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Mytella strigata and *Mytella guyanensis* as an object of study: scientific and popular nomenclature review, morphological aspects and occurrence in Babitonga Bay-SC

Mytella strigata e *Mytella guyanensis* como objeto de estudo: revisão da nomenclatura científica e popular, aspectos morfológicos e ocorrência na Baia da Babitonga-SC

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ABSTRACT
Bivalve molluscs are an object of great economic interest, in the genus *Mytella*, it is possible to highlight the species *Mytella strigata* and *Mytella guyanensis*. The aim of this study was to carry out a review about the popular and scientific nomenclature of these species, evaluate the main characteristics used to differentiate them, as well as to carry out a quali-quantitative analysis of the mussels from the bay of Babitonga-SC. During the popular nomenclature review it turned out that the mussels *M. guyanensis* and *M. strigata* have gone through numerous revisions and nomenclature changes, as well as have several synonymous species. According to the studies reviewed to the popular nomenclature subject, 75% of the publications related to *M. guyanensis* and *M. strigata* were made in the Northeast, regarding the popular names "bacucu" and "sururu", the second term was the most widespread. The analysis of the mussel stocks of Babitonga Bay demonstrated the predominance of *M. guyanensis* (96%). No significant difference was observed for the sample survey and collection station factors. However, the variations in abundance and diversity were significant for the stratum factor, where the highest values were recorded in the lower mesolittoral, suggesting a tendency for these organisms to be distributed in environments with less air exposure at low tide.

Palavras-chave: sururu, bacucu, extrativismo, estuário.

RESUMO
Os moluscos bivalves são objeto de grande interesse econômico, no gênero Mytella, é possível destacar as espécies Mytella strigata e Mytella guyanensis. O objetivo deste estudo foi realizar uma revisão acerca da nomenclatura popular e científica dessas espécies, assim como, avaliar as principais características utilizadas para diferenciá-las. Por fim, foi realizada uma análise quali-quantitativa dos mexilhões da baía da Babitonga-SC. Durante a pesquisa da nomenclatura popular observou-se que as espécies M. guyanensis e M. strigata passaram por diversas revisões e mudanças na nomenclatura, assim como, possuem muitas espécies em sinonímia. De acordo com os estudos utilizados durante a revisão da nomenclatura popular, 75% das publicações relacionadas a M. guyanensis e M. strigata foram realizadas no Nordeste, quanto aos nomes populares "bacucu" e "sururu", o segundo termo foi o mais difundido. A análise dos bancos de mexilhão da baía da Babitonga demonstrou o predomínio de M. guyanensis (96%), e não foi observada diferença significativa para as campanhas amostrais e estação de coleta. Contudo, as variações de abundância e diversidade foram significativas no estrato, onde os maiores valores foram registrados no mesolitoral inferior, sugerindo uma tendência desses organismos a se distribuírem em ambientes de menor exposição ao ar durante a maré baixa.

Keywords: sururu, bacucu, extractivism, estuary.

1 INTRODUCTION

The molluscs are objects of great economic interest for Brazil, according to FAO (2016), the state of Santa Catarina is a national leader in the production of bivalves and the second largest producer in Latin America. In Santa Catarina, the most cultivated

mussels are: *Brachidontes, Mytilus* and *Mytella*. These organisms represent a low-cost source of animal protein with high nutritional value and are commonly found in estuarine regions (Reis Júnior et al., 2016).

In the genus *Mytella*, it is possible to highlight the species *M. strigata* (Hanley, 1843) and *M. guyanensis* (Lamarck, 1819) as a resource of high socioeconomic importance for communities of bivalve mollusc small scale fishery (Pereira et al., 2006). Both species are mostly popularly known as "bacucu" or "sururu", varying according to the region (Narchi and Bueno, 1983; Kumar et al., 2015; Christo et al., 2016; Barros et al., 2020). However, they can also be known as "sutinga", "sururu do mangue", "mexilhão do estuário", "bico de ouro", "sururu de Alagoas" and "marisco do lodo".

The mangrove mussel *M. strigata* is native from Atlantic coasts of Central and South America, it has also been recorded as an invasive species in Florida, Philippines, Singapore, Thailand, India and Taiwan (Huang et al., 2021). While *M. guyanensis* is distributed from Mexico to Peru in the Pacific Ocean, and from Venezuela to Brazil in the Atlantic Ocean (Rios, 2009). In Brazil, both species have wide distribution in estuaries, living attached to rocky substrates or mangrove roots with the byssus (Ceuta and Boehs, 2012; Reis Júnior et al., 2016).

Although it has a lot of potential, there are no records of large-scale production of these organisms and the commercialization occurs mainly through capture in natural stocks. Rudimentary extraction is still a relevant economic activity for riverine populations in several regions of the country (Freitas et al., 2012), including São Francisco do Sul. The municipality that is located in the northern portion of Santa Catarina, is heavily influenced by the Babitonga Bay estuarine complex and includes the most preserved mangrove ecosystem in the southern hemisphere (Silva and Mouga, 2020). Important fishing resources are concentrated in this region, especially bivalve molluscs such as bacucu. According to Cunha (2019), this mussel is a key resource for the subsistence of several fishing communities in the region.

Knowledge of the occurrence and distribution of species becomes essential for the analysis of the conservation and economic potential of estuarine regions. In this context, the present study aims to carry out a review of the popular and scientific nomenclature of *M. strigata* and *M. guyanensis*, as well as the main characteristics used to differentiate the species *Mytella guyanensis* and *Mytella strigata*. These results will be applied in a

quali-quantitative analysis of mussels collected in Babitonga Bay, São Francisco do Sul-SC.

2 MATERIAL AND METHODS

2.1 SCIENTIFIC AND POPULAR NOMENCLATURE REVIEW

A broad literature search on scientific nomenclature of *M. strigata* and *M. guyanensis* was carried out considering the revisions and nomenclature changes. The popular nomenclature search was conducted using the online search tools "Scielo", "Web of Science" and "Periódicos da CAPES" with the keywords "*Mytella charruana*", "*Mytella falcata*", "*Mytella strigata*" and "*Mytella guyanensis*". The search was carried out only by scientific articles published between the years 2000-2021, carried out in Brazil, in which the words "bacucu" and "sururu" were cited. Duplicated articles, that is, found in more than one of the websites of search, have been removed from the study.

2.2 EXTERNAL MORPHOLOGY OF THE SHELLS OF *MYTELLA STRIGATA* AND *MYTELLA GUYANENSIS*

The survey of the morphological characteristics for differentiation between the species *M. strigata* and *M. guyanensis* occurred through articles published by Bacon (1975), Narchi and Bueno (1983), Absher et al. (2015) and Christo et al. (2016). Later, in order to highlight these characteristics, an illustrative figure was developed to assist future studies.

2.3 COLLECTION AND PROCESSING OF MUSSELS FROM BABITONGA BAY

Babitonga Bay is located on the northern coast of Santa Catarina, between the geographical coordinates of 26º02' - 26º28'S and 48º28' - 48º50'WO, bordering the municipalities of São Francisco do Sul, Araquari, Barrado Sul, Itapoá, Garuva and Joinville. The Babitonga Bay estuary is approximately 160 km² and has an average depth of 6 meters (IBAMA, 1998). The collections of mussels were carried out in five collection stations (1, # 2 # 3 # 4 and # 5), during three sample survey (Figure 1).

The first sample survey was collected in December 2020, the second in January and the third in March, 2021 (Figure 1). In each area, six 10-meter long transects were established parallel to the waterline, three at the upper limit of the mesolittoral and three at the lower limit, configuring a triplicate per stratum. The organisms were collected

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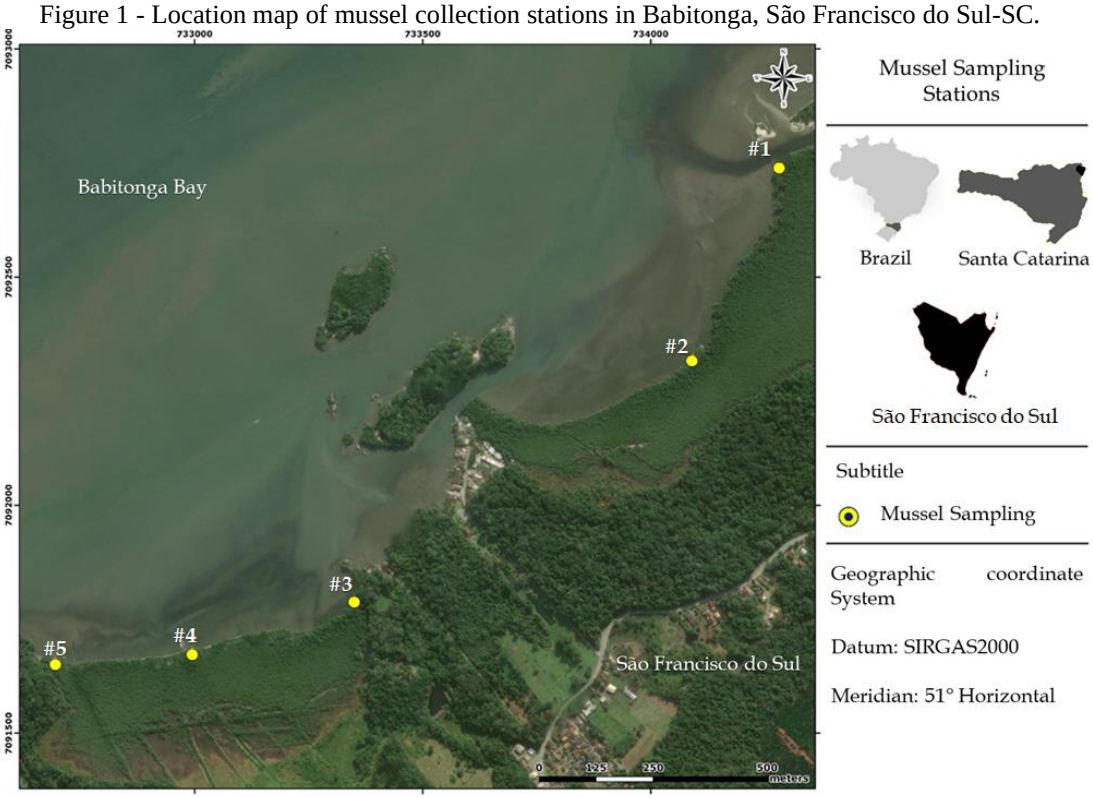
during the low tide of spring, to a depth of 10 centimeters, in squares of 1m² randomly launched over the pre-established transects. The samples were packed in mesh bags, fixed in 4% formaldehyde and sent to the laboratory for sorting and species identification.

In the laboratory, the mussel samples were washed to separate the fauna from the detrital material. Subsequently, the organisms were counted and identified at the species level using the morphological characteristics, obtained through the bibliographic survey. The average diversity in each sample survey and collection station was calculated using the Shannon-Wiener H ′ log (e) indicator (Shannon and Weaver, 1963), with 95% confidence intervals, using the PAST statistical package (Hammer et al., 2001). For the interpretation of spatial and temporal distributions, the Kruskal Wallis test was used, this nonparametric analysis was performed using the STATISTICA® software. Probability values of p <0.05 were considered significant.

Figure 1 - Location map of mussel collection stations in Babitonga, São Francisco do Sul-SC.



Source: Authors, 2021.

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3 RESULTS

3.1 SCIENTIFIC AND POPULAR NOMENCLATURE REVIEW

The species *Mytella strigata* has undergone numerous revisions and changes in nomenclature (d'Orbigny, 1846; Narchi and Bueno, 1983; Lim et al., 2018). Originally, it was described as *Mytilus strigatus* by Sylvanus Hanley (1843) in his 'Catalogue of Recent Bivalve Shells', though, d'Orbigny (1846) described the same species as *Mytilus falcatus* in 'Voyage dans 1'Amerique Méridionale" in 1846. Later, in 1955, Soot-Ryen described the genus *Mytella* and included the species as *Mytella falcata*. However, this nomenclature was already being used in another species by Goldfuss (1937), therefore, it was designated as *Mytella charruana*.

The same situation occurs with the species *Mytella guyanensis*, originally described as *Mytilus bicolor* and later its genus was changed to *Mytella*, being named as *Mytella bicolor* (Reis Júnior et al., 2016). However, the nomenclature *M. guyanensis* was universally used as the valid name, there are only a few references that use *M. bicolor* (Mollusca Base eds., 2021). According to the literature (d'Orbigny, 1846; Carpenter, 1857; San Diego Shell Club, 1970; Rios, 2009; Lim et al., 2018; Mollusca Base eds., 2021) several species are *M. guyanensis* and *M. strigata* synonymous (Table 1).

Table 1 - Synonymic nomenclature list of Mytella guyanensis and Mytella strigata.

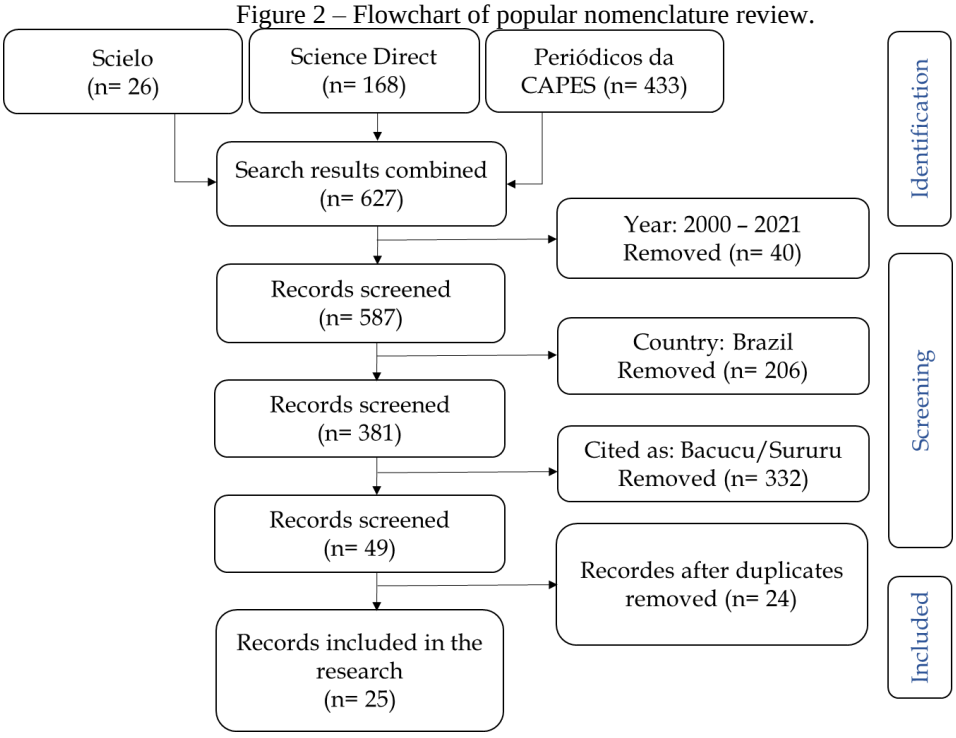
Species - Synonymous Nomenclature	
Mytella strigata	***Mytella guyanensis***
*Modiola strigata (*Hanley, 1843)	*Mytilus bicolor* (Bruguière, 1792)
Musculus strigatus (Hanley, 1843)	*Mytella bicolor* (Bruguière, 1792)
Mytilus strigatus (Hanley, 1843)	*Modiola guyanensis* (Lamarck, 1819)
Mytilus falcatus (d'Orbigny, 1846 - invalid: homonym to Goldfuss, 1837)	*Modiola semifusca* (Sowerby, 1825)
Mytilus charruanus (d'Orbigny, 1846)	*Mediolus brasilensis* (Gray, 1825)
Mytella falcata (d'Orbigny, 1846)	*Mediola sinuosa* (King and Broderip, 1832)
Mytella charruana (d'Orbigny, 1846)	*Mediolus mutabilis* (Carpenter, 1857)
Mytilus sinuatus (Reeve, 1857)	*Modiola subfuscata* (Clessin, 1887)
Volsella reevei (Angas, 1867)	
Modiolus arciformis (Dall, 1909)	
Mytilus mundahuensis (Duarte, 1926)	
Musculus lebourae (White, 1949)	

Source: Authors, 2021.

Through research conducted in electronic databases regarding the popular nomenclature, a total of 627 potential articles were identified, 26 in Scielo, 168 in Science Direct, and 433 in Periódicos da CAPES (Figure 2). Of these, 40 articles were excluded

based on the year of publication (only accept those published between 2000-2021) and 206 because they were not developed in Brazil. Finally, 25 articles not duplicated, which presented the terms "sururu" or "bacucu" throughout the text were kept.

Figure 2 – Flowchart of popular nomenclature review.



Source: Authors, 2021.

According to the 25 articles maintained after research related to the *M. guyanensis* and *M. strigata* (*M. strigata* + *M. falcata* + *M. charruana*), 75% were carried out in the Northeast, 11% in the North and 7% in the South and Southeast regions (Table 2). Of these publications, 12 studied *M. strigata*, nine *M. guyanensis*, and four both. The analysis of the results showed that the popular name “sururu” was used in all articles, however, three of them presented the term “bacucu” as a synonym.

Table 2 – Summary of studies related to evaluated species with their respective author, location of the study, scientific and popular name. AL – Alagoas, MA – Maranhão, PB – Paraíba, PA – Pará, PI – Piauí, BA – Bahia, ES – Espirito Santo, SP – São Paulo and PR – Paraná.

Bibliography	Location	*M. guyanensis*	*M. strigata*	Bacucu	Sururu
Lira et al., 2004	AL		x		x
Alves and Rosa, 2006	MA, PB	x			x
Nishida et al., 2006	PB	x	x		x
Alves and Rosa, 2007	PA, MA, PB, PI	x			x
Alves and Rosa, 2007	PA, PB, PI	x			x
Alves and Rosa, 2010	PA, MA, PB, PI	x			x
Boehs et al., 2010	BA	x			x
Maioli et al., 2010	AL		x		x
Pena et al., 2011	BA	x			x
Freitas et al., 2012	PI	x	x		x
Kumar et al., 2015	ES	x	x	x	x
Tamano et al., 2015	AL		x		x
Araújo et al., 2016	BA		x		x
Christo et al., 2016	PR	x	x	x	x
Vasconcelos, 2016	SP		x		x
Brito et al., 2018	AL		x		x
Dornelles et al., 2018	Northeast		x		x
Santos and Della, 2017	PR	x			x
Camilo et al., 2019	BA	x		x	x
Correia et al., 2018	AL		x		x
Barbosa et al., 2019	BA	x			x
Henrique et al., 2020	AL		x		x
Leoncio et al., 2020	MA		x		x
Lucena, 2020	PB		x		x
Quintela et al., 2020	AL		x		x
Nunes et al., 2021	AL		x		x

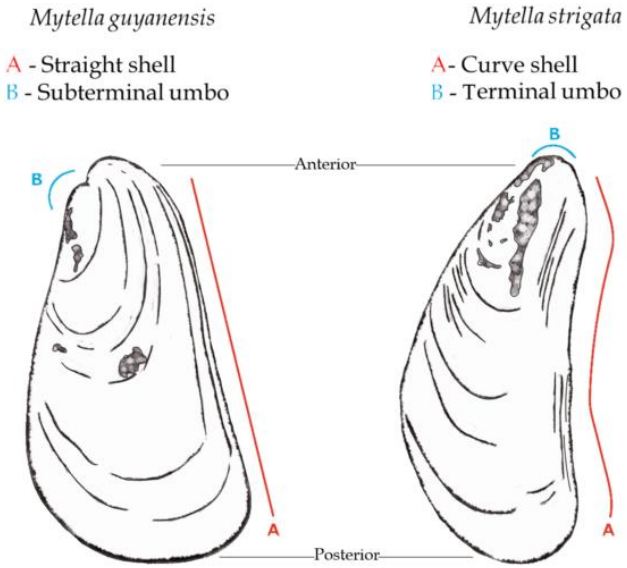
Source: Authors, 2021.

3.2 EXTERNAL MORPHOLOGY OF THE SHELLS OF *MYTELLA STRIGATA* AND *MYTELLA GUYANENSIS*

The species *M. strigata* presents terminal umbo, 13263ytiliform, gently angled in the dorsal region and laterally concave in the ventral region (Narchi and Bueno, 1983; Christo et al., 2016; Absher et al., 2015). Although *M. guyanensis* also exhibits a 13263ytiliform shell, it is wider at the midpoint between the ventral and dorsal sides and the umbo is located in the subterminal region (Bacon, 1975; Christo et al., 2016; Absher et al., 2015) (Figure 3). Both species live strongly attached to rocky substrates or

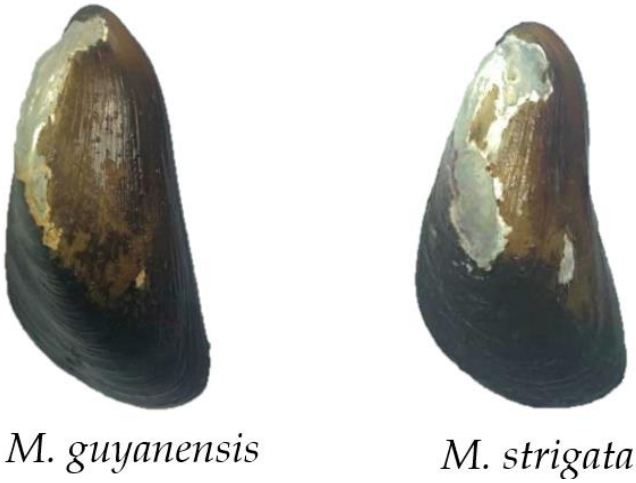
mangrove roots with the byssus, therefore, just as observed by Yonge (1955) and Bacon (1975), a large part of the individuals collected present considerable damage to the periostracum near the umbonal region (Figure 4).

Figure 3 – Main characteristics for differentiation between the shells of *Mytella guyanensis* and *Mytella strigata*.



Source: Authors, 2021.

Figure 4 – Mangrove Mussel Mytella guyanensis e Mytella charruana collected in São Francisco do Sul/SC.



Source: Authors, 2021

3.3 COLLECTION AND PROCESSING OF MUSSELS IN BABITONGA BAY

In total, 2,393 individuals of the genus Mytella were collected, of which 2,289 (96%) were identified as *M. guyanensis* and 104 (4%) as *M. strigata* (Table 3). The highest mean values of abundance were recorded in the lower mesolittoral of station #4,

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during the sample surveys carried out in March and January, corresponding to 90.67 ind/m² and 85.67 ind/m² respectively. However, in the same period, the presence of mussels was not identified in the samples collected in the upper mesolittoral of stations # 2, # 3, # 4 and # 5.

Table 3 - Mean abundance ± standard deviation (ind/m²) of mussel species recorded in the five collection stations during the three collection sample surveys in Babitonga Bay, São Francisco do Sul - SC. LM - lower mesolittoral and UM - upper mesolittoral.

Sample survey	Station	Strata	*M. guyanensis* Mean ± SD	*M. strigata* Mean ± SD	Mean ind/m²
dec/20	1	LM	35.3 ±61.1	2±3.46	37.33
	1	UM	13.3±23.0	0	13.33
	2	LM	38.3±66.3	1±1.73	39.33
	2	UM	4±6.9	0	4
	3	LM	21.7±37.5	0	21.67
	3	UM	0	0	0
	4	LM	28.7±49.6	0	28.67
	4	UM	0	0	0
	5	LM	15.3±26.5	0	15.33
	5	UM	12.7±21.9	0	12.67
jan/21	1	LM	56±19.9	7±7.54	63
	1	UM	16.7±22.3	0	16.67
	2	LM	53.3±36.1	3±3.60	56.33
	2	UM	0	0	0
	3	LM	81.3±37.8	4±1	85.33
	3	UM	0	0	0
	4	LM	80.3±37.0	5.3±7.5	85.67
	4	UM	0	0	0
	5	LM	21.7±18.7	4±3.6	25.67
	5	UM	0	0	0
mar/21	1	LM	41.3±9.8	1.3±0.5	42.67
	1	UM	8±13.8	0	8
	2	LM	55±52.6	3.3±3.0	58.33
	2	UM	0	0	0
	3	LM	55.3±16.1	0.7±1.1	56
	3	UM	0	0	0
	4	LM	89.3±67.7	1.3±1.2	90.67
	4	UM	0	0	0
	5	LM	35.3±5.6	1.7±1.5	37
	5	UM	0	0	0

Source: Authors, 2021.

The Kruskal-Wallis analysis revealed that the ecological indicators of abundance (N) and Shannon-Wiener diversity (H') did not show any significant difference for the sample survey factors (N p = 0.85 and H' p = 0.22) and collection station (N p = 0.81 and H 'p = 0.89). However, both indicators showed a significant difference for the stratum factor (N p-value = 0.00 and H' p-value = 0.00) - Table 4.

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Table 4 - Result of the Kruskal Wallis Test considering the sample survey, collection station and stratum factors. H= statistical test and HC= adjusted statistical test.

Source	H	Hc	p-value
Abundance (N)			
Sample survy	0.32	0.33	0.85
Station	1.55	1.60	0.81
Stratum	21.39	22.20	0.00
Shannon-Wiener Diversity (H')			
Sample survy	2.39	3.04	0.22
Station	0.92	1.17	0.88
Stratum	13.94	17.77	0.00

Source: Authors, 2021.

4 DISCUSSION

As for the identification of the studied organisms, it should be considered that although several authors point out the concavity of M. strigata in the ventral margin as a characteristic of the species (Bacon, 1975; Christo et al., 2016; Absher et al., 2015), considering only this information can lead to misidentification, since exist specimens of *M. guyanensis* with the same concave edge (Lim et al., 2018). Therefore, umbo location is considered the most reliable shell character to distinguish species.

From an economic point of view mussels are very important organism, above all, due to their ease of cultivation and collection (Fuentes et al., 2009). The exploitation of these organism represents a significant resource, supporting several small scale fishery families (Santos et al., 2014). According to the articles, 75% of studies related to *M. strigata* and *M. guyanensis* occurs in the Northeast.

The Northeast is one of the pioneer regions in studies of the bivalve *Mytella*. Mattews et al. (1977) identified *M. strigata* and *M. guyanensis* species during a survey of the aquatic fauna carried out in São Luiz Island. Nishida and Leonel (1995) studied the occurrence and dynamics of *M. guyanensis*, while Lira et al. (2004) analyzed the fatty acid profile, proximate composition and caloric value of the molluscs. Pena et al. (2011), Freitas et al. (2012) and Tamano et al. (2015), investigated the fisherman and shellfish gatherers who live off the extractivism.

Araújo et al. (2009) highlighted the relevance of sururu for the State of Sergipe, where, the collection of these organism represents one of the main sources of income for the village of Taiçoca de Fora, in which, 90% of the population is supported by small scale fishery. In Alagoas, about 21000 inhabitants survive from mussel extraction

(Government of Alagoas, 2008). Due to it is great relevance in the state, sururu was listed as Intangible Heritage by the Conselho Estadual de Cultura de Alagoas in 2014 (Bezerra and Neto, 2014).

The extractivism is quite expressive in the Northeast, where the collection of sururu represents a high percentage of the mussels sold (Araújo et al., 2009). In this region, the commercialization of *M. strigata* and *M. guyanensis* occurs mainly through organism captured in mangroves (Silva et al., 2021). On the other hand, in Santa Catarina, situate in the Southern region, the sale of bivalve molluscs occurs from malacoculture. This activity has received government investments since 1990, making the state responsible for 98% of national production. (Santos and Della Giustina, 2017). The main mussel cultivated in Santa Catarina is *Perna perna*, the species *M. strigata* and *M. guyanensis* are not very representative. However, for Paraná, also located in Southern, the fishing modality based on mussel extraction does not represent a very significant portion of the economy (Marango, 2015).

Some environmental conditions are decisive for the development and occurrence of large sururu stocks. The natural habitat of these organism is limited to estuarine regions, and the Northeast has the largest extensions and diversity of this ecosystem in Brazil (Melo et al., 2011). Alone, the state of Maranhão has approximately 505,000 ha of mangroves (ICMBio, 2018), while Babitonga Bay, in São Francisco do Sul consist in 80% of the mangrove areas of Santa Catarina and occupies 6,200 ha (IBAMA, 1998). Studies carried out in the Northeast demonstrate that salinity should also be considered a limiting factor. Pereira-Barros estimated that the ideal range of salinity varies from 29 to 33 (Pereira-Barros, 1969), however, Muedas and Moreira (2000) concluded that sururu does not tolerate salinity below 2 and above 30.

Another essential parameter is temperature, according to Onodera and Henriques (2017), the optimal survival interval to *M. falcata* and *M. guyanensis* was between 27 °C to 30 °C and temperature from 33 °C was considered lethal for the species. On the coast of the Northeast, the average sea water temperature varies from 30°C to 32°C (INMET, 2021; Queiroz et al., 2013), providing an extremely favorable environment for the development of mitilids.

The popular names bacucu and sururu are the main ones used for the two studied species, however, it was noted the unanimity of the term sururu in the literature. In the

present study, the highest frequency of use of the nomenclature sururu it is related to the Northeast region, since the nomenclature is widely applied there and the region holds the largest number of publications associated with these species (Guilherme et al., 2021; Tamano et al., 2020). According to Santos and Ferreira (2000) the origin of the name sururu is indigenous, and comes from the tupi çoo-rurú and means "humid animal". The use of the term bacucu was mainly concentrated in the South of the country (Serafini et al., 2014; Christo et al., 2016), where research related to these organisms is scarce.

The data obtained from the survey carried out in Babitonga Bay showed that 96% of the natural stocks of mytilids were represented by *M. guyanensis* and 4% by *M. Strigata*. Corroborating this result, Pereira et al., (2006) and Pereira et al. (2007) observed that the mussel stocks in Cananéia-SP was constituted by a large populations of *M. guyanensis* and few individuals of *M. strigata*.

The number of individuals identified per sample station in this study ranged from 0 ind/m² to 90.67 ind/m², which are lower than those recorded in most of other estuarine researches. In the state of São Paulo, Pereira et al. (2006) found the density of *M. guyanensis*/m² ranged between 16.6 – 264.4 and *M. strigata* between 16.8 – 11,036. Santos et al., (2010) pointed out that in the Emboraí-PA estuary the average density of *M. strigata* declined from 2.157.5 ind/m² (August) to 187.5 ind/m² (May). However, the values found in the São Francisco do Sul, were higher than those mentioned by Nishida and Leonel, (1995) in the Paraíba do Norte estuary, located in the Northeast region, were the average annual density of *M. guyanensis* corresponded to 5.2 ind/m².

As observed by several authors (Nishida & Leonel, 1995; Nishida et al., 2006; Farrapeira et al., 2010; Fuertes et al., 2021;) the organism collected in São Francisco do Sul presented an aggregated distribution. Narchi and Bueno (1983) emphasized these species are constantly found in groups of 3 to 4 individuals, connected to each other through the byssal threads. Jackson (1968) concluded that the heterogeneity of the substrate is an important factor that influences the aggregate behavior.

The population of mitilids in the Babitonga Bay did not show any significant difference for the collection station factor, as well as for the sample survey, since they were all collected during the summer. However, according to Fuentes et al. (2009) and Santos et al. (2014) factors such as: seasonality, reproductive period, availability of nutrients and food throughout the year, can generate variations in the composition and

abundance of these organism. Nunes et al. (2021), observed that the density of *M. strigata* was significantly higher during the rainy season (February to May), when the lowest salinity values were recorded.

However, when considering the stratum, the differences observed for abundance and diversity were significant, in which, the highest values were exhibited in the lower mesolittoral. Most of the studies related to these organisms do not separate the mesolittoral into two zones, thus, the authors mention that the distribution of stocks occurs predominantly in the mesolittoral region (Sibaja and Villalobos, 1986; Cruz, 1992; Nishida and Leonel, 1995; Pereira and Lopes, 1995; Araújo et al. 2009).

The species *M. strigata* was not identified in the upper mesolittoral zone in any of the collection stations, suggesting that these organisms have greater affinity for environments with less exposure to air at low tide. Although, Marques (1998) pointed out that due to a reduction on metabolism these organisms are adapted to air exposure. Pereira and Lopes (1995) found the species distributed in the mesolittoral and infralittoral in Bertioga Canal-SP. Corroborating with this result, Fernandes et al. (1983) associated the expressive abundance of *M. strigata* in the mesolittoral and infralittoral to the pronounced environmental stability of the stratum.

5 CONCLUSIONS

According to research, umbo location is considered the most reliable shell character to distinguish *M. strigata* to *M. guyanensis*. These species have gone through numerous revisions and nomenclature changes, as well as have several synonymous species. Considering popular nomenclatures “bacucu” and “sururu”, the second term is the most widespread, being cited in all articles. This result is probably related to the fact that “sururu” is used mainly in the Northeast, and this region holds the largest number of studies due to the great importance of extractivism as a source of income.

The natural stocks of mussels in Babitonga Bay were mainly formed by *M. guyanensis* (96%) and few representatives of *M. strigata* (4%). In this region, no significant difference was identified for the sample survey and collection station factors. However, the variations in abundance and diversity were significant for the factor stratum, where the highest values were recorded in the lower mesolittoral. This suggests

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a tendency for these organisms to be distributed in environments with less air exposure at low tide.

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