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Some Isopod and Copepod Parasites (Crustacea) of Colombian Marine Fishes

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Few reports of fish-associated crustaceans have been made in the southern Caribbean. Williams et al. (1994) reported 2 species of copepods and 3 species of isopods from 10 species of Colombian marine fishes. Williams and Williams (1981) noted two additional species of cymothoid isopods from two Colombian fishes. Garzon-Ferreira (1990) noted an isopod, that often infects fishes, attacking humans in Colombia. Delaney (1989) noted *Alcirona* spp., a genus with species that sometimes associate with fishes, from Colombia.

This paper reports on a collection of crustaceans taken from marine fishes in Colombia and includes two new geographic localities for the Caribbean, six for the southern Caribbean, and ten for Colombia. We also report two new fish associates, five new host families, a new host genus, 16 new host records, and an odd difference in habitat for one isopod.

Fishes were collected by trawl, seine, spearing, and hook and line. The third author collected and identified the fishes, and examined them for crustaceans. The external surfaces, mouth and gill chambers of each fish were examined without magnification. For this reason very few copepod parasites and gnathiid isopods were actually collected. Crustaceans were preserved in 70% ethanol in individual vials for each host specimen, and the first and second authors identified them. All crustacean specimens are deposited in the U. S. National Parasite Collection (USNPC). Fish hosts were not preserved.

Thirty-three copepods representing four species and 112 isopods representing 9 species were collected from 47 individuals of 20 species of fishes (Table 1). Williams et al. (1994) reported on a similar collection of grossly visible crustacean parasites of fishes collected near Cartagena, Colombia. That collection differed considerably from the one reported here, because none of the host species were the same, and only 1 of the 5 and 13 species of crustaceans, respectively, were the same. These differences may be explained by variations in collecting techniques or in habitats sampled. Together they demonstrate that the fish-isopod and larger copepod fauna of Colombia is very poorly known.

TABLE 1. Isopods collected in marine fishes from Colombia.

Parasite classification, parasite species					
Host species	Location on host	Date	Geographic locality	No. hosts/ no. parasites	USNPC
Subclass Copepoda, Order Siphonostomatoidea, Family Caligidae, <i>Caligus coryphaenae</i> Steenstrup & Lütken ²					
<i>Eurythunnus alletteratus</i> (Rafinesque)	body	25 Apr 1985	Bahía de Chengue	1/1_1_	89065.00
<i>Lepeophtheirus dissimulatus</i> Wilson ²					
<i>Mycteroperca bonaci</i> (Poey) ³	body	17 Jun 1985	Punta Betín	1/1_	88976.02
<i>Lepeophtheirus curtus</i> Wilson ²					
<i>Mycteroperca bonaci</i> (Poey) ³	body	17 Jun 1985	Punta Betín	1/15_	88976.03
	body	29 Aug 1985	Bahía de Cinto	1/11_	88974.02
	body	11 April 1990	Granate	1/15_	89062.00
Family Euryphoridae, <i>Euryphorus nordmanni</i> Milne-Edwards ²					
<i>Coryphaena hippurus</i> Linnaeus	body	17 Apr 1985	Bahía de Gayraca	1/3_1_	89060.00
Subclass Malacostraca, Order Isopoda, Family Gnathiidae, <i>Gnathia</i> sp. ¹					
<i>Apogon quadrisquamatus</i> Longley ³	head	3 Oct 1985	Granate	1/1J	89064.00
<i>Epinephelus niveatus</i> (Valenciennes) ³	gills	15 Jun 1984	Santa Marta	1/50+J	89063.00
<i>Scorpaenodes tredecimspinosus</i> (Metzelaar) ³	snout	15 Dec 1985	Punta Betín	1/1J	89066.00
Family Corallanidae, <i>Alcirona krebsii</i> (Hansen) ¹					
<i>Apogon binotatus</i> (Poey) ^{3,4}	not noted	6 Oct 1982	Isla Mucura	1/1	88975.00
<i>Scorpaena bergi</i> Evermann & Marsh ^{3,4}	not noted	6 Feb 1985	Ensenada Pinorroa	1/6	88977.00
<i>Excorallana costata?</i> Lemos de Castro ⁵					
<i>Mycterperca bonaci</i> (Poey) ³	gills	22 Mar 1985	Punta Betín	1/1	88978.00
<i>Tridentella virginiana</i> (Richardson) ⁵					
<i>Mycterperca bonaci</i> (Poey) ³	nares	11 Apr 1990	Granate	1/3	89061.00
Family Cymothoidae, <i>Anilocra haemuli</i> Williams and Williams					
<i>Mycterperca rubra</i> (Bloch) ^{3,6}	cheek	23 Nov 1985	Punta Betín	1/1	88979.00
<i>Mycterperca bonaci</i> (Poey) ³	cheek	17 Jun 1985	Punta Betín	1/1_	88976.01
	cheek	29 Aug 1985	Bahía de Cinto	1/1_1J	88974.01
<i>Paranthias furcifer</i> (Valenciennes)	cheek	8 Jul 1983	Punta Betín	1/1_	89059.00
<i>Cymothoa excisa</i> Perty					
<i>Diapterus auratus</i> Ranzani ^{3,4}	mouth	20 Nov 1987	Bahía de Portete	1/1T	88985.00
<i>Diapterus rhombeus</i> (Cuvier) ³	mouth	20 Nov 1987	Bahía de Portete	4/4_1_	88986.00
	mouth	-- Sep 1987	Bahía de Portete	1/1_1_	88982.00
<i>Lutjanus analis</i> (Cuvier)	mouth	-- Jul 1987	near Rio Hacha	1/1_1_	88984.00
<i>Micropogonius furnieri</i> (Desmarte) ³	mouh	23 Jul 1987	Bahía de Portete	8/8_	88980.00
<i>Stellifer venezuelae</i> (Schultz) ³	mouth	19 Nov 1987	Bahía de Portete	8/8_	88991.00
<i>Cymothoa oestrum</i> (Linnaeus)					
<i>Caranx latus</i> Agassiz	mouth	26 Aug 1987	Bahía Concha	1/1_1_	88982.00
<i>Chloroscombrus chrysurus</i> (Linnaeus)	mouth	18 Sep 1987	Bahía Concha	1/2J	88993.00
<i>Elagatis bipinnulata</i> (Quoy & Gaimard) ³	mouth	12 Mar 1985	Bahía de Concha	1/1_	88981.00

TABLE 1. Continued.

Parasite classification, parasite species					
Host species	Location on host	Date	Geographic locality	No. hosts/ no. parasites	USNPC
			<i>Livoneca redmanii</i> Leach ¹		
<i>Scomberomorus brasiliensis</i> Collette et al.	gills	3 Aug 1993	Boca de la Barra	1/1_	89058.00
			<i>Livoneca</i> sp. of Bunkley-Williams et al. ¹		
<i>Haemulon bonariense</i> Cuvier ^{3,4}	gills	-- Jul 1987	Bahía Concha	1/1	88994.00

¹New country record; ²New southern Caribbean record; ³New host record; ⁴New Family record; ⁵New Caribbean record; ⁶New genus record; J = juvenile; T = male to female transitional (cymothoids are protandrous hermaphrodites); ? = identification tentative; Bahía de Cinto = Parque Natural Tayrona; Bahía de Concha = Parque Natural Tayrona; Bahía de Gayraca = Parque Natural Tayrona; Bahía de Portete = Guajira; Boca de la Barra = Ciénaga Grande de Santa Marta; Ensenada Pinorroa = Urabá Chocoano; Granate = Parque Natural Tayrona, Colombia; Isla Mucura = Islas de San Bernardo; Punta Betín = Santa Marta.

Caligus coryphaenae Steenstrup & Lütken

We also found this copepod on little tunny, *Eurythunnus alletteratus*, off Puerto Rico (Williams and Bunkley-Williams, 1996). The present report is a new geographic record for the southern Caribbean, but this parasite probably occurs throughout the region.

Euryphorus nordmanni Milne-Edwards

We reported this copepod for the first time in the Caribbean off Puerto Rico (Williams and Bunkley-Williams, 1996). This is only the second published record in the Caribbean, but this parasite occurs practically world wide.

Alicirona krebsii Hansen

The specimens had fewer setae than has been described and figured, but otherwise conform to the species description. This widespread and variable isopod may represent a species complex (Delaney, 1984). The two families of fishes, represented by the barred cardinalfish, *Apogon binotatus* [Apogonidae] and the goosehead scorpionfish, *Scorpaena bergi* [Scorpaenidae], are new observed hosts, but this isopod may possess little if any host specificity (Bunkley-Williams and Williams, 1998).

Excorallana costata Lemos de Castro

An isopod on the black grouper, *Mycteroperca bonaci*, appears to be *E. costata*. This identification is tentative because *Excorallana* is in need of revision (Delaney, 1984, 1989) and many of its species are in need of redescription or validation. *Excorallana costata* was previously known only from Brazil and was not known to associate with fishes (Delaney, 1984, 1989).

More species of *Excorallana* may associate with fishes than has previously been suspected. Delaney (1989) was the first to report *E. acuticauda* (Miers, 1881)

and *E. quadricornis* (Hansen, 1890) associating with a Caribbean fish, and we have seen these and *E. oculata* (Hansen, 1890) (another species not previously noted to associate with fishes) on Caribbean marine fishes (unpubl. data).

Tridentella virginiana (Richardson)

This is the first published record for the Caribbean Sea and the first record of a host for this isopod. We have previously collected it in the nares of groupers (Serranidae) at Mona Island (Puerto Rico) and the Bahamas (unpubl. data), and this isopod appears to occur fairly commonly in the nares of groupers in the West Indies. Delaney (1990) described *Tridentella williamsi* from the nares of two species of groupers from British Virgin Islands. Subsequently, Kensley and Heard (1997) synonymized this species with *T. ornata* (Richardson, 1911) and noted this isopod from the nares of one sparid and three grouper host species from the Gulf of Mexico. Kensley and Heard (1997) was also the only published record of *T. ornata* in the Caribbean. The rarity of these isopods in the literature appears to be caused more by a lack of study than an actual rarity of occurrence.

Kensley and Heard (1997) noted that only five of the 14 known species in genus *Tridentella* were known to be associated with fishes. We add *T. virginiana* to this list. They also agree with Delaney and Brusca (1985) that members of this genus are only opportunistic or casual micropredators on fishes, but they present no data to support their suggestion that: "Tridentellids are thought to lurk in the benthos, and pounce on almost any passing fish, to take a meal of blood and drop off again." (Kensley and Heard, 1997: 424). We disagree. The association of some species in the nares suggests a long-term association with and dependence on host fishes. The Caribbean species appear to have some level of specificity for groupers (Serranidae). These characters seem to imply parasitism rather than micropredation.

Anilocra haemuli Williams and Williams

The infection of members of the grouper genus *Mycteroperca* by *A. haemuli* is interesting because this isopod commonly infects three species, and occasionally a fourth, of groupers in the genus *Epinephelus* and one species of *Paranthias* in different areas of the Caribbean (Williams and Williams, 1981). None were previously seen on *Mycteroperca*. The black grouper, *M. bonaci*, the comb grouper, *M. rubra*, and the more common host in Venezuela, the corocoro grunt, *Orthopristis ruber* (Cuvier), are found predominantly in habitats other than coral reefs, yet outside of the southern Caribbean *A. haemuli* is considered to occur only on coral reefs (Williams and Williams, 1981).

Cymothoa excisa Perty

This isopod typically infects snappers, such as the mutton snapper, *Lutjanus analis* (Table 1), along the continental Atlantic coasts of North, Central and South America (Bunkley-Williams et al., 1998; Williams and Bunkley-Williams, 1999). Mojarras (Gerreidae) are a new family of hosts for this isopod (Table 1). Bunkley-Williams et al. (1998) did not record this isopod from the examination of numerous specimens of the Caitipa mojarra, *Diapterus rhombeus*, in Venezuela. The Venezuelan stardrum, *Stellifer venezuelae*, and the whitemouth croaker, *Micropogonius furnieri*, are new hosts. This isopod has been reported from another member of this family of fishes (Sciaenidae) in the Gulf of Mexico (Kensley and Schotte, 1989).

Cymothoa oestrum (Linnaeus)

This isopod typically infects jacks (Carangidae), such as the horse-eye jack, *Caranx latus*, and Atlantic bumper, *Chloroscombrus chrysurus*, throughout the tropical and subtropical western Atlantic (Bunkley-Williams et al., 1998; Williams and Bunkley-Williams, 1999) (Table 1). It has not been reported from the rainbow runner, *Elagatis bipinnulatus* (parasites of this host summarized by Williams and Bunkley-Williams, 1996).

Livoneca sp.

One isopod from a black grunt, *Haemulon bonariense*, belongs to an undescribed species of *Livoneca* we reported occurring commonly in *D. rhombeus* in Venezuela (Bunkley-Williams et al., 1998). The record in *H. bonariense* may represent an accidental infection. Specimens of *D. rhombeus* were examined in this collection, but they were only infected by *C. excisa*.

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