

## ***THE FAMILY GLYCYMERIDIDAE (MOLLUSCA: BIVALVIA) FROM NORTH AND NORTHEAST BRAZIL***

Sobre a família Glycymerididae (Mollusca: Bivalvia), no Norte e Nordeste do Brasil

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### **ABSTRACT**

*This study aims to identify the species of the family Glycymerididae deposited at the Malacological Collection “Prof. Henry Ramos Matthews”, from Instituto de Ciências do Mar (Brazil), collected along the coasts of Alagoas, Amapá, Ceará, Maranhão and Pará states, North and Northeast of Brazil. Materials examined were dredged by the Oceanographic Expeditions GEOMAR II, GEOMAR III, Akaroa and MAR.XV, from octopus commercial fisheries and other collections off Ceará State’s coast. This study identified 3,827 shells belonging to five species: Glycymeris tellinaeformis (Reeve, 1843), G. decussata (Linnaeus, 1758), G. longior (Sowerby, 1832), G. undata (Linnaeus, 1758) and Tucetona pectinata (Gmelin, 1791). The species G. tellinaeformis, G. undata and G. longior are new reports for states of North and Northeast of Brazil.*

**Keywords:** *oceanographic expeditions, malacological collection, extended report.*

### **RESUMO**

*Este estudo tem como objetivo identificar as espécies da família Glycymerididae depositados na Coleção Malacológica “Prof. Henry Ramos Matthews”, Instituto de Ciências do Mar, Universidade Federal do Ceará (Brasil), coletados ao longo das costas de Alagoas, Amapá, Ceará, Maranhão e Pará, regiões Norte e Nordeste. O material analisado foi dragado pelas comissões oceanográficas GEOMAR II, GEOMAR III, Akaroa e MAR.XV, das pescarias do polvo e outras coletas na costa do Ceará. Este estudo identificou 3.827 conchas pertencentes a cinco espécies: Glycymeris tellinaeformis (Reeve, 1843), G. decussata (Linnaeus, 1758), G. longior (Sowerby, 1832), G. undata (Linnaeus, 1758) e Tucetona pectinata (Gmelin, 1791). As espécies G. tellinaeformis, G. undata e G. longior apresentaram novos registros para estados do Norte e Nordeste do Brasil.*

**Palavras-chaves:** *comissão oceanográfica, coleção malacológica, extensão de registro.*

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## INTRODUCTION

Mollusks are one of the major phyla of invertebrates, among which the classes Gastropoda and Bivalvia are well represented in the marine benthos (Díaz & Puyana, 1994). The class Bivalvia includes very common animals that are economically important.

Bivalves known as “dog-cockles” or “bittersweet clams” (Arcoidea: Glycymeridoidea: Glycymerididae) have probably number fewer than 100 species. Glycymeridids are found in most oceans but absent from the polar regions (Oliver & Holmes, 2006), being inhabitants of shallow-water, rarely present at the intertidal areas and prefer sand and gravel substrata. Rios (1994; 2009) reported five species from the genus *Glycymeris* for the entire Brazilian coast. Currently, it is known that *G. pectinata* belongs to genus *Tucetona* – *T. pectinata* (Huber, 2010).

*Glycymeris* have prominent umbo (orthogyrate, prosogyrate or rarely opisthogyrate), with porcelain inner shell and often heavy periostracum (Coan *et al.*, 2000). Their shells are subcircular, equivalve, the outer surface with radial rays or fine lines, and the hinge plate have taxodont teeth and duplivincular ligament (Penna-Neme 1978; Oliver & Holmes, 2006). The inner margin of the shell is crenulated and the posterior adductor muscle scar is larger than the anterior adductor muscle scar (Rios, 1994).

*Tucetona* have shell subcircular to subtrigonal, taxodont teeth, beaks orthogyrate, radial ribs well developed, hinge plate moderately curved and differs from *Glycymeris*, “which has low, rounded, smooth radial ribs that do not bifurcate” (e.g., Valentich-Scott & Garfinkle, 2011; Coan & Valentich-Scott, 2012). The distribution of *Tucetona* is cosmopolitan, but it is confined to subtropical and tropical seas (Oliver & Holmes, 2006).

This study identifies the species of Glycymerididae found on the coasts of Alagoas, Amapá, Ceará, Maranhão and Pará states (Brazil) using shell characteristics.

## MATERIAL AND METHODS

Samples were obtained by dredging carried out by Oceanographic Expeditions GEOMAR II and GEOMAR III, AKAROA and MAR.XV, by collecting from inside octopus fishing pots and other collections off Ceará State’s coast (Figure 1). The samples are deposited in the Malacological Collection “Prof.

Henry Ramos Matthews” (CMPHRM – série “A”) at the Instituto de Ciências do Mar/Universidade Federal do Ceará, Brazil.

These collections were gathered as supporting stuff for other projects and this study came about due to a wealth of previously collected but unidentified material in the CMPHRM collection.

GEOMAR II (1970) and GEOMAR III (1971), aimed to contribute for the guidelines in the oceanographic research in Brazil. The collected material was mainly used for geological analysis – biological analysis being made later. The samples used in this study are from states Amapá and Pará.

AKAROA (1965) and MAR XV (1990 to 1991) expeditions aimed to carry out surveys of mollusk species populations in Brazil. The samples used in this study are from Alagoas, and Ceará/Maranhão States, respectively. Other collections gathered in Ceará coast were meant for several kinds of study.

Species were identified using Abbott (1974), Penna-Neme (1978), Rios (1994; 2009) and Amaral *et al.* (2006). Characters used for identification included shell form, umbo, ligament, and the surface ornamentation. Technical terms in the descriptions came from the literature used on identification and Coan *et al.* (2000).

## RESULTS AND DISCUSSION

This study identified 3,827 shells from Alagoas, Amapá, Ceará, Maranhão and Pará states (Brazil) belonging to five species.



Figure 1 - Brazil’s map showing the states where samples were collected: Amapá (AP), Pará (PA), Maranhão (MA), Ceará (CE) and Alagoas (AL).

***Glycymeris undata* (Linnaeus, 1758)** (Figure 2-A)

*Glycymeris undata* has opisthogyrate umbo that is slightly toward the center of the duplivincular ligament. Externally the shell has several fine radial striae, which can give the appearance of radial ribs. The inner margin is crenulated.

This study extends the distribution of this species to Amapá and Pará states, North of Brazil (Table I). This range extension may reflect the fact that these areas have had little study. *Glycymeris undata* and *G. decussata* were found inside the octopus pots - traps used in octopus fishery on Ceará coast - and are food for *Octopus vulgaris* and *Octopus insularis*, (Matthews-Cascon *et al*, 2009) which are important in the human economy and feeding diet. This species was reported before for Northeast of Brazil (Rios, 1994, 2009).

Material examined: CMPHRM 3119A (Ceará: Paracuru, 3 shells), CMPHRM 3117A (Ceará: 03°50'4,68''S / 34°44'14,7''W, 6 shells), CMPHRM 3115A (Alagoas: 09°53'3''S / 35°41'3''W, 34 m, AKAROA, 1 shell), CMPHRM 3114A (Alagoas: 09°58'2S / 035°42'7W, 50 m, AKAROA, 1 shell), CMPHRM 3118A (Ceará: 03°28'14,5''S / 35°02'4,62''W, 6 shells), CMPHRM 3111A (Alagoas: 09°32'1S / 035°25'6W, 26 m, AKAROA, 1 shell ) CMPHRM 3120A (Ceará: 02°57'34,311''S / 38°58'46,289''W, 4 shells), CMPHRM 3044A [LMDB245] (Ceará: 03°35'4''S / 38°25'5''W, 6 shells), CMPHRM 3116A (Alagoas: 10°16'7S / 036°11'3W, 13 m, AKAROA, 6 shells), CMPHRM 3110A (Alagoas: 08°56'2S / 035°02'7W, 32 m, AKAROA, 2 shells), CMPHRM 3113A (Alagoas: 10°02'7S / 035°48'0W, 36 m, AKAROA, 2 shells), CMPHRM 3112A (Alagoas: 10°05'7S / 035°52'2W, 27 m, AKAROA, 1 shell), CMPHRM 3095A (Amapá: 02°51'30''N / 48°37'48''W, 80 m, GEOMAR II, 1 shell), CMPHRM 3096A (Amapá: 03°10'30''N / 49°00'18''W, 85 m, GEOMAR II, 1 shell), CMPHRM 3107A (Amapá:

02°53'00''N / 48°17'00''W, 111 m, GEOMAR II, 2 shells), CMPHRM 3098A (Amapá: 03°37'00''N / 50°01'00''W, 72 m, GEOMAR III, 5 shells), CMPHRM 3106A (Amapá: 02°29'00''N / 48°30'00''W, 77 m, GEOMAR II, 17 shells), CMPHRM 3100A (Amapá: 02°26'30''N / 48°10'30''S, 90 m, GEOMAR III, 1 shell), CMPHRM 3097A (Pará: 00°48'30''N / 47°05'00''W, 44 m, GEOMAR II, 3 shells), CMPHRM 3105A (Pará: 02°06'00''N / 47°24'00''W, 92 m, GEOMAR III, 1 shell), CMPHRM 3108A (Amapá: 04°35'30''N / 50°21'00''W, 104 m, GEOMAR III, 3 shells), CMPHRM 3102A (Amapá: 04°39'00''N / 50°53'00''W, 71 m, GEOMAR III, 3 shells), CMPHRM 3104A (Amapá: 03°37'00''N / 50°01'00''W, 72 m, GEOMAR III, 1 shell), CMPHRM 3103A (Amapá: 02°27'00''N / 47°45'00''W, 161 m, GEOMAR III, 1 shell), CMPHRM 3109A (Amapá: 04°20'00''N / 50°18'00''W, 90 m, GEOMAR III, 17 shells), CMPHRM 3094A (Amapá: 04°51'00''N / 50°51'30''W, 81 m, GEOMAR III, 14 shells), CMPHRM 3101A (Amapá: 02°07'00''N / 48°04'00''W, 63 m, GEOMAR III, 17 shells ) CMPHRM 3045A (Amapá: 04°51'00''N / 50°51'30''W, 81 m, GEOMAR III, 2 shells), CMPHRM 2678A [LMDB 2668] (Ceará: Icapuí, Octopus fishery, 9 shells) and CMPHRM 2679A [LMDB 2667] (Ceará: Icapuí, Octopus fishery, 1 shell).

***Glycymeris tellinaeformis* (Reeve, 1843)** (Fig. 2-B)

Shells of *Glycymeris tellinaeformis* are more elongated than high, with the umbo slightly toward the posterior area of the amphidetic ligament. There are low radial ribs crossed by thin striae. The inner edge is crenulated.

This study extends the distribution of this species to Amapá and Pará states, North of Brazil, important because the species was previously known from Maranhão to São Paulo (Rios 1994, 2009) (Table 1).

In a previous study on the western continental shelf of Ceará, this species is not listed (Rocha & Martins, 1998). So this study confirms the presence of the species on Ceará, including the western coast, being observed in Paracuru beach.

Material Examined: CMPHRM 2154A (Pará: 02°57,5''N / 48°45''W; 82 m, GEOMAR II, 6 shells), CMPHRM 3088A (Ceará, 1 shell), CMPHRM 3090A (Ceará: 03°02'00,33''S / 39°02'15,57''S, 4 shells), CMPHRM 3092A (Ceará: Paracuru, 1 shell), CMPHRM 3093A (Ceará: 02°58'36,1''S / 38°57'33,9''W, 1 shell), CMPHRM 3076A (Alagoas: 10°19'6S / 036°15'3W, 15 m,

Table I - Distribution of Glycymerididae species according to Rios (2009) and to this study. New reports are indicated by (\*).

Species	<i>Tucetona wpectinata</i>	<i>Glycymeris tellinaeformis</i>	<i>Glycymeris decussata</i>	<i>Glycymeris undata</i>	<i>Glycymeris longior</i>
Distribution by Rios (2009)	From Amapá to Espírito Santo	From Maranhão to Paraná	From Amapá to Alagoas	From Maranhão to São Paulo	From Bahia to Rio Grande do Sul
Distribution found in this study	Ceará, Alagoas, Maranhão, Amapá, Pará	Amapá*, Pará*, Ceará, Alagoas	Alagoas, Ceará, Maranhão, Pará, Amapá	Amapá*, Pará*, Ceará, Alagoas	Amapá*, Pará*, Ceará*, Alagoas*



AKAROA, 1 shell), CMPHRM 3087A (Alagoas: 09°20'6S / 035°05'7W, 45 m, AKAROA, 2 shells), CMPHRM 3074A (Alagoas: 09°53'3S / 035°41'3W, 67 m, AKAROA, 1 shell), CMPHRM 3080A (Alagoas: 09°15'7S / 035°04'2, 41 m, AKAROA, 2 shells), CMPHRM 3084A (Alagoas: 09°46'2S / 035°29'7W, 41 m, AKAROA, 1 shell), CMPHRM 3085A (Alagoas: 08°56'2S / 034°57'7W, 36 m, AKAROA, 2 shells), CMPHRM 3081A (Alagoas: 09°41'4S / 035°23'2W, 41 m, AKAROA, 4 shells), CMPHRM 3091A (Ceará: 03°02'06,254'S / 39°02'00,44''W, 13 shells), CMPHRM 3079A (Alagoas: 10°05'3S / 036°02'2W, 24 m, AKAROA, 3 shells), CMPHRM 3077A (Alagoas: 09°58'2S / 035°47'7W, 34 m, AKAROA, 1 shell), CMPHRM 3078A (Alagoas: 09°32'1S / 035°15'6W, 43 m, AKAROA, 2 shells), CMPHRM 2677A (Alagoas: 09°11'1S / 035°07'0W, 32 m, AKAROA, 2 shells), CMPHRM 3083A (Alagoas: 09°46'2S / 035°34'7W, 31 m, AKAROA, 2 shells), CMPHRM 3086A (Alagoas: 09°32'1S / 035°20'6W, 31 m, AKAROA, 1 shell), CMPHRM 3075A (Alagoas: 09°32'1S / 035°10'6S, 40 m, AKAROA, 1 shell), CMPHRM 3082A (Alagoas: 09°50'7S / 035°42'2W, 27 m, AKAROA, 2 shells), CMPHRM 2676A (Alagoas: 09°41'4S / 035°23'2W, 41 m, AKAROA, 3 shells), CMPHRM 3063A (Amapá: 03°10'30''N / 49°00'18''W, 85 m, GEOMAR II, 1 shell), CMPHRM 3064A (Amapá: 02°29'00''N / 48°30'00''W, 77 m, GEOMAR II, 62 shells), CMPHRM 3061A (Amapá: 02°26'30''N / 48°10'30''W, 90 m, GEOMAR III, 16 shells), CMPHRM 3054A (Pará: 00°48'30''N / 47°05'00''W, 44 m, GEOMAR II, 3 shells), CMPHRM 3060A (Amapá: 04°01'30''N / 49°53'00''W, 96 m, GEOMAR III, 3 shells), CMPHRM 3049A (Pará: 02°01'00''N / 47°32'30''W, 86 m, GEOMAR III, 8 shells), CMPHRM 3062A (Pará: 02°06'00''N / 47°24'00''W, 92 m, GEOMAR III, 9 shells), CMPHRM 3070A (Amapá: 02°02'00''N / 48°10'00''W, 50 m, GEOMAR III, 14 shells), CMPHRM 3067A (Amapá: 04°35'30''N / 50°21'00''W, 104 m, GEOMAR III, 2 shells), CMPHRM 3069A (Amapá: 04°35'00''N / 51°01'00''W, 72 m, GEOMAR III, 11 shells), CMPHRM 3071A (Amapá: 04°39'00''N / 50°53'00''W, 71 m, GEOMAR III, 13 shells), CMPHRM 3072A (Amapá: 01°47'00''N / 47°49'00''W, 61 m, GEOMAR III, 75 shells), CMPHRM 3065A (Amapá: 03°37'00''N / 50°01'00''W, 72 m, GEOMAR III, 32 shells), CMPHRM 3048A (Amapá: 02°27'00''N / 47°45'00''W, 161 m, GEOMAR III, 6 shells), CMPHRM 3066A (Amapá: 04°20'00''N / 50°18'00''W, 90 m, GEOMAR III, 26 shells), CMPHRM 3068A (Amapá: 03°37'00''N / 50°01'00''W, 72 m, GEOMAR III, 7 shells), CMPHRM 3059A (Amapá: 04°51'00''N / 50°51'30''W, 81 m, GEOMAR III, 23 shells), CMPHRM 3099A (Amapá:

02°07'00''N / 48°04'00''W, 63 m, GEOMAR III, 66 shells), CMPHRM 3057A (Amapá: 01°33'00''N / 48°48'00''W, 16 m, GEOMAR III, 1 shell), CMPHRM 3055A (Amapá: 02°51'30''N / 48°37'48''W, 80 m, GEOMAR III, 1 shell), CMPHRM 3056A (Amapá: 03°47'30''N / 49°42'00''W, 95 m, GEOMAR III, 1 shell), CMPHRM 3052A (Pará: 01°39'00''N / 47°57'00''W, 54 m, GEOMAR III, 3 shells), CMPHRM 3050A (Pará: 01°30'00''N / 48°06'00''W, 49 m, GEOMAR III, 3 shells), CMPHRM 3053A (Pará: 01°55'30''N / 47°41'00''W, 57 m, GEOMAR III, 13 shells), CMPHRM 3051A (Amapá: 02°18'00''N / 48°07'30''W, 78 m, GEOMAR III, 10 shells), CMPHRM 3073A (Amapá: 03°44'30''N / 50°07'30''W, 78 m, GEOMAR III, 3 shells), CMPHRM 3058A (Amapá: 03°10'30''N / 49°00'18''W, 85 m, GEOMAR III, 1 shell).

### *Glycymeris longior* (G. B. Sowerby I, 1833) (Fig. 2-C)

Shells of *Glycymeris longior* can be identified by the opisthogyrate umbones, subtrigonal ligament, with its posterior side shorter, smooth outer surface that is marked by fine growth lines, and crenulated inner margin. This species can vary in shell form, sculptures and colors according to the latitudinal gradient (Amaral *et al.*, 2006).

We extend the distribution of this species to Pará and possibly to Amapá, Alagoas and Ceará states (*Glycymeris* cf. *longior*) (Table 1). Penna-Neme (1978), who referred to the work of Parodiz (1962), noted that *G. longior* occurs on the North coast of Brazil, but did not cite collections studied. No studies since Parodiz (1962) have recorded the species in the area.

Material Examined: CMPHRM 3046A (Pará: 00°34'30''N / 47°22'30''W, 24 m, GEOMAR III, 1 shell), CMPHRM 3047A (Alagoas: 09°53'3''S / 35°51'3''W, 14 m, AKAROA, 2 shells), CMPHRM 3121A (Amapá: 04°35'30''N / 50°21'00''W, 104 m, GEOMAR III, 1 shell), CMPHRM 3122A (Amapá: 02°29'00''N / 48°30'00''W, 77 m, GEOMAR II, 4 shells), CMPHRM 3123A, (Amapá: 02°53'00''N / 48°17'00''W, 111 m, GEOMAR II, 1 shell), CMPHRM 3124A (Pará: 01°02'00''N / 47°11'30''W, 48 m, GEOMAR III, 1 shell), CMPHRM 3125A (Amapá: 02°02'00''N / 48°10'00''W, 50 m, GEOMAR III, 1 shell), CMPHRM 3126A (Amapá: 02°27'00''N / 47°45'00''W, 161 m, GEOMAR III, 2 shells), CMPHRM 3127A (Alagoas: 09°53'3''S / 35°51'3''W, 14 m, AKAROA, 4 shells), CMPHRM 3128A (Ceará: 03°39'16,7''S / 38°33'25,8''W, 6 shells), CMPHRM 3129A (Ceará: 02°57'34,031''S / 38°58'47,162''W, 2 shells), CMPHRM 3130A (Ceará: 03°01'45,6''S / 39°02'34,5''W, 24 shells).

***Tucetona pectinata* (Gmelin, 1791)** (Figure 2-D)

Shells of *Tucetona pectinata* are subcircular, with central umbones and a small amphidetic ligament. The outer surface has large ribs and crossed by growth lines. The inner margin is crenulated.

This species was found in the study area before, occurring from Amapá to E. Santo (RIOS 1994; 2009). Found in depths of 25 m to 153 m, it is a rare species (Amaral *et al*, 2006).

Material Examined: CMPHRM 3234A (Ceará: Paracuru, 9 shells), CMPHRM 3232A (Ceará: 03°04'04,3''S / 38°51'54,0''W, 12 shells), CMPHRM 3239A (Ceará: 03°07'54,2''S / 38°49'13,5''W, 27 shells), CMPHRM 3235A (Ceará: 03°08'21,7''S / 38°49'54,1''W, 2 shells), CMPHRM 3279A (Alagoas: 09°20'6S / 035°20'7W, 20 m, AKAROA, 1 shell), CMPHRM 3237A (Ceará: Paracuru, 4 shells), CMPHRM 3038A (Ceará: Paracuru, 6 shells ) CMPHRM 3247A (Alagoas: 09°58'2S / 035°52'7W, 21 m, AKAROA, 1 shell), CMPHRM 3240A (Ceará: 02°58'36,1''S / 38°57'33,9''W, 7 shells), CMPHRM 3236A (Ceará: 03°02'00,330''S / 39°02'15,570''W, 5 shells), CMPHRM 3276A (Alagoas: 10°21'2S / 036°05'5W, 27 m, AKAROA, 1 shell), CMPHRM 3261A (Alagoas: 09°37'1S / 035°25'7W, 30 m, AKAROA, 1 shell), CMPHRM 3262A (Alagoas: 09°50'7S / 035°37'2W, 33 m, AKAROA, 2 shells), CMPHRM 3253A (Alagoas: 09°11'1S / 035°17'0W, 19 m, AKAROA, 3 shells) , CMPHRM 3278A (Alagoas: 10°33'7S / 036°12'0W, 27 m, AKAROA, 5 shells), CMPHRM 3259A (Alagoas: 08°56'2S / 034°57'7W, 36 m, AKAROA, 4 shells), CMPHRM 3268A (Alagoas: 09°37'1S / 035°15'7W, 36 m, AKAROA, 14 shells), CMPHRM 3266A (Alagoas: 10°30'2S / 036°05'5W, 90 m, AKAROA, 4 shells), CMPHRM 3267A (Alagoas: 09°27'8S / 035°27'7W, 17 m, AKAROA, 1 shell), CMPHRM 3254A (Alagoas: 09°15'7S / 035°14'2W, 35 m, AKAROA, 1 shell), CMPHRM 3241A (Ceará: 03°05'22,510''S / 38°47'53,864''W, 2 shells) CMPHRM 3274A (Alagoas: 09°01'5S / 035°01'3W, 36 m, AKAROA, 4 shells), CMPHRM 3251A (Alagoas: 09°41'4S / 035°28'2W, 36 m, AKAROA, 5 shells), CMPHRM 3275A (Alagoas: 09°07'2S / 034°58'7W, 42 m, AKAROA, 2 shell), CMPHRM 3250A (Alagoas: 09°01'0S / 034°51'2W, 46 m, AKAROA, 1 shell), CMPHRM 3256A (Alagoas: 09°50'7S / 035°42'2W, 27 m, AKAROA, 3 shells), CMPHRM 3250A (Alagoas: 09°46'2S / 035°29'7W, 41 m, AKAROA, 1 shell), CMPHRM 2680A [LMDB 2670] (Ceará: Icapuí, Octopus fishery, 2 shells), CMPHRM 3249A (Alagoas: 09°41'4S / 035°23'2W, 41 m, AKAROA, 4 shells), CMPHRM 3245A (Ceará: 03°07'55,402''S

/ 38°49'25,939''W, 2 shells), CMPHRM 3272A (Alagoas: 09°32'1S / 035°30'6W, 16 m, AKAROA, 1 shell), CMPHRM 3271A (Alagoas: 09°15'7S / 035°09'2W, 21 m, AKAROA, 1 shell), CMPHRM 3233A (Ceará: Pecém, 2 shells), CMPHRM 3242A (Ceará: 02°58'01,4''S / 38°58'30,7''W, 9 shells ) CMPHRM3243A (Ceará:03°3'12,4''S / 38°55'57,0''W, 11 shells), CMPHRM 3244A (Ceará: 03°07'52,045''S / 38°49'41,492''W, 2 shells), CMPHRM 3033A [LMDB 1752] (Maranhão: 01°21,0'S / 43°34,3'W, MAR XV, 1 shell), CMPHRM 3041A [LMDB598] (Ceará: 03°37,0'S / 38°15,5'W, MAR XV, 6 shells), CMPHRM 3040A [LMDB 671] (Ceará: 01° 36,5'S / 38° 42'W, 50 m, MAR XV, 4 shells), CMPHRM 3034A [LMDB 970] (Maranhão: 01°21,0'S / 43°34,3'W, MAR XV,1 shell), CMPHRM 3037A [LMDB 662] (Maranhão: 01°20,2'S / 43°33,7'W, 53 m, MAR XV, 1 shell), CMPHRM 3035A [LMDB 682] (Maranhão: 01°36,6'S / 43°32,1'W, 45 m, MAR XV, 1 shell), CMPHRM 3039A [LMDB936] (Ceará: 02°41,6'S / 39°30,1'W, 29m, MAR XV, 3 shells), CMPHRM 3036A [LMDB 940] (Ceará: 03°35,3'S / 38°10,8'W, MAR XV, 12 shells ) CMPHRM 3038A [LMDB 482] (Ceará: Paracuru, 2 shells), CMPHRM 3042A [LMDB 487] (Ceará: 02° 36,5'S / 39° 25,2'W, 2 shells), CMPHRM 3265A (Alagoas: 09°07'1S / 035°03'7W, 36 m, AKAROA, 1 shell), CMPHRM 3260A (Alagoas: 10°35'0S / 036°07'0W, 110 m, AKAROA, 1 shell), CMPHRM 3264A (Alagoas: 09°06'9S / 035°08'7W, 36 m, AKAROA, 1 shell), CMPHRM 3263A (Alagoas: 09°53'3S / 035°46'3W, 20 m, AKAROA, 4 shells ) CMPHRM 3258A (Alagoas: 09°46'2S / 035°19'7W, 67 m, AKAROA, 2 shells), CMPHRM 3246A (Alagoas: 09°24'2S / 035°09'2W , 36 m, AKAROA, 1 shell), CMPHRM 3252A (Alagoas: 09°01'0S / 034°51'2W, 46 m, AKAROA, 3 shells), CMPHRM 3277A (Alagoas: 09°20'6S / 035°00'7W, 53 m, AKAROA, 4 shells), CMPHRM 3269A (Alagoas: 09°11'1S / 035°07'0W, 32 m, AKAROA, 2 shells), CMPHRM 3273A (Alagoas: 10°02'7S / 035°48'0W, 36 m, AKAROA, 5 shells), CMPHRM 3255A (Alagoas: 09°46'2S / 035°34'7W, 31 m, AKAROA, 2 shells) , CMPHRM 3248A (Alagoas: 10°05'7S / 035°52'2W, 27 m, AKAROA, 2 shells), CMPHRM 3270A (Alagoas: 09°32'1S / 035°20'6W, 31 m, AKAROA, 2 shells), CMPHRM 3257A (Alagoas: 09°32'1S / 035°10'6W, 40 m, AKAROA, 2 shells), CMPHRM 3205A (Amapá: 04°18'48''N / 05°17'06''W, 89 m, GEOMAR II, 3 shells), CMPHRM 3199A (Pará: 00°48'30''N / 47°05'00''W, 44 m, GEOMAR II, 4 shells), CMPHRM 3229A (Amapá: 03°44'30''N / 50°07'30''W, 78 m, GEOMAR III, 632 shells), CMPHRM 3221A (01°52'30''N / 48°21'00''W, 44 m, GEOMAR III, 1 shell), CMPHRM 3190A

(Pará: 00°48'30"N / 47°05'00"W, 44 m, GEOMAR II, 2 shells), CMPHRM 3230A (Amapá: 03°55'30"N / 49°21'30"W, 95 m, GEOMAR III, 21 shells), CMPHRM 3206A (Pará: 01°46'00"N / 47°14'00"W, 77 m, GEOMAR II, 4 shells), CMPHRM 3227A (Amapá: 02°02'00"N / 48°10'00"W, 50 m, GEOMAR III, 4 shells), CMPHRM 3226A (Amapá: 02°29'00"N / 48°30'00"W, 77 m, GEOMAR II, 1 shell), CMPHRM 3222A (Amapá: 04°10'00"N / 49°43'00"W, 108 m, GEOMAR III, 5 shells), CMPHRM 3210A (Amapá: 03°10'30"N / 49°00'18"W, 85 m, GEOMAR II, 87 shells), CMPHRM 3215A (Amapá: 04°18'48"N / 05°17'06"W, 89 m, GEOMAR II, 11 shells), CMPHRM 3193A (Amapá: 02°51'30"N / 48°37'48"W, 80 m, GEOMAR II, 17 shells), CMPHRM 3208A (Amapá: 02°53'00"N / 48°17'00"W, 111 m, GEOMAR II, 19 shells), CMPHRM 3223A (Amapá: 02°06'30"N / 48°24'00"W, 50 m, GEOMAR III, 19 shells), CMPHRM 3204A (Amapá: 02°29'00"N / 48°30'00"W, 77 m, GEOMAR II, 144 shells), CMPHRM 3220A (Amapá: 02°53'00"N / 48°17'00"W, 111 m, GEOMAR II, 5 shells), CMPHRM 3228A (Amapá: 02°26'30"N / 48°10'30"S, 90 m, GEOMAR III, 27 shells), CMPHRM 3224A (Amapá: 04°01'30"N / 49°53'00"W, 96 m, GEOMAR III, 11 shells), CMPHRM 3200A (Pará: 02°01'00"N / 47°32'30"W, 86 m, GEOMAR III, 14 shells), CMPHRM 3202A (Pará: 02°06'00"N / 47°24'00"W, 92 m, GEOMAR III, 22 shells), CMPHRM 3225A (Amapá: 02°02'00"N / 48°10'00"W, 50 m, GEOMAR III, 35 shells), CMPHRM 3203A (Amapá: 04°35'30"N / 50°21'00"W, 104 m, GEOMAR III, 12 shells), CMPHRM 3196A (Amapá: 04°35'00"N / 51°01'00"W, 72 m, GEOMAR III, 14 shells), CMPHRM 3189A (Amapá: 02°02'00"N / 48°10'00"W, 50 m, GEOMAR III, 1 shell), CMPHRM 3218A (Amapá: 04°39'00"N / 50°53'00"W, 71 m, GEOMAR III, 41 shells), CMPHRM 3209A (Amapá: 01°47'00"N / 47°49'00"W, 61 m, GEOMAR III, 127 shells), CMPHRM 3212A (Amapá: 03°37'00"N / 50°01'00"W, 72 m, GEOMAR III, 262 shells), CMPHRM 3201A (Amapá: 02°27'00"N / 47°45'00"W, 161 m, GEOMAR III, 24 shells), CMPHRM 3207A (Amapá: 04°20'00"N / 50°18'00"W, 90 m, GEOMAR III, 82 shells), CMPHRM 3217A (Amapá: 04°26'00"N / 50°25'00"W, 79 m, GEOMAR III, 39 shells), CMPHRM 3214A (Amapá: 03°37'00"N / 50°01'00"W, 72 m, GEOMAR III, 25 shells), CMPHRM 3216A (Amapá: 04°51'00"N / 50°51'30"W, 81 m, GEOMAR III, 131 shells), CMPHRM 3219A (Amapá: 02°07'00"N / 48°04'00"W, 63 m, GEOMAR III, 763 shells), CMPHRM 3185A (Amapá: 02°16'00"N / 47°47'00"W, 84 m, GEOMAR III, 1 shell), CMPHRM 3191A (Amapá: 01°33'00"N / 48°48'00"W, 16 m, GEOMAR III, 2 shells), CMPHRM

3188A (Amapá: 04°52'00"N / 50°31'30"W, 118 m, GEOMAR III, 3 shells), CMPHRM 3194A (Pará: 01°39'00"N / 47°57'00"W, 54 m, GEOMAR III, 4 shells), CMPHRM 3187A (Pará: 01°30'00"N / 48°06'00"W, 49 m, GEOMAR III, 4 shells), CMPHRM 3197A (Pará: 01°02'00"N / 47°11'30"W, 48 m, GEOMAR III, 2 shells), CMPHRM 3192A (Pará: 01°55'30"N / 47°41'00"W, 57 m, GEOMAR III, 56 shells), CMPHRM 3198A (Amapá: 02°18'00"N / 48°07'30"W, 78 m, GEOMAR III, 46 shells), CMPHRM 3186A (Amapá: 02°51'30"N / 48°37'48"W, 80 m, GEOMAR II, 1 shell), CMPHRM 3195A (Amapá: 02°51'30"N / 48°37'48"W, 80 m, GEOMAR II, 4 shells), CMPHRM 3031A (Amapá: 02°53'00"N / 48°17'00"W, 111 m, GEOMAR II, 2 shells), CMPHRM 3211A (Pará: 00°48'30"N / 47°05'00"W, 44 m, GEOMAR II, 3 shells) and CMPHRM 3213A (Amapá: 03°10'30"N / 49°00'18"W, 85 m, GEOMAR II, 1 shell).

#### *Glycymeris decussata* (Linnaeus, 1758) (Fig. 2-E)

Shells of *Glycymeris decussata* are subcircular with slight angularity in posterior region. The umbo is opisthogyrate and the ligament is opisthodontic. The outer surface has cancellate ribs and the inner margin is crenulated. This species previously found in the study areas (RIOS 1994; 2009) (Table 1). Its shell features are different from the other species of Glycymerididae that occur in Brazil, mainly for your decussate ornamentation.

Material examined: CMPHRM 3140A (Alagoas: 09°15'7S / 034°59'2W, 49 m, AKAROA, 1 shell), CMPHRM 3141A (Alagoas: 10°02'7N / 035°48'0S, 36 m, AKAROA, 1 shell), CMPHRM 3142A (Alagoas: 09°53'3N / 035°51'3W, 14 m, AKAROA, 1 shell), CMPHRM 3133A (Ceará: 02°57'51,453"S / 38°58'18,843"W, 1 shell), CMPHRM 3132A (Ceará: 03°02'01,7"S / 39°03'00,05"W, 2 shells), CMPHRM 3137A (Ceará: 03°40'4,3"S / 38°32'06"W, 2 shells) CMPHRM 3136A (Ceará: Paracuru, 1 shell), CMPHRM 3152A (Alagoas: 10°05'5S / 035°57'2W, 27 m, AKAROA, 1 shell), CMPHRM 3147A (Alagoas: 09°24'2S / 035°09'2W, 36 m, AKAROA, 1 shell), CMPHRM 3150A (Alagoas: 09°20'6S / 035°00'7W, 53 m, AKAROA, 2 shells), CMPHRM 3146A (Alagoas: 09°32'1S / 035°15'6W, 36 m, AKAROA, 1 shell), CMPHRM 3148A (Alagoas: 09°50'7S / 035°32'2W, 41 m, AKAROA, 1 shell), CMPHRM 3144A (Alagoas: 09°27'8S / 035°27'7W, 17 m, AKAROA, 5 shells), CMPHRM 3149A (Alagoas: 09°24'2S / 035°04'2W, 44 m, AKAROA, 2 shells), CMPHRM 3145A (Alagoas: 09°41'4S / 035°23'2W, 41 m, AKAROA, 1 shell),



CMPHRM 3151A (Alagoas: 09°01'0S / 034°51'2W, 46 m, AKAROA, AKAROA, 1 shell), CMPHRM 3135A (Ceará: 03°08'09,940''S / 38°48'37,799''W, 2 shells), CMPHRM 3153A (Alagoas: 09°37'1S / 035°10'7W, 48 m, AKAROA, 1 shell), CMPHRM 3154A (Alagoas: 09°15'7S / 035°04'2W, 41 m, AKAROA, 1 shell), CMPHRM 3143A (Alagoas: 10°08'3S / 035°56'5W, 27 m, AKAROA, 1 shell), CMPHRM 3156A (Alagoas: 09°15'7s / 035°14'2W, 35 m, AKAROA, 3 shells), CMPHRM 3134A (Ceará: 03°08'05,391''S / 38°48'53,714''W, 2 shells), CMPHRM 3131A (Ceará: 02°58'01,4''S / 38°58'30,7''W 1 shell), CMPHRM 3138A (Ceará: 03°39'16,7''S / 38°33'25,8''W, 5 shells), CMPHRM 3285A [616 LMDB ] (Ceará: 03°37,0'S / 38°15,5'W, 27 m, MAR XV, 2 shells), CMPHRM 2675A [LMDB 665] (Ceará: 01°36,5'S / 38°42'W, 50 m, MAR XV, 1 shell), CMPHRM 3282A [LMDB 971] (Maranhão: 01°36,6'S / 43°32,1'W, MAR XV, 2 shells), CMPHRM 3284A [LMDB 597] (Ceará: 02°46,2'S / 39°30,1'W, 22 m, MAR XV, 2 shells), CMPHRM 3283A [LMDB 935] (Ceará: 02°41,6'S / 39°30,1'W, 29 m, MAR XVI shell), CMPHRM 2674A [LMDB 654] (Maranhão: 01° 20,2'S / 43° 33,7'W, 53m, MAR XV, 1 shell), CMPHRM 2681A [LMDB 2669] (Ceará: Icapuí, Octopus Fishery, 1 shell), CMPHRM 3171A (Amapá: 03°44'30''N / 50°07'30''W, 78 m, GEOMAR III, 7 shells), CMPHRM 3168A (Pará: 00°48'30''N / 47°05'00''W, 44 m, GEOMAR II, 12 shells), CMPHRM 3174A (Amapá: 03°55'30''S / 49°21'30''W, 95 m, GEOMAR III, 2 shells), CMPHRM 3181A (Pará: 01°46'00''N / 47°14'00''W, 77 m, GEOMAR II, 1 shell), CMPHRM 3160A (Amapá: 02°24'00''N / 48°24'00''W, 85 m, GEOMAR II, 2 shells), CMPHRM 3159A (Amapá: 02°51'30''N / 48°37'48''W, 80 m, GEOMAR II, 12 shells), CMPHRM 3173A (Amapá: 02°29'00''N / 48°30'00''W, 77 m, GEOMAR II, 18 shells), CMPHRM 3164A (Amapá:

02°26'30''N / 48°10'30''W, 90 m, GEOMAR III, 2 shells), CMPHRM 3163A (Pará: 02°06'00''N / 47°24'00''W, 92 m, GEOMAR III, 6 shells), CMPHRM 3179A (Amapá: 03°10'30''N / 49°00'18''W, GEOMAR II, 85 m, 1 shell), CMPHRM 3161A (Amapá: 04°39'00''N / 50°53'00''W, 71 m, GEOMAR III, 6 shells), CMPHRM 3162A (Amapá: 01°47'00''N / 47°49'00''W, 61 m, GEOMAR III, 8 shells), CMPHRM 3167A (Amapá: 03°37'00''N / 50°01'00''W, 72 m, GEOMAR III, 11 shells), CMPHRM 3169A (Amapá: 02°27'00''N / 47°45'00''W, 161 m, GEOMAR III, 2 shells), CMPHRM 3180A (Amapá: 04°20'00''N / 50°18'00''W, 90 m, GEOMAR III, 6 shells), CMPHRM 3170A (Amapá: 04°26'00''N / 50°25'00''W, 79 m, GEOMAR III, 2 shells), CMPHRM 3165A (Amapá: 03°37'00''N / 50°01'00''W, 72 m, GEOMAR III, 2 shells), CMPHRM 3175A (Amapá: 04°51'00''N / 50°51'30''W, 81 m, GEOMAR III, 3 shells), CMPHRM 3158A (Amapá: 02°07'00''N / 48°04'00''W, 63 m, GEOMAR III, 30 shells), CMPHRM 3177A (Amapá: 01°33'00''N / 48°48'00''W, 16 m, GEOMAR III, 1 shell), CMPHRM 3176A (Amapá: 02°09'00''N / 47°25'30''W, 92 m, GEOMAR III, 1 shell), CMPHRM 3184A (Pará: 00°34'30''N / 47°22'30''W, 24 m, GEOMAR III, 1 shell), CMPHRM 3178A (Pará: 01°02'00''N / 47°11'30''W, 48 m, GEOMAR III, 4 shells), CMPHRM 3183A (Amapá: 01°55'30''N / 47°41'00''W, 57 m, GEOMAR III, 9 shells), CMPHRM 3182A (Amapá: 02°18'00''N / 48°07'30''W, 78 m, GEOMAR III, 1 shell), CMPHRM 3157A (Amapá: 02°51'30''N / 48°37'48''W, 80 m, GEOMAR II, 1 shell), CMPHRM 3166A (Pará: 00°48'30''N / 47°05'00''W, 44 m, GEOMAR II, 1 shell) and CMPHRM 3172A (Pará: 00°48'30''N / 47°05'00''W, 44 m, GEOMAR II, 1 shell).

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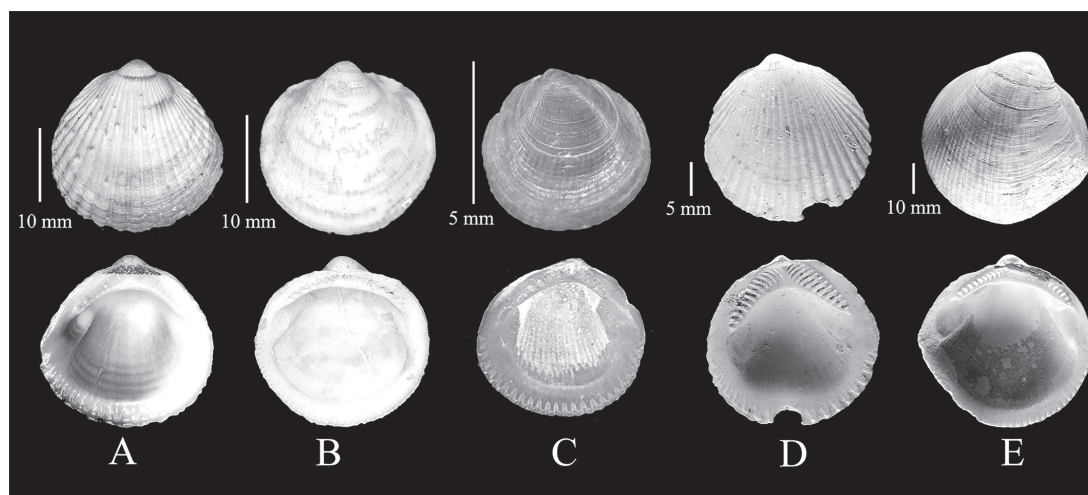


Figure 2 - Glycymerididae species from North and Northeast Brazil: (A) *Glycymeris undata*, (B) *Glycymeris tellinaeformis*, (C) *Glycymeris longior*, (D) *Tucetona pectinata* and (E) *Glycymeris decussata*.

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