THALASSAS

Thalassas, 29(1) · January 2013: 59-75
An International Journal of Marine Sciences

SEASLUGS (Mollusca: Opisthobranchia) FROM CAMPECHE BANK, YUCATAN PENINSULA, MEXICO

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ABSTRACT

Little is known about the seaslugs in the Mexican coast of the Gulf of Mexico and almost all the species reported are either large or have a well-developed calcareous shell. Through specific sampling methods focused in opisthobranchs fauna, in two lagoons and three coral reefs of the Campeche Bank, Yucatan Peninsula, we have recorded 51 species belonging to the clades Cephalaspidea, Aplysiomorpha, Sacoglossa, Eutenidiacea, and Cladobranchia. Of these, 30 species had not been previously reported for the Campeche Bank and 20 out of those are new records for the Atlantic coast of Mexico. The nudibranch *Tambja cf. tenuilineata* could be the first record for the east coast of the Atlantic Ocean. With this study, the actual number of opisthobranch fauna in the Campeche Bank are 84 species.

Key words: Opisthobranchs, Mexico, Biodiversity, Biogeography, Mollusks, Campeche bank, Yucatan.

RESUMEN (Opistobranquios del banco de Campeche, Península de Yucatán, México)

Se sabe poco sobre los opistobranquios de la costa mexicana del Golfo de México y la mayoría de las especies reportadas son especies con conchas grandes o bien desarrolladas. A través de muestreos dirigidos específicamente a la fauna de opistobranquios realizados en dos lagunas y en tres arrecifes del Banco de Campeche, península de Yucatán, se reportan 51 especies pertenecientes a los Clados Cephalaspidea, Aplysiomorpha, Sacoglossa, Eutenidiacea y Cladobranchia. De estos, 30 especies son nuevos registros para el Banco de Campeche y 20 de ellos son nuevos registros para la costa Atlántica de México. El nudibranquio *Tambja cf. tenuilineata* podría ser el primer registro de esta especie para la costa Este del océano Atlántico. Con las aportaciones del presente trabajo, se acumula un total de 84 especies de opistobranquios en el Banco de Campeche.

Palabras clave: Opistobranquios, México, Biodiversidad, Biogeografía, Moluscos, Banco de Campeche, Yucatán.

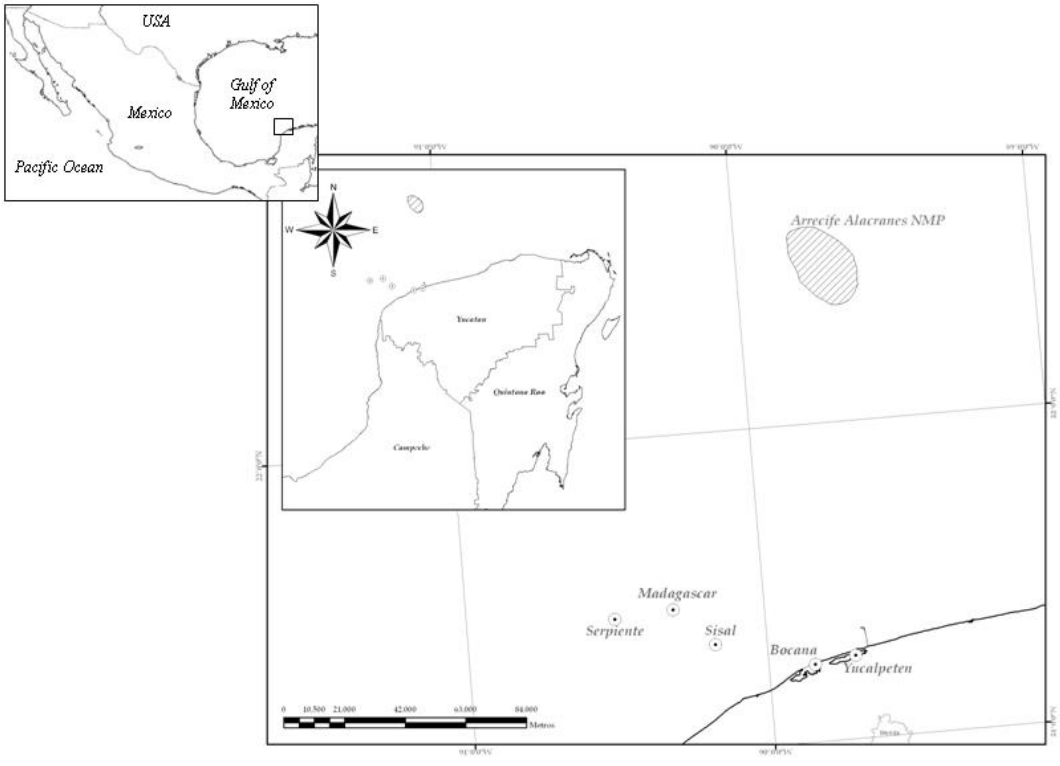

Figure 1: *Sampling sites are indicated with black dots.*

INTRODUCTION

There are between 5,000 to 6,000 described opisthobranch species (Wägele and Klussmann-Kolb, 2005). From the over 6,000 described opisthobranch species, The Atlantic coast of Mexico has, so far, 111 species of benthic opisthobranch reported (based on Rosenberg *et al*., 2007 and complete with references in table 1). However, the opisthobranch records from Mexico are scarce and confined to malacological or generalist faunistic studies where the opisthobranchs do not represent more than 2% of the taxonomical records (Zamora-Silva and Naranjo-García, 2008). This is due to an insignificant sampling effort focused exclusively on the opisthobranch fauna of the Atlantic coast of Mexico. To date, there are two studies exclusively dealing with the opisthobranchs fauna, one in five reefs of Veracruz, in the central western part of the Atlantic coast of Mexico (Zamora-Silva and Ortigosa, 2012), and a recent report at the Alacran reef, in the Campeche Bank (Sanvicente-Añorve *et al.,* 2012).

The Campeche Bank is a large area situated southwest of the Gulf of Mexico and northwest of the Yucatan Peninsula formed by dozens of small reefs rising from depths of 40-60 meters and some submerged banks such as Arcas, Triangulos and Arenas Cays, and the large Alacran reef National Marine Park (Spalding, 2004). This bank lies reasonably close to the Caribbean Sea and within the influence of the Yucatan Stream (Chávez and Hidalgo, 1998; Sheinbaum *et al*., 2002; Abascal *et al*., 2003), so it should share many species with the Caribbean fauna. By 2001, only 17 species of opisthobranchs (almost all of them with a conspicuous shell) were reported at different parts of the Campeche Bank (Rice and Kornicker, 1962, 1965; García-Cubas *et al*., 1999; Hicks *et al*., 2001). Thirty two species were recently added to the Campeche Bank inventory (Sanvicente-Añorve *et al.* 2012), summing up to 51 species known. In this work we report the results of the first campaigns devoted to the opisthobranch fauna of three coral reefs of the Campeche Bank and two lagoons of Yucatan coast.

MATERIAL AND METHODS

All specimens were collected in five localities between October 2006 and May 2008 (table 2, fig. 1). Surveys in the reefs were made using SCUBA equipment down to a depth of 20 m and shallow-water surveys were made with a snorkel or by foot. In both habitats, the sampling effort was focused on different kinds of substrata such as sand, mud, rocky walls and on diverse

slopes that are normally colonized by benthic organism where opisthobrachs are likely to be found such as sponges, hydrozoans, bryozoans, tunicates, algae, and turtle seagrass meadows (p.e. *Thalassia testudinum*). The undersides of regular-size boulders were also inspected, taking care to return all rocks to their original position (Nybakken, 1974). Collecting methods involved direct manual capture as well as indirect methods, such as the collection of substrate samples and by brushing part of the surface into a 1 mm mesh bag. Material collected by indirect methods was divided into several white trays containing salt water and left untouched until the decrease in the oxygen concentration forced the specimens to crawl up to the surface looking for areas richer in oxygen. All specimens were measured and described *in vivo* under a stereomicroscope. At least one specimen per species was photographed. Afterwards, specimens were put in the refrigerator or anesthetized with magnesium chloride or clove oil, and then preserved in 96% absolute ethanol. Some specimens were deposited at the Colección Nacional de Moluscos (CNMO) of the Instituto de Biología, UNAM. The phylogenetic classification follows Bouchet and Rocroi (2005) down to family level, with the exception of the family Chromodorididae, where we used Johnson and Gosliner (2012); Gosliner *et al.* (2008) for genera, and species are listed in chronological order by year of the description. Data for each species include: Scientific name; Examined material (Sisal (Sis); Madagascar (Mad); Serpiente (Ser); Yucalpeten (Ycl); La Bocana (Boc)); Date of sampling; Lenght in milimeters (maxim lenght as ML, and L for length of only one specimen); Type of substrate; Diagnosis (for identification to species level is indicated the publication and the pages that were used to identify the specimen; for unidentified species there is a brief description of the main features of the sampled material); Distribution (distribution information was taken from published records: localities of the west coast of the Atlantic ocean are listed in geographical order from north to south, west to east, and by country, first the continental countries and then the islands; for Mexico, we specified the states of the Atlantic coast of the country where each species record was found, also north to south order, following the author of the work. Abbreviations used for each state were: Tamaulipas, TAMS; Veracruz, VER; Tabasco, TAB; Campeche, CAMP; Yucatan, YUC; Quintana Roo, QROO. For species with wide geographical range, the distribution is not specified down country level.

RESULTS

From the total of 58 samples, 18 were collected in lagoons (nine in the Bocana, eight in Yucalpeten, and one in Celestun) and 40 in reefs (25 in Madagascar, 11 in Sisal, and four in Serpiente). A total of 51 species of opisthobranchs belonging to the Clades Cephalaspidea (10 species), Aplysiomorpha (6 species), Sacoglossa (13 species), Eutenidiacea (13 species), and Cladobranchia (9 species) were observed. The most abundant families were Chromodorididae and Plakobranchidae with eight species each one, and Aplysiidae with six species. Of these, 30 species are new records for the Campeche Bank, and 20 are new records for the Atlantic coast of Mexico. Thirty six species were sampled in only one site, 23 in the reefs and 13 in the lagoons (table 2). Eighteen species were collected in the lagoons and 35 species were found in the reefs. Three species were also found in lagoons with similar environmental conditions (*Bulla occidentalis*, *Aplysia brasiliana* and *Spurilla neapolitana*). Only two species were present at the three reefs (*Elysia patina* and *Hypselodoris picta*), and only five species (*Chelidonura berolina*, *C. hirundinina*, *C. cubana*, *Costasiella ocellifera* and *Chromodoris clenchi*) were distributed in the reefs of Sisal and Madagascar. Madagascar and Serpiente reefs share three species (*Hypselorodis acriba*, *Mexichromis kempfi* and *Tambja cf. tenuilineata*). Only *Aplysia dactylomela* and *Dendrodoris krebsii* were found at least in one reef and one lagoon. Since diagnosis was based on external characters and the geographical range reported in the literature, we preferred to keep *Tambja cf. tenuilineata* as uncertain species. Finally, external characteristics of eight species (*Haminoea* sp, *Ercolania* sp, *Chromodoris* sp, *Doto* sp, *Okenia* sp, *Flabellina* sp, *Aeolidiella* sp 1, and *Aeolidiella* sp 2) were insufficient to identify the specimens down to the species level and might be undescribed species (for seven of them we only have one specimen of each). To our best knowledge, this is the first time that images of specimens with these characteristics are shown. A color photograph for these unidentifiable species is included (fig. 2). The species recorded through this study are presented in the following list:

Clade Cephalaspidea
Family Bullidae Gray, 1827
Bulla occidentalis Adams, 1850
Examined material: Boc: 25 specimens (10-06), ML 35 mm, on mud and over sea grass; 5 specimens (17-05-07), ML 30 mm, over mud and over sea grass (CNMO3015); 1,489 specimens (07-04-08), ML 15 mm, over mud; 225 specimens (09-04-08), ML 15 mm, over mud; Ycl: 35 specimens (06-05-08), ML 40 mm, over mud; 200 specimens (07-05-08), ML 40 mm, over sea grass (CNMO3040).
Diagnosis: Malaquias and Reid, 2007
Distribution: USA (North Carolina, Florida, Louisiana and Texas); Mexico: VER (Wiley *et al*., 1982; García-Cubas and Reguero, 1995; Pérez-Rodríguez, 1997;

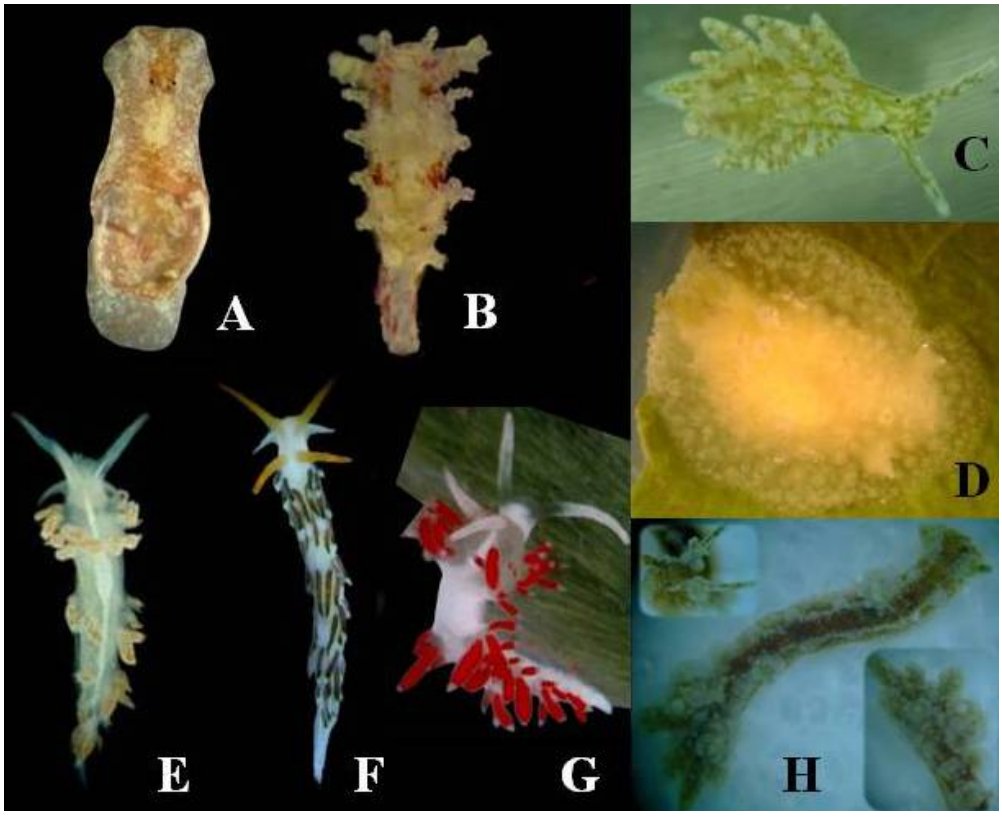

Figure 2:
Unidentified species. A. Haminoea sp; B. Okenia sp; C. Ercolania sp; D. Chromodoris sp; E. Flabellina sp; F. Aeolidiella sp 1; G. Aeolidiella sp 2; H. Doto sp.

Zamora-Silva and Ortigosa, 2012), TAB (García-Cubas and Reguero, 1990), YUC (Sanvicente-Añorve *et al.,* 2012), QROO (Á. Valdés, personal communication); Belize; Honduras; Costa Rica; Panama; Colombia; Venezuela; Brazil; Uruguay; Bermuda; Curaçao; Cuba; Jamaica; Puerto Rico; Virgin Islands; Bahamas; Guadeloupe; Martinique; Dominique; San Martin; St. Vincent and the Grenadines; Granada; Barbuda; Antigua; St. Lucia; Guadeloupe; Barbados (Valdés *et al*., 2006; Malaquias and Reid, 2007).
Remarks: The work of Malaquias and Reid (2007) proved that the species named as *Bulla striata* Bruguière, 1792 in the Atlantic coast of Mexico should be named as *B. occidentalis*. Due to this, most of the species were misidentified as *B. striata*.

Family Haminoeidae Pilsbry, 1895
Haminoea elegans (Gray, 1825)
Examined material: Boc: 2 specimens 16-02-07, ML 14 mm (CNMO3006); 19 specimens (17-05-07), ML 17 mm (CNMO2997); 8 specimens (07-04-08), ML 20 mm; 1 specimen (09-04-08), L 22 mm. All over mud.
Diagnosis: Valdés *et al*., 2006: 24
Distribution: USA (Florida and Texas); Mexico: VER (Chávez *et al*., 1970; Vicencio-de la Cruz and González-Gándara, 2006; Zamora-Silva and Ortigosa, 2012), YUC (Vokes and Vokes, 1983; Sanvicente-Añorve *et al.,* 2012), QROO (Ekdale, 1974); Belize; Honduras; Costa Rica; Colombia; Venezuela; Brazil; Bermuda; Cuba; Jamaica; Puerto Rico; Virgin Islands; Martinique; St. Lucia; St. Vincent and the Grenadines; Curaçao; Bonaire; Granada; Trinidad and Tobago (Valdés *et al*., 2006).

Haminoea antillarum (d'Orbigny, 1841)
Examined material: Boc: 183 specimens (30-01-07), ML 20 mm, over mud; 17 specimens (01-02-07), ML 6-20 mm, over tree leaves we observed kidney shaped capsule eggs; 71 specimens (16-02-07), ML 20 mm, over mud; 45 specimens (17-05-07), ML 12 mm, over mud; 304 specimens (07-04-08), ML 15 mm, over mud (CNMO3044); 212 specimens (09-04-08), ML 16 mm, over mud.
Diagnosis: Valdés *et al*., 2006: 24
Distribution: USA (Florida and Texas); Mexico: VER (Moore, 1958; García-Cubas, 1971; Vicencio-de la Cruz and González-Gándara, 2006; Zamora-Silva and Ortigosa, 2012), YUC (Vokes and Vokes, 1983; Sanvicente-Añorve *et al*., 2012), QROO (Ekdale, 1974); Honduras; Panama; Colombia; Venezuela; Brazil;

Bermuda; Cuba; Cayman Islands; Jamaica; Puerto Rico; Virgin Islands; Guadalupe (Andrews, 1971; Valdés *et al*., 2006).

Haminoea succinea (Conrad, 1846)
Examined material: Ycl: 20 specimens (06-05-08), ML 16 mm, over mud (CNMO3041).
Diagnosis: Valdés *et al*., 2006: 26
Distribution: USA (Florida, Louisiana and Texas); Mexico: VER (García-Cubas, 1971; García-Cubas and Reguero, 1995; Vicencio-de la Cruz and González-Gándara, 2006; Zamora-Silva and Ortigosa, 2012), CAMP (Rice and Kornicker, 1962), YUC (Vokes and Vokes, 1983), QROO (Cruz-Abrego *et al*., 1994); Colombia; Venezuela; Bermuda; Puerto Rico; St. Martin; St. Bartolomé (Andrews, 1971; Valdés *et al*., 2006).

Haminoea sp (fig. 2)
Examined material: Mad: 3 specimens (20-06-07), L 6-8 mm.
Diagnosis: Elongate body, with short parapodia partially covering the shell. Brownish background, with numerous patch of lighter brown all over the body. Cylindrical, thin and translucent shell.
Distribution: Thus far, known only from Madagascar reef, Campeche Bank.
Remarks: This is the only species of this genus that was found in a reef. All the others were found in the Bocana lagoon. This species didn´t match the same coloration patterns, neither in the shell nor in the body, of the known species of this genus for this geographical area *Haminoea glabra* (Gray, 1825), *H. elegans*, *H. antillarum*, and *H. succinea* (Valdés *et al*., 2006; Rosenberg *et al*. 2007).

Family Aglajidae Pilsbry, 1895
Chelidonura hirundinina (Quoy & Gaimard, 1833)
Examined material: Sis: 1 specimen (10-06), L 20 mm (CNMO3032); Mad: 1 specimen (28-08-07), L 18 mm (CNMO3034).
Diagnosis: Valdés *et al*., 2006: 38
Distribution: Indo-Pacific. Western Atlantic: USA (Florida); Mexico: YUC (Sanvicente-Añorve *et al*., 2012); Belize; Colombia; Bahamas; Cayman Islands; Jamaica; Puerto Rico; Guadeloupe; St. Vincent and the Grenadines; Curaçao; Grenada (Valdés *et al*., 2006).

Chelidonura berolina Er. Marcus & Ev. Marcus, 1970
Examined material: Sis: 1 specimen (10-06), L 10 mm.
Diagnosis: Valdés *et al*., 2006: 36.
Distribution: Amphiatlantic. Western Atlantic: Mexico: QROO (Á. Valdés, personal communication); Belize; Honduras; Colombia; Cayman Islands; Cuba; Jamaica; Martinique; Puerto Rico; Bermuda (Valdés *et al*., 2006).

Chelidonura cubana Ortea & Martínez, 1997
Examined material: Sis: 1 specimen 10-06, L 10 mm; Mad: 3 specimens (07-05-07), ML 25 mm, over green algae (CNMO2980); 3 specimens (27-08-07), ML 22 mm, over green algae (CNMO2979).
Diagnosis: Valdés *et al*., 2006: 38
Distribution: Cuba; Cayman Islands (Valdés *et al*., 2006).

Family Cylincnidae H. Adams & A. Adams, 1854
Acteocina canaliculata (Say, 1826)
Examined material: Boc: 13 specimens (07-04-08), ML 6-7 mm, crawling over silt during nocturnal sampling (CNMO3043).
Diagnosis: Valdés *et al*., 2006: 16
Distribution: USA (Nova Scotia, New Brunswick, Maine, Massachusetts, Rhode Island, Connecticut, New Jersey, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida, Louisiana and Texas) (Valdés *et al*., 2006); Mexico: VER (Flores-Andolais *et al*., 1988; Reguero and García-Cubas, 1989; García-Cubas *et al*., 1990; García-Cubas *et al*., 1992; Reguero and García-Cubas, 1993; García-Cubas and Reguero, 1995), TAB (García-Cubas and Reguero, 1990), YUC (Rice and Kornicker, 1962), QROO (Cruz-Ábrego *et al*., 1994).
Remarks: This species had been reported to live in areas of sand and seagrass (Redfern, 2001).

Family Gastropteridae Swaison, 1840
Gastropteron chacmol Gosliner, 1989
Examined material: Mad: 1 specimen (07-05-07), L 8 mm swimming (Recol. Q. Hernández-Díaz) (CNMO3012); 2 specimens (28-08-07), ML 3 mm, over green algae (CNMO3026).
Diagnosis: Gosliner, 1989: 363
Distribution: USA (Florida, Texas); Mexico: QROO (Gosliner, 1989; Valdés *et al*., 2006); Belize; Honduras; Colombia; Venezuela; Brazil; Bahamas; Cayman Islands (Valdés *et al*., 2006).
Remarks: One of the sampled specimens was found swimming through the water column, as was reported in the original description (Gosliner, 1989).

Clade Anaspidea
Family Aplysiidae Lamarck, 1809
Aplysia brasiliana Rang, 1828
Examined material: Ycl: 3 specimens (31-01-07), ML 6 mm (juveniles) (CNMO2999); 1 specimen (09-05-07), L 120 mm, over green algae; 1 specimen (18-05-07), L

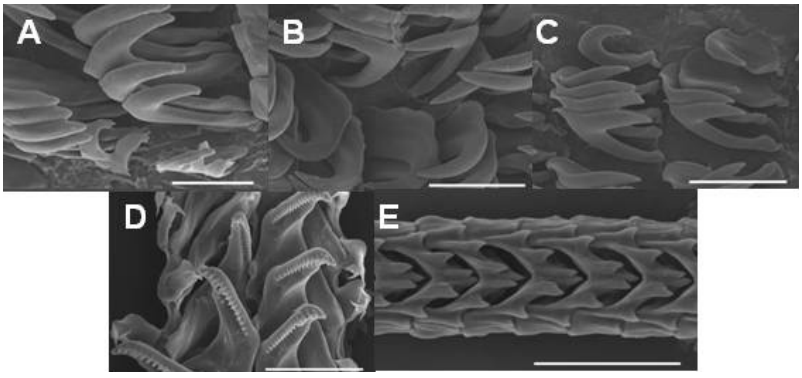

Figure 3:
. Radula of some unidentified species. Chromodoris sp: A) marginal tooth (scale= 30 µm), B) lateral tooth (scale = 50 µm), C) central tooth (scale = 30 µm); D) Okenia sp radula (scale = 30 µm); E) Doto sp radula (scale = 30 µm).

110 mm, under rocks, 14 specimens found dead near the water channel; 2 specimens (07-05-08), ML 120 mm one under rock and the other, swimming; Boc: 7 specimens (07-04-08), ML 140mm, over mud; 3 specimens (17-04-08), ML 120 mm, over sand.
Diagnosis: Valdés *et al*., 2006: 96
Distribution: Amphiatlantic. Western Atlantic: USA (New Jersey, Florida and Texas); Mexico: VER (Wiley *et al*., 1982; Vicencio-de la Cruz and González-Gándara, 2006; Zamora-Silva and Naranjo-García, 2008; Zamora-Silva and Ortigosa, 2012), CAMP (Zamora-Silva and Naranjo-García, 2008), YUC (Sanvicente-Añorve *et al.,* 2012) Costa Rica; Colombia; Venezuela; Brazil; Bermuda; Aruba (Strenth and Blankenship, 1977; Valdés *et al*., 2006).
Remarks: We observed some recently dead specimens near the water channel of Yucalpeten lagoon, these seahares tend to get captured in the shrimp fishing nets, and they are thrown away to avoid further clogging of the nets.

Aplysia dactylomela Rang, 1828
Examined material: Boc: 2 specimens (30-01-07), ML 100 mm, over sand; Sis: 1 specimen (22-04-08) L 50 mm, over green algae.
Diagnosis: Valdés *et al*., 2006: 96
Distribution: Circumtropical. Western Atlantic: USA (Florida and Texas); Mexico: VER (Moore, 1958; Wiley *et al*., 1982; Quintana y Molina, 1991; García-Cubas *et al*., 1994; Vicencio-de la Cruz and González-Gándara, 2006; Zamora-Silva and Naranjo-García, 2008; Zamora-Silva and Ortigosa, 2012), CAMP (Zamora-Silva and Naranjo-García, 2008); YUC (Sanvicente-Añorve *et al.,* 2012); Belize; Honduras; Costa Rica; Panama; Colombia; Venezuela; Brazil; Bermuda; Cayman Islands; Jamaica; Puerto Rico; Virgin Islands; San Martin; Guadeloupe; Martinique; St. Lucia; St. Vincent and the Grenadines; Barbados; Aruba; Curaçao; Bonaire; Granada; Trinidad and Tobago (Andrews, 1971; Strenth and Blankenship, 1977; Valdés *et al*., 2006).
Aplysia morio (Verrill, 1901)
Examined material: Boc: 3 specimens (17-04-08), ML 150 mm, over sand.
Diagnosis: Valdés *et al*., 2006: 98
Distribution: USA (Rhode Island, Georgia, Florida and Texas); Bermuda; Bahamas (Valdés *et al*., 2006).

Bursatella leachii pleii Rang, 1828
Examined material: Boc: 7 specimens (30-01-07), ML 24 mm; 4 specimens (12-04-07), ML 60 mm; 7 specimens (07-04-08), ML 40 mm (CNMO3039). All over mud.
Diagnosis: Valdés *et al*., 2006: 98
Distribution: Circumtropical. Western Atlantic: USA (North Carolina, Florida and Texas); Mexico: VER (Vicencio-de la Cruz and González-Gándara, 2006; Zamora-Silva and Ortigosa, 2012); CAMP (Zamora-Silva and Naranjo-García, 2008); Belize; Costa Rica; Panama; Colombia; Venezuela; Brazil; Bermuda; Jamaica; Virgin Islands; Aruba; Curaçao; Trinidad (Andrews, 1971; Strenth and Blankenship, 1977; Valdés *et al*., 2006).
Remarks: All the specimens were found on mud during the low tide, near this area we saw green algae that they are supposed to feed on (Valdés *et al*., 2006).

Stylocheilus striatus (Quoy & Gaimard, 1832)
Examined material: Boc: 2 specimens (17-04-08), L 35 and 40 mm, over mud (Recol. R. Mena) (CNMO3045).
Diagnosis: Valdés *et al*., 2006: 100
Distribution: Cosmopolitan. Western Atlantic: USA (Florida and Dry Tortugas); Mexico: VER (Zamora-Silva and Ortigosa, 2012); YUC (Sanvicente-Añorve *et al*., 2012) Belize; Colombia; Venezuela; Brazil;

Bermuda; Bahamas; Cayman Islands; Jamaica; Puerto Rico; Virgin Islands; Martinique; Barbados; St. Vincent and the Grenadines; Aruba; Curaçao; Bonaire; Grenada (Valdés *et al*., 2006).

Phyllaplysia engeli Er. Marcus, 1955
Examined material: Ycl: 1 specimen (09-05-08), L 10 mm over *Thalassia testudinum* (CNMO3042).
Diagnosis: Valdés *et al*., 2006: 104
Distribution: USA (Florida); Mexico: YUC (Sanvicente-Añorve *et al*., 2012), QROO (Valdés *et al*., 2006); Costa Rica; Colombia; Brazil; Bahamas; Puerto Rico; Jamaica; St. Martin; Barbados; Curaçao (Valdés *et al*., 2006).
Remarks: The only specimen was found 50 km west of the Bocana during an extra expedition that was made on a *Thalassia* meadow as it is reported (Valdés *et al*., 2006). This is one of the two species reported to the Caribbean Sea.

Clade Sacoglossa
Family Oxynoidae Stoliczka, 1868
Lobiger souberbii P. Fischer, 1857
Examined material: Sis: 1 specimen (08-02-07), L 4 mm (CNMO3035).
Diagnosis: Valdés *et al*., 2006: 52
Distribution: USA (Florida); Mexico: YUC (Vokes and Vokes, 1983), QROO (Ekdale, 1974); Honduras; Costa Rica; Venezuela; Cayman Islands; Jamaica; Puerto Rico; Guadeloupe; Barbados; St. Vincent and the Grenadines; Curaçao (Valdés *et al*., 2006).
Remarks: This species is usually found on algae of the genus *Caulerpa* (Redfern 2001; Valdés *et al*., 2006) but we could not specify the habitat because this species were found by an indirect method in a complex of different green algae.

Family Juliidae E. A. Smith, 1885
Berthelinia caribbea Edmunds, 1963
Examined material: Mad: 1 specimen (04-05-07), L 3 mm (CNMO3028); 2 specimens (07-05-07), ML 3 mm (CNMO3013); 1 specimen (02-05-08), L 3 mm.
Diagnosis: Valdés *et al*., 2006: 48
Distribution: USA (Florida); Mexico: QROO (Á. Valdés, personal communication); Belize; Costa Rica; Panama; Bahamas; Jamaica; Puerto Rico; Brazil (Valdés *et al*., 2006).
Remarks: This species is frequently associated with the green algae *Caulerpa verticillata* (Clark *et al*., 1990). We found it with a variety of green algae.

Family Placobranchidae Gray, 1840
Elysia cf. cornigera
Examined material: Ycl: 2 specimens (31-01-07), ML 4 mm (CNMO2995).
Diagnosis: Carmona *et al*., 2011 (With molecular analysis (16s and H3).
Distribution: USA (Florida); Bahamas; Cuba; Cayman Islands (Ortea *et al*., 1994; Valdés *et al*., 2006).
Remarks: *Elysia cornigera* (Nuttall, 1987) from the Pacific Ocean and *Elysia timida* (Risso, 1818) are valid species and sister to each other (Carmona *et al*., 2011).

Elysia papillosa Verrill, 1901
Examined material: Mad: 1 specimen (04-05-07), L 8 mm, over green algae.
Diagnosis: Valdés *et al*., 2006: 64
Distribution: USA (Florida); Mexico: QROO (Á. Valdés, personal communication); Belize; Honduras; Costa Rica; Panama; Venezuela; Bermuda; Bahamas; Cayman Islands; Guadeloupe; St. Lucia; Martinique; Granada; Curaçao; Trinidad and Tobago; (Rios, 1994; Valdés *et al*., 2006).

Elysia subornata Verrill, 1901
Examined material: Ycl: 1 specimen (31-01-07), L 3 mm (CNMO2998), on *Caulerpa* sp, with egg ribbons over the algae.
Diagnosis: Valdés *et al*., 2006: 66
Distribution: USA (Florida); Mexico: VER (Vicencio-de la Cruz and González-Gándara, 2006; Zamora-Silva and Ortigosa, 2012), YUC (Sanvicente-Añorve *et al.,* 2012), QROO (Valdés *et al*., 2006); Belize; Bermuda; Bahamas; Cayman Islands; Jamaica; Puerto Rico; Virgin Islands; Martinique; Aruba; Granada; Trinidad and Tobago (Valdés *et al*., 2006).
Remarks: Valdés *et al*. (2006) report that this slug feeds on the green algae *Penicillus dumetosu*s and *Udotea flabellum* and Clark (1994) say that this species is associated with *Caulerpa racemosa*; we have found it on *Caulerpa* sp.

Elysia canguzua Er. Marcus, 1955
Examined material: Sis: 1 specimen (10-06), L 9 mm (CNMO3017).
Diagnosis: Valdés *et al*., 2006: 64
Distribution: Costa Rica; Brazil (Valdés *et al*., 2006).
Remarks: There are reports of *E. canguzua* feeding on green algae of the genus *Codium* (Valdés *et al*., 2006), but we did not identify the substrate were we found it.

Elysia tuca Ev. Marcus & Er. Marcus, 1967
Examined material: Sis: 1 specimen (10-06), L 9 mm (CNMO3019).
Diagnosis: Valdés *et al*., 2006: 66
Distribution: USA (Florida); Mexico: YUC (Sanvicente-Añorve *et al*., 2012), QROO (Valdés *et al*., 2006); Honduras; Costa Rica; Panama; Colombia; Brazil; Bermuda; Cayman Islands; Jamaica; Puerto Rico;

Table 1:
Previous studies in the Atlantic Coast of Mexico not cited in Rosenberg et al. 2007.

Study area	Author	Year
Veracruz	Flores-Andolais *et al.*	1988
	Quintana y Molina	1991
	Reguero and García-Cubas	1993
	Vicencio-de la Cruz and González-Gándara	2006
	Zamora and Ortigosa	2012
Tabasco	García-Cubas and Reguero	1990
Quintana Roo	Cruz-Ábrego *et al*.	1994
Gulf of Mexico	Pérez-Rodríguez	1997
	Zamora-Silva and Naranjo-García	2008
Campeche Bank	Sanvicente-Añorve *et al*.	2012
Atlantic	Malaquias and Reid	2007

Virgin Islands; San Martin; St. Lucia; St. Vincent and the Grenadines; Barbados; Curaçao; Grenada (Valdés *et al*., 2006).
Remarks: It is reported that this species is usually found on the green algae *Halimeda*. We could not identify the substrate.

Elysia patina Ev. Marcus, 1980
Examined material: Sis: 1 specimen (27-04-07), L 10 mm; Mad: 1 specimen (07-05-07), L 8 mm, over *Halimeda* sp; 1 specimen (23-02-07), L 9 mm.
Diagnosis: Valdés *et al*., 2006: 72
Distribution: USA (Florida); Mexico: YUC (Sanvicente-Añorve *et al*., 2012), QROO (Valdés *et al*., 2006); Costa Rica; Bahamas; Martinique; St. Vincent and the Grenadines (Valdés *et al*., 2006).
Remarks: One specimen of this species was found in *Halimeda* sp, in contrast with reports of finding it on *Udotea* sp. (Valdés *et al*., 2006).

Elysia zuleicae Ortea & Espinosa, 2002
Examined material: Sis: 2 specimens (23-02-07), ML 18 mm, over green algae.
Diagnosis: Valdés *et al*., 2006: 70
Distribution: Costa Rica; Cuba; Jamaica (Valdés *et al*., 2006).

Thuridilla mazda Ortea & Espinosa, 2000
Examined material: Mad: 1 specimen (06-06-07), L 13 mm, over *Caulerpa* sp (CNMO3027).
Diagnosis: Valdés *et al*., 2006: 58
Distribution: Costa Rica; Bahamas; Cuba (Valdés *et al*., 2006). Portugal (Azores) (Malaquias *et al*., 2012)

Family Limapontiidae Gray, 1847
Ercolania sp (fig. 2)
Examined material: Mad: 14 specimens (28-08-07), ML 2 mm, over ribbons of eggs attached to a coral (CNMO2968).
Diagnosis: light green body with dark green cerata all over the body except for the head. Small white dots through all the ceratas. Smooth rhinophores. Ceratas not so dense, leaving the dorsum clear.
Distribution: Thus far, known only from Madagascar reef, Campeche Bank.
Remarks: Here are four species of *Ercolania* in the Gulf of Mexico and the Caribbean Sea. The sampled material did not have a purple spot over the head as *E. viridis* A. Costa, 1866; nor the black points of *E. fuscata* (Gould, 1870); the ceratas are not so numerous as in *E. courulea* Trinchese, 1872, and was described for the Atlantic east so the distribution and identification must be reviewed; finally, Rosenberg *et al*. (2007) reported *E. fuscovittata* (Lance, 1962) as an introduced species in Florida from East Pacific. Such lack of characters can be due to the small size of the sampled specimens (1-2 mm). Species of these genera had been reported to be on *Caulerpa racemosa* (Clark *et al*., 1990). However, the collected specimens were found over ribbons of eggs, as some species of limapontiids (Gosliner *et al*., 2008).

Costasiella ocellifera (Simroth, 1895)
Material: Sis: 10 specimens (10-06), ML 8 mm (CNMO3020); 6 specimens (27-04-07), ML 6 mm (CNMO2993); 5 specimens (06-03-08), ML 4 mm; Mad: 3 specimens (11-06-07), ML 7 mm (CNMO3002); 4 specimens (11-04-08), ML 5 mm. All over the green

algae *Avrainvillea longicaulis*.
Diagnosis: Valdés *et al*., 2006: 78
Distribution: USA (Florida); Mexico: YUC (Sanvicente-Añorve *et al*., 2012), QROO (Á. Valdés, personal communication); Belize; Honduras; Costa Rica; Brazil; Bermuda; Bahamas; Cayman Islands; Puerto Rico; Jamaica; St. Martin; Martinique; St. Lucia; St. Vincent and the Grenadines; Granadas (Valdés *et al*., 2006).
Remarks: Valdés *et al*. (2006) report that this species lives and feeds on the surface of *Avrainvillea longicaulis*. This alga was found randomly distributed in the studied area in low densities and all the specimens of this species were found there. Not all of the branches of the algae have this species of opisthobranch.

Placida dendritica (Alder & Hancock, 1843)
Examined material: Sis: 8 specimens (08-02-07), ML 3 mm (CNMO3018).
Diagnosis: Valdés *et al*., 2006: 82
Distribution: Cosmopolitan. Western Atlantic: USA (North Carolina); Costa Rica; Jamaica; Curaçao (Valdés *et al*., 2006).

Clade Cryptobranchia
Family Doridiidae Rafinesque, 1815
Doris bovena Er. Marcus, 1955
Examined material: Ycl: 2 specimens (10-06), ML 14 mm, over sponges (CNMO2965).
Diagnosis: Valdés *et al*., 2006: 170
Distribution: USA (Florida); Mexico: YUC (Sanvicente-Añorve *et al*., 2012); Honduras; Venezuela; Brazil; Aruba; Curaçao (Valdés *et al*., 2006).
Radular formula. 30x30.0.30

Family Chromodorididae Bergh, 1891
Chromodoris clenchi (Rusell, 1935)
Examined material: Sis: 1 specimen (10-06), L 6 mm, over sponges; Mad: 3 specimens (28-08-07), ML 15 mm (CNMO2992), on green algae; 2 specimens (30-08-07), ML 20 mm, over green algae (CNMO3003); 5 specimens (05-09-07), ML 22 mm, over green algae (CNMO3009).
Diagnosis: Valdés *et al*., 2006: 148
Distribution: USA (Florida); Costa Rica; Panama; Colombia; Bermuda; Cayman Islands; Jamaica; St. Lucia; St. Vincent and the Grenadines; Curaçao (Valdés *et al*., 2006).

Chromodoris regalis (Ortea, Caballer & Moro, 2001)
Examined material: Mad: 3 specimens (08-06-07), ML 10 mm, (Recol. Q. Hernández-Díaz); 3 specimens (20-06-07), ML 12 mm; 18 specimens (28-08-07), ML 22 mm; 8 specimens (05-09-07), ML 23 mm (CNMO3025). All over purple-reddish sponges.
Diagnosis: (Valdés *et al*., 2006: 152)
Distribution: Costa Rica; Martinique; St. Vincent and the Grenadines (Valdés *et al*., 2006).
Radular formula: 47x26-27.0.26-27
Remarks: All the sampled material was collected on sponges, in contrast with Valdes et al (2006) that report finding it in rocky bottoms.

Chromodoris sp (fig.2, 3)
Examined material: Sis: 1 specimen (02-03-07), L 12 mm.
Diagnosis: Yellow-white elongated and flat body with small brown spots randomly through all the dorsum. Big tubercles over the entire mantle. Large perfoliate tubercles. The gill is in the posterior part of the body.
Distribution: Thus far, known only from Sisal reef, Campeche Bank.
Remarks: Radular formula 33x42-43.0.42-43. This species didn´t match the orange, purple and red coloration patterns of *C. clenchi*, *C. binza* Ev. Marcus & Er. Marcus, 1963, *C. ponga* Er. Marcus & Ev. Marcus, 1970; the reticulated dorsum of C. neona (Er. Marcus, 1955); the orange and white species as *C. grahami* Thompson, 1980, *C. regalis* (Ortea, Caballer & Moro, 2001), and the irregular spots of *Chromodoris* sp. image of Valdés *et al.* (2006)

Hypselodoris picta (Schultz, 1836)
Examined material: Sis: 8 specimens (10-06), ML 100-140 mm, over algae; 1 specimen (08-02-07), L 120 mm, over sand; 1 specimen (27-04-07), L 110 mm, over soft coral; 1 specimen (28-05-07), L 100 mm, over sponges (CNMO2989); Mad: 1 specimen (08-06-07), L 45 mm, over green algae; 2 specimens (11-06-07), ML 47 mm, over green algae (CNMO3001); 1 specimen (20-06-07), L 40 mm, over sand (CNMO3005); 1 specimen (27-08-07), L 30 mm, over sand (CNMO3008); 5 specimens (06-03-08), ML 100 mm, over green algae.
Diagnosis: Valdés *et al*., 2006: 154
Distribution: Amphiatlantic. Western Atlantic: USA (Florida); Brazil (Valdés *et al*., 2006).
Remarks: Due to its dark color and large size, it was found in many sites.

Hypselodoris acriba Ev. Marcus & Er. Marcus, 1967
Examined material: Mad: 4 specimens (07-05-07), ML 18-40 mm over green algae (CNMO3014); 1 specimen (06-06-07), L 34 mm, over coral (CNMO2990); 1 specimen, (08-06-07), L 22 mm, over green algae; 2 specimens (11-06-07), ML 25 mm, over green algae; 1 specimen (30-08-07), L 21 mm, over green algae (CNMO3004); 1 specimen (05-09-07), L 21 mm, over green algae; 1 specimen (11-04-08), L 40 mm, over orange sponge; 1 specimen (24-04-2008), L 40 mm, over green algae; Ser: 1 specimen (28-05-07), L 25 mm,

Table 2: *Reef sites*

Localities	Distance to coast (km)	Area (km^2)	Deep (m)
Serpiente	53	0.046	7-18
Madagascar	40	0.216	4-13
Sisal	23	0.673	3-10

over green algae; 1 specimen (30-05-07), L 40 mm, over red algae.
Diagnosis: Valdés *et al*., 2006: 160
Distribution: Mexico: QROO (Ortea *et al*., 1996); Costa Rica; Puerto Rico; San Martin; Guadeloupe; Santa Lucia (Valdés *et al*., 2006).

Hypselodoris ruthae Ev. Marcus & Hughes, 1974
Examined material: Mad: 1 specimen (28-08-07), L 13 mm, over green algae; 1 specimen (05-09-07), L 25 mm over green algae.
Diagnosis: Valdés *et al*., 2006: 156
Distribution: Mexico: QROO (Ortea *et al*., 1996; Valdés *et al*., 2006); Costa Rica; Venezuela; Bahamas; Cuba; Jamaica; Puerto Rico; Virgin Islands; San Martin; Antigua; Guadeloupe; Martinique; St. Lucia; Barbados; Aruba; Curaçao; Grenada (Valdés *et al*., 2006).

Felimare kempfi (Ev. Marcus, 1971)
Examined material: Ser: 1 specimen (28-05-07), L 14 mm, over sand; Mad: 3 specimens (27-08-07), ML 8 mm, over green algae (CNMO3007).
Diagnosis: Valdés *et al*., 2006: 166
Distribution: USA (Florida); Mexico: QROO (Valdés *et al*., 2006); Panama; Costa Rica; Brazil; Puerto Rico (Rios, 1994; Valdés *et al*., 2006).
Remarks: This species was found over green alga; nevertheless it has been reported on calcareous algae.

Felimare sisalensis Ortigosa & Valdés, 2012
Examined material: Mad: 3 specimens (05-09-07), L 12 mm (CNMO2981), L 11 mm (LACM3223), L12 mm (CNMO3037), all over green algae
Diagnosis: Ortigosa and Valdés, 2012: 101.
Distribution: Thus far, known only from Madagascar reef, Campeche Bank.

Family Discodorididae Bergh, 1891
Jorunna spazzola (Er. Marcus, 1955)
Examined material: Boc: 1 specimen (30-01-07), L 15 mm, under rocks.
Diagnosis: Valdés *et al*., 2006: 184
Distribution: USA (Florida); Honduras; Brazil; Cuba; Barbados; Virgin Islands; Curaçao (Valdés *et al*., 2006).

Family Dendrodorididae O´Donoghue, 1924
Dendrodoris krebsii (Mörch, 1863)
Examined material: Ycl: 2 specimens (10-06), ML 45 mm, over orange sponges; 1 specimen (31-01-07), L 50 mm; 3 specimens (28-02-07), ML 60 mm; 2 specimens (09-05-07), ML 40-50 mm; 2 specimens (18-05-07), ML 60 mm (CNMO3010); 14 specimens (07-05-08), ML 55-60 mm; Sis: 1 specimen (21-04-08), L 40 mm, under rocks.
Diagnosis: Valdés *et al*., 2006: 198.
Distribution: USA (Georgia and Florida); Mexico: YUC (Sanvicente-Añorve *et al.,* 2012), QROO (Á. Valdés, personal communication); Belize; Honduras; Costa Rica; Panama; Colombia; Venezuela; Brazil; Bahamas; Cuba; Dominic Republic; Cayman Islands; Jamaica; Virgin Islands; San Martin; Antigua; Guadeloupe; Martinique; St. Lucia; St. Vincent and the Grenadines; Barbados; Granada; Aruba; Curaçao (Valdés *et al*., 2006).
Remarks: This is one of the most common nudibranch in the Caribbean (Valdés *et al*., 2006). We found them both in coral reefs and in lagoons.

Family Goniodorididae H. Adams & A. Adams, 1854
Okenia sp (fig. 2, 3)
Examined material: Sis: 2 specimens (23-02-07), L 8 mm (CNMO3038).
Diagnosis: Translucent white body. White, brown, and red small papiles over the body. Lamellate rhinophores, posterior part of the same color as the body. Short oral tentacles.
Distribution: Thus far, known only from Sisal reef, Campeche Bank.
Remarks: This species didn´t match the same coloration patterns, shape and length of the papillae of the known species of this genus for this geographical area; *Okenia zoobotryon* (Smallwood, 1910) have dark purple and pale brown spots all over the body; *Okenia evelinae* Er. Marcus, 1957 its white and their rhinophores are partially purple; *Okenia impexa* Er. Marcus, 1957 is yellow and has large papillae; *Okenia miramarea* Ortea & Espinosa, 2000 (in Valdés *et al*., 2006); *Okenia* sp. 1 (in Valdés *et al*., 2006) is yellow and have wide and short papillae; *Okenia* sp. 2 and *Okenia* sp. 3 have a white green translucent body,and the papillaes are long and shorter, respectively.

Family Polyceridae Alder & Hankock, 1845
Tambja cf. tenuilineata Miller & Haagh, 2005 (fig. 2, 3)
Examined material: Mad: 1 specimen (07-05-07), L 13 mm; 1 specimen (27-08-07), L 4 mm, over green algae; Ser: 1 specimen, (30-05-07), L 2 mm.
Diagnosis: Miller and Haagh, 2005

Placida dendritica (Alder & Hancock, 1843)
Examined material: Sis: 8 specimens (08-02-07), ML 3 mm (CNMO3018).
Diagnosis: Valdés *et al*., 2006: 82
Distribution: Australia (New South Wales, Southern Queensland and Lord Howe Island); New Zealand (Miller and Haagh, 2005); Portugal (Azores) (Wirtz, 1998, as *Tambja* sp.).
Remarks: The known distribution of this species is very disjunctive; it was described in Australia, and it has been also recorded in the Azores Islands in the middle of the North-Atlantic Ocean. Here it is reported for first time for the western Atlantic. The coloration pattern of the specimens is the same as the original description. Nevertheless, molecular or taxonomical dissection will be necessary in order of confirm its identity.

Clade Cladobranchia
Falimy Dotidae Gay, 1853
Doto sp
Examined material: Mad: 1 specimen (06-06-07), L 11 mm (CNMO3033).
Diagnosis: Small elongated brownish green body. Rhinophoral sheaths with pulpital shape, also brownish green. Smooth rhinophores. Tuberculate cerata arranged dorso-laterally on each side of the body, the anterior ceratas are smaller and with a simpler arrangement than the posterior ones. The base of the cerata is lighter brown through all the body. Irregular tubercles distributed through all the body (fig. 2). Radula with a single row. The reproductive system has one receptacle with an unknown function.
Radular formula: 79x1.0.1 (fig 3).
Distribution: Thus far, known only from Madagascar reef, Campeche Bank.
Remarks: This species didn´t match with the coloration patterns, or the shape and size of the ceratas of the 14 known species of this genus for this geographical area: the orange color of the ceratas of *D. uva* Er. Marcus 1955, *D. wildeli* Er. Marcus & Ev. Marcus, 1970, and *D. duao*, Ortea, 1955; the flat ceratas of *D. pita* Er. Marcus, 1955 and *Doto* sp 1 (in Valdes *et al*., 2006; the dark body and rounded ceratas of *D. escatlari* Ortea, Moro & Espinosa, 1997, *Doto* sp 2 (in Valdés *et al*., 2006), and *Doto* sp 3 (in Valdés *et al*., 2006); the particular coloration of *Doto pygmaea* Bergh, 1871, *D. divae* Ev. Marcus & Er. Marcus, 1950, *D. sabuli* Ortea, 2001, and *D. cabecar* Ortea, 2001; the large apical tubercles and white spots on the dorsum of *D. chica* Ev. Marcus & Er. Marcus, 1960; and the white color, dense and large tubercles of *D. varaderoensis* Ortea, 2001. It´s important to notice that there are disagreements between the identity and description of some Caribbean species (Valdés *et al*., 2006).
Family Scyllaeidae Alder & Hancock, 1855
Scyllaea pelagica Linnaeus, 1758
Examined material: Sis: 1 specimen (23-02-07), L 8 mm (CNMO3021).
Distribution: Circumtropical. Western Atlantic: USA (Massachusetts, North Carolina, Georgia, Florida, Texas); Mexico: YUC (Sanvicente-Añorve *et al.,* 2012); Costa Rica; Bermuda; Bahamas; Bonaire (Valdés et al., 2006).
Remarks: This species inhabits on floating *Sargassum* sp, here we found it by a brushing method over different species of algae.

Family Flabellinidae Bergh, 1881
Flabellina dushia (Ev. Marcus & Er. Marcus, 1963)
Examined material: Mad: 1 specimen (11-04-08), L 10 mm, over green algae.
Diagnosis: Valdés *et al*., 2006: 238
Distribution: USA (Florida); Bahamas; Jamaica; Martinique; Curaçao (Valdés *et al*., 2006).

Flabellina engeli Ev. Marcus & Er. Marcus, 1968
Examined material: Mad: 1 specimen (24-04-08), L 14 mm, over red-purple sponge.
Diagnosis: Valdés *et al*., 2006: 240
Distribution: USA (Florida); Costa Rica; Colombia; Cuba; Puerto Rico; Martinique; St. Lucia; Barbados; Curaçao; Grenada (Valdés *et al*., 2006).

Flabellina sp (fig. 9)
Examined material: Ycl: 2 specimens (28-02-07), ML 12 mm.
Diagnosis: White elongated body with a slightly more translucent foot than the rest of the body. With an opaque white dorsal line across the body, it is wider in the pericardial area. Oral tentacles the same color as the body and with translucent tips. The anterior corner of the foot is small, triangular, and of the same color as the foot. Smooth white rhinophores. Numerous and densely arranged cerata, without forming clusters, the digestive gland is orange with scattered opaque white spots.
Distribution: Thus far, known only from Yucalpeten lagoon, Campeche Bank.
Remarks: The collected material could be attributed *Flabellina verta* (Er. Marcus, 1976) or *Flabellina bandeli* (Ev. Marcus, 1976); nevertheless, the diagnosis

Table 3:
Opisthobranch species sampled in the Yucalpeten and the Bocana lagoons, and in Sisal, Madagascar, and Serpiente coral reefs (NR=New record).

Family	Species	La Bocana	Yucalpeten	Sisal	Madagascar	Serpiente	NR for Yucatan State	NR from Atlantic coast of Mexico
	Clado Cephalaspidea							
Bullidae	*Bulla occidentalis* Adams, 1850	●	●					
Haminoeidae	*Haminoea elegans* (Gray, 1825)	●						
	Haminoea antillarum (d´Orbigny 1841)	●						
	Haminoea succinea (Conrad, 1846)		●					
	Haminoea sp				●		●	●
Aglajidae	*Chelidonura hirundinina* (Quoy and Gaimard, 1833)			●	●			
	Chelidonura berolina Er. Marcus and Ev. Marcus, 1970			●	●		●	
	Chelidonura cubana Ortea and Martínez, 1997			●	●		●	●
Cylichnidae	*Acteocina canaliculata* (Say, 1826)	●						
Gastropteridae	*Gastropteron chacmol* Gosliner, 1989				●		●	
	Clado Aplysiomorpha							
Aplysiidae	*Aplysia brasiliana* Rang, 1828	●	●					
	Aplysia dactylomela Rang, 1828	●		●				
	Aplysia morio (Verrill, 1901)	●					●	●
	Bursatella leachii pleii Rang, 1828	●					●	
	Stylocheilus striatus (Quoy and Gaimard, 1832)	●						
	Phyllaplysia engeli Er. Marcus, 1955		●					
	Clado Sacoglossa							
Oxynoidae	*Lobiger souverbii* P. Fischer, 1857			●				
Juliidae	*Berthelinia caribbea* Edmunds, 1963				●		●	
Placobranchidae	*Elysia cf. cornigera* (Nuttall, 1989)		●				●	●
	Elysia papillosa Verrill, 1901				●		●	
	Elysia subornata Verrill, 1901		●					
	Elysia canguzua Er. Marcus, 1955			●			●	●
	Elysia tuca Ev. Marcus y Er. Marcus, 1967			●				
	Elysia patina Ev. Marcus, 1980			●	●	●		
	Elysia zuleicae Ortea y Espinosa, 2002			●			●	●
	Thuridilla mazda Ortea y Espinosa, 2000				●		●	●
Limapontiidae	*Ercolania* sp				●		●	●
	Costasiella ocellifera (Simroth, 1895)			●	●			
	Placida dendritica (Alder y Hancock, 1843)			●			●	●
	Clade Eutenidiacea							
Dorididae	*Doris bovena* Er. Marcus, 1955		●					
Chromodorididae	*Chromodoris clenchi* (Rusell, 1935)			●	●		●	●
	Chromodoris regalis (Ortea, Caballer & Moro, 2001)				●		●	●
	Chromodoris sp			●			●	●
	Hypselodoris picta (Schultz, 1836)			●	●	●	●	●
	Hypselodoris acriba Ev. Marcus y Er. Marcus, 1967				●	●	●	
	Hypselodoris ruthae (Ev. Marcus y Hughes, 1974)				●		●	
	Felimare kempfi (Ev. Marcus, 1971)				●	●	●	
	Felimare sisalensis Ortigosa & Valdés, 2012				●		●	●
Discodoridae	*Jorunna spazzola* (Er. Marcus, 1955)			●			●	●
Dendrodorididae	*Dendrodoris krebsii* (Mörch, 1863)		●	●				
Goniodorididae	*Okenia* sp			●			●	●
Polyceridae	*Tambja cf. tenuilineata* Miller y Haagh, 2005				●	●	●	●
	Clado Cladobranchia							
Dotidae	*Doto* sp				●		●	●
Scyllaeidae	*Scyllaea pelagica* Linnaeus. 1758			●				
Flabellinidae	*Flabellina dushia* (Ev. Marcus y Er. Marcus, 1963)				●		●	●
	Flabellina engeli Ev. Marcus y Er. Marcus, 1968)				●		●	●
	Flabellina sp		●				●	●
Aeolidiidae	*Aeolidiella stephanieae* Valdés, 2005		●					
	Aeolidiella sp 1				●		●	●
	Aeolidiella sp 2				●		●	●
	Spurilla neapolitana (delle Chiaje, 1841)	●	●					

Table 4:
Richness species of opisthobranchs in different areas.

Area	Cephalaspidea	Sacoglossa	Aplysiomorpha	Notaspidea	Nudibranchia	Reference
Caribbean	29%	15.6%	5.2%	4.6%	45.7%	Bertsch, 2009
Brazil	25.9%	10%	6.3%	5.4%	50.7%	Bertsch, 2009
Colombia	32.47%	6.49%	24.29%	?	40.26%	Ardila *et al*., 2007
Campeche Bank	16.92%	24.62%	12.31%	0%	46.15% (Eutenidiacea+ Cladobranchia)	Sanvicente-Añorve *et al*., 2012, this study

of those species didn´t show concluding differences between each one and both match with our specimen.

Family Aeolidiidae Gray, 1827
Aeolidiella stephanieae Valdés, 2005
Examined material: Ycl: 1 specimen (28-02-07), L 9 mm (CNMO2996); 1 specimen (18-05-07), L 10 mm, both beneath rocks.
Diagnosis: Valdés *et al*., 2006: 274
Distribution: USA (Florida) (Valdés *et al*., 2006); Mexico: YUC (Sanvicente-Añorve *et al.,* 2012).
Remarks: This species feeds on sea anemones (Valdés *et al*., 2006).

Aeolidiella sp 1 (fig. 2)
Examined material: Mad: 1 specimen (06-06-07), L 15 mm, over *Padina* sp.
Diagnosis: Opaque white elongated body with foot slightly wider than the rest of the body and translucent white. Oral tentacles orange and well developed. The anterior corner of the foot is small, triangular, and of the same color as the rest of the foot. Smooth orange rhinophores with no other sculpture. Numerous and densely arranged cerata, without forming groups, the digestive gland of brownish color with white tips.
Distribution: Thus far, known only from Madagascar reef, Campeche Bank.

Aeolidiella sp 2 (fig. 2)
Examined material: Mad: 1 specimen (05-09-07), L 14 mm, over green algae.
Diagnosis: Opaque white elongated body with a translucent white foot. White Oral tentacles, well developed with a translucent white base. Smooth opaque white rhinophores with no other sculpture, with a white translucent base. Numerous and densely arranged cerata, without forming groups, red digestive gland with white tips.
Distribution: Thus far, known only from Madagascar reef, Campeche Bank.
Remarks: The two species of *Aeolidiella* didn´t match the same coloration patterns of any of the known species of this genus for this geographical area *A. indica* Bergh, 1988, *A. benteva* (Er. Marcus, 1958), and *A. stephanieae*.

Spurilla neapolitana (delle Chiaje, 1841)
Examined material: Boc: 1 specimen (30-01-07), L 12 mm, under rock; Ycl: 1 specimen (31-01-07), L 10 mm, under rock; 3 specimens. (28-02-07), ML 22 mm, over brown algae; 3 specimens (18-05-07), ML 18 mm, under rock.
Diagnosis: Valdés *et al*., 2006: 270
Distribution: Circumtropical. Western Atlantic: USA (Florida and Texas); Mexico: VER (Zamora-Silva and Ortigosa, 2012), YUC (Sanvicente-Añorve *et al.,* 2012); Belize; Honduras; Costa Rica; Colombia; Venezuela; Brazil Bahamas; Bermuda; Virgin Islands; Jamaica; Puerto Rico; Barbados; St. Vincent and the Grenadines; Curaçao (Valdés *et al*., 2006).
Remarks: This species feeds on anemones of the genus *Aiptasia* (Valdés *et al*., 2006).

DISCUSSION

The information of the distribution of these species partially fills the information gap of this group of gastropods in the Campeche Bank, Yucatan Peninsula, a very interesting transition area between the Gulf of Mexico and the Caribbean Sea. The number of species registered during this survey is the result of the sampling effort focused exclusively in this group of mollusks. The number of species recorded here is higher than those found by Zamora Silva and Ortigosa (2012), and Sanvicente-Añorve *et al.* (2012), since the habitats studied here include two different areas (lagoons and reefs), and also due to the use of SCUBA equipment. The indirect methods were the best to find small, cryptic and shell-less species, as it can be confirmed in Table 3. The methods used in the present study prevented damage to the fragile body structures of the shell-less species, enabling the observation of complete and intact morphological characteristics. To date, almost all the opisthobranch species reported for the Atlantic coast of Mexico were those having a well-developed calcareous shell such as *J. punctostriatus*, *B. occidentalis,* and *A. canaliculata* those with large size such as *A. dactylomela and A. brasiliana* (Zamora-Silva and Ortigosa, 2012). and only the study of Sanvicente-Añorve *et al.* (2012) reported cryptic and small species. The shelled seaslugs are well preserved in sand and mud samples, and

the larger ones could be easily observed, leaving the cryptic species undiscovered. Nevertheless, there are still places that were not sampled, such as live coral, sand beaches or mangroves swamps, and therefore, the number of species could increase in the future. Out of the 51 species of seaslugs reported in this study, six species have no shell and 17 species were 16 mm or less of total length in the adult stage. This could be the first record of *T. cf. tenuilineata* for the east coast of the Atlantic Ocean; it has been reported only in the Azores Islands (Wirtz, 1998) and in Australia (Miller and Haagh, 2005). Sisal village has an small harbor, almost confined to fishermen of the village, due to this, *T. cf. tenuilineata* could be introduced by ships that arrived to the Progreso Harbor (eastern of the study sites). The present checklist includes 23 species of seaslugs that are new records for the Mexican Atlantic coast (including Gulf of Mexico and Caribbean Sea). Compared with Sanvicente-Añorve *et al.* (2012), only 17 species were shared between studies suggesting possible differences between the reefs. Nonetheless, efforts must be made to improve the knowledge of the seaslug fauna of the Campeche bank.

In this study the clade Sacoglossa has the highest specific richness, followed by Eutenidiacea, Cephalaspidea, Aeolidina, Anaspidea, and Cladobranchia. The Eutenidiacea+ Cladobranchia group (Nudibranchia) were the most diverse with almost the half of the records, as happens with other studies at the Campeche Bank (Sanvicente-Añorve *et al.,* 2012), Caribbean Sea (Bertsch, 2009), Colombia (Ardila *et al*., 2007), and Brazil (Bertsch, 2009) (Table 5). The diversity of the other clades differed between the areas. In this study, Notaspidea species were not found, as in Sanvicente-Añorve *et al.* (2012), although the group is reported in the warm Atlantic waters of Colombia and Brazil (Valdés *et al*., 2006; Ardila *et al.* 2007; Bertsch 2009).

From the entire species recorded, seven have a widespread distribution (*A. dactylomela*, *B. leachii pleii*, *S. striatus*, *L. souverbii*, *P. dendritica*, *S. pelagica*, and *S. neapolitana*), and two are recorded for the Atlantic and Pacific coasts of Mexico (*C. hirundinina*, and *L. souverbii*).

Out of the 111 species of opisthobranch reported for the Atlantic Mexican coast, 37 were reported for the Gulf of Mexico, 36 for the Mexican Caribbean, and 20 of the records do not specified the locality (Valdés *et al*., 2006). With the contribution of the present study, the actual number of opisthobranch fauna in the Campeche Bank increases to 84 species, representing a 64% increment of the biodiversity knowledge on the region's species richness of this particular taxa. As expected, due to the spatial distribution of the sampling stations we found opisthobranch species that had already been reported in the Caribbean and in the Gulf of Mexico, as it happens with other species of invertebrates that share species between regions (González *et al*., 1991; Gutiérrez *et al*., 1993; Jordán-Dahlgren, 2002).

From the 18 total species found in the lagoons, only three species were shared between both lagoons (*B. occidentalis*, *A. brasiliana*, and *S. neapolitana*), each one of different clades (Cephalaspidea, Aplysiomorpha, and Cladobranchia). Similarly, from the 35 species total found in the three reefs, only two (*E. patina* and *H. picta*) are shared between them from two different clades (Sacoglossa and Eutenidiacea). This could be due to the great diversity of the feeding resources inside the group (Nybakken, 1974; McDonald and Nybakken, 1991, 1997, 1999) and despite some similar habitats between each reef and between lagoons; there are differences in the feeding resources. The nudibranch *D. krebsii* is reported as common in the Caribbean (Valdes *et al*., 2006) but we only found it in seven out of the 57 sampled sites; and *Elysia crispata* Mörch, 1863, distributed in Veracruz reefs (Zamora-Silva and Ortigosa, 2012), at Alacranes reef (Sanvicente-Añorve *et al.* 2012), and at Mexican Caribbean (Á. Valdés, personal communication) was not recorder in this study.

According to Johnson and Gosliner (2012), all the Atlantic species of the *Chromodoris* genera have to be named as *Felimida* Marcus, 1971, and the species from the eastern Pacific, Atlantic, and Mediterranean known as *Hypselodoris*, and the eastern Pacific and Atlantic *Mexichromis* are part of *Felimare* clade, but due to the lack of molecular analysis in this study, we conserved the traditional names. The species of traditionally *Mexichromis* in this study are named as *Felimare* according to Johnson and Gosliner (2012) and Ortigosa and Valdés (2012).

As the objective of the present study was to update the opisthobranch fauna inventory of the Campeche Bank, Yucatan Peninsula, the lack of a quantitative sampling effort (using transects or quadrants), did not compromised the results, and indeed, the use of direct sampling using different collection techniques increased the rare and cryptic species numbers.

The adequate knowledge of the biodiversity of a specific area is critical for the establishment or management of conservation areas. Very large areas of the Mexican Atlantic coast remain unexplored for opisthobranchs fauna and these represent not only great

challenges to increase our knowledge of this particular taxa in the region, but it also poses difficult logistic obstacles. Areas such as the Veracruz reefs at the western-central part of the Gulf of Mexico, the many cays of the Campeche Bank, the Mesoamerican Reef in the Caribbean sea, and a diverse system of coastal lagoons creates great opportunities for future opisthobranch fauna surveys and to increase the group species richness in the region.

ACKNOWLEDGEMENTS

We want to thank CONACyT for the M. Sc. scholarship through the Posgrado de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México (PCMyL, UNAM) (202617); Ecology research group of UMDI-Sisal, UNAM (M. Badillo, A. Gallardo, M. Mascaró, J. Aranda, Q. Hernández, S. Zarco, M. Oseguera, F. Mex); Dr. Ángel Valdés, California State Polytechnic University, Pomona; Natural History Museum of Los Angeles County (SEM); M. Reguero, B. Urbano, and S. Biro, UNAM; the Biology group of Universidade Lusófona de Humanidades e Tecnologias (F. Carlos, M. Albuquerque, C. Cúcio, P. Coelho). This work was funded by the UNAM (PAPIME PE207210) and CONACyT-SEMARNAT (108285 Project).

REFERENCES

Abascal AJ, Sheinbaum J, Candela J, Ochoa J, Badan A (2003). Analysis of flow variability in the Yucatan Channel, Journal of Geophysical Research 108 (C12, doi: 10.1029/2003JC001922, 2003)

Andrews J (1971). Sea shells of the Texas coast, 1st Edition, University of Texas Press, Texas, 298 pp.

Ardila NE, Báes DP, Valdés A (2007). Babosas y liebres de mar (Mollusca: Gastropoda: Opisthobranchia) de Colombia. Biota Colombiana 8 (002): 185-197.

Bertsch, H (2009). Book review of Indo-Pacific nudibranchs and sea slugs (Gosliner, Behrens and Valdés, 2008), with comparisons of global and Indo-Pacific opisthobranch taxonomic biodiversity and biogeography, Opisthobranch Newsletter, 30: 1-9.

Bouchet P, Rocroi J (2005). Classification and Nomenclator of Gastropod Families, Malacologia, 47: 1-357.

Carmona L, Malaquias MA, Gosliner TM, Pola M, Cervera JL (2011). Amphi-Atlantic distributions and cryptic species in Sacoglossan sea slugs, Journal of Molluscan Studies, 77: 401-412

Chávez E, Hidalgo E (1998). Los arrecifes coralinos del Caribe Noroccidental y Golfo de México en el contexto socioeconómico, Anales del Instituto de Ciencias del Mar y Limnología, 15(1):167-176.

Chávez EA, Hidalgo E, Sevilla ML (1970). Datos acerca de las comunidades bentónicas del arrecife de Lobos, Veracruz, Revista de la Sociedad Mexicana de Historia Natural, 31: 211-280.

Clark K, Jensen K, Stirts H (1990). Survey for functional kleptoplasty among West Atlantic Ascoglossa (=Sacoglossa) (Mollusca: Opisthobranchia), The Veliger, 30(4): 339-345.

Clark, K (1994) Ascoglossan (=Sacoglossa) mollusks in the Florida Keys: rare marine invertebrates at special risk, Bulletin of Marine Science, 54(3): 900-916.

Cruz-Ábrego FM, Toledano-Granados A, Flores-Andolais F (1994). Ecología comunitaria de los gasterópodos marinos (Mollusca: Gastropoda) en Isla Contoy, Revista de Biología Tropical, 42: 549-556.

Ekdale AA (1974). Marine molluscs from the shallow-water environments (0-60 meters) off the northeast Yucatan coast, Mexico, Bulletin of Marine Science, 24(3): 638-668.

Flores-Andolais F, García-Cubas A, Toledano-Granados A (1988). Sistemática y algunos aspectos ecológicos de los moluscos de la Laguna de la Mancha, Veracruz, México, Anales del Instituto de Ciencias del Mar y Limnología, 175(2):235-258

García-Cubas A (1971). Ecología and distribución de los micromoluscos de la Laguna de Tamiahua, Veracruz, México, Universidad Nacional Autónoma de México, Boletín del Instituto de Geología, 91: 1-53.

García-Cubas A, Escobar F, González L, Reguero M (1990). Moluscos de la Laguna de Mecoacan, Tabasco, México: Sistemática y ecología, Anales del Instituto de Ciencias del Mar y Limnología, 17(2): 309-343.

García-Cubas A, Escobar F, Reguero M (1999). Gastrópodos marinos de la Península de Yucatán, México, Revista de la Sociedad Mexicana de Historia Natural, 49: 127-146.

García-Cubas A, Reguero M (1990). Moluscos del sistema Lagunas Tupilco-Ostion, Tabasco, México: Sistemática y ecología, Anales del Instituto de Ciencias del Mar y Limnología, 17(2): 345-359.

García-Cubas A, Reguero M (1995). Moluscos de la laguna de Sontecomapan, Veracruz, México: sistemática y ecología, Hidrobiológica, 5 (1-2): 1-24

García-Cubas A, Reguero M, Elizarrarás R (1992). Moluscos del Sistema Lagunar Chica-Grande, Veracruz, México: Sistemática y ecología, Anales del Instituto de Ciencias del Mar y Limnología, 19(1): 71-101.

García-Cubas A, Reguero M, Jácome L (1994). Moluscos arrecifales de Veracruz, México (Guía de Campo), Universidad Nacional Autónoma de México, Ciudad de México, 143 pp.

González MA, Chávez EA, de la Cruz G, Torruco D (1991). Distribution patterns of Gastropods and Bivalves at the Yucatan Peninsula, Mexico, Ciencias Marinas, 17(3):147-172.

Gosliner TM (1989). Revision of the Gastropteridae (Opisthobranchia: Cephalaspidea) with descriptions of a new genus and six new species, The Veliger, 32(4): 333-381.

Gosliner MT, Behrens DW, Valdés Á. (2008). Indo-Pacific

nudibranchs and sea slugs. A field guide to the World´s most diverse fauna. Sea Challengers Natural History Books, Hong Kong, 426 pp.

Gutiérrez D, García C, Lara M, Padilla C (1993). Comparación de arrecifes coralinos: Veracruz y Quintana Roo pp. 187-806 In: Biodiversidad Marina Costera de México. Salazar SI, González NE (eds). Com. Nal. Biodiversidad y CIQRO 865 pp.

Hicks DW, Barrera NC, Tunell Jr. W (2001). Ecological distribution of shallow-water Mollusca on the Alacran reef, Campeche Bank, Yucatan, Mexico, Texas Conchologist, 38(1): 7-30.

Johnson R, Gosliner TM (2012) Traditional taxonomic groupings mask evolutionary history: A molecular phylogeny and new classification of the chromodorid nudibranchs. PLoS ONE 7(4): e33479. doi:10.1371/journal.pone.0033479.

Jordán-Dahlgren E (2002). Gorgonian distribution patterns in coral reef environments of the Gulf of Mexico: evidence of sporadic ecological connectivity? Coral Reefs, 21: 205-215.

Malaquias M, Calado G, Cruz JF, Jensen K. (2012). On the occurrence of the Caribbean sea slug *Thuridilla mazda* Ortea & Espinosa, 2000 in the Eastern Atlantic Ocean, Marine Biodiversity Records, doi:10.1017/S1755267211001023.

Malaquias M, Reid D (2007). Systematic revision of the living species of Bullidae (Mollusca: Gastropoda: Cephalaspidea), with a molecular phylogenetic analysis, Zoological Journal of the Linnean Society, 153: 453-543.

McDonald G, Nybakken J (1991). A preliminary report on a world-wide review of the food of nudibranchs, Journal of Mollucan Studies. 57:61-63.

McDonald G, Nybakken J (1997). A worldwide review of the food of nudibranch mollusks I. Introduction and the suborder Arminacea, Veliger, 40 (2): 157-159.

McDonald G, Nybakken J (1999). A worldwide review of the food of nudibranch mollusks II. The suborder Dendronotacea, Veliger, 42 (1): 62-66.

Miller MC, Haagh JJ (2005). A new species of the dorid nudibranch genus *Tambja* Burn, 1962 (Gastropoda: Opisthobranchia) from Australasia, Vita Malacologica, 35 (3): 205-214.

Moore DR (1958). Notes on Blanquilla Reef, the most northerly coral formation in Western Gulf of Mexico, Institute Marine Science, 5: 151-155.

Nybakken J (1974). A phenology of the smaller dendronotacean, arminacean and aeolidacean nudibranchs at Asilomar State Beach over a twenty-seven month period, The Veliger, 16 (4): 370-373.

Ortigosa D, Valdés Á (2012) A new species of Felimare (formerly Mexichromis) (Gastropoda: Opisthobranchia: Chromodorididae) from the Yucatan Peninsula, Mexico, The Nautilus, 126 (3): 98-104.

Ortea J, Moro L, Espinosa J (1994). Nuevos datos sobre el género *Elysia* Risso, 1818 (Opisthobranchia: Sacoglossa) en el atlántico, Revista de la Academia Canaria de Ciencias IX, (2-4): 141-155.

Ortea J, Valdés A, García Gómez JC (1996). Revisión de las especies atlánticas de la familia Chromodorididae (Mollusca: Nudibranchia) del grupo cromático azul, Avicennia suplemento, 1: 1-165.

Pérez-Rodríguez R (1997). Moluscos de la plataforma continental del Atlántico mexicano, 1st edition, Universidad Autónoma Metropolitana, Ciudad de México, 260 pp.

Quintana y Molina J (1991). Resultados del Programa de Investigaciones en arrecifes Veracruzanos del Laboratorio de sistemas Bentónicos Litorales, Hidrobiología, 1(1): 73-79.

Redfern C (2001). Bahamian Seashells: A thousand Species from Abaco, Bahamas. Bahamian Sea Shells Inc. Florida. 280 pp.

Reguero M, García-Cubas A (1989). Moluscos de la Laguna de Alvarado, Veracruz: Sistemática y ecología, Anales del Instituto de Ciencias del Mar y Limnología, 16(2): 279-306.

Reguero M and García-Cubas A (1993). Moluscos de la Laguna Pueblo Viejo, Veracruz, México: Sistemática y ecología, Anales del Instituto de Ciencias del Mar y Limnología, 20(1): 77-104.

Rice WH, Kornicker LS (1962). Mollusks of Alacran Reef, Campeche Bank, Mexico, Institute of Marine Science, 8: 366-403.

Rice WH, Kornicker LS (1965). Mollusks from the deeper waters of the northwestern Campeche Bank, Mexico, Publications of the Institute of Marine Science, 10: 108-172.

Rios EC (1994). Seashells of Brazil. 2nd ed. Editora da FURG, Rio Grande. 368 pp.

Rosenberg F, Moretzsohn F, García EF (2007). Gastropoda (Mollusca) of the Gulf of Mexico. In: DL Felder, DK Camp (Eds.) Gulf of Mexico Origin, Waters, and Biota. 1st edition, Vol. 1 Biodiversity, Texas A&M University Press, Texas, 1312 pp.

Sanvicente-Añorve L. Solís-Weiss V, Ortigosa J, Hermoso-Salazar M, Lemus-Santana E (2012). Opisthobranch fauna from the National Park Arrecife Alacranes, southern Gulf of Mexico, Cah. Biol. Mar., 53: 447-460.

Sheinbaum J, Candela J, Badan A, Ochoa J (2002). Flow structure and transport in the Yucatan Channel, Geophys, Res. Let. 29, doi:10.1029/2001GL013990.

Spalding MD (2004). A guide to the coral reefs of the Caribbean, 1st edition, University of California Press, Berkeley, 256 pp.

Strenth NE, Blankenship JE (1977). Notes on Sea Hare of South Texas, The Veliger, 20 (2): 98-100.

Valdés Á, Hamann J, Behrens D, DuPont A (2006). Caribbean sea slugs. A field guide to the opisthobranchs mollusks from the tropical northwestern Atlantic, Sea Challengers Natural History Books, Washington, 289 pp.

Vicencio de la Cruz F, González-Gándara C (2006). Lista actualizada de los gasterópodos de la planicie del arrecife Lobos, Veracruz, México, Revista UDO Agrícola, 6(1): 128-137.

Vokes HE, Vokes EH (1983). Distribution of shallow-water marine Mollusca, Yucatan Peninsula, Mexico. Mesoamerican

Ecology Institute, Monograph 1, Tulane University, New Orleans, 183 p.

Wägele H, Klussmann-Kolb A (2005). Opisthobranchia (Mollusca, Gastropoda) - more than just slimy slugs. Shell reduction and its implications on defense and foraging, Frontiers in Zoology, 2: 1-18.

Wiley G, Circé R, Tunell J (1982). Mollusca of the rocky shores of East Central Veracruz State, Mexico, The Nautilus, 96: 55-61.

Wirtz P (1998). Opisthobranch Molluscs from the Azores, Vita Marina, 45 (1): 1-16.

Zamora-Silva A, Ortigosa D (2012). Nuevos registros de opistobranquios en el Parque Nacional Sistema Arrecifal Veracruzano, México, Revista Mexicana de Biodiversidad, 83: 359-369.

Zamora-Silva A, Naranjo-García E (2008). Los opistobranquios de la Colección Nacional de Moluscos, Revista Mexicana de Biodiversidad, 79: 333-342.

(Received: January 17, 2012; Accepted: October 30, 2012)