RESEARCH ARTICLE

Polychaetes (Annelida) of the Southwest Cays and Serranilla Bank, Seaflower Biosphere Reserve, Colombian Caribbean

Poliquetos (Annelida) de las islas Cayos de Alburquerque y Cayos de Serranilla, Reserva de la Biósfera Seaflower, Caribe Colombiano

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ABSTRACT

Polychaetes are the most abundant marine invertebrates, with a valuable contribution of biomass to the food chain and the balance of ecosystems. In the Colombian Caribbean, the islands have been identified as areas where there is a lack of information regarding marine biodiversity. In order to understand the polychaete communities of the Seaflower Biosphere Reserve, located within the Colombian insular Caribbean, studies were carried out between 2017 and 2018 in the Serranilla (CS) Bank and Southwest (CA) Cays with the objective of generating an inventory of polychaetes present in these two areas. The collection in both cays was made using dredges, nets, scuba diving and freediving, and revealed a total of 30 families, 152 genera and 226 species. The families with the highest number of species were Syllidae (56 species), Eunicidae (23 species), Spionidae (16 species) and Sabellidae (14 species). This list includes 86 new records of genera and 172 species of polychaetes in the Colombian Caribbean.

KEYWORDS: Polychaetes, Caribbean, Seaflower BR, Serranilla Bank, Southwest Cays.

RESUMEN

Los poliquetos son los invertebrados marinos más abundantes, con un aporte valioso de biomasa a la cadena trófica y al equilibrio de los ecosistemas. En el Caribe colombiano las áreas con mayor deficiencia de información sobre biodiversidad marina son las insulares. Con el propósito de conocer las comunidades de poliquetos de la Reserva de la Biosfera Seaflower, en el Caribe insular colombiano, se realizaron estudios entre 2017 y 2018 en las islas Cayo Serranilla (CS) y Cayos de Alburquerque (CA) para generar un inventario de poliquetos de estas dos áreas. Utilizando dragas, red, buceo autónomo y por apnea la recolecta en ambas islas cayos reveló un total de 30 familias, 152 géneros y 226 especies. Las familias con mayor número de especies fueron Syllidae (56 especies), Eunicidae (23 especies), Spionidae (16 especies) y Sabellidae (14 especies). El presente listado contiene 86 nuevos registros de géneros y 172 de especies de poliquetos en el Caribe colombiano.

PALABRAS CLAVES: *poliquetos, RB Seaflower, Caribe, isla Cayos de Serranilla, isla Cayos de Alburquerque*

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INTRODUCTION

Coral reefs are one of the most biodiverse and productive ecosystems on the planet, providing the human population with a wide range of goods and services, such as the protection of the coastline and other ecosystems against erosion, the provision of food and income, and the generation of economic gains from diving and tourism (Burke *et al*., 2011). Colombia's total coral reef area covers 4,405 km² across both continental and oceanic zones, with 77% of these coral areas located within the archipelago of San Andres, Old Providence and Ketlina Islands. This archipelago was designated as the Seaflower Biosphere Reserve (SBR) by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2000, a designation that has been maintained due to the region's status as one of the most extensive marine and island reserves on the planet (Gómez-Cubillos *et al.,* 2015; Vides *et al*.*,* 2016).

The SBR is constituted by a series of islands, cays, banks and lowlands that exhibit a notable biodiversity and a diverse array of marine ecosystems, underscoring their significance as biodiversity reservoirs in the Colombian Caribbean (Díaz *et al.,* 2000; Coralina-Invemar, 2012; Vega-Sequeda *et al*., 2015). However, the biodiversity of these environments remains under-explored, primarily due to the focus of research efforts on shallow habitats up to 60 meters deep and on the most visible groups of organisms (Vides *et al.,* 2016). Consequently, certain invertebrates inhabiting benthic communities, such as polychaetes, have been overlooked in efforts to enhance the marine faune inventories of Colombia.

Polychaetes are among the most abundant groups of marine invertebrates and exhibit great diversity in body forms, habitat occupation, and life-history strategies. They play key roles in ecosystem functioning by serving as a food source for higher trophic levels, contributing to bioturbation, nutrient recycling, and the degradation of organic matter. Likewise, they are widely recognized as effective bioindicators of environmental pollution, particularly in relation to organic matter and heavy metals (Rouse & Pleijel, 2001; Báez & Ardila, 2003; Dean, 2008; Martins & Barros, 2022). Although polychaetes in the marine ecosystems of the SBR have been studied since the 1970s, a definitive estimate of species richness is still lacking, as new records continue to emerge with each publication from different sectors of the SBR. The most recent record for this region is found in the publication by Londoño-Mesa *et al*. (2016), which contains 340 records between families, genera and species. However, in comparison to the number of studies conducted in the continental coastal area of the Colombian Caribbean, the studies available for this island region is limited. This is due to the fact that accessibility and travel costs play an important role when planning ocean expeditions.

The high ecosystem value of coral reefs, combined with the geophysical, ecological, cultural and economic characteristics of the SBR, underscores the critical need for continued monitoring and research to ensure their preservation (Coralina-Invemar, 2012). In this context, the Presidency of the Republic of Colombia, initiated the scientific expedition plan led by the Colombian Ocean Commission (CCO) in 2015. In conjunction with the Colombian Navy (ARC), the Government of the Department of Archipelago of San Andrés, Providencia y Santa Catalina, the Corporation for the Sustainable Development of the Archipelago of San Andrés, Providencia y Santa Catalina (Coralina), and the General Maritime Directorate (Dimar). The Caribbean Oceanographic and Hydrographic Research Centre (CIOH) has been instrumental in fostering collaboration with academic and research institutions to promote the generation of new knowledge within the SBR. This initiative has contributed to enhancing the management and conservation of the region's marine resources (CCO, 2015).

This study was conducted during two scientific expeditions to the Serranilla Bank and Southwest Cays, which took place in 2017 and 2018 respectively. A variety of institutions participated in the study with the aim of strengthening the management of the comprehensive scientific knowledge of the SBR with the updating of the baseline information.

STUDY AREA

The Serranilla Bank (CS) is located north of the SBR, between 15°50’ and 16°’04’N and 80°03’ and 79°40’W. This bank covers an area of 1,200 km^2, an includes several nearby small cays (West Breaker, Middle Cay, East Cay and Beacon Cay). The shallow zone consists of a carbonate platform at a depth of about 8 meters, with benthic habitats comprising algae, sponges, small patches

of hard corals, and seagrass beds in the southeastern sectors (Abril-Howard *et al*., 2012; CCO, 2015) (Fig. 1).

The Southwest Cays (CA) are located approximately 35 km southwest of San Andres Island (12°10'N – 81°51'W). This is the only atoll within the SBR with an almost circular shape, measuring over 8 km in diameter, formed by a continuous peripheral reef to windward and discontinuous to leeward. The basin and lagoon terrace of this atoll contain North Cay and South Cay, surrounded by patch reefs, sand and coral debris, bioturbated sediments with calcareous algae, and seagrass meadows; the latter border a part of North Cay (Díaz *et al.,* 2000; CCO, 2015) (Fig. 1).

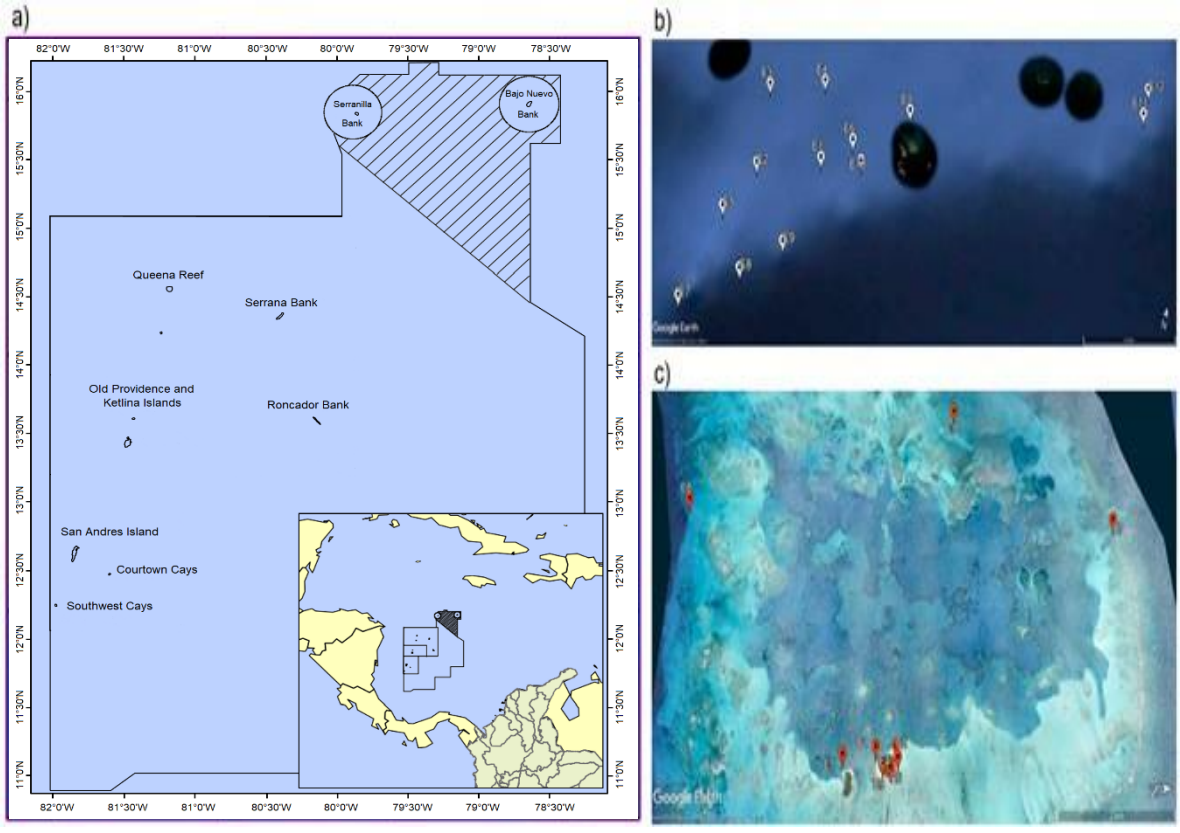

Figure 1. (a) Map of the Seaflower Biosphere Reserve; **(b)** Location of the sampling areas on the Serranilla Bank; **(c)** Southwest Cays. (SBR map modified from: Seaflower Foundation, 2019; images with sampling sites: Google Earth, 2024).

METHODOLOGY

At each study site in CS and CA, sample collection covered a minimum area of 0.1 m^2, as recommended for macrofauna studies for sandy or muddy bottoms (Eleftheriou & Moore, 2013). For sample preservation and handling, the methodologies proposed by Cortés *et al*. (2013) for soft-bottomed organisms, and Merchán-Cepeda *et al*. (2013) for rocky littoral organisms were followed.

Serranilla Bank

In September 2017, sampling was conducted in CS and surrounding areas from a research vessel, covering both the eastern (E11 and E12) and western sectors (E0 to E10). Samples were collected using a Van Veen dredge at depths of 10 m, 20 m and 30 m; and a Chipec dredge was used at a depth of 320 m in the central area of the bank's plain (E7) (Table 1). On the eastern and

western sides of CS, linear transects were carried out along the rocky shore, where polychaetes were collected from supratidal and infralittoral zones. In some cases, rocks were fractured manually or basic diving equipment was used to collect biological material.

Table 1. Date, coordinates, depth and type of dredger used at sampling sites in the Serranilla Bank.

Date	Site	Coordinates	Depth	Dredge
19/09/2017	E0	15° 48′ 21.00′′N - 79° 51′ 7.56′′W	12 m	Chipec
21/09/2017	E1	15° 45′ 58.80′′N - 79° 54′ 1.62′′W	22 m	Van Veen
21/09/2017	E2	15° 45′ 1.98′′N - 79° 56′ 22.62′′W	30 m	Van Veen
21/09/2017	E3	15° 47′ 13.86′′N - 79° 56′ 52.62′′W	17 m	Van Veen
21/09/2017	E4	15° 48′ 2.88′′N - 79° 54′ 45.78′′W	11.5 m	Van Veen
22/09/2017	E5	15° 43′ 34.80′′N - 79° 57′ 6.60′′W	27 m	Van Veen
20/09/2017	E6	15° 46′ 50.22′′N - 79° 53′ 0.84′′W	16 m	Van Veen
20/09/2017	E7	15° 41′ 2.22′′N - 79° 57′ 35.52′′W	323 m	Chipec
20/09/2017	E8	15° 42′ 21.90′′N - 79° 55′ 44.64′′W	28 m	Van Veen
25/09/2017	E9	15° 43′ 29.58′′N - 79° 54′ 30.00′′W	30 m	Van Veen
25/09/2017	E10	15° 46′ 24.30′′N - 79° 52′ 28.38′′W	18 m	Van Veen
25/09/2017	E11	15° 51′ 19.20′′N - 79° 42′ 6.00′′W	22 m	Van Veen
25/09/2017	E12	15° 52′ 6.00′′N - 79° 42′ 2.40′′W	20 m	Van Veen

Southwest Cays

In September 2018, sampling was conducted at six shallow stations located in the North Cay and South Cay sectors. Samples from sandy bottoms were collected by freediving, using a hand net mounted on an iron frame (0.1 m² opening) fitted with a 500 µm mesh. A plexiglass sheet was inserted between the net and the substrate to aid in sample extraction. Additionally, coral rocks were manually removed at each station. At stations E3, E7, and E8, samples were collected manually by SCUBA diving due to the greater depth at those sites (Table 2).

Table 2. Date, coordinates, depth and collection method at sampling sites in the Southwest Cays.

Date	Site	Coordinates	Depth
09/25/2018	E1	12º 09’ 52.50’’N - 81º 50’ 27.66’’W	2.0 m
09/26/2018	E2	12º 09’ 57.00’’N - 81º 50’ 27.84’’W	1.1 m
09/26/2018	E3	12° 10’ 24.99”N - 81° 52’ 15.99”W	6.4 m
09/27/2018	E4	12º 09’ 58.14’’N - 81º 50’ 23.94’’W	1.2 m
09/28/2018	E5	12º 9’ 37.74’’N - 81º 50’ 25.14’’W	1.5 m
09/29/2018	E6	12º 09’ 58.01’’N - 81º 50’ 21.74’’W	1.5 m
09/30/2018	E7	12º 11’ 45.64’’N - 81º 51’ 40.75’’W	4.3 m
10/01/2018	E8	12° 8’ 16.62”N - 81°52’ 15.99”W	18.8 m
10/01/2018	E9	12° 9’ 55.38”N - 81° 50’ 24.48”W	1.8 m

Storage and preservation of samples

Marine benthic sediment samples in CS and CA were washed through a 500 µm mesh sieve to retain the macrofauna. The retained material was placed in heavy-gauge (1 mm) transparent plastic bags, to which a narcotizing solution (up to 500 ml of Magnesium Chloride) was added to relax the organisms for 15 to 20 minutes. Subsequently, a 12% formalin solution (500 ml) prepared with seawater, was added as a fixative. The solution was neutralized with a borax and stained with rose bengal to facilitate tissue visualization during laboratory analysis.

Rocks manually collected in CS and CA were transported in buckets to the shore, where they were carefully to extract polychaetes using soft forceps. The specimens were then placed in deep plastic trays containing a solution of magnesium chloride and seawater to anesthetize them. Subsequently, they were preserved in pre-labeled storage jars with 96% ethanol, as some organisms were intended for additional studies not addresed in this document.

In the laboratory, the samples from both expeditions were rinsed with distilled water in plastic trays to remove residual formaldehyde. Macrofauna was separated from the sediment under a stereoscope, and polychaetes were preserved in labeled storage jars with 70% ethanol. The process of species-level identification was conducted by using a stereoscope, a microscope, and microphotography equipment, following the taxonomic keys of Uebelacker and Johnson (1984), Salazar-Vallejo (1996), De León-González *et al.* (2009; 2021), and Gil (2011). To determine the presence of new records for the Colombian Caribbean, the publications on polychaetes by Londoño-Mesa *et al.* (2016); León *et al*. (2019) and Coneo-Gómez *et al*. (2022) were reviewed.

RESULTS

In the expeditions to CS and CA, a total of 231 organisms were recorded, distributed in 30 families, 152 genera and 226 species (Table 3).

Table 3. Polychaete species recorded in the expeditions to the Serranilla Bank and the Southwest Cays. **NR:** new record for the Colombian Caribbean; **(X)** previously recorded in Colombia; **(**)** New record of genus and species for the Colombian Caribbean; **(*)** new record of species for the Colombian Caribbean.

N°.	Species	CS	CA	No.	Species	CS	CA
1	*Amphinome rostrata*		x	124	*Lepidametria commensalis* **	NR	
2	*Benthoscolex sp.*		x	125	*Polynoe erythrotaenia* **		NR
3	*Chloeia entypa* *	NR		126	*Subadyte mexicana***	NR	
4	*Eurythoe complanata*	x		127	*Thormora johnstoni* *	NR	
5	*Hermodice carunculata*		x	128	*Claudrilus draco* **	NR	
6	*Hipponoe gaudichaudi* *		NR	129	*Acromegalomma fauchaldi* *		NR
7	*Linopherus paucibranchiata* *	NR	NR	130	*Anamobaea orstedii*		x
8	*Pareurythoe elongata**		NR	131	*Bispira crassicornis* *	NR	
9	*Pareurythoe spirocirrata* *	NR		132	*Bispira melanostigma*	x	
10	*Branchiomaldane vincentii* **		NR	133	*Branchiomma curtum*	x	
11	*Amastigos delicatus***		NR	134	*Branchiomma nigromaculatum*	x	
12	*Capitella aciculata* *	NR	NR	135	*Chone gracilis* *	NR	
13	*Capitella caribaeorum* *	NR		136	*Fabricinuda limnicola* **	NR	
14	*Capitella teres* *		NR	137	*Jasmineira bilobata* *	NR	
15	*Dasybranchethus pacifica* **		NR	138	*Notaulax nudicollis* *	NR	NR
16	*Dasybranchus lumbricoides*	x		139	*Notaulax paucoculata* *		NR
17	*Decamastus gracilis* *		NR	140	*Potamethus spathiferus*	x	x
18	*Neonotomastus glabrus* **	NR		141	*Pseudobranchiomma emersoni* **	NR	
19	*Notomastus hemipodus*	x		142	*Terebrasabella heterouncinata* **	NR	
20	*Notomastus landini* *		NR	143	*Saccocirrus major* **		NR
21	*Bhavania riveti**		NR	144	*Hydroides mucronata* *	NR	
22	*Chrysopetalum occidentale* **	NR		145	*Pseudovermilia fuscostriata*	x	
23	*Aphelochaeta multifilis* *	NR		146	*Pseudovermilia multispinosa*	x	
24	*Cirratulus exuberans* *		NR	147	*Salmacina huxleyi* *	NR	
25	*Cirriformia afer* *		NR	148	*Siboglinum sp.*		x
26	*Cirriformia chicoi* *		NR	149	*Sthenelanella uniformis*	x	
27	*Dodecaceria diceria* *		NR	150	*Sphaerephesia similisetis* **	NR	
28	*Dorvillea cerasina* *	NR		151	*Aonidella cirrobranchiata* **	NR	
29	*Dorvillea clavata**	NR		152	*Aonides californiensis* **	NR	
30	*Dorvillea largidentis* *	NR		153	*Aonides paucibranchiata* **		NR
31	*Dorvillea moniloceras**	NR		154	*Dipolydora giardi* **		NR
32	*Dorvillea rubra* *	NR		155	*Dipolydora socialis* **	NR	
33	*Dorvillea sociabilis* *	x		156	*Dispio lenislamellata* **		NR
34	*Parougia batia* **	NR		157	*Lindaspio dibranchiata* **		NR
35	*Eunice brevis* *	NR		158	*Malacoceros cariacoensis* *		NR
36	*Eunice collini* *	NR		159	*Microspio paradoxa* **	NR	
37	*Eunice filamentosa*	x		160	*Polydora ciliata* *	NR	
38	*Eunice fucata* *		NR	161	*Polydora heterochaeta* *	NR	
39	*Eunice gagzoi*	x		162	*Prionospio vermillionensis* *		NR

N°.	Species	CS	CA	No.	Species	CS	CA
40	*Eunice hartmanae* *	NR		163	*Pygospio elegans* **		NR
41	*Eunice hawaiensis*	x		164	*Rhynchospio harrisae* **		NR
42	*Eunice imogena* *	NR		165	*Scolelepis andradei* *		NR
43	*Eunice kinbergi*		x	166	*Xandaros acanthodes* **		NR
44	*Eunice lanai**	NR		167	*Amblyosyllis lineata* *	NR	
45	*Eunice pulvinopalpata* *	NR		168	*Amblyosyllis madereinsis* *		NR
46	*Eunice rubrivittata* *	NR		169	*Branchiosyllis diazi*		x
47	*Eunice semisegregata*	x	x	170	*Branchiosyllis exilis* *	NR	
48	*Eunice stigmatura* *	NR		171	*Branchiosyllis pacifica* *	NR	
49	*Eunice tenuis* *	NR		172	*Brania russelli* **	NR	
50	*Eunice vittatopsis* *		NR	173	*Brevicirrosyllis weismanni* **		NR
51	*Leodice antennata*	x		174	*Dentatisyllis carolinae* **	NR	NR
52	*Leodice rubra*		x	175	*Dentatisyllis mangalis* **	NR	NR
53	*Lysidice collaris*	x		176	*Dentatisyllis morrocoyensis* **	NR	
54	*Lysidice ninetta*	x		177	*Dioplosyllis octodentata* **		NR
55	*Lysidice unicornis*	x	x	178	*Eusyllis assimilis* **	NR	
56	*Nicidion angeli* *	NR		179	*Eusyllis blomstrandi**	NR	
57	*Nicidion longula*	x		180	*Eusyllis spiocirrata* **	NR	
58	*Glycera brevicirris* *	NR		181	*Exogone arenosa* **	NR	
59	*Glycera lapidum* *		NR	182	*Exogone dispar* **	NR	
60	*Glycera oxicephala* *	NR		183	*Exogone longicornis* **	NR	
61	*Glycera papillosa* *	NR		184	*Exogone naidinoides* **		NR
62	*Glycera tesselata*	x		185	*Haplosyllides floridiana* **		NR
63	*Goniada teres*	x		186	*Haplosyllis agelas* *	NR	
64	*Hesiocaeca bermudensis* **		NR	187	*Haplosyllis spongicola*	x	
65	*Heteropodarke formalis* **		NR	188	*Inermosyllis curacaoensis*	x	
66	*Leocrates atlanticus* **	NR		189	*Inermosyllis mexicana* *	NR	NR
67	*Leocrates longocirratus* **	NR		190	*Myrianida brevipes* *	NR	
68	*Syllidia armata* **		NR	191	*Nuchalosyllis lamellicornis* **	N	
69	*Syllidia liniata* **	NR		192	*Nudisyllis divaricata* **	NR	
70	*Abyssoninoe hibernica* **	NR		193	*Opisthodonta mitchelli* **	NR	
71	*Abyssoninoe sp.* *		NR	194	*Opisthosyllis arboricola* *		NR
72	*Eranno lagunae* **	NR		195	*Paraehlersia ferrugina* **	NR	
73	*Gallardoneris nonatoi* **	NR		196	*Parapionosyllis floridana* **	NR	
74	*Lumbricalus campoyi conf.* **		NR	197	*Parapionosyllis longicirrata* **	NR	
75	*Lumbrinerides uebelackerae* **		NR	198	*Parapionosyllis uebelackerae* **	NR	
76	Paraninoe brevipes **	NR		199	Parasphaerosyllis indica **	NR	
77	Axiothella somersi **		NR	200	Parexogone exmouthensis **		NR
78	Notoproctus sp. *		NR	201	Parexogone longicirris **		NR
79	Clymenella torquata		x	202	Perkinsyllis spinisetosa **	NR	
80	Euclymene coronata *		NR	203	Plakosyllis brevipes **		NR
81	Euclymene rubrocincta *		NR	204	Prosphaerosyllis sotoi **		NR

N°.	Species	CS	CA	No.	Species	CS	CA
82	*Heteroclymene glabra* **		NR	205	*Pseudosyllis brevipennis* **	NR	NR
83	*Isocirrus reticulatus* **		NR	206	*Salvatoria euritmica* **	NR	NR
84	*Maldane sarsi*	x		207	*Salvatoria vieitezi* **		NR
85	*Maldanella fibrillata* **		NR	208	*Syllides bansei* **	NR	
86	*Aglaophamus foliosa* *	NR		209	*Syllides fulvus* **	NR	NR
87	*Alitta succinea*		x	210	*Syllis adamantea* *		NR
88	*Ceratonereis mirabilis*	x	x	211	*Syllis castroviejoi* *	NR	NR
89	*Leonnates decipiens* **	NR		212	*Syllis fasciata*		x
90	*Micronereis piccola* **	NR		213	*Syllis gracilis*		x
91	*Neanthes acuminata*	x	x	214	*Syllis hyalina*	x	
92	*Neanthes unifasciata* *	NR		215	*Syllis pectinans* *		NR
93	*Nereis casoae* *	NR		216	*Syllis truncata* *	NR	NR
94	*Nereis sp.*		x	217	*Syllis vivipara* *	NR	
95	*Platynereis dumerilii*	x	x	218	*Trypanedenta gemmipara*	x	x
96	*Arabella mutans*	x		219	*Trypanosyllis vittigera*	x	
97	*Diopatra cuprea*		x	220	*Trypanosyllis inglei* *	NR	
98	*Diopatra papillata* *	NR		221	*Trypanosyllis parvidentata*	x	x
99	*Hyalinoecia bermudensis* *		NR	222	*Xenosyllis scabra* **	NR	
100	*Mooreonuphis elsiae* **	NR		223	*Eupolymnia magnifica*		x
101	*Mooreonuphis nebulosa* **		NR	224	*Loimia medusa*		x
102	*Nothria occidentalis* *		NR	225	*Paraxionice artifex* **	NR	
103	*Onuphis elegans* *	NR		226	*Pista palmata*	x	
104	*Rhamphobrachium agassizi* **		NR	227	*Polycirrus holthei* *	NR	
105	*Armandia agilis*		x	228	*Polycirrus purpureus conf.* *	x	x
106	*Ophelia limacina***		NR	229	*Streblosoma hartmanae*	x	
107	*Ophelina abranchiata* *		NR	230	*Thelepus setosus*	x	
108	*Ophelina acuminata* *	NR	NR	231	*Thelepus verrilli* *	NR	
109	*Ophelina alata**		NR				
110	*Ophelina cylindricaudata**	NR					
111	*Ophelina hachaensis*		x				
112	*Polyophthalmus pictus*	x	x				
113	*Hypereteone lactea**	NR					
114	*Nereiphylla fragilis*	x					
115	*Paranaitis speciosa* **	NR					
116	*Cabira incerta* *	NR					
117	*Litocorsa acuminata* *	NR					
118	*Litocorsa antennata* *	NR					
119	*Antinoe uschakovi* **	NR					
120	*Chaetacanthus pilosus*	X					
121	*Eunoe eura* **	NR					
122	*Harmothoe crucis*	x					
123	*Hermenia verruculosa* **	NR					

The results of the expeditions revealed a similar abundance of families, genera and species of polychaetes between both areas of the SBR. In CS, 20 families, 83 genera, and 150 species were recorded, while in the CA, 27 families, 90 genera, and 103 species were identified. (Fig. 2).

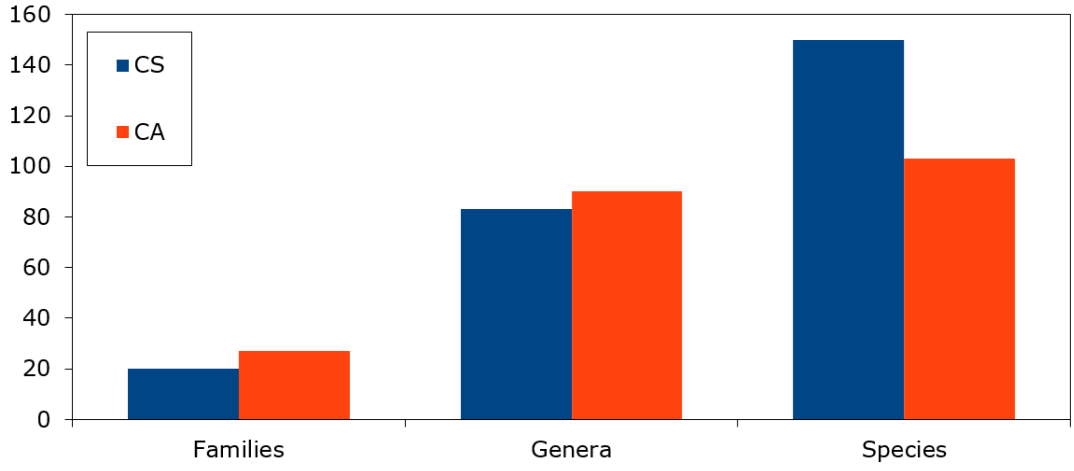

Figure 2. Number of records of polychaetes found in Seaflower expeditions in Serranilla Bank and Southwest Cays.

Regarding the polychaete families, the highest number of species recorded for both cays was provided by the Syllidae family (56 species), followed by the families Eunicidae (23 species), Spionidae (16 species) and Sabellidae (15 species). The remaining families obtained a smaller number of records (n= <10) (Fig. 3).

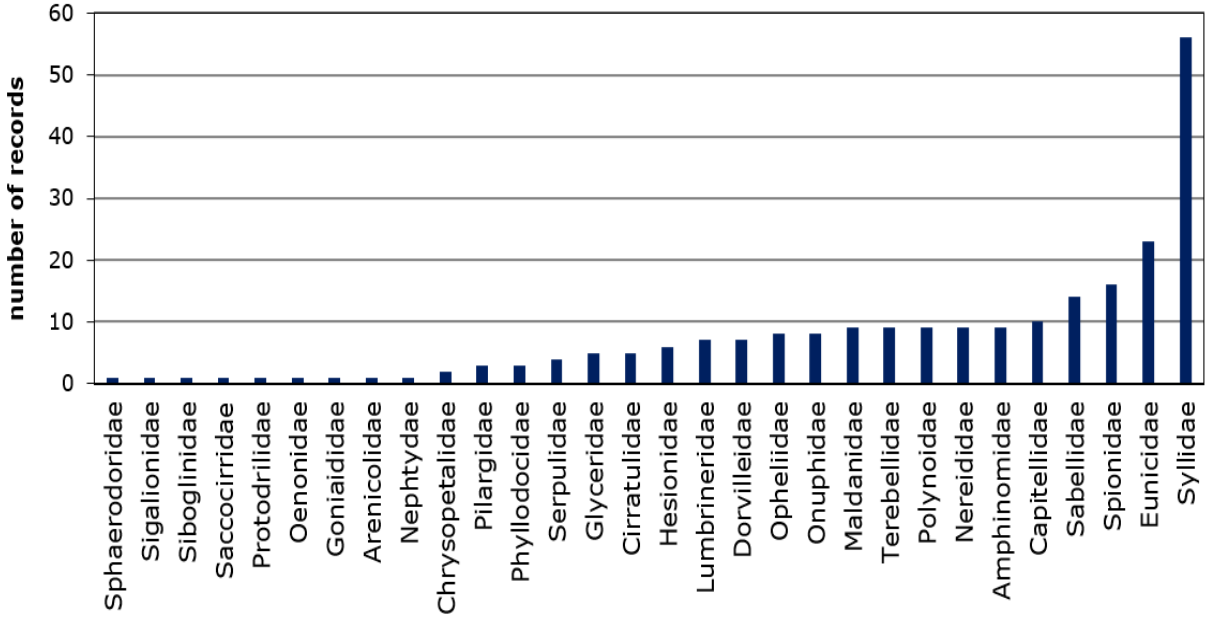

Figure 3. Number of records by families of polychaetes found in the Seaflower expeditions in Serranilla Bank and Southwest Cays.

A total of 86 new records of genera and species were reported for the Colombian Caribbean (representing 37.2% of the total found in the expeditions) which were distributed among the families Arenicolidae, Capitellidae, Chrysopetalidae, Dorvilleidae, Hesionidae, Lumbrineridae, Maldanidae, Nereididae, Onuphidae, Opheliidae, Phyllodocidae, Polynoidae, Protodrilidae, Sabellidae, Saccocirridae, Sphaerodoridae, Spionidae, Syllidae and Terebellidae, some of these species are illustrated in Figures 4 and 5.

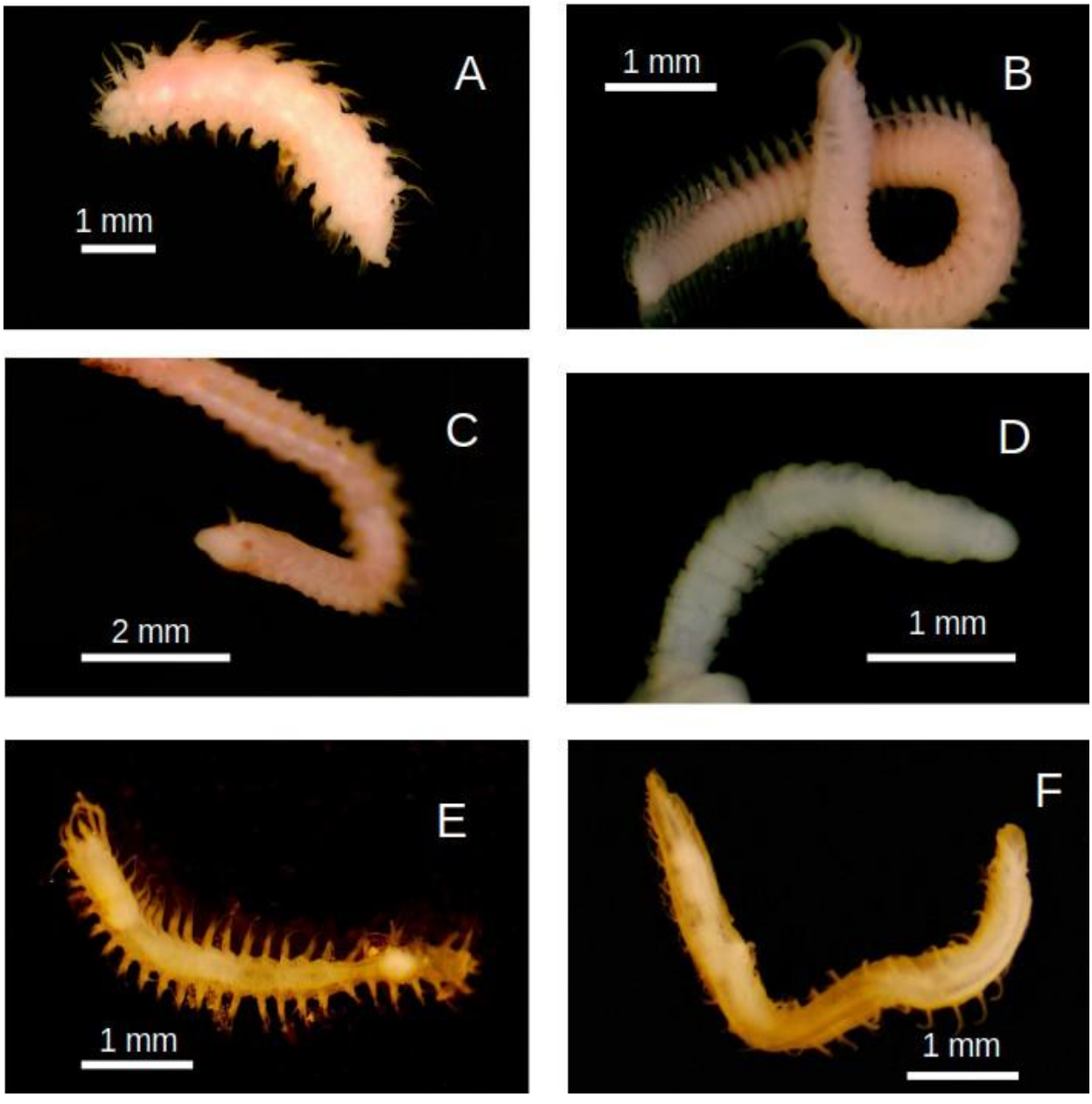

Figure 4. A) Amphinomidae, *Eurythoe complanata*; **B)** Dorvilleidae, *Dorvillea sociabilis*; **C)** Eunicidae, *Lysidice collaris*; **D)** Lumbrineridae, *Lumbrinereis nonatoi*; **E)** Nereididae, *Platinereis dumerilii*; **F)** Opheliidae, *Ophelina cylindrica*.

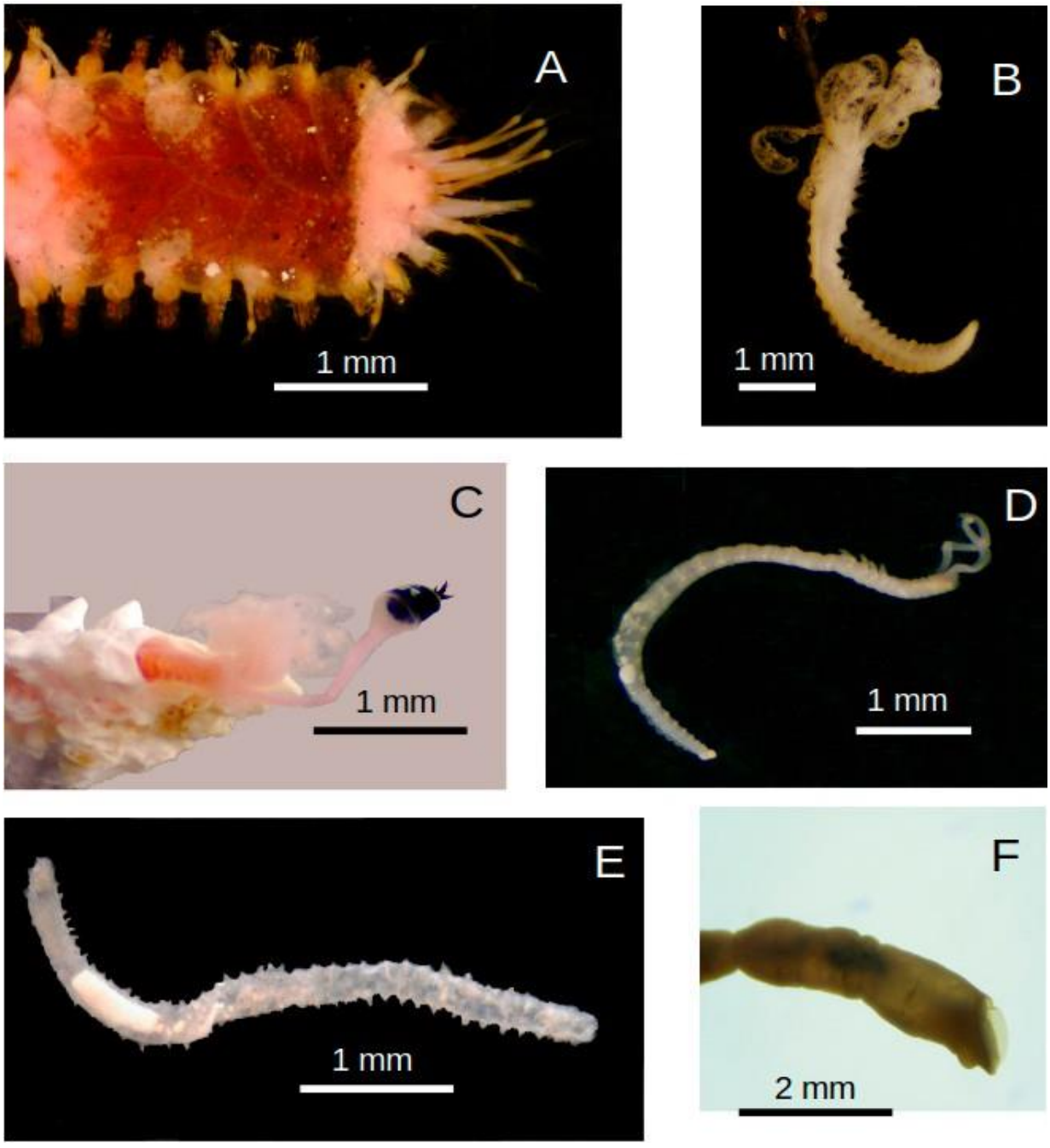

Figure 5. A) Polynoidae, *Eunoe eura*; **B)** Sabellidae, *Branchiomma curtum*; **C)** Serpulidae, *Pseudovermilia multispinosa*; **D)** Spionidae, *Polydora ciliata*; **E)** Syllidae, *Haplosyllis spongicola*; **F)** Maldanidae, *Maldane sarsi*.

Discussion

Londoño-Mesa *et al.* (2016) recorded 49 families, 66 genera and 131 species of polychaetes (Annelida) for the SBR, mostly from the sectors of the islands of San Andres, Old Providence and Ketlina, where the largest number of investigations have been generated. Coneo-Gómez et al. (2022) recorded 51 families, 230 genera and 297 species for the Colombian Caribbean. The present study contributes with 86 genera and 172 species to these records,

demonstrating the significant value of scientific expeditions in remote island coral ecosystems such as those of the SBR.

The three families with the highest number of species (Syllidae, Eunicidae and Spionidae) have a wide global distribution, with presence in all types of substrates. In the case of the Syllidae, due to their minute size ensures their dominance within benthic communities, where they are able to colonise a wide variety of soft and hard substrates, including sand, rocks, live and dead corals, macroalgae and seagrasses, among others. (De León-González *et al.,* 2021).

On the other hand, for the families Arenicolidae, Goniaididae, Nephtydae, Oenonidae, Protodrilidae, Saccocirridae, Siboglinidae, Sigalionidae and Sphaerodoridae, only a single specimen was collected for each, supporting the trend observed in highly diverse ecosystems where species richness tends to be higher than organism abundance.

Conclusions

The high richness of polychaetes present in the SBR is largely due to the fact that the SBR is an area recognized as a biodiversity hot spot, characterized by low levels of anthropogenic disturbance and restricted access, in contrast to more heavily impacted continental coastal areas.

A total of 30 families, 152 genera and 226 species were recorded during both expeditions, of which 8 families, 18 genera and 20 species are present in both study areas; 86 genera and 172 species represent new records for the Colombian Caribbean.

A significant contribution was made to the list of marine benthic polychaete species for the SBR in two areas that had not been previously considered for the study of these invertebrates such as Southwest Cays and Serranilla Bank.

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Authors' contribution

Conceptualization: N.H.C.; methodology: N.H.C. and A.D.L.; analysis: N.H.C., A.D.L., and P.R.D.; research: N.H.C., A.D.L., and P.R.D.; resources: N.H.C.; data curation: P.R.D.; drafting and preparation of the original draft: P.R.D.; writing, revision and editing: P.R.D., N.H.C. and A.D.L.; project management: N.H.C.; fundraising: N.H.C. All authors have read and accepted the published version of the manuscript.

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