort the gastropods for to be fixed and preserved in a solution of 70% ethanol. The obtained gastropods were examined under the stereomicroscope, identified through their shell characteristics, counted from each collecting site and then separated in lots which were deposited in the Zoology Museum of the State University of Campinas “Prof. Adão José Cardoso”. For each species, well preserved specimens were chosen to be photographed by a camera coupled to a Zeiss “Discovery V8” stereomicroscope. All these lots are georeferenced and registered in the Center of Reference in Environmental Information (CRIA) database. About five morphotypes of shellless opisthobranch gastropods could be distinguished, but most of the total specimens were poorly preserved, hence, precluding an accurate identification; these were, therefore, excluded in this inventory.

Results

A total of 13945 individuals from 62 species belonging to 35 families was obtained (Table 1). These specimens compose 2437 deposited lots (Table 1). All the identified species are shown in Figures 2, 3, 4 and 5. Except for 32 specimens of the single Calliostomatidae (*Calliostoma* sp.), one of the single Marginellidae (*Volvarina* sp.), one of the Eulimidae *Vitreolina* sp., and 32 juveniles of Columbelloidea and 14 of Fissurellidae, all the animals were identified up to the species level. Most families (31) are represented by one or two species (Table 1). Pyramidellidae, Columbelloidea, Eulimidae and Cerithiopsidae are the only exceptions to this rule, each one with eight, six, four and three species, respectively.

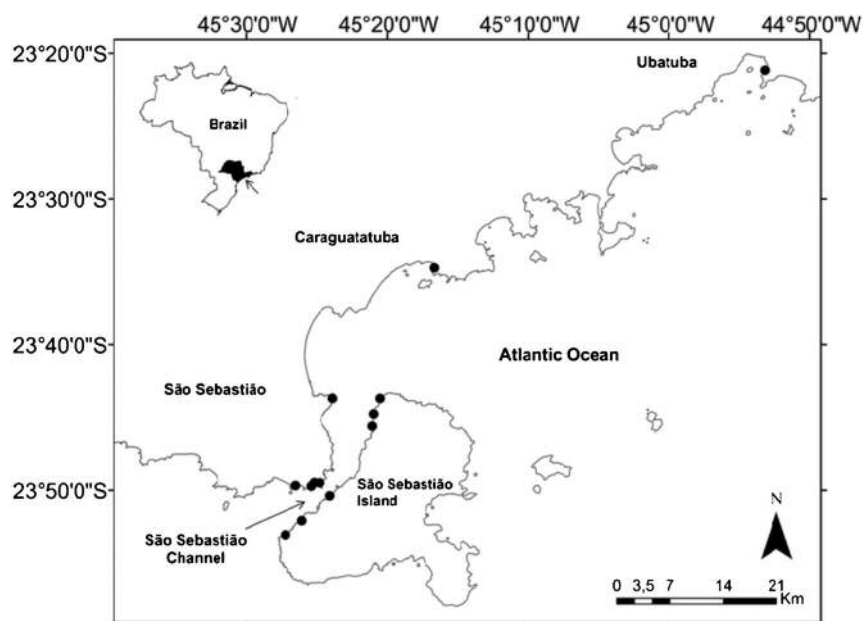


Figure 1. Collecting sites in the insular and continental part of the São Sebastião Channel, and in the Caraguatatuba and Ubatuba municipalities. The placement of this area is indicated by an arrow pointing the north coast of the State of São Paulo (SP), southeastern Brazil.

Table 1. Species, number of individuals (N), series number, literature used for the identification and places where species occurred (X). S.Sb. = São Sebastião; Ib. = Ilhabela (São Sebastião Island); Tb. = Tabatinga (Caraguatatuba) and Ubm. = Ubatumirim (Ubatuba)

Family/Species	n	Series number	Literature used	Species occurrence				
				S.Sb.	Ib.	Tb.	Ubm.	
Cerithiidae								
<i>Cerithium atratum</i> (Born, 1778)	81	1652–1660	Marcus & Marcus 1964, Rios 2009	X	X			
<i>Bittium varium</i> (Pfeiffer, 1840)	4642	2389–2870	Houbrick 1977, Houbrick 1993, Simone 2001	X	X	X	X	
Phasianellidae								
<i>Eulithidium affine</i> (C. B. Adams, 1850)	4630	752–1037; 1881–1887	Robertson 1958, Marcus & Marcus 1960; Pereira et al. 2010	X	X	X	X	
Columbellidae								
<i>Anachis fenneli</i> Radwin, 1968	626	1366–1420; 1422–1478	Radwin 1968	X	X	X		
<i>Costoanachis sertulariarum</i> (d'Orbigny, 1839)	600	2871–3051	Marcus & Marcus 1962	X	X	X	X	
<i>Costoanachis sparsa</i> (Reeve, 1859)	124	1306–1365; 1421;	Marcus & Marcus 1962	X	X	X	X	
<i>Anachis obesa</i> (Adams, 1845)	121	1479–1484	Marcus & Marcus 1962	X	X	X	X	
<i>Mitrella dichroa</i> (G. B. Sowerby I, 1844)	813	2227–2269	Marcus & Marcus 1962	X	X	X	X	
<i>Astyris lunata</i> (Say, 1826)	1	1608	Marcus & Marcus 1962	X	X			
<i>Columbella mercatoria</i> (Linnaeus, 1758)	15	1588–1607	Marcus & Marcus 1962, Radwin 1977	X	X	X		
Columbellidae juvenes	32	1812–1825		X	X	X		
Caecidae								
<i>Caecum rysosotium</i> de Folin, 1867	323	1038–1100	Mello 1986, Bendel 1996, Gomes & Absalão 1996	X	X	X	X	
<i>Caecum brasilicum</i> de Folin, 1874	294	1101–1141	Mello 1986, Bendel 1996, Gomes & Absalão 1996, Rios 2009	X	X			
Rissoidae								
<i>Alvania auveriana</i> (d'Orbigny, 1842)	302	1994–2070	Abbott 1974, Rios 2009	X	X	X	X	
Fissurellidae								
<i>Fissurella rosea</i> (Gmelin, 1791)	200	2270–2359	Righi 1965, Abbott 1974, Rios 2009	X	X	X	X	
Fissurellidae juvenes	14	1794–1770	Sasaki 1998, Reynoso–Granados et al. 2007			X		
Pyramidellidae								
<i>Fargoa bushiana</i> (Bartsch, 1909)	5	1863–1869	Abbott 1974, Pimenta et al. 2009	X	X			
<i>Folinella robertsoni</i> (Van Regteren Altena, 1975)	37	1847–1862	Mello 1990, Pimenta et al. 2008, Rios 2009	X	X	X	X	
<i>Boonea jadisii</i> (Olsson & McGinty, 1958)	16	1717–1727	Rios 1985, Pimenta et al. 2009	X	X	X	X	
<i>Chrysalida nioba</i> (Dall & Bartsch, 1911)	33	1692–1716	Pimenta 2012	X	X	X	X	
<i>Turbonilla multicostata</i> (C. B. Adams, 1850)	160	2147–2226	Rios 2009	X	X	X	X	
<i>Eulimastoma didyma</i> (Verrill & Bush, 1900)	22	2071–2080	Pimenta et al. 2004	X	X	X		
<i>Turbonilla penistoni</i> Bush, 1899	10	1633–1643	Bush 1899, Absalão & Pimenta 1999	X	X	X	X	
<i>Trabecula krumpfermani</i> (De Jong & Coomans, 1988)	4	1687–1691	Pimenta et al. 2009, Rios 2009	X	X	X	X	

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Table 1. Continued.

Family/Species	n	Series number	Literature used	Species occurrence		
				S.Sb.	Ib.	Tb. Ubm.
Certhiidae						
Rissoellidae						
<i>Rissoella ornata</i> Simone, 1995	194	1953–1993	Simone 1995	X	X	X
Litiopidae						
<i>Alaba incerta</i> (d'Orbigny, 1841)	148	2081–2146	Houbrick 1987, Simone 2001, Rios 2009	X	X	
Barleidae						
<i>Amphithalamus glabrus</i> Simone, 1996	123	1930–1952	Simone 1995	X	X	
Scaliolidae						
<i>Finella dubia</i> (d'Orbigny, 1840)	43	1752–1763	Abbott 1974, Simone 2001, Rios 2009	X	X	
Certhiopsidae						
<i>Retilaskeya bicolor</i> (C. B. Adams, 1845)	2	1888–1889	Rios 2009		X	
<i>Seila adamsii</i> (H. C. Lea, 1845)	2	1892–1893	Rólan & Fernandes 1990, Rios 2009	X		
<i>Certhiopsis gemmulosa</i> (C. B. Adams, 1850)	35	1826–1846	Rios 1985, Rolán & Espinosa 1995	X	X	X
Assimineidae						
<i>Assiminea succinea</i> (Pfeiffer, 1840)	18	1905–1917	Marcus & Marcus 1965, Rios 2009	X	X	
Buccinidae						
<i>Engina turbinella</i> (Kiener, 1836)	34	1771–1799	Abbott 1974, Rios 2009	X	X	
Triphoridae						
<i>Marshallora nigrocineta</i> (C. B. Adams, 1839)	6	1800–1802	Rios 2009	X	X	X
<i>Notoriphora decorata</i> (C. B. Adams, 1850)	11	1803–1811	Rios 2009, Fernandes et al. 2013	X	X	
Littorinidae						
<i>Echinolittorina lineolata</i> (d'Orbigny, 1840)	16	1623–1632; 1899–1901	Rios 2009	X	X	X
Muricidae						
<i>Stramonita brasiliensis</i> Claremont & D. G. Reid, 2011	25	1738–1751	Rios 1985, Rios 2009, Claremont et al. 2011	X	X	X
<i>Muricopsis necocheana</i> (Pilsbry, 1900)	6	1902–1904	Absalão & Pimenta 2005, Rios 2009	X	X	X
Calliostomatidae						
<i>Calliostoma</i> sp. Swainson, 1840	13	1678–1686	Quinn 1992, Dornellas 2012	X	X	
Scissurellidae						
<i>Scissurella alexandrei</i> Montouchet, 1972	10	1728–1731	Montouchet 1972	X	X	
Tornidae						
<i>Circulus</i> cf. <i>liratus</i> (A. E. Verrill, 1882)	2	1927–1928	Spencer & Campbell 1987		X	
<i>Parviturboides interruptus</i> (C. B. Adams, 1850)	8	1644–1651	Abbott 1974, Rios 2009	X	X	
Eulimidae						
<i>Melanella</i> cf. <i>eulimoides</i> (C. B. Adams, 1850)	2	1734–1735	Rios 2009	X		
<i>Vitreolina arcuata</i> (C. B. Adams, 1850)	1	1732	Rios 2009		X	
<i>Vitreolina</i> sp.	1	1733	Warén 1983	X	X	
<i>Melanella eburnea</i> (Mühlfeld, 1824)	1	1736–1737	Queiroz et al. 2013		X	X

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Gastropods on Sargassum in São Sebastião Channel

Table 1. Continued.

Family/Species	n	Series number	Literature used	Species occurrence			
				S.Sb.	Ib.	Tb.	Ubm.
Cerithiidae							
Turbinidae							
<i>Lithopoma phoebium</i> (Röding, 1798)	2	1919–1920	Abbott 1974, Williams 2007, Rios 2009	X	X		
<i>Tegula viridula</i> (Gmelin, 1791)	3	1896–1898	Williams et al. 2008; Rios 2009	X	X		
Nassariidae							
<i>Nassarius albus</i> (Say, 1826)	2	1890–1891	Matthews 1968, Absalão & Pimenta 2005, Rios 2009		X		
Mangeliidae							
<i>Tenaturris fulgens</i> (E. A. Smith, 1888)	2	1923–1924	Rios 2009	X	X		
<i>Glyphoturris rugirina</i> (Dall, 1889)	2	1894–1895	Absalão et al. 2005, Rios 2009	X	X	X	
Epitoniidae							
<i>Epitonium</i> cf. <i>worsfoldi</i> Robertson, 1994	1	1929	Robertson 1993	X	X		
Retusidae							
<i>Pyrrunculus caelatus</i> (Bush, 1885)	1	1926	Absalão & Pimenta 2005, Rios 2009	X	X		
Ellobiidae							
<i>Pedipes mirabilis</i> (Mühlfeld, 1816)	1	1925	Abbott 1974, Rios 2009		X		
Modulidae							
<i>Modulus modulus</i> (Linnaeus, 1758)	1	1922	Houbrick 1980		X		
Pseudomelatomidae							
<i>Crassispira</i> cf. <i>fuscoseens</i> (Reeve, 1843)	1	1921	Rios 2009, Fallon 2011		X		
Rissoinidae							
<i>Schwartziella bryerea</i> (Montagu, 1803)	23	1609–1622	Rios 2009	X	X		X
Planaxiidae							
<i>Fossarus ambiguus</i> (Linnaeus, 1758)	1	3350	Houbrick 1990		X		
Bullidae							
<i>Bulla occidentalis</i> A. Adams, 1850	82	2360–2388	Malaquias & Reid 2008	X	X	X	X
Haminoeidae							
<i>Haminoea antillarum</i> (d'Orbigny, 1841)	16	1871–1879	Abbott 1974	X	X		X
Cylichnidae							
<i>Cylichna discus</i> Watson, 1883	2	1880	Marcus 1970, Absalão & Pimenta 2005, Rios 2009		X		X
Marginellidae							
<i>Volvarina</i> sp.	1	1918	Rios 2009		X		X

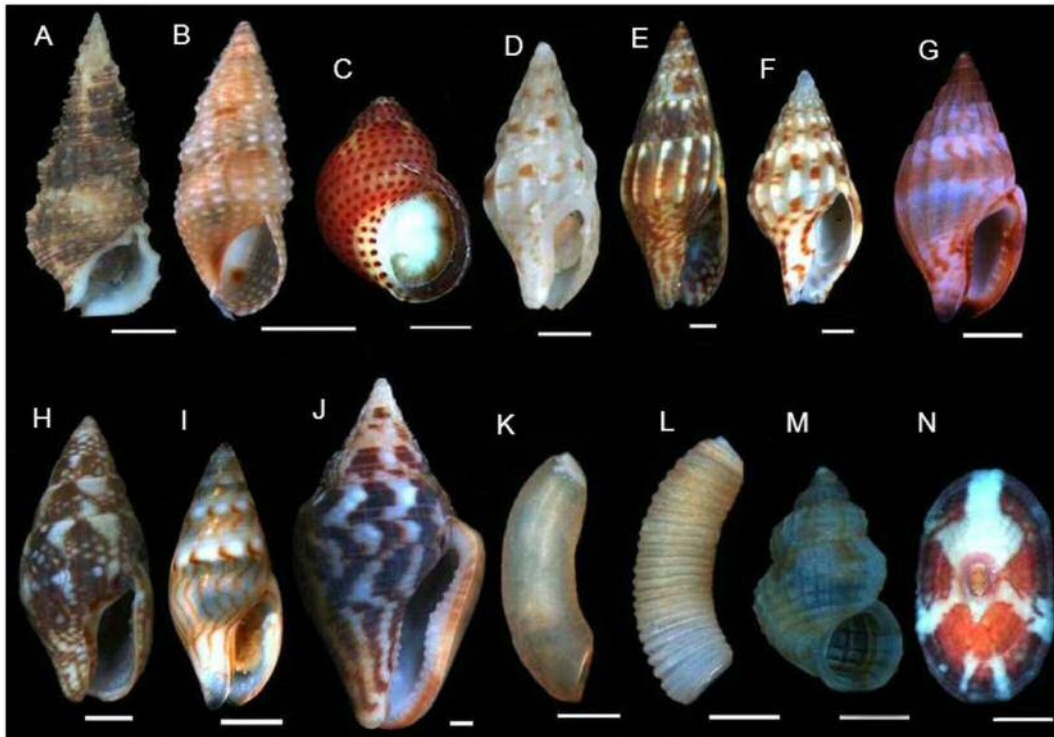


Figure 2. Photomicrographs of the gastropod species collected in *Sargassum* sp. beds from the São Sebastião Channel, Caraguatatuba and Ubatuba (continues in Figures 3 to 5). Cerithiidae: *Cerithium atratum* (A) and *Bittiolium varium* (B). Phasianellidae: *Eulithidium affine* (C). Columbelloidea: *Anachis femeli* (D), *Costoanachis sertulariarum* (E), *Costoanachis sparsa* (F), *Anachis obesa* (G), *Mitrella dichroa* (H), *Astyris lunata* (I), and *Columbella mercatoria* (J). Caecidae: *Caecum rysotitum* (K) and *Caecum brasilicum* (L). Rissoidae: *Alvania auberiana* (M). Fissurellidae: *Fissurella rosea* (N). Scale bars: 500µm for A and K-N; 1000µm for B-J.

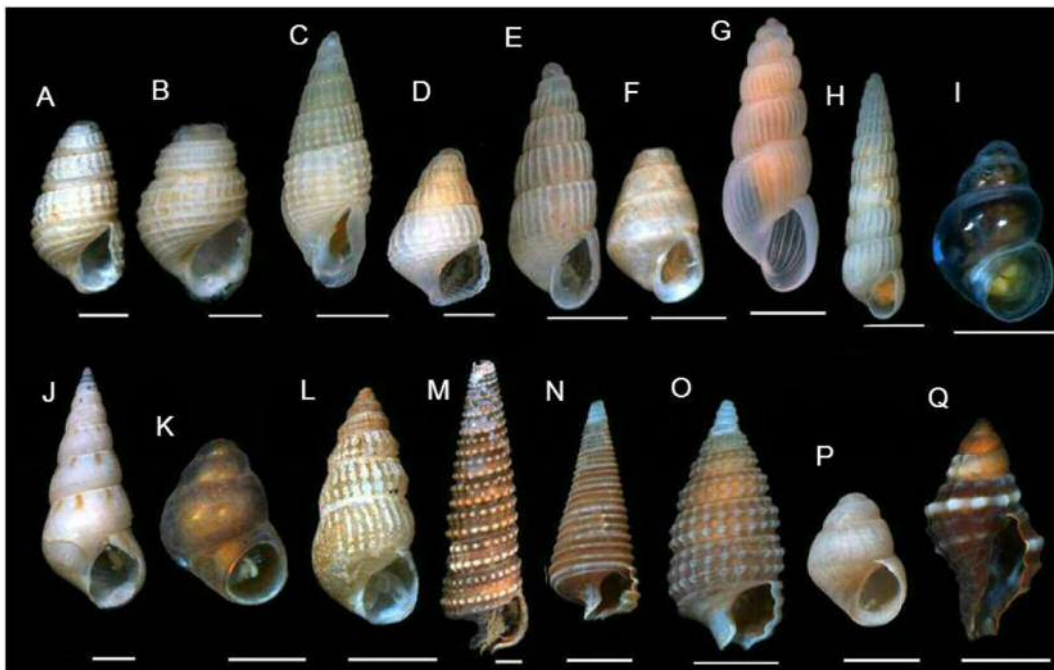


Figure 3. Photomicrographs of the gastropod species collected in *Sargassum* sp. beds from the São Sebastião Channel, Caraguatatuba and Ubatuba. Pyramidelloidea: *Fargoa bushiana* (A), *Folinella robertsoni* (B), *Boonea jadisi* (C), *Chrysallida nioba* (D), *Turbonilla multicosata* (E), *Eulimastoma didyma* (F), *Trabecula krumpfermani* (G), *Turbonilla penistonii* (H). Rissoidae: *Rissoella ornata* (I). Litiopidae: *Alaba incerta* (J). Barleeidae: *Amphithalamus glabrus* (K). Scaliolidae: *Finella dubia* (L). Cerithiopsidae: *Retilaskeya bicolor* (M), *Seila adamsii* (N) and *Cerithiopsis gemmulosa* (O). Assimineidae: *Assiminea succinea* (P). Buccinidae: *Engina turbinella* (Q). Scale bars: 500µm for A, D, F, K and P; 250 µm for B; 1000µm for C, E, G-J, L-O and Q.

Gastropods on Sargassum in São Sebastião Channel

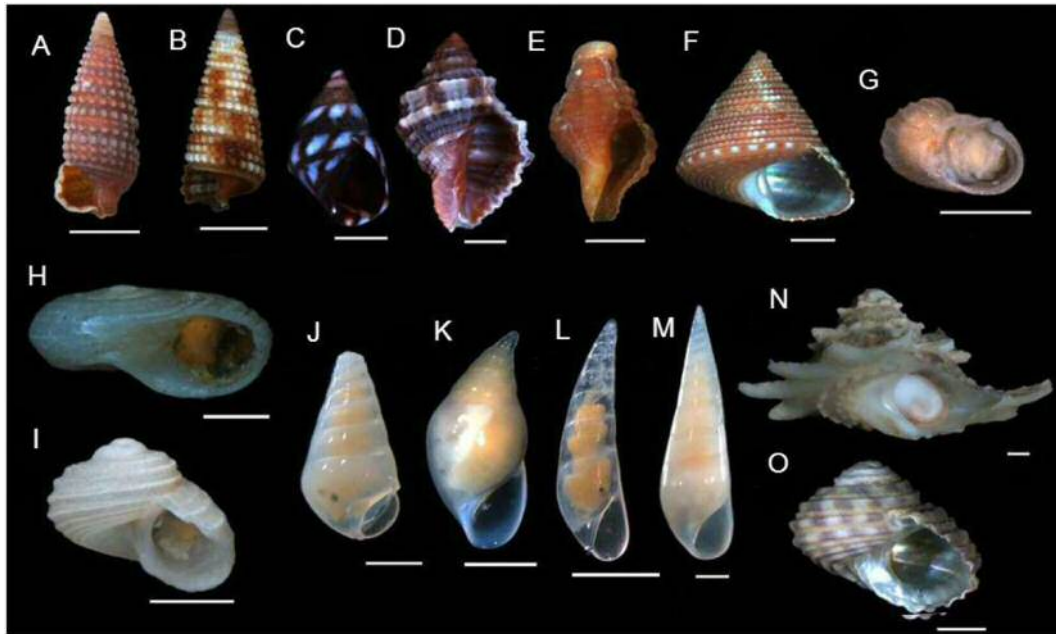


Figure 4. Photomicrographs of the gastropod species collected in *Sargassum* sp. beds from the São Sebastião Channel, Caraguatatuba and Ubatuba. Triphoridae: *Marshallora nigrocincta* (A), *Nototriphora decorata* (B). Littorinidae: *Echinolittorina lineolata* (C). Muricidae: *Stramonita brasiliensis* (D) and *Muricopsis necocheana* (E). Calliostomatidae: *Calliostoma* sp. (F). Scissurellidae: *Scissurella alexandrei* (G). Tornidae: *Circulus* cf. *liratus* (H) and *Parviturboides interruptus* (I). Eulimidae: *Melanella* cf. *eulimoides* (J), *Vitreolina arcuata* (K), *Vitreolina* sp. (L), *Melanella eburnea* (M). Turbinidae: *Lithopoma phoebium* (N) and *Tegula viridula* (O). Scale bars: 1000µm for A-F and K-O; 500µm for G-J.

In terms of abundance, the predominance of a few families is remarkable: specimens of Cerithiidae, Phasianellidae and Columbelloidea are the most numerous, representing altogether 84% of the total number of individuals. This is mainly caused by the fact that *Eulithidium affine* (C. B. Adams, 1850) (the

single Phasianellidae) and *Bittium varium* (Pfeiffer, 1840) (Cerithiidae) are the best represented species (4630 and 4642 specimens, respectively), followed by *Mitrella dichroa* (G. B. Sowerby I, 1844) (n=813), *Anachis fenneli* Radwin, 1968 (n=626) and *Costoanachis sertulariarum* (d'Orbigny, 1839)

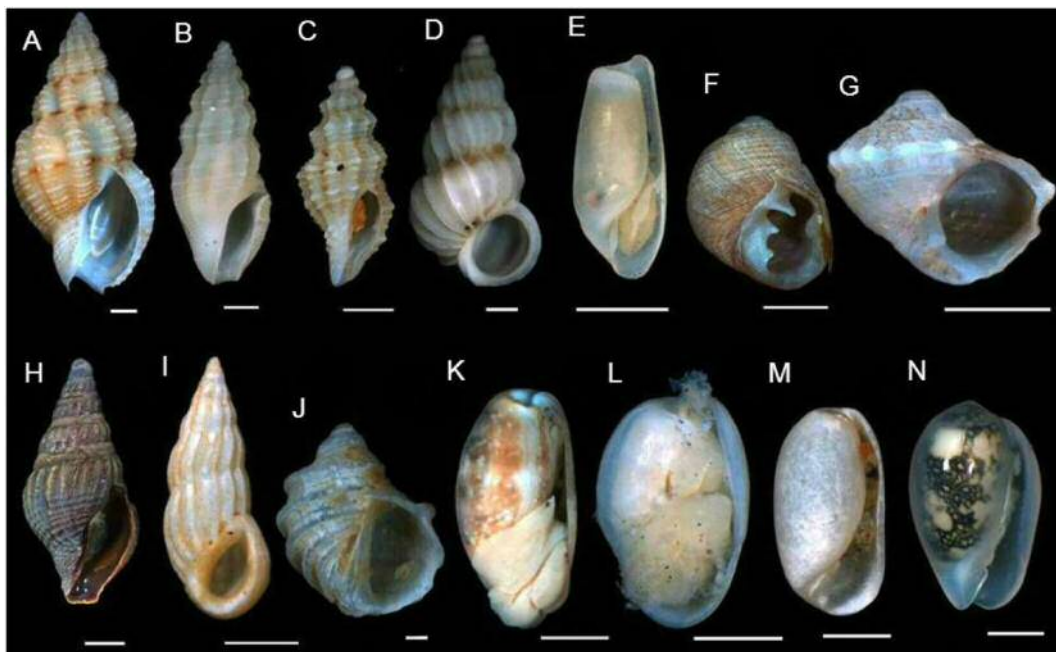


Figure 5. Gastropod species collected in *Sargassum* sp. beds from the São Sebastião Channel, Caraguatatuba and Ubatuba. Nassariidae: *Nassarius albus* (A). Mangelloidea: *Tenaturris fulgens* (B) and *Glyphoturris rugirima* (C). Epitoniiidae: *Epitonium* cf. *worsfoldi* (D). Retusidae: *Pyrrunculus caelatus* (E). Ellobiidae: *Pedipes mirabilis* (F). Modulidae: *Modulus modiolus* (G). Pseudomelatomidae: *Crassispira* cf. *fuscescens* (H). Rissoinidae: *Schwartziella bryerea* (I). Planaxidae: *Fossarus ambiguus* (J). Bullidae: *Bulla occidentalis* (K). Haminoeidae: *Haminoea antillarum* (L). Cylichnidae: *Cylichna discus* (M). Marginellidae: *Volvarina* sp. (N). Scale bars: 1000µm for A-K; 500µm for L-N.

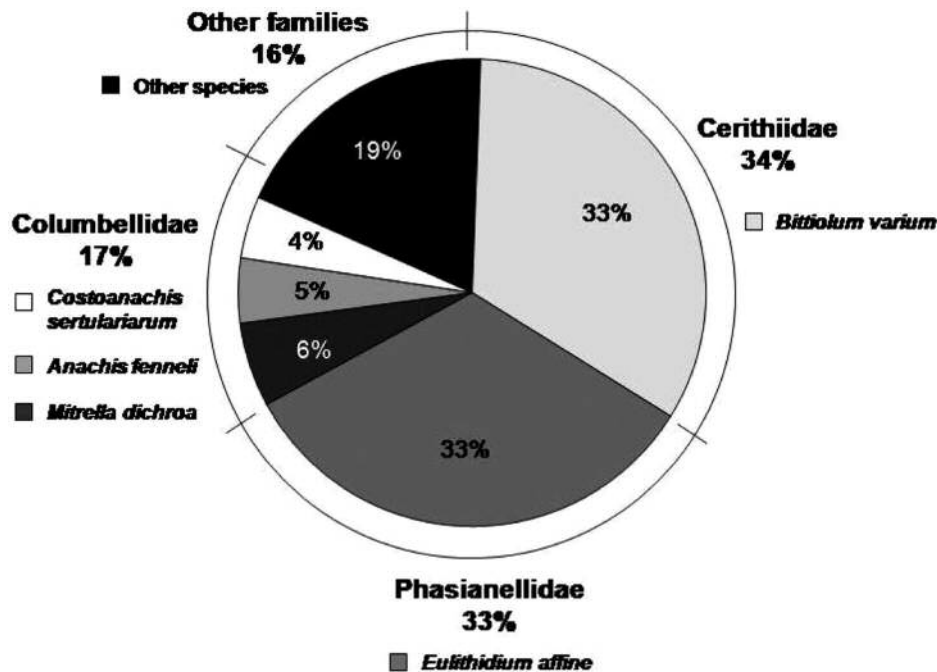


Figure 6. The most representative species and families, in terms of relative abundance of collected individuals.

(n=600) (Columbellidae). Apart from these abundant species, 57 species are responsible for 19% of the total number of individuals (Figure 6). Some of them were well collected, as *Caecum ryssotitum* de Folin, 1867, *Caecum brasiliicum* de Folin, 1874 and *Alvania auberiana* (d'Orbigny, 1842), with 323, 294 and 302 individuals, respectively. Noteworthy is also the occurrence of *Costoanachis sparsa* (Reeve, 1859), *Anachis obesa* (Adams, 1845), *Fissurella rosea* (Gmelin, 1791), *Turbonilla multicosata* (C. B. Adams, 1850), *Rissoella ornata* Simone, 1995, *Alaba incerta* (d'Orbigny, 1841) and *Amphithalamus glabrus* Simone, 1996, each one represented by 100 to 200 specimens. Regarding the more rare species, 26 presented less than 10 specimens; for some species, most animals found are juveniles, as for *Cerithium atratum* (Born, 1778), *F. rosea*, *T. multicosata*, *Stramonita brasiliensis* Claremont & D. G. Reid, 2011, *Calliostoma* sp. and *Bulla occidentalis* A. Adams, 1850.

Discussion

Expressive values for both number of species and individuals were found for the Gastropoda assemblages studied herein. Similar records had already been found for phytal assemblages of other algae species and from other localities (Montouchet 1979, Schézy & Paula 2000, Chemello & Milazzo 2002, Jacobucci & Leite 2002, Jacobucci et al. 2006, Almeida 2007, Leite et al. 2009, Veras 2011). Many families identified in this work, including the most abundant ones (Cerithiidae, Phasianellidae and Columbelloidea) have recurrent records in general phytal studies already developed in Brazil (Montouchet 1979, Jacobucci et al. 2006, Almeida 2007, Leite et al. 2009, Veras 2011).

The two most abundant species, *B. varium* and *E. affine*, exhibit similar feeding habits: they graze algae surface and feed on the periphyton settled on the fronds (Marcus & Marcus 1960, Montfrans et al. 1982). The following most abundant species, the columbellids *M. dichroa* and *A. fenneli*, on the other hand,

are both carnivorous species (Radwin 1977). The Pyramidellidae and the Eulimidae, with eight and four species, respectively, are known as parasites of other invertebrates (Warén 1983, Wise 1996). This diversity in the feeding habits is notorious throughout all the species, and indicates that the *Sargassum* sp. beds are a highly heterogeneous environment, which provides a great variety of food sources for its associated species. This should be expected, since *Sargassum* species are already known as having a high structural complexity (Széchy & Paula 2000).

Among the least abundant species (< 50 specimens), some of them are known to occur in phytal habitats, e.g. *Columbella mercatoria* (Linnaeus, 1758), *Schwartziella bryerea* (Montagu, 1803), *Finella dubia* (d'Orbigny, 1840), *Seila adamsii* (H. C. Lea, 1845), *Assimineia succinea* (Pfeiffer, 1840), *Nototriphora decorata* (C. B. Adams, 1850) and *Glyphoturris rugirima* (Dall, 1889) (Rios 2009). On the other hand, a few species found are typical from other habitats like rocky shores or soft bottoms, e.g. *Echinolittorina lineolata* (d'Orbigny, 1840), *S. brasiliensis*, *Calliostoma* sp., *Melanella eburnea* (Mühlfeld, 1824) and *Tegula viridula* (Gmelin, 1791). In this last case, the occurrence of most species in the *Sargassum* sp. beds can be considered as fortuitous, whilst in the former case, those species can be characterized as rare, even though they can be considered typical in this habitat. In both cases, and also for many of the more numerous species, it is notable the presence of juvenile forms. This may be an indicator that the seaweed beds are a favorable environment for the development of these gastropods, due to the many benefits provided by the algae, which can act as a nursery for many species.

The gastropod assemblages stand out, therefore, as an important component of the associated fauna of the *Sargassum* sp. beds in São Sebastião Channel, northern coast of São Paulo. However, studies describing the composition and dynamics of these phytal assemblages are still scarce, especially the ones developed in Brazil. A higher and more detailed

knowledge of these assemblages are an important step for a better understanding and conservation of these environments.

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