

Mollusks from Bojórquez Lagoon, Quintana Roo, Mexico: ecological and distributional considerations.

Moluscos de la Laguna Bojórquez, Quintana Roo, México: aspectos de su ecología y distribución.

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Abstract

Mollusks collected in Bojórquez Lagoon, Mexican Caribbean included 42780 individuals in two classes, 39 families, 52 genera and 65 species. Characteristic families were Marginellidae, Turridae, Phasianellidae, Rissoidae, Lucinidae and Veneridae. Most species belonged to *Tricolia*, and *Tellina*. *Tricolia thalassicola*, *Caecum nitidum*, *Brachidontes exustus* and *Chione cancellata* are representative for the zone. Herbivorous and carnivorous gastropod species and filter feeders bivalves were the dominant feeding guilds; 64.5% of the gastropods live in euhaline waters and 57.1% of bivalves in polyhaline. Epifaunal gastropods dominated over infaunal bivalves. A comparison between mollusk of the Gulf of Mexico coastal lagoons and Bojórquez Lagoon was made. The general distribution of the species in the West Atlantic is reviewed. Thirteen species are new registries in Bojórquez Lagoon.

Resumen

Los moluscos recolectados en la Laguna Bojórquez, Caribe Mexicano, incluyen 42780 ejemplares de dos clases, 39 familias, 52 géneros y 65 especies. Las familias características fueron Marginellidae, Turridae, Phasianellidae, Rissoidae, Lucinidae y Veneridae. Muchas de las especies pertenecen a los géneros *Tricolia* y *Tellina*. Las especies representativas de la zona fueron *Tricolia thalassicola*, *Caecum nitidum*, *Brachidontes exustus* y *Chione cancellata*. Las especies dominantes de gasterópodos tienen hábitos alimentarios herbívoro y carnívoro y los bivalvos filtrador. El 64.5% de gasterópodos viven en aguas euhalinas y el 57.1% de bivalvos en polihalinas. Los gasterópodos epifaunales dominaron sobre los bivalvos infaunales. Se compara la composición de especies con la de otras lagunas del Golfo de México. Se proporciona la distribución general de las especies en el Atlántico Occidental. Trece especies son nuevos registros en la Laguna Bojórquez.

Key words: Mollusks, Systematics, Distribution, Ecology, Bojórquez Lagoon, Cancún, Mexico.

Palabras clave: Moluscos, Sistemática, Distribución, Ecología, Laguna Bojórquez, Cancún, México.

INTRODUCTION

One of the most developed zones in Mexico is the Cancún tourist complex, whose hub has developed on the eastern shore of the Nichupté lagoonal system and primarily on the Bojórquez Lagoon. In this area the ecological impact caused by development is most apparent. Changes in the submerged vegetation have been observed, as well as increases in turbidity and accumulation of organic matter. Benthic communities, and in particular

mollusks, are one of the most abundant benthic groups whose knowledge in the zone is scarce. CARNES (1974) did the only study before this in the South Nichupté Lagoonal System. The ecological distribution of mollusks due to the wide habitats they live made them an important group of study.

The main goal of this paper is to give the present mollusks that inhabit Bojórquez Lagoon and to provide information about the ecological distribution of the species. An analysis about species distribution in the Western Atlantic is done.

Study Area.

The area included in this study is situated in the northeast section of the Yucatán Peninsula and forms part of the Nichupté Lagoonal System (Fig. 1).

The surface area of the Bojórquez Lagoon is 2.5 km². Exchange with the Nichupté Lagoon takes place by two channels located on the western shore. The depth in the lagoon ranges from 0.9 m, in areas close to the south channel, to 2.0 m in the navigational chan-

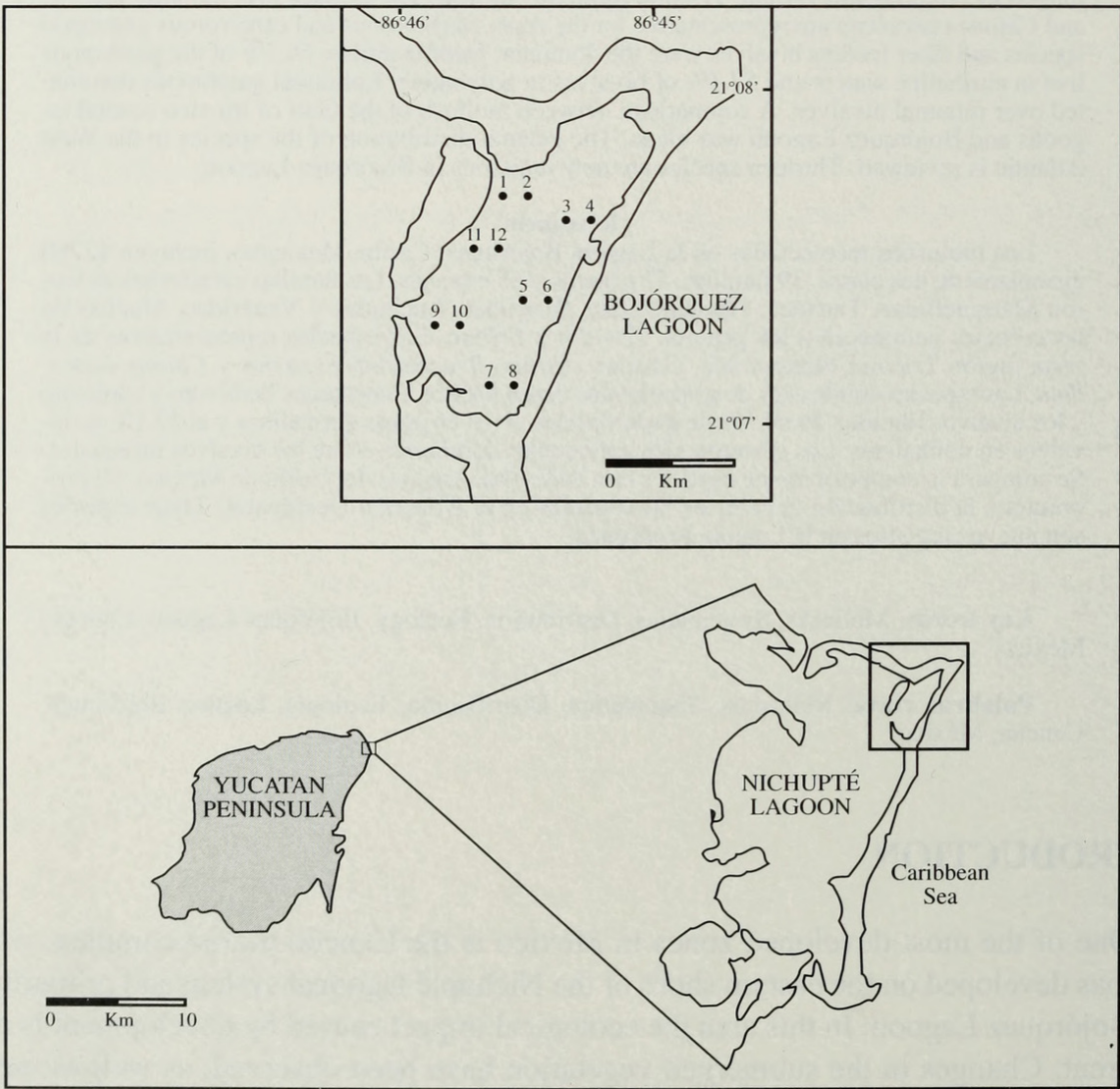


Fig. 1. Study area. Nichupté Lagoonal System and Bojórquez Lagoon sampling stations.

nel in the western area. Cancún island, where the tourism center has developed, separates the Lagoon from the Caribbean Sea.

There are three climatic periods in the area: the dry season (between February and May), the rainy season (between July and September) and the "Nortes" season a period of winds prevailing from the North (between October and January). The hurricane season is from July to October.

MATERIALS AND METHODS

Data were collected during the dry season in May of 1991 at 12 field sites (Fig. 1). Temperature, salinity and depth of all stations were measured during the process of obtaining dredge samples. Temperature and salinity were recorded with a Kahlsico field salinometer, and depth recordings were taken with a lead line. Sediment samples for biological analysis were obtained with a Van Veen dredge with a 2 liter capacity.

Sediment samples were sifted through a 0.1 mm screen and fixed in a formaldehyde solution. The volume of each sample was 0.5 liter of sifted sediment. Environmental conditions registered in the study area are concentrated in Table 1.

Mollusks were preserved in 70% ethyl alcohol.

The identity of the mollusks was determined by reference to WARMKE AND ABBOTT (1961), ABBOTT (1974), MORRIS (1975), ANDREWS (1977), REHDER (1981), VOKES AND VOKES (1983) and JONG AND COOMANS (1988). Specimens are deposited to the Mollusk Collection of the University of Mexico's Institute for Marine Science and Limnology, Puerto Morelos Marine Station.

Distributional ranges of mollusks were taken principally from WEISBORD (1926), JAUME (1947), WARMKE AND ABBOTT (1961), EKDALE (1974), ABBOTT (1974), MORRIS

Station	Prof. (m)	Temp. C	Salinity
1	1.1	32.1	34
2	1.4	31.8	36
3	1.2	31.5	36
4	1.0	32.7	36
5	0.9	32.2	35
6	1.5	32.7	35
7	1.1	32.0	36
8	1.4	31.9	35
9	1.7	31.6	36
10	1.0	32.6	36
11	0.9	32.3	36
12	2.0	32.6	36

Table 1. Environmental conditions during the study.

Tabla 1. Condiciones ambientales durante el estudio.

(1975), ANDREWS (1977), TREECE (1980), REHDER (1981), VOKES AND VOKES (1983), and GONZÁLEZ, CHÁVEZ, DE LA CRUZ AND TORRUCO (1991).

A particular attention to registries in Mexican coasts is made.

In the comparison of the species founded here with 10 coastal lagoons of the Gulf of Mexico we take in consideration the works of GARCÍA-CUBAS (1981), ANTOLÍ AND GARCÍA-CUBAS (1985), FLORES-ANDOLAIS, GARCÍA-CUBAS AND TOLEDANO (1988), COVARRUBIAS (1988), REGUERO AND GARCÍA-CUBAS (1989), GARCÍA-CUBAS, ESCOBAR, GONZÁLEZ-ANIA AND REGUERO (1990), GARCÍA-CUBAS AND REGUERO (1990), REGUERO, GARCÍA-CUBAS AND ZUÑIGA (1991), GARCÍA-CUBAS, REGUERO AND ELIZARRARÁS (1992) CRUZ-ÁBREGO, FLORES-ANDOLAIS AND TOLEDANO-GRANADOS (In press).

RESULTS

Faunal Description.

Seven orders, 39 families and 65 species of mollusks were identified in 12 dredge samples containing 42,780 mollusks. Five orders, 31 families, 44 genera, 55 species and 34,138 individuals belonged to Class Gastropoda, while two orders, 7 families, 10 genera and 10 species belonged to Class Bivalvia. The gastropod families best represented are Marginellidae and Turridae with 5 species each and Phasianellidae and Rissoiidae with 4. Bivalves families best represented are Lucinidae and Veneridae, with two species each. The best represented gastropods genera is *Tricolia* with four species (Table 2). Eighteen families are represented by only one specie. Among the bivalves the genera with more species was *Tellina* with 2 species. Four bivalve families are represented by only one species (Table 2).

Feeding Guilds and Life Forms.

Both gastropods and bivalves exhibit different feeding guilds and life forms. The gastropods were grouped into six feeding guilds. Among the primary consumers, herbivorous comprise the dominant feeding guild (28.5%), followed by deposit feeders

CLASS	ORDER	FAMILIES	GENERA	SPECIES
GASTROPODA	Archaeogastropoda	5	5	9
	Mesogastropoda	13	17	19
	Neogastropoda	9	17	21
	Pyramidelloida	1	2	2
	Cephalaspidea	3	3	3
BIVALVIA	Mytiloida	1	1	1
	Veneroida	7	9	10

Table 2. General composition of Molluscan fauna.
Tabla 2. Composicion de la fauna de moluscos.

FAMILY	FEEDING GUILDS						LIFE FORM			SALINITY ppm		HABITAT
	F	D	H	P	C-C	C	E	SI	I	18-30	30-40	
GASTROPODS												
ACMAEIDAE			•				•				•	S,SM
FISSURELLIDAE			•				•				•	R
TROCHIDAE			•				•				•	R
PHASIANELLIDAE			•				•			•	•	S,SP,R,C
NERITIDAE			•				•			•	•	SP
RISSOIDAE			•					•		•	•	S,G,US,SP
ASSIMINEIDAE		•					•			•	•	P,R
TRUNCATELLIDAE										•	•	M,R
RISOELLIDAE			•				•			•	•	SP
VITRINELLIDAE		•					•			•	•	SP,S
CAECIDAE	•						•			•	•	S
MODULIDAE									•		•	SP,S,R
POTAMIDIDAE								•		•	•	M,SP
CERITHIIDAE		•					•			•	•	SP,S
CERITHIOPSIDAE						•	•				•	R,S
TRIPHORIDAE						•	•				•	US
EULIMIDAE				•			•				•	S,C
CALYPTRAEIDAE	•						•				•	R,M
COLUMBELLIDAE						•	•				•	SP
BUCCINIDAE						•	•				•	R,S,G
NASSARIIDAE						•		•		•	•	S,SM
FASCIOLARIIDAE						•	•				•	S,M
OLIVIDAE					•			•			•	S
MITRIDAE						•			•		•	S,C,R
COSTELLARIIDAE						•	•		•		•	S
MARGINELLIDAE				•			•				•	S,A,R
TURRIDAE						•	•				•	S
PYRAMIDELLIDAE				•			•			•	•	M,W,S,E,T
SCAPHANDRIDAE						•			•		•	S
BULLIDAE						•		•			•	S
ATYIDAE						•		•			•	R
BIVALVES												
MYTILIDAE	•						•				•	A,R
LUCINIDAE	•						•			•	•	S,M
CARDITIDAE	•						•				•	R,G,S
CARDIIDAE									•		•	S,SM
TELLINIDAE		•							•	•	•	S OR M
SEMELIDAE									•		•	M
VENERIDAE	•								•	•	•	S or M

FEEDING GUILDSLIFE FORMSHABITAT

F= Filter Feeders E= EpifaunalA= AlgaeS= Sand

D= Deposit FeedersSI= SemifaunalC= CoralsSM= Sandy Muddy

H= Herbivorous I= InfaunalE= EchinodermsSP= Submerged Plants

P= Parasites G= GravelT= Tunicates

C-C= Necrophagous M= MudUS= Under Stones

C= Carnivorous R= RocksW= Worms

Table 3. Feeding guilds and ecological necessities.
Tabla 3. Hábitos alimenticios y requerimientos ecológicos.

(15.2%) and filter feeders (6.1%). At the secondary consumer level, carnivores dominate the fauna (28.5%) followed by scavengers (15.2%) and parasites (6.1%).

Among the bivalves, filter feeders (85.7%) dominated over deposit feeders. Gastropods epifaunal forms comprise the 67.7 percent of the species total, followed by seminafaunal (19.4%) and infaunal species (12.9%). Among bivalves infaunal forms (57.14%) dominated over epifaunal (42.86%) and seminafaunal families (Table 3).

Habitat.

A high percentage of gastropods families (64.52%) can be found in marine waters and only 35.48% in brackish and marine waters. The presence of brackish and marine families between bivalves was higher (57.14%) than marine (42.86%). In general the mollusks collected here habit in sand sediment, mud, gravel and rocks, among marine plants (algae and seagrasses) and occasionally over other mollusks, tunicates, sponges and echinoderms (Table 3).

The 65 species collected in Bojórquez Lagoon are listed in Table 4.

Distribution.

The next 13 species were recognized for the first time at Bojórquez lagoon: *Assimineer gerhardtae* Jong and Coomans 1988, *Caecum floridanum* Stimpson 1855, *Modulus modulus* (Linné, 1758), *Anachis sparsa* (Reeve, 1859), *Mitrella* sp, *Cantharus multangulus* (Philippi, 1848), *Olivella perplexa* Olsson 1856, *Vexillum sykesi* McGinty 1955, *Prunum amabilis* (Rehfield, 1852), *Pilsbryspira leucocyma* (Dall, 1883), *Pyrgocythara filosa* Rehder 1943, *Pyrgocythara plicosa* (C. B. Adams, 1850) and *Cumingia tellinoides* (Conrad, 1831).

The results of the comparison of the species composition from Bojórquez Lagoon and other studies made at Yucatán Peninsula and south of Nichupté follows.

Eighteen species (28.15%) were common between this study and CARNES (1974). The species in common with VOKES AND VOKES (1988) at the Yucatán Peninsula were 56 (86.5%) and only 9 (14%) were similar to GONZÁLEZ *ET AL.* (1991).

Twenty two species were founded in common with the Gulf of Mexico lagoons. From south to north 16 species were common with Términos Lagoon, three with Mecoacán, only one with Tupilco-Ostion system, 11 with Carmen y Machona, one with Alvarado and six with Camaronera. Five species were common with La Mancha, and Chica y Grande, nine species with Tampamachoco, eight with Tamiahua and only six with San Andrés (Table 4).

In these group 13 species have wide distributional range from Brazil to North Carolina. *Odostomia laevigata* (Orbigny, 1842), *Cerithium eburneum* Bruguière, 1792, *Lucina nassula* (Conrad, 1846) and *Vitrinella helicoidea* C.B. Adams, 1850 distributes from the West Indies to Quintana Roo and to Florida. Mexican registries of *C. eburneum* were restricted to Yucatán Peninsula, this specie was listed to Términos Lagoon.

Although range distribution of *Caecum nitidum* Stimpson, 1815, and *Crepidula maculosa* Conrad, 1846 includes the Gulf of Mexico, they were only identified at Términos Lagoon.

COASTAL LAGOONS	S.A.	Tami.	Tamp.	CyG	LM	Cam.	Alv.	CyM	T.O.	Mec.	Ter.
GASTROPODS											
<i>Patelloida pustulata</i> (Helbling)											
<i>Diodora cayenensis</i> (Lamarck, 1822)									•		•
<i>Diodora listeri</i> (Orbigny, 1842)											
<i>Tegula fasciata</i> Born, 1778											•
<i>Tricolia affinis</i> (C.B. Adams, 1850)											
<i>Tricolia affinis cruenta</i> Robertson, 1958											
<i>Tricolia bella</i> (M. Smith, 1937)											
<i>Tricolia thalassicola</i> Robertson, 1958											
<i>Smaragdia viridis</i> (Linné, 1758)											
<i>Alvania auberiana</i> Orbigny, 1842											
<i>Zebina browniana</i> (Orbigny, 1842)											
<i>Rissoina cancellata</i> Philippi, 1847											
<i>Rissoina multicostata</i> (C.B. Adams, 1850)											
<i>Assiminea gerdhartae</i> Jong and Coomans, 1988											
<i>Truncatella caribaeensis</i> Reeve, 1842					•		•				•
<i>Rissoella caribaea</i> Rehder, 1943											
<i>Vitrinella helicoidea</i> C.B. Adams, 1850	•						•	•		•	
<i>Caecum floridanum</i> Stimpson, 1815											
<i>Caecum nitidum</i> Stimpson, 1815											
<i>Modulus modulus</i> Linné, 1758											
<i>Cerithidea costata</i> (da Costa, 1778)											
<i>Cerithium eburneum</i> Bruguière, 1792											•
<i>Bittium varium</i> (Pfeiffer, 1840)	•	•		•	•	•	•	•	•	•	•
<i>Retilaskeya emersoni</i> (C.B. Adams, 1838)									•		•
<i>Cerithiopsis greenii</i> (C.B. Adams, 1839)				•				•	•		•
<i>Marshallora nigrocincta</i> (C.B. Adams, 1839)									•	•	
<i>Melanella jamaicensis</i> (Cantraine, 1845)											
<i>Crepidula maculosa</i> Conrad, 1846											•
<i>Collumbella rusticoides</i> Heilprin, 1887											
<i>Anachis sparsa</i> (Reeve, 1859)		•	•						•	•	•
<i>Mitrella</i> sp.											
<i>Cantharus multangulus</i> (Philippi, 1848)											
<i>Nassarius</i> sp.											
<i>Fasciolaria tulipa</i> (Linnaeus, 1758)											•
<i>Olivella perplexa</i> Olsson, 1956											
<i>Olivella dealbata</i> (Reeve, 1850)											
<i>Mitra nodulosa</i> Gmelin, 1791											
<i>Pusia monilifera</i> (C.B. Adams, 1845)											
<i>Pusia sykesi</i> McGinty, 1955											
<i>Granulina ovuliformis</i> Orbigny, 1841											
<i>Dentimargo eburneola</i> Conrad, 1834											
<i>Prunum amabilis</i> (Rehfield, 1852)											•
<i>Prunum labiata</i> Kiener, 1841											

Table 4. Distribution of the Bojórquez Lagoon mollusks in other coastal lagoons of the Gulf of Mexico. S.A.= San Andres, Tami.= Tamiahua, Tamp.= Tampamachoco, CyG= Chica y Grande, LM= La Mancha, Cam.= Camaronera, Alv.= Alvarado, CyM= Carmen y Machona, T.O= Tupilco-Ostion, Mec.= Mecoacan, Ter.= Términos.

Tabla 4. Distribución de los moluscos de la Laguna Bojórquez en otras lagunas costeras del Golfo de México. S.A.= San Andres, Tami.= Tamiahua, Tamp.= Tampamachoco, CyG= Chica y Grande, LM= La Mancha, Cam.= Camaronera, Alv.= Alvarado, CyM= Carmen y Machona, T.O.= Tupilco-Ostión, Mec.= Mecoacan, Ter.= Términos.

COASTAL LAGOONS	S.A.	Tami.	Tamp.	CyG	LM	Cam.	Alv.	CyM	T.O.	Mec.	Ter.
<i>Volvarina avena</i> (Kiener, 1834)											
<i>Pilsbryspira leucocyma</i> (Dall, 1883)											
<i>Mangelia biconica</i> C.B. Adams, 1850											
<i>Mangelia stellata</i> Stearns, 1872											
<i>Pyrgocythara filosa</i> Rehder, 1943											
<i>Pyrgocythara plicosa</i> (C.B. Adams, 1850)											
<i>Odostomia laevigata</i> (Orbigny, 1842)	•	•	•	•	•	•	•	•	•	•	•
<i>Turbonilla unilirata</i> Bush, 1889											
<i>Acteocina candeï</i> Orbigny, 1841											
<i>Bulla striata</i> Bruguière, 1792		•							•		•
<i>Haminoea elegans</i> (Gray, 1825)											
BIVALVES											
<i>Brachidontes exustus</i> Linnaeus, 1758				•	•						
<i>Ctena orbiculata</i> (Montagu, 1808)											
<i>Lucina nassula</i> (Conrad, 1846)				•							
<i>Carditamera floridana</i> Conrad, 1838											
<i>Laevicardium laevigatum</i> Linnaeus, 1758	•										
<i>Tellina lineata</i> Turton, 1819				•							•
<i>Tellina mera</i> Say, 1834											
<i>Cumingia tellinoides</i> (Conrad, 1831)											
<i>Chione cancellata</i> (Linnaeus, 1767)	•	•	•	•	•	•			•	•	•
<i>Anomalocardia auberiana</i> (Orbigny, 1842)				•	•						

Table 4. Continuation.
Tabla 4. Continuación.

The results show that although some species have wide distributional ranges only few of them are found at the coastal lagoons of the Gulf of Mexico.

The reason of the low similarity between Bojórquez Lagoon and other coastal lagoons might be explained to the ecological demands of the species. Most of the species at Bojórquez are eurihaline (64.5%) and in minor degree polyhaline-eurihaline (35.58%). Gulf of Mexico mollusks are polyhaline-eurihaline but there are some species under oligohaline-polyhaline salinity conditions and in only oligohaline salinities.

General Distribution of the Bojórquez Lagoon Mollusks. Twenty nine species recolected at Bojórquez Lagoon have a wide distribution from Brazil to North Carolina (USA) inclusively Bermuda (Table 5). In this group six species have their northern limit in the state of Florida, *Brachidontes exustus* Linné, 1758 at Texas and *Retilaskeya emersoni* (C.B. Adams, 1838) at Massachusetts (USA). Only *B. exustus* has its southern limit at Uruguay while for *Acteocina candeï* (Orbigny, 1841) is at Argentina.

The distributional range of the species *Pusia monilifera* (C.B. Adams, 1845) and *Tricolia affinis cruenta* Robertson, 1858 was narrower, it comprises from Brazil trough the Gulf of Mexico.

Thirty four species distributes from the West Indies to North Carolina. In this group *Smaragdia viridis* Linné, 1758, *Alvania auberiana* (Orbigny, 1842), *Vitrinella helicoides* C.B. Adams, 1850, *Rissoina multicostata* (C. B. Adams, 1850), *Olivella dealbata*

Brazil to North Carolina (USA) and Bermuda.	West Indies to North Carolina
<i>Diodora cayenensis</i> (Lamarck)	<i>Patelloida pustulata</i> (Helbling)
<i>Diodora listeri</i> (Orbigny)	<i>Tricolia affinis</i> (C.B. Adams)
<i>Tegula fasciata</i> (Born)	<i>Smaragdia viridis</i> (Maury)
<i>Tricolia bella</i> (M. Smith)	<i>Alvania auberiana</i> (Orbigny)
<i>Tricolia thalassicola</i> Robertson	<i>Rissoina multicostata</i> (C.B. Adams)
<i>Tricolia affinis cruenta</i> Robertson	<i>Rissoella caribaea</i> Rehder
<i>Zebina browniana</i> (Orbigny)	<i>Vitrinella helicoidea</i> C.B. Adams
<i>Rissoina cancellata</i> Philippi	<i>Caecum nitidum</i> Stimpson
<i>Truncatella caribaeensis</i> Reeve	<i>Cerithidea costata</i> (da Costa)
<i>Caecum floridanum</i> Stimpson	<i>Cerithium eburneum</i> Bruguiere
<i>Modulus modulus</i> Linne	<i>Crepidula maculosa</i> Conrad
<i>Bittium varium</i> (Pfeiffer)	<i>Melanella jamaicensis</i> (Cantraine)
<i>Retilaskeya emersoni</i> (C.B. Adams)	<i>Collumbella rusticoides</i> Heilprin
<i>Cerithiopsis greenii</i> (C.B. Adams)	<i>Mitrella</i> sp.
<i>Marshallora nigrocincta</i> (C.B. Adams)	<i>Cantharus multangulus</i> (Philippi)
<i>Anachis sparsa</i> (Reeve)	<i>Nassarius scissuratus</i> (Dall)
<i>Fasciolaria tulipa</i> (Linnaeus)	<i>Olivella perplexa</i> Olsson
<i>Mitra nodulosa</i> (Gmelin)	<i>Olivella dealbata</i> (Reeve)
<i>Pusia monilifera</i> (C.B. Adams)	<i>Pusia sykesi</i> McGinty
<i>Volvarina avena</i> (Kiener)	<i>Granulina ovuliformis</i> (Orbigny)
<i>Acteocina candeii</i> (Orbigny)	<i>Dentimargo eburneola</i> Conrad
<i>Bulla striata</i> Bruguiere	<i>Prunum amabilis</i> (Rehfield)
<i>Haminoea elegans</i> (Gray)	<i>Prunum labiata</i> Kiener
<i>Brachidontes exustus</i> (Linnaeus)	<i>Pilsbryspira leucocyma</i> (Dall)
<i>Ctena orbiculata</i> (Montagu)	<i>Mangelia biconica</i> (C.B. Adams)
<i>Laevicardium laevigatum</i> (Linnaeus)	<i>Mangelia stellata</i> Stearns
<i>Tellina lineata</i> (Turton)	<i>Pyrgocythara filosa</i> Rehder
<i>Tellina mera</i> Say	<i>Pyrgocythara plicosa</i> (C.B. Adams)
<i>Chione cancellata</i> (Linnaeus)	<i>Odostomia laevigata</i> (Orbigny)
	<i>Turbonilla unilirata</i> Bush
	<i>Lucina nassula</i> (Conrad)
	<i>Carditamera floridana</i> Conrad
	<i>Cumingia tellinoides</i> Rehder
	<i>Anomalocardia auberiana</i> (Orbigny)

Table 5. Distribution of the species of Bojorquez Lagoon in the Western Atlantic.
Tabla 5. Distribucion de las especies de la Laguna Bojorquez en el Atlantico Occidental.

(Reeve, 1850), *Odostomia laevigata* (Orbigny, 1842) and *Lucina nassula* (Conrad, 1846) distributes in the Gulf of Mexico from Texas to Florida; six species extend north to Texas. The southern limit of *L. nassula* is in Cuba.

Assiminea gerhardtae (Jong and Coomans, 1988) distributes in Aruba and Bojórquez Lagoon.

In general 16 species have it's northern limit at Bermuda, 13 at North Carolina, 22 at Florida. Two species extend North at Bahamas, Massachusetts and Texas and one at Maryland, Cape Hatteras, Nova Scotia, Yucatán and Quintana Roo.

The species *Alvania auberiana* (Orbigny, 1842) and *Brachidontes exustus* (Linné, 1758) extend farther south, to Uruguay and *A. candei* to Argentina. Twenty five species have their southern limit at Brazil, 14 at the West Indies, 11 at Cuba, two at Yucatán Peninsula and Yucatán State, three at Quintana Roo and one at Puerto Rico and Aruba.

Most of the species founded here live between seagrass beds in association with algae, corals, echinoderms, tunicates and annelids so they occupy a higher different types of habitats than in the Gulf of Mexico. On the other hand most of the species have restricted distribution to particular ranges in the Western Atlantic and some of them do not distribute in the Gulf of Mexico.

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