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An account of *Alciopina, Torrea*, and *Rhynconereella* (Polychaeta: Alciopidae) of the western Caribbean Sea

Soledad Jiménez-Cueto & Eduardo Suárez-Morales

El Colegio de la Frontera Sur (ECOSUR) Unidad Chetumal. A.P. 424. Chetumal, Quintana Roo 77900. Mexico.

Corresponding author : Eduardo Suárez-Morales, e-mail: esuarez@ecosur.mx

ABSTRACT. Seven species of *Alciopina* Claparède & Panceri, *Torrea* Quatrefages, and *Rhynconereella* Costa were collected during five oceanographic cruises off the east coast of the Yucatan Peninsula, western Caribbean Sea. Descriptions and illustrations are provided here with an identification key. The most frequent species were *Rhynchonereella petersii* (Langerhans, 1880); *Alciopina parasitica* Claparède & Panceri, 1867; and *A. paumotanus* Chamberlin, 1919; which comprised 85% of the alciopid numbers collected during this survey. These three genera currently contain nine species, of which seven were obtained in our samples from the western Caribbean. These are the first records of the Alciopidae in the western Caribbean Basin and in Mexican waters of the Atlantic Ocean.

KEY WORDS : marine zooplankton, alciopid taxonomy, plankton

INTRODUCTION

Only a few groups of polychaetes have colonized the water column; among these, the highly specialized alciopids predominate (Støp-Bowitz, 1981; 1996; Wu & Lu, 1993). According to the results of the cladistical analysis and classification proposed by Rouse & Fauchald (1997) and modified by Glasby et al. (2000), the alciopid polychaetes belong to the clade Palpata, Aciculata, Phyllodocida. Alciopids were long considered a subfamily of the Phyllodocidae; however, as noted by Rouse & Pleijel (2001), there are no conclusive cladistical studies establishing that this group is nested within the Phyllodocidae, although both groups have important similarities. Wu & Lu (1993) addressed the phylogenetic relationships within the family, and agreed with Dales (1957) and Rice (1987) in inferring the origin of alciopids from a phyllodocid-like ancestor. Members of the Alciopidae are characterized by extreme development of the lateral eyes, a feature that modifies the structure of the entire cephalic area. Among other adaptations for the planktic life, alciopids show transformed podial cirri into natatorial appendages. Also, the cirriform processes of the pharynx have numerous gland cells used to catch small prey items (see Uschakov, 1972; Rouse & Fauchald, 1997).

All the members of this family are marine holoplanktic forms, easily recognized by their enormous sphaerical, lensed eyes (e.g., Pleijel & Dales, 1992); the unusual development of these organs probably relates to visual predatory behaviour. They are raptorial forms feeding on copepods, euphausiids, and other zooplankters. Alciopids occur in tropical and temperate waters of the world oceans, and are infrequently found in neritic environments. Most are epipelagic, dwelling in the upper layers (0–100m); however, some species migrate more widely through the water column, to depths exceeding 500m (Støp-Bowitz, 1981). Some species have been regarded as indicators of water masses (Orensanz & Ramírez, 1973).

Currently, the family contains 34 nominal species (Dales & Peter, 1972; Støp-Bowitz, 1996). Records of Alciopidae in the Atlantic Ocean can be found in the surveys by Treadwell (1943), Støp-Bowitz (1948; 1991; 1992; 1996), Renaud (1956), Tebble (1960), Rioja (1958), Day (1967), Orensanz & Ramírez (1973), Rice (1987), Pleijel & Dales (1992), and Núñez et al. (1993). Hitherto, this group has been surveyed only sporadically in the northwestern tropical Atlantic region. Twenty-six species of Alciopidae are known from the Atlantic Ocean; of these, up to 15 have been reported from the tropical northwestern Atlantic (see Salazar-Vallejo, 1992; 1996). In large oceanic areas in this region, such as the Caribbean Basin, the alciopid fauna remains poorly known. In this contribution we present a first taxonomic account and illustrated records of seven species of alciopids from the westernmost sector of this tropical basin. Descriptions of these species and a key for their identification are also provided.

MATERIALS AND METHODS

Five oceanographic cruises were carried out in oceanic waters in the Mexican Caribbean, the westernmost sector of the Caribbean Basin. These surveys were performed in February, March, May, August, and November 1991 on board of vessels of the Mexican Secretaría de Marina. Zooplankton samples were collected following a station plan that included 22 sampling sites during each cruise (Fig. 1). Sampling was performed by surface (0–10m) oblique trawls with a standard, square-mouthed plankton net (0.33mm mesh). This gear allowed collection of large and middle-sized pelagic polychaetes. Temperature and salinity were recorded at each sampling site. The mean volume of water filtered by the net per haul ranged between 100 and 160m^3; density values were obtained from these data. Samples were collected both in daylight (06: 00–18: 00h) and at night (19: 00–05: 00h). Samples were fixed and preserved in a buffered 4% formalin solu-

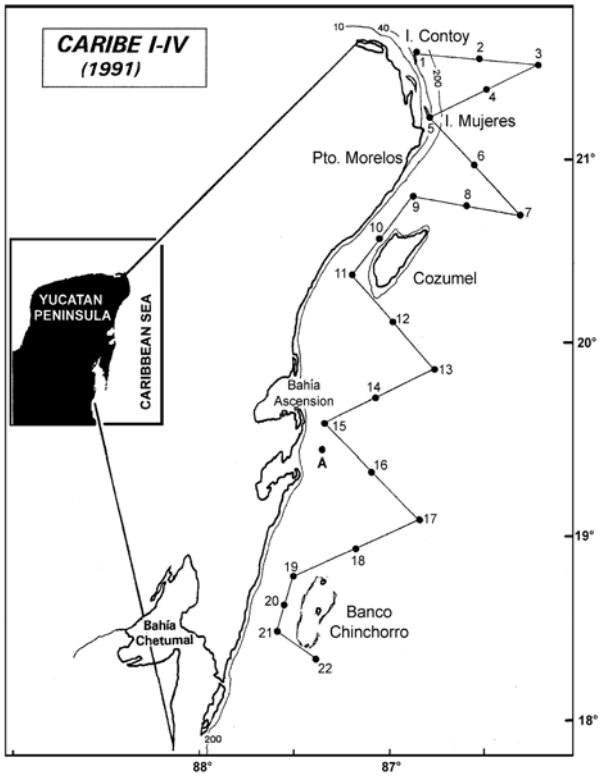

Fig. 1. – Surveyed area in the western Caribbean Sea, showing sampling stations.

tion. Alciopid polychaetes were sorted from the original sample and then transferred to 70% ethanol for long-term preservation. Additional material was collected during a cruise of the R/V "Edwin Link", carried out during August 1990 off the Caribbean coast of Mexico. Specimens were identified following the keys and illustrations published by CHAMBERLIN (1919), FERNÁNDEZ-ÁLAMO (1983), STØP-BOWITZ (1948; 1996), DAY (1967), and ORENSANZ & RAMÍREZ (1973). The specimens were deposited in the Collection of Zooplankton (ECO-CHZ) held at El Colegio de la Frontera Sur (ECOSUR), in Chetumal, Mexico. Type material of the species treated in this report was sought, unsuccessfully, from curators or databases of various institutions. We were able to compare our specimens with the original illustrations and descriptions of the alciopids found in this survey.

RESULTS

In this section we present revised diagnoses of the genera and species recorded in this survey, illustrations of the taxonomically relevant characters of each species, and a key for their identification. The abbreviations used in the section of material examined indicate the cruise name (C for the "Caribe" cruises, EL for "Edwin Link" cruise). In case of the Caribe cruises the C followed by the number (I–V) of the cruise and by the station number (A and 1-22, as in Fig. 1), the number and sex of the specimens examined, date and hour of collection, geographic position of the station, and catalogue number.

Systematics

Family Alciopidae Ehlers, 1864

Genus *Alciopina* Claparède & Panceri, 1867

Diagnosis: Body short. Prostomium rounded, produced anterior to eyes. One ventral pair of palps and three antennae, one dorsal pair plus a median one, the latter represented by a small process. Pharynx short, with marginal papillae. Eyes large, laterally directed. Six pairs of tentacular cirri, arranged as follows: first ventral pair arising from cirrophores on the lower surface of eyes, first and second segments with one dorsal and one ventral pair, third segment with single ventral pair. Fourth segment with or without chaetigerous lobe. Succeeding segments well-developed, with dorsal and ventral foliaceous cirri; chaetigerous lobes without cirriform appendages. Chaetae simple, capillary, acicular on anterior segments. Genital papillae on parapodia 9-18. Segmental glands from first chaetigerous segment. Two known species.

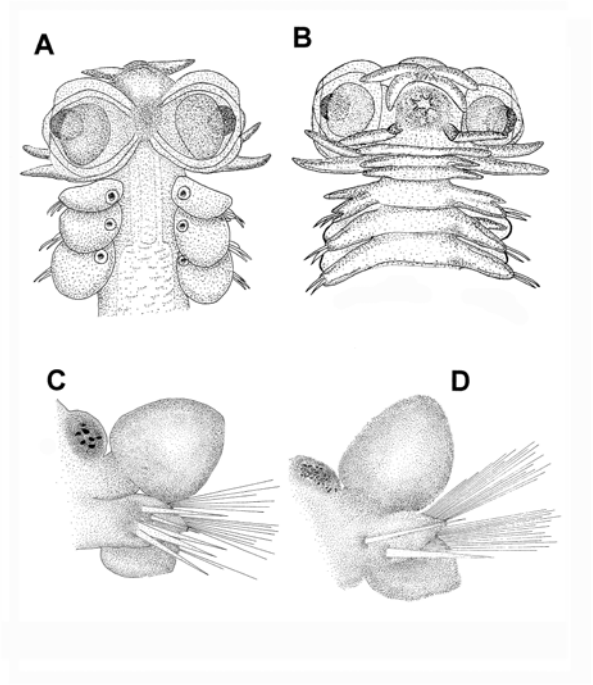

Fig. 2. – *Alciopina parasitica* Claparède and Panceri, 1867. A, anterior part of body, dorsal view; B, anterior part of body, ventral view; C, parapod from anterior part of body; D, parapod from middle part of body.

Alciopina parasitica Claparède & Panceri, 1867

(Figs 2 A–D)

Alciopina parasitica CLAPARÈDE & PANCERI (1867: 8); CLAPARÈDE (1868: 253, with figure); GRANATA (1911): 57, with figure); STØP-BOWITZ (1948: 32); DALES (1957: 128; 1963: 502); DAY (1967: 177); DALES & PETER (1972: 71); ORENSANZ & RAMÍREZ (1973: 35); FERNÁNDEZ-ÁLAMO (1983: 105).

Alciopina panceri BUCHHOLZ (1869: 95, with figure).

Corynocephalus albomaculatus LEVINSEN (1885: 327, with figure); APSTEIN (1900: 14, with figure).

C. albo-maculatus Fauvel (1916: 68; 1923: 208, with figure; 1939: 284; 1951: 293); Wesenberg-Lund (1939: 36, with figure); Zei (1956: 53); Rullier (1965: 872).

Material examined: CI-A (1♂), 11-02-91, 22: 05,19°13'05" N, 87°23'04" W, ECO-CHZ- 02486; CI-11 (1♂,1♀), 07-02-91, 06: 05, 20°23'00" N, 87°09'00" W, ECO-CHZ- 02487; CI-15 (1♂), 11-02-91, 5: 50, 19°34'03" N, 87°20'04" W, ECO-CHZ-02488; CII-14 (1♂), 06-03-91, 20: 04, 19°44'01" N, 87°02'07" W, ECO-CHZ- 02489; CIII-17 (1♀), 09-05-91, 23: 01, 19°04'00" N, 86°51'00" W, ECO-CHZ-02490.

Diagnosis: Body short, yellowish. Total length: 4–7mm, width: 1.0mm. 20 parapodia in complete specimens, 17–31 in incomplete specimens. Dorsal antennae robust, short; ventral palps relatively longer than dorsal (Fig. 2B). Median antenna represented by protuberance between eyes (Fig. 2A). First ventral pair on short cirrophore with cirri 0.3 times as long as dorsal ones; succeeding ventral pairs 0.6 times as long as dorsal. Chaetigerous lobes absent on first parapodia, with dorsal cirri larger than ventral ones, all foliaceous (Fig. 2B). Following segments with foliaceous dorsal and ventral cirri; cirriform appendages absent on chaetigerous lobes. Acicular and simple capillary chaetae on parapodia 1–3; in parapodia 4–5 acicular chaetae are predominant, capillary chaetae present from parapod 4, most abundant from parapod 8 (Figs 2C; D). Segmental glands small, from first pair of parapodia, represented by distally pigmented unbranched projections. Males with ventral genital papillae at base of parapodia 9–13.

Type locality. Gulf of Naples (Italy).

Distribution. Tropical and subtropical waters of the Atlantic, Mediterranean, eastern tropical Pacific. First record from the Caribbean Sea.

Alciopina paumotanus (Chamberlin, 1919)

(Fig. 3)

Corynocephalus paumotanus Chamberlin (1919: 141), Treadwell (1943: 37), Ushakov (1957: 277, with figure); Berkeley & Berkeley (1958: 400; 1964: 125).

?*Corynocephalus gazellae* Apstein (1893: 148; 1900: 15).

Material examined: CI-A (1♂), 11-02-91, 22: 05, 19°13'05" N, 87°23'04" W, ECO-CHZ-02491; CI-11 (1♂), 07-02-91, 06: 05, 20°23'00" N, 87°09'00" W, ECO-CHZ-02492; CI-15 (1♂), 11-02-91, 05: 50, 19°34'03" N, 87°20'04" W, ECO-CHZ-02493; CII-14 (1 spec., sex undet.), 06-03-91, 20: 04, 19°44'01" N 87°02'07" W, ECO-CHZ-2494; CIII-17 (1♂, 1♀), 09-05-91, 23: 01, 19°04'00" N 86°51'00" W, ECO-CHZ-02495.

Diagnosis: Body flattened dorso-ventrally, widest at middle section. Total length: 3–7mm, width: 0.5–1mm. 25 parapodia in single complete specimen, 9–32 in incomplete specimens. Dorsal antennae short, ventral palps robust, longer than antennae, with pigment spots at base (Fig. 3B). Median antenna poorly developed (Fig. 3A). Pharynx retracted in Caribbean specimens (Fig. 3B). Parapodia with large, foliaceous dorsal cirri, chaetigerous lobes elongated, devoid of cirriform appendages, with single, low acicule. Ventral cirri foliaceous, of nearly the same size as chaetigerous lobes. Simple acicular and capillary chaetae present. Parapodia 1–3 with 4–5 acicular chaetae, succeeding parapodia with one chaeta; parapodia 7–8 with capillary chaetae, most abundant from parapod 13 (Figs 3C–E). Segmental glands small, behind dorsal cirrus, with distal end pigmented. Males with ventral genital papillae on base of parapodia 10–14, with digitiform pigmented projections, larger than in *A. parasitica*.

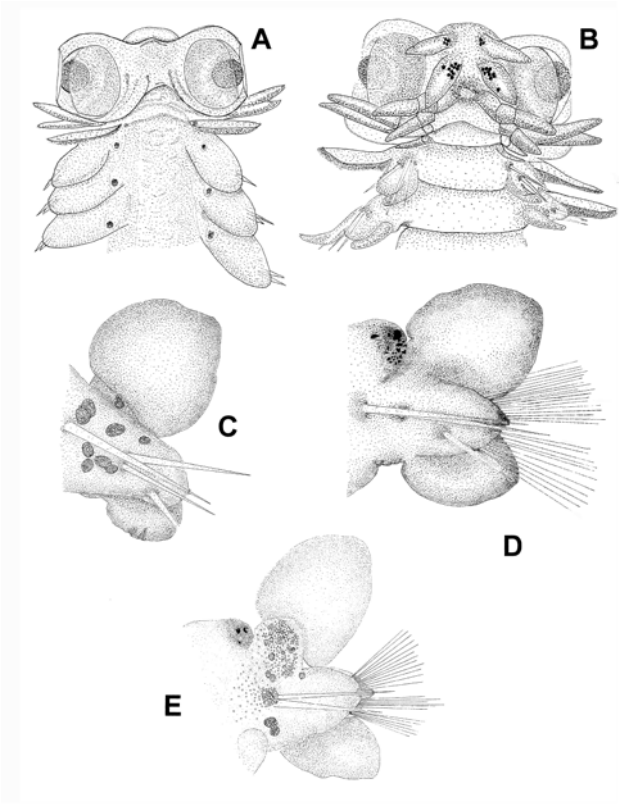

Fig. 3. – *Alciopina paumotanus* (Chamberlin, 1919). A, anterior part of body, dorsal view; B, anterior part of body, ventral view; C, parapod 6; D, parapod 15; E, parapod 23.

Type locality: Paumotu Islands (tropical Pacific).

Distribution: Pacific, North Atlantic.

Remarks: This is the first record of species in the western Caribbean Sea. There is one previous record from the easternmost sector of the Caribbean Basin (Treadwell, 1943), based on specimens collected during the Carnegie Plankton Expedition (1928).

Genus *Torrea* Quatrefages, 1850

Diagnosis: Body elongated, cylindrical. Prostomium not produced anteriorly from eyes. Pharynx large, with distal end bearing pair of lateral horn-like processes with or without marginal papillae. Eyes large, directed laterally. Three pairs of tentacular cirri on ventral surface of first three segments, one pair on each segment, first pair arising from base of eyes. Segments 4 and 5 with chaetae, with reduced chaetigerous lobes; females with large dorsal cirri on both segments to form a receptaculum seminis. Parapodia normal, with foliaceous dorsal and ventral cirri; cirriform appendage absent in chaetigerous lobes. All chaetae compound capillary with long appendages. Segmental glands pigmented. Single pair of anal cirri. Two species known.

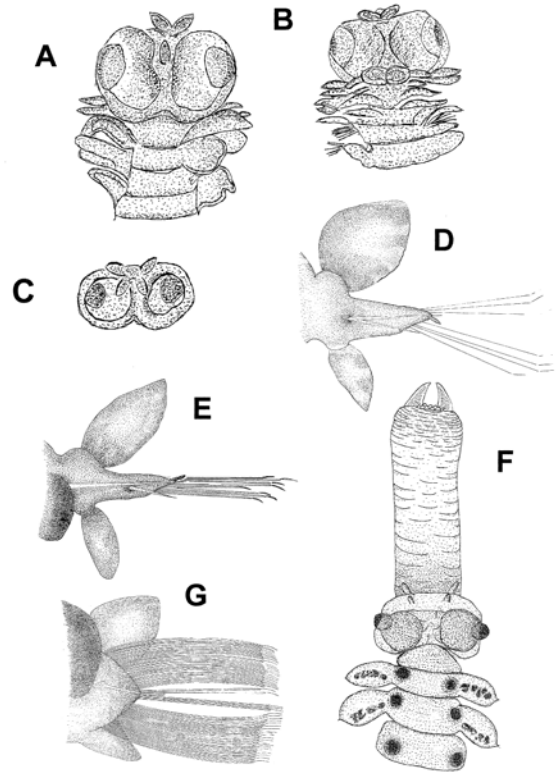

Fig. 4. – *Rhynchonereella moebii* (Apstein, 1893). A, anterior part of body, dorsal view; B, anterior part of body, ventral view; C, anterior part of body, frontal view; D, parapod 12. *Rhynchonereella gracilis* Costa, 1862. E, parapod from middle part of body; *Torrea candida* (delle Chiaje, 1828): F, anterior part of body, ventral view; G, parapod from middle part of body.

Torrea candida (delle Chiaje, 1828) Benham, 1929

(Figs 4 F; G)

Alciopa candida DELLE CHIAJE (1828: 88); KRÖHN (1845: 174).

Alciopa vittata HERING (1860: 11; 1892: 747, with figure).

Liocapa vertebralis COSTA (1864: 165, with figure); EHLERS (1864: 181); COSTA (1867: 55); CLAPARÈDE (1868: 252).

Liocapa candida LEVINSEN (1885: 333, with figure).

Torrea vitrea QUATREFAGES (1865: 159, with figure)

Asterope candida CLAPARÈDE (1870: 108, with figure); GREEFF (1876: 62, with figure); APSTEIN (1900: 7); LO BIANCO (1904: 50, with figure); FAUVEL (1907: 8, with figure; 1916: 65; 1923: 202, with figure; 1932: 16; 1939: 283); IZUKA (1914: 3, with figure); FYTE (1952: 10); ZEI (1956: 52).

Torrea candida BENHAM (1929: 186); MONRO (1930: 82; 1936: 119); WESENBERG-LUND (1939: 32, with figure); STØP-BOWITZ (1948: 22); DALES (1955: 435; 1957: 111); TEBBLE (1962: 194); GRICE & HART (1962: 302); IMAJIMA & HARTMAN (1964: 73); DAY (1967: 188); HARTMAN (1968: 315, with figure); USHAKOV (1972: 189); ORENSANZ & RAMÍREZ (1973: 4).

Material examined: EL 2775 (1), 20-08-90, Banco Chinchorro, 18°45.4' N, 87°15.80' W, ECO-CHZ-02496.

Diagnosis: A single specimen was obtained from our samples. Total length: 5.5mm. Specimen damaged, with 32 parapodia. Observable species characters: ventral palps twice as long as dorsal antennae (Fig. 4F), pharynx as in genus. First pair of tentacular cirri arising from cirrophore, larger than the other two pairs. Female specimen with dorsal cirri of first two parapodia transformed into seminal receptacles, with intensely pigmented dorsal fringe (Fig. 4F). Parapodia normal, with foliaceous dorsal cirri; ventral cirri smaller. Chaetae noticeably long (Fig. 4G). Segmental glands subrectangular, intensely pigmented.

Type locality: Naples Bay (Italy).

Distribution: Mediterranean, tropical and subtropical waters of the Atlantic, Indian, and Pacific. First record of this species in the Caribbean Sea.

Genus *Rhynchonereella* Costa, 1862

Diagnosis: Body elongated, slender. Prostomium produced anteriorly to eyes. Pharynx short, with marginal papillae, no lateral horn-like processes. Three antennae, one median, two dorsal; two ventral palps. First three segments with 4–5 pairs of tentacular cirri. First segment with ventral pair, second and third segments each with one dorsal and one ventral pair. Anterior parapodia well-developed; parapodia normal, with foliaceous dorsal and ventral cirri; chaetigerous lobes with cirriform appendage. Chaetae of three types, compound capillary and simple or compound acicular, at least on anterior parapodia. Five species known.

Rhynchonereella gracilis Costa, 1862

(Fig. 4E)

Rhynchonereella gracilis COSTA, (1862: 168, with figure); STØP-BOWITZ (1948: 36); DALES (1956: 293; 1957: 131, with figure; 1957: 662); HARTMAN (1969: 171); TEBBLE (1962: 396, with figure; 1968: 33); BERKELEY & BERKELEY (1964: 126); IMAJIMA & HARTMAN (1964: 72; 1964: 72); DAY (1967: 189); DALES & PETER (1972: 69); USHAKOV (1972: 199); ORENSANZ & RAMÍREZ (1973: 45); FERNÁNDEZ-ÁLAMO (1983: 93); PLEIJEL & DALES (1992: 156).

Callizona nasuta GREEFF (1876: 72, with figure); APSTEIN (1891: 133; 1893: 148, with figure); FAUVEL (1923: 215, with figure); ZEI (1956: 54); USHAKOV (1957: 279); BERKELEY & BERKELEY (1960: 790); RULLIER (1965: 871).

Callizona japonica IZUKA (1914: 7).

Material examined: CIV-5 (1 spec., sex undet.) plus fragment of middle section of body, 06-08-91, 07: 45, 21°10'09" N, 86°46'02" W, ECO-CHZ-02497.

Diagnosis: Caribbean specimens damaged, incomplete, length: 3mm, 13 parapodia. Pharynx not observable in Caribbean specimen. Five pairs of tentacular cirri. First pair of parapodia with dorsal and ventral foliaceous cirri, chaetigerous lobes and chaetae absent on this parapod. Dorsal cirri twice as long as ventral ones. Parapodia normal, with foliaceous dorsal cirri; smaller ventral cirri lanceolate. Chaetigerous lobes digitiform, with cirriform appendages. Chaetae compound capillary plus one or two simple ventral acicular chaetae on anterior and median

parapodia (Fig. 4E). Segmental glands posterior to dorsal cirrus; pigmentation weaker on anterior part of body, strongest medially.

Type locality: Bay of Naples (Italy).

Distribution: Mediterranean, tropical and subtropical waters of the Atlantic, Indian, and Pacific. First record in the Caribbean Sea.

Rhynchonereella moebii (Apstein, 1893)
Støp-Bowitz 1948

(Figs 4A–D)

Callizona möbii Apstein (1893: 147; 1900: 16, with figure); Wesenberg-Lund (1939: 40, with figure); Rullier (1965: 871).

Callizona moebii Fauvel (1923: 213, with figure).

Rhynchonereella möbii Støp-Bowitz (1948: 34); Dales (1957: 131; 1960: 484); Grice & Hart (1962: 302); Tebble (1962: 396, with figure); Berkeley & Berkeley (1964: 126).

Rhynchonereella moebii Day (1967: 189); Dales & Peter (1972: 70); Fernández-Alamo (1983: 102); Støp-Bowitz (1996: 176).

Material examined: CI-6 (1 spec., sex undet.), 06-02-91, 19: 05, 20°57'04" N, 86°26'03" W, ECO-CHZ-02498; CIV-17 (1 spec., sex undet.), 07-08-91, 23: 40, 19°04'00" N, 86°51'00" W, ECO-CHZ-02499.

Diagnosis: Caribbean specimens incomplete, total length: 2–3mm, with 14–18 parapodia. Dorsal and ventral antennae robust (Fig. 4C). Median antenna digitiform (Fig. 4A). Pharynx not observed in Caribbean specimens, but cylindrical, slender, slightly wider distally in species. Five pair of tentacular cirri. First pair of tentacular cirri short, arising from large cirrophores, not reaching margin of eyes, second and fourth pairs elongated, latter noticeably thicker than former. Third pair small, lanceolate, fifth pair foliaceous (Fig. 4D). Dorsal and ventral cirri relatively larger on first 4 pairs than those on other parapodia. Chaetae of two kinds, simple acicular, distally curved, abundant on first 4–5 parapodia (2–7 chaetae on each, then decreasing to one on each posterior parapod); compound capillary chaetae from parapodia 4 or 5, reaching slightly beyond distal end of acicular chaetae (Fig. 4D). Segmental glands represented by oval protuberances on postero-dorsal position of parapod.

Type locality: Messina, Sicily, Italy.

Distribution: Mediterranean, tropical and subtropical waters of the Atlantic, Indian, and Pacific. First record from the Caribbean Sea.

Rhynchonereella petersii (Langerhans, 1880)
Støp-Bowitz, 1948

(Figs 5A–C)

Alciopa (Halodora) petersi Langerhans (1880: 312, with figure); Ehlers (1913: 465).

Callizona setosa Apstein (1900: 18, with figure); Southern (1910: 5); Fauvel (1923: 14, with figure); Wesenberg-Lund (1939: 43); Ushakov (1957: 281).

Rhynchonerellla petersii Støp-Bowitz (1948: 34); Dales (1957: 133; 1963: 502); Tebble (1962: 398); Grice & Hart (1962: 302); Berkeley & Berkeley (1964: 126); Hartman (1964: 61); Bhaud (1966: 436); Guille & Laubier (1966: 263); Day (1967: 192); Pleijel & Dales (1992: 158).

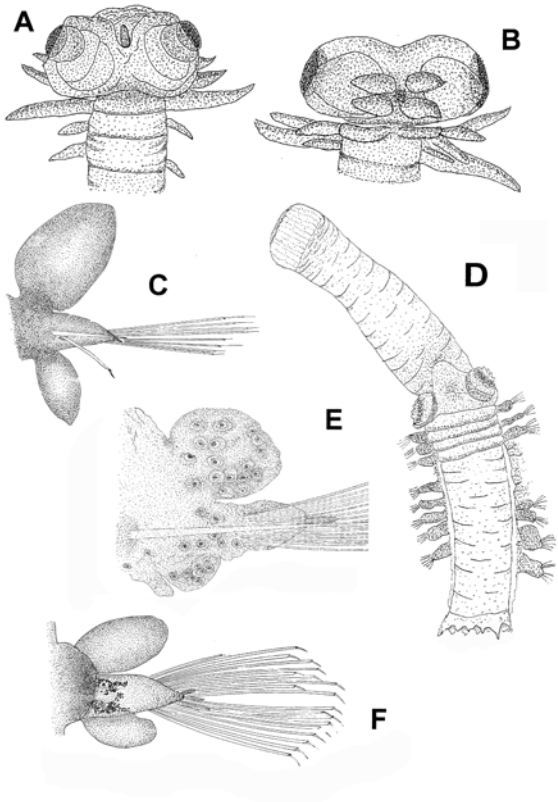

Fig. 5. – *Rhynchonereella petersii* (Langerhans, 1880). A, anterior part of body, dorsal view; B, anterior part of body, ventral view; C, parapod from middle part of body. *Rhynchonereella angelini* (Kinberg, 1866). D, anterior part of body, dorsal view; E, parapod of anterior part of body, specimen in epitoke; F, parapod from anterior part of body, non-reproducing specimen.

Alciopa cari Hering (1892: 753); Ehlers (1912: 17).

Vanadis heterochaeta Viguier (1886: 405, with figure).

Vanadis setosa Greeff (1885: 449, with figure).

Corynocephalus magnachaetus Treadwell (1943: 37).

Callizona petersii Monro (1939: 107).

Material examined: CI-A (1), 11-02-91, 22: 05, 19°13'05" N, 87°23'04" W, ECO-CHZ-02500; CII-6 (1), 05-03-91, 22: 05, 20°57'08" N, 86°26'05" W, ECO-CHZ-02501; CIII-17 (3), 09-05-91, 23: 01, 19°04'00" N, 86°51'00" W, ECO-CHZ-02502; CIII-18 (3), 09-05-91, 20: 25, 18°54'04" N, 87°11'03" W, ECO-CHZ-02503; CIV-17 (1), 07-08-91, 19: 05, 19°04'00" N, 86°51'00" W, ECO-CHZ-02504.

Diagnosis: Body slender, yellowish. Caribbean specimens incomplete, total length: 1–2mm, width: 0.2–0.5mm, 14 parapodia. Dorsal and ventral antennae robust, ventral pair slightly longer than dorsal; median antenna digitiform (Figs 5A; B). Pharynx not observable in the Caribbean specimens; short, cylindrical, with 10–12 marginal rounded or conical papillae in species. Five pairs of tentacular cirri. First pair of tentacular cirri reaching beyond outer margin of eyes, shorter than second; third

pair slender, small; fourth pair robust, longest; fifth pair digitiform, smallest (Fig. 5B). Cordiform dorsal cirri on anterior parapodia, foliaceous on median parapodia. Ventral cirri small, foliaceous, almost as long as chaetigerous lobes, the latter bearing short cirriform appendages. Chaetae of two kinds, compound capillary and compound acicular: former slender, smooth; latter slender, distally serrated. Anterior parapodia with 1–2 acicular chaetae; compound capillary chaetae mainly on median parapodia (Fig. 5C). Segmental glands unpigmented.

Type locality: Madeira, Eastern Atlantic

Distribution: Tropical and subtropical Atlantic, Indian, and Pacific. First record from the Caribbean Sea.

Rhynchonereella angelini (Kinberg, 1866)
Greeff, 1876
(Figs 5D–F)

Krohnia angelini Kinberg (1866: 242).

Rhynchonereella angelini Greeff (1876: 57,with figure); Støp-Bowitz (1948: 34); Fraser (1955: 12); Dales (1955: 439); Hartman (1956: 277); Dales (1957: 113); Imajima (1961: 8, with figure); Tebble (1960: 192; 1962: 400; 1968: 33); Imajima & Hartman (1964: 72); Day (1967: 189); Hartman (1968: 313, with figure); Clark (1970: 42); Dales & Peter (1972: 69); Pleijel & Dales (1992: 156).

Callizona grubey Greeff (1876: 72, with figure); Levinsen (1885: 333, with figure); Apstein (1900: 18, with figure).

Callizona angelini Apstein (1900: 18, with figure); Reibisch (1905: 4, with figure); Southern (1911: 4); Fauvel (1916: 68; 1923: 215, with figure); Monro (1930: 82; 1936: 118); Wesenberg-Lund (1939: 41); Berkeley & Berkeley (1948: 34; 1957: 575; 1958: 400; 1960: 790).

Rhynchonereella picnocera Chamberlin (1919: 147); Treadwell (1928: 462; 1943: 36).

Rhynchonereella parva Chamberlin (1919: 150).

?*Callizona henseni* Apstein (1900: 20, with figure).

Krohnia angelini Ushakov & Wu (1963).

Material examined: CIII-18 (1 spec., sex undetermined plus 2 fragments), 09-05-91, 20: 25,18°54'04" N, 87°11'03" W, ECO-CHZ-02505; EL 2773 (2), 19-08-90, off Punta Allen, Quintana Roo, 19°47.2' N, 87°24.4' W, ECO-CHZ-02506.

Diagnosis: Both females examined represented by fragments only. These specimens were assigned to *R. angelini* by the characters of the parapodia and the pharynx, as follows. Pharynx fully observable in Caribbean specimens, muscular, long, about eight times longer than the eye diameter; margin with remains of papillae (Fig. 5D). Five tentacular cirri. Parapodia with foliaceous dorsal and ventral cirri, chaetigerous lobes elongated, with long, digitiform cirriform appendages; two kinds of chaetae, compound capillary, compound acicular with small, smooth apices. Anterior parapodia with 14–18 acicular chaetae, plus some capillary chaetae as well (Figs 5E; F). Female specimens with parapodia full of gametes (Figs 5E; F). Specimen also with two kinds of chaetae; 16–18 compound acicular chaetae on anterior parapodia with short, smooth apice, acicular chaetae as long as capillary (Figs 5E; F). Some parapodial fragments bear 1–2 acicular chaetae, thus suggesting a decrease in the number of chaetae posteriorly.

Type locality: North Pacific

Distribution: Atlantic, Pacific. First record from the western Caribbean Sea. Hitherto, it was recorded from the eastern Caribbean by Treadwell (1943) from specimens collected during the last cruise of the "Carnegie".

Distribution and abundance: Alciopid polychaetes were absent from the zooplankton samples collected during the Caribe V cruise (November, 1991). Alciopids of the three genera studied herein had low densities in the remaining four cruises; their numerical abundance was highest during May (mean density: 41 ind./1000m^3), and lowest in August (18 ind./1000m^3) (see Table 1). The distribution of the alciopid species included the entire surveyed area (see Fig. 6). The commonest species were *Alciopina parasitica*, *A. paumotanus*, and *Rhynchonereella petersii*. These were collected during three Caribe cruises in varying densities (Table 1). These species accounted for nearly 85% of the alciopids of the three genera treated in this work.

TABLE 1

Mean density (ind./1000 m³) and relative abundance (%) of alciopids of the genera *Alciopina* and *Rhynchonerella* collected during the CARIBE cruises I-IV (CAR-I–IV), Mexican Caribbean Sea.

	CAR–I		CAR–II		CAR–III		CAR–IV	
	February		March		May		August	
	Density	%	Density	%	Density	%	Density	%
A. parasitica Claparède & Panceri, 1867	5.2	44	5.6	33.3	7.3	10	–	–
A. paumotanus (Chamberlin, 1919)	7.8	33	5.6	33.3	14.7	20	–	–
Rhynconerella. gracilis Costa, 1862	–	–	–	–	–		6.2	33.3
R. moebii (Apstein, 1893)	9.1	11	–	–	–		6.0	33.3
R. petersi (Langerhans, 1880)	7.1	11	4.2	33.3	14.7	60	6.0	33.3
R. angelini (Kinberg, 1866)	–	–	–	–	4.4	10	–	–
Number of species	4		3		4		3	

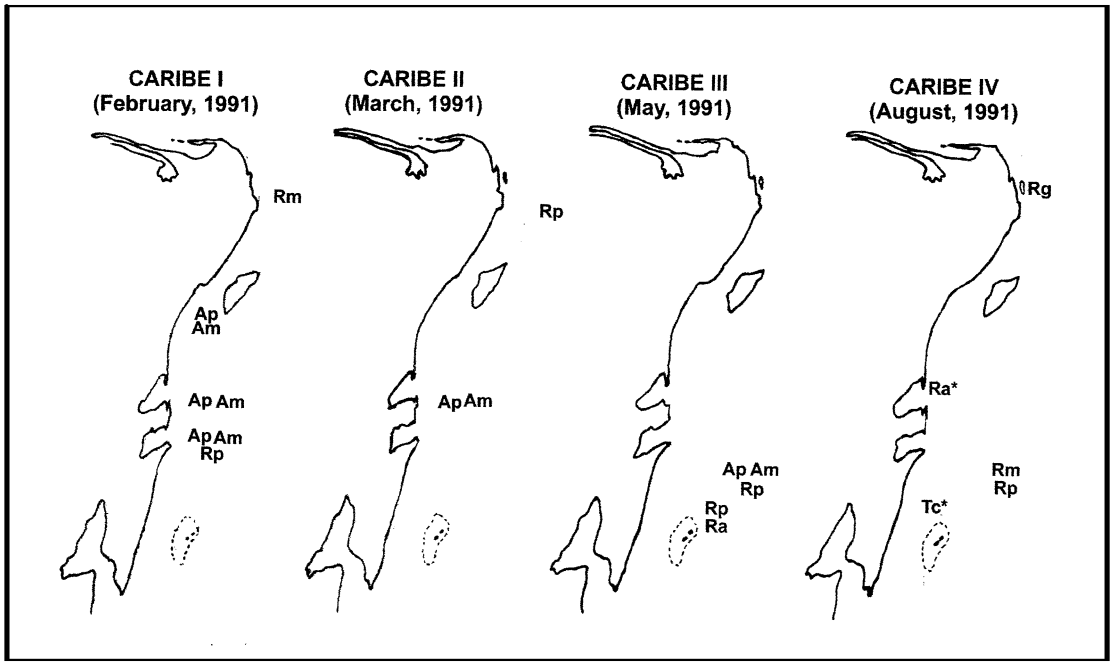

Fig. 6. – Local distribution of the species recorded in the western Caribbean Sea during this survey. *Alciopina parasitica* (Ap); *Alciopina paumotanus* (Am); *Torrea candida* (Tc); *Rhynchonereella gracilis* (Rg); *Rhynchonereella moebii* (Rm); *Rhynchonereella petersii* (Rp); *Rhynchonereella angelini* (Ra). (*) species collected during expedition of the "Edwin Link".

Key to the species of *Alciopina*, *Torrea*, and *Rhynchonereella* recorded in the Caribbean Sea

I. – Chaetigerous lobes without cirriform appendages

A. Simple capillary chaetae

Two kinds of chaetae, capillary and acicular, 4 or 5 pairs of tentacular cirri, parapodial cirri foliaceous, dorsal cirri larger than ventral cirri, body relatively short . . . . .
Alciopina

1) Median antenna protuberant. . . . . .
Alciopina parasitica

2) Median antenna inconspicuous . . . . . .
Alciopina paumotanus

B. Compound capillary chaetae

Three or four pairs of tentacular cirri, only compound capillary chaetae,

pharynx elongated, with pair of lateral horn-like processes . . . . . .
Torrea

Median antenna represented by rounded protuberance, trilobulate papillae between lateral horn-like processes .
Torrea candida

II. – Chaetigerous lobes with cirriform appendage

Dorsal tentacular cirri of third segment normal, anterior parapodia well-developed, all capillary chaetae compound, acicular chaetae simple or compound. . . . . .
Rhynchonereella

A. Simple acicular chaetae

1) Segments 4-6 with 1 or 2 acicular chaetae and some capillary chaetae. Dorsal cirri of first four parapodia shorter than on succeeding parapodia . . . . . .
R. gracilis

2) Segments 4-5 with 2-7 acicular chaetae. Dorsal and ventral cirri of first four parapodia larger than on succeeding parapodia . . . . . .
R. moebii

B. Compound acicular chaetae

1) Acicular chaetae with serrated margin, body small
R. petersii

2) Acicular chaetae smooth, small, body elongated, chaetigerous lobes with long cirriform appendages, tentacular cirri of third segment subequal to second . . . . . .
R. angelini

DISCUSSION

The distributions of most of most known species of the Alciopidae have been described as widespread or cosmopolitan; records of many nominal species are from different latitudes of the Atlantic, Indian, and Pacific oceans (Dales, 1957; Dales & Peter, 1972; Støp-Bowitz, 1981, 1996; Pleijel & Dales, 1992). However, the apparent cosmopolitanism of these and other holoplanktic forms has not been fully demonstrated; many local or regional records are based on a small number of descriptive works without original illustrations or complete

descriptions of the local specimens. Further, some species of the Alciopidae have a complex history of synonymies (Støp-Bowitz, 1992) that implies a certain degree of intraspecific variability; these differences have not been taxonomically evaluated.

Most of the alciopid species examined in this survey were described during the XIX century, and, as far as we could determine, type material of most of these species is not extant. Only for *R. angelini* were we able to locate a single type specimen, deposited in the Swedish Museum of Natural History, Stockholm (cat. T-5555). It is probable that the lack of type specimens affects most of the family, which should undergo a revisionary process including: 1) designation of neotypes based on specimens from the original localities and 2) detailed taxonomic and comparative analyses of the records and of extant specimens deposited in different collections. Some of these nominal species could be taxonomic complexes comprising undescribed taxa. In this work we provide basic elements (descriptions, detailed illustrations) to aid this kind of analysis in reference to the Alciopidae of the northwestern tropical Atlantic region.

The surveyed area receives the influence of the Caribbean Current, which flows westwards from the Lesser Antilles and eventually reaches the Yucatan Channel. The surface zooplankton fauna recorded in this study has a strong affinity to that of the rest of the Caribbean Basin, as stated previously for other planktic taxa (Gasca et al., 1996; Gasca & Shih, 2003); hence, it is speculated that the alciopid species found in this survey are also distributed in the entire Caribbean Basin.

Hitherto, the only previous survey on the pelagic polychaetes from the western Caribbean was that by Jiménez-Cueto & Suárez-Morales (1999), on the family Tomopteridae. They recorded up to 15% of the tomopterid species known worldwide and 17% of those recorded in the tropical northwestern Atlantic (Dales & Peter, 1972; Salazar-Vallejo, 1992; 1996). The corresponding figures for the alciopid fauna reported herein are more representative. The three genera considered here contain a total of 9 species (Støp-Bowitz, 1996), of which 7 (77%) were present in our samples from the western Caribbean. Figures for each genus examined herein are as follows: *Alciopina* (2 species known: 2 in the Caribbean), *Torrea* (2: 1), *Rhynchonereella* (5: 4). It remains clear that these genera are not particularly diverse, but they are all well represented in the surface zooplankton of the Caribbean Sea. To the best of our knowledge, no other survey in the Atlantic Ocean has reported more than 5 species of these three genera (see Støp-Bowitz, 1948; Orensanz & Ramírez, 1973; Núñez et al., 1993).

The number of specimens collected in this survey (24) falls within the range known for this relatively rare group of holoplanktic polychaetes. Núñez et al. (1993) collected only fragments of 4 individuals of one of these alciopid genera in the Tropical Eastern Atlantic. Støp-Bowitz (1948) found between 1 and 9 specimens and 36 individuals of *R. angelini* in the North Atlantic. Also, Orensanz and Ramírez (1973) recorded only 5 species of these three genera from samples collected during seven oceanographic cruises in the southwestern Atlantic; the number of specimens in each of those campaignes ranged between 1 and 3, and only one species was represented by more than 10.

We found differences in the abundance of these polychaetes with respect to night and day samples; up to 70% of the specimens were collected during the night. This information suggests that even within the uppermost layer (0–50m), these species show a well-defined circadian vertical migration, moving closer to the surface at night. As noted by Núñez et al. (1993), alciopids differ from tomopterids in this respect; the latter group migrates extensively along the water column and contains many deep-living species. It is suggested that this was a factor related to the lower representation of tomopterids in the area (see Jiménez-Cueto & Suárez-Morales, 1999) with respect to the Alciopidae, even though these two surveys were based on the same samples. Our data from the western Caribbean confirm that alciopids are upper epipelagic forms with a limited range of vertical migration.

Only two of these species have been recorded from the Caribbean Basin before: *A. paumotanus* (as *Corynocephalus paumotanus*) and *R. angelinii* (as *R. picnocera*), both from the eastern sector (Treadwell, 1943). Hence, five of the seven species of Alciopidae are newly recorded from the Caribbean Basin, although some (i.e. *A. parasitica*, *T. candida*, *R. angelini*, *R. moebii*, *R. petersii*) have been reported previously from adjacent areas of the tropical northwestern Atlantic such as the Bahamas and the Gulf of Mexico (see Rice, 1987; Salazar-Vallejo, 1992; 1996; Long & Zottoli, 1997). These species have not been previously recorded from Mexican waters of the Atlantic Ocean.

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