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Acanthocolpid Metacercariae in the Sea Bass from Alejandro Selkirk Island, Chile

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ABSTRACT: Morphological characteristics of a metacercaria from muscle of 15 sea bass *Caprodon longimanus* (Serranidae) collected near Alejandro Selkirk Island (Chile) in the southeastern Pacific Ocean indicate that it belongs to the genus *Manteria* (Acanthocolpidae). All metacercarie were encapsulated with connective tissue. The prevalence of infection was 100%, with 64% of metacercariae were located between dorsal pterygiophores and dorsal fin base. Mean intensities of metacercariae did not differ significantly with respect to sex of the fish. There was no significant correlation with intensities of infection and condition in the host.

Key words: Acanthocolpidae, *Caprodon longimanus*, *Manteria* sp., sea bass, survey, metacercaria, muscles.

The sea basses (Pisces: Serranidae) include more than 400 demersal species, associated with the rocky bottom of littoral and sublittoral areas of tropical and subtropical seas. Generally, they are carnivorous and hermaphrodites (Heemstra and Randall, 1993). Parasites of this family are known mostly on species of economic importance (Oliva et al., 1992; Alvarez-Pellitero et al., 1993; Al-Marzoug and Al-Rifae, 1994). The sea bass *Caprodon longimanus* (Boulenger, 1895) lives in littoral waters of Australia, New Zealand, the North Pacific (Midway and Hawaiian Islands), Taiwan, Korea, southern Japan, Lord Howe and Kermadec Islands, Tuamotu Archipelago, Easter Island, Desventuradas Islands, and Juan Fernandez Archipelago (Katayama, 1960; Kharin and Dudarev, 1983; Sepúlveda, 1987).

The fishermen of Alejandro Selkirk Island (Chile) commented about the presence of "gray spheric bodies" in muscles of *C. longimanus*, which we identified as metacercariae. The objective of this note is to establish the taxonomic status of these metacercariae, and to report on their prevalence and mean intensity of infection, as well as their distribution in muscles and relationships with sex and condition of the host.

Field work conducted during November and December 1996 in the Alejandro Selkirk Island (about 700 km west of Chile; 33°45′S, 80°51′W), resulted in the collection of 15 specimens of *C. longimanus* (Fig. 1). The fish were captured with longline, at depths ranging from 15–150 m. The sex, standard length, fresh weight and maturity were determined following Nikolsky (1963). Fishes were preserved in 70% ethanol. At necropsy, the metacercariae were founded in the internal parts of the body, especially on dorsoventral muscular regions between the head and the caudal peduncle, including the base of dorsal, pelvic, pectoral, anal and caudal fins by means of a deep longitudinal cut at both sides of body. The metacercariae were counted with the unaided eye. Metacercariae were not found in mesenteries, liver, gonads, stomach, intestine, and swimbladder. The parasites were flattened by coverglass pressure and cleared in lactophenol for microscopic examination. The definitions of prevalence and intensity adhere to Bush et al. (1997), and the coefficient of body condition that measure individual robustness within a given fish population was calculated as follows: 100 × weight (g)/(standard length (cm))3 (Esch and Fernandez, 1993).

The encapsulated metacercariae (n = 30) of 0.8–1.5 (x = 1.1)mm diameter and observed only in the musculature (Fig. 2). The isolated and cleared metacercariae (n = 10), are described as follows with measurements expressed in μm (unless oth-

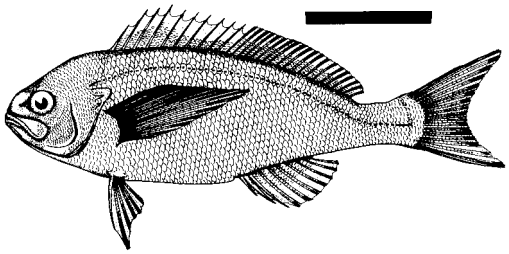

FIGURE 1. Adult specimen of the sea bass *Caprodon longimonus*. Bar = 50 mm.

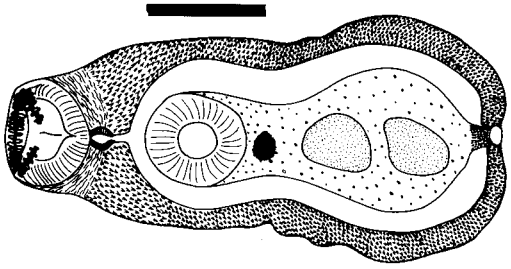

FIGURE 3. Exsheathed metacercariae of *Manteria* sp. Bar = 0.5 mm.

erwise stated) and means are followed by ranges in parenthesis. Metacercariae were characteristic of the family Acanthocolpidae and the genus *Manteria* (Fig. 3). The body is pear-shaped, with a spinous tegument; 1.8 (1.7–2.1) mm long by 854 (780–1100) maximum wide. The oral sucker is 371 (281–468) long. Circumoral spines are arranged in two ventrally interrupted alternating rows; there were 28 to 30 in each 34 (30–36) long row with the last spine 14 long. The pharynx is 126 (100–140) long. The caeca passed laterally to the ventral sucker, extending to posterior region where a uroproct is formed. The ventral sucker is near the anterior end, measuring 364 (312–449) long. The testes are in tandem, each 259 (250–270) long. The excretory vesicle is distended with minute granules. Metacercariae were surrounded by a thin host capsule of connective tissue, which revealed collagen fibers after Van Gieson's trichrome staining (Roberts, 1981) (Fig. 4). Voucher specimens of *Manteria* sp. have been deposited in the collection of the Instituto de Parasitología, Universidad Austral de Chile (UACH), Valdivia, Chile (IPUAT N° 0252–0253).

All fish examined were adults. All were infected with the metacercaria. Mean intensities ± standard deviation were 89 ± 29.1 in males ($n = 9$) and 104 ± 26.9 in females ($n = 6$) and no showed significant differences ($U = 22$, $P > 0.05$) using a Mann-Whitney *U*-test (Siegel, 1991). Similarly, condition showed no significant correlation with intensity of infection ($r_s = 0.207$; $P > 0.05$) according to the Spearman range test (Siegel, 1991). The latter suggests no effect of metacercariae on robustness of fish examined. The frequency of occurrence, mean number, and percentages of metacercariae in different locations are indicated in Table 1. The mus-

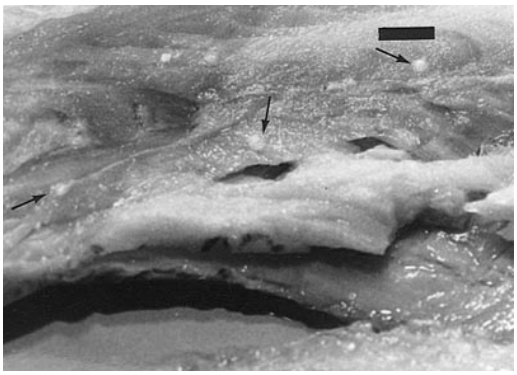

FIGURE 2. Encapsulated metacercariae (arrow) in the muscles of the sea bass *Caprodon longimanus*. Bar = 8 mm.

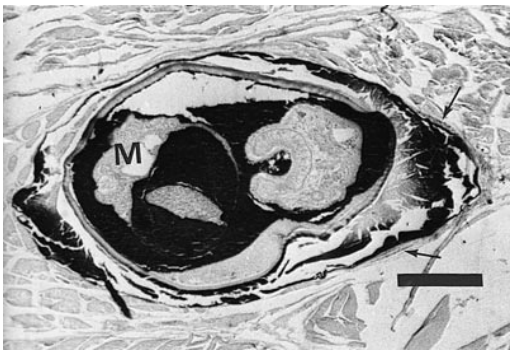

FIGURE 4. Section of a metacercariae (M) of *Manteria* sp. in the muscles of the sea bass (*Caprodon longimanus*), with thin capsule (arrow) of connective tissue. Van Gieson's stain. Bar = 0.5 mm.

TABLE 1. Frequencies, mean numbers and percentages of metacercariae in the muscles of *Caprodon longimanus* from Alejandro Selkirk Island, Chile.

Muscles	Number of fishes (n = 15)	Prevalence	Metacercariae		
			Number (n = 1,424)	Mean (range)	Relative frequency (%)
Head	5	33	6	1.2 (1–2)	0.4
Mouth	3	20	4	1.3 (1–2)	0.3
Gills	4	27	9	2.3 (1–4)	0.6
Gular region	4	27	8	2.0 (1–3)	0.6
Brachiostegals	2	13	3	1.5 (1–2)	0.2
Dorsal pterygiophores	15	100	287	19.1 (4–36)	20.2
Dorsal fin-base	15	100	618	41.2 (13–79)	43.4
Anal fin-base	12	80	69	5.8 (1–12)	4.8
Pectoral fin-base	9	60	29	3.2 (1–8)	2.0
Pelvic fin-base	12	80	113	9.4 (1–24)	7.9
Pleural ribs	8	53	133	16.6 (8–23)	9.3
Caudal peduncle	11	73	145	13.2 (8–19)	10.2

cular region between dorsal pterygiophores and the dorsal-fin base always had the greatest concentration of metacercariae. Muscles posterior to the pectoral fins had a higher number and percentage of metacercarie in relation to the anterior cephalic and opercular region of the body (mouth, gills, head, gular region, and branchiostegal rays).

The occurrence of *Manteria* sp. in *C. longimanus* from waters off Alejandro Selkirk Island represents a new host and geographic record, respectively. Prior to this discovery, two species of *Manteria* have been described as *M. brachyderus* in *Oligoplites saurus* and *Caranx hippos* from Ecuador and Florida, in *Oligoplites albus* from Mexico, Puerto Rico and Florida, and in *O. saurus* from Jamaica (Yamaguti, 1971). *Manteria costalimae* was described in *Scomberoides* sp., from the coast of Brazil. All definitive hosts for *Manteria* sp. are members of the family Carangidae (Freitas and Kohn, 1964; Travassos et al., 1969; Yamaguti, 1971). Life cycles of *Manteria* sp. are unknown. Species of the subfamily Stephanostominae described in the genus *Stephanostomum* and *Stephanostomoides*, develop metacercariae in certain species of fish which subsequently serve to transmit them to fish that act as definitive hosts (Yamaguti, 1971). *Seriola* sp., an ichthyophagous carangid fish from the Alejandro Selkirk Island, that seems to predate on *C. longimanus* populations, may be a possible definitive host for *Manteria* sp. Further study on this host-parasite relationship is needed. It is doubtful that these common, and intense infections of metacercariae are of concern to human consumers of the sea bass.

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