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Metazoan Parasites Observed in Darkblotched Rockfish, *Sebastes crameri* (Jordan) in Newport Fish Market

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Abstract - A total of ten specimens of darkblotched rockfish, *Sebastes crameri* obtained from Newport fish market were examined for parasites during February, 2002. Eight out of ten *S. crameri* were found to be infected with metazoan parasites. They were flatworm *Trochopus australis*, nematoda *Anisakis simplex*, and copepods *Neobrachiella robusta* and *Chondracanthus triventricosus*. Nine (30.0%) *T. australis*, seven (30.0%) *N. robusta*, one (10.0%) *C. triventricosus* and seven (60.0%) *A. simplex* were infected. Among them, *A. simplex* was the most abundant and prevalent metazoan parasites in *S. crameri*. *T. australis* and *N. robsta* were found in gills with moderate intensity (1.7 and 1.9, respectively), and *C. triventricosus* in dorsal fin with low intensity (0.3).

Key words : darkblotched rockfish, *Trochopus australis, Neobrachiella robusta, Chondracanthus triventricolus, Anisakis simplex*

INTRODUCTION

In this study, four species have been found on host belonging to the *Sebastes crameri* (Jordan). Fish that are eaten by man may contain worms, many of which are definite parasites of marine mammals. They may reduce the growth and survival of their hosts, directly or indirectly. Therefore, a knowledge of the parasites to which they are subject is a prerequisite to the fish to be aware of potential hazards.

In fact, Parasites may cause fish mortalities, then unfit for human consumption (Kabata 1981; Campbell 1983). The monogenean, *Trochopus australis* and the crustacean parasite, *Neobrachiella robusta* and *Chondracanthus triventricus* could be detrimental to fish populations (Kabata 1970; Hoskins *et al.* 1976). Movements of these parasites on the gills cause serious destruction and hypotrophy of the gill filaments. *Anisakis simplex* 3rd stage larvae may invade the stomach wall or intestinal wall causing eosinophil granuloma (Oshima 1972).

The purpose of the present study is to provide basic information on the identity and distribution of species of metazoan parasites infecting *Sebastes crameri*. It is intended that this study will investigate the prevalence, intensity and numbers of species recovered.

MATERIALS AND METHODS

Ten darkblotched rockfish from Newport fish market located in Oregon State, U.S.A. were purchased for the examinations of parasites. The fishes were transported alive to the laboratory, and examined for parasites. During this period the fish were stored on ice.

The gills, skin, fins and gastrointestinal organs were removed and examined. Monogenea and parasitic copepods were fixed in 8% formalin or 70% ethyl alchol. Nematodes were treated in the manner described in

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Hanek and Threfall (1970). Nematoda worms collected and mounted in lactophenol. Specimens were cleared as whole mounts in glycerin and examined for encysted parasites with the aid of a streomicroscope at magnifications up to 50x.

The location of each worms was recorded. The prevalence, the number of infected hosts per total number of hosts examined and the intensity, the number of parasites of a given species per infected host were recorded for each parasite species. Systematic assignment of host species followed the arrangement presented in Marine Advisory Bulletin No. 25 of Kramer and O'Connell (1995). Taxonomy of parasites was made according to Margolis and Arthur (1979) and Beverly-Burton (1984).

RESULTS

Four parasite species were identified from *Sebastes crameri*; namely *Trochopus australis* (Sekerak and Arai 1977), *Neobrachiella robusta* (Wilson 1912), *Chondracanthus triventricosus* Sekerak, 1970 and *Anisakis simplex* (Rudolphi 1809). Darkblotched rockfish ranged in length from 31.5 to 35.8 mm. Of the ten fish examined, 80.0% (8) were infected with at least one species of parasite and only two of them were free of parasites. Thirty percents harboured one species of parasite and 50% with multiple species.

For monogenea and copepods, 16 worms were distributed on the gills and one on the fin only. One specimen of *Chondracanthus triventricosus* was found embedded in the flesh near the base of the dorsal fin (Table 1). Seven nematoda Anisakis larvae were found in the stomach wall (1), omentum (3) and intestine (3). They were tightly coiled inside capsules attached to the viscera or embedded in the stomach wall (Table 2).

Table 1. Specific composition found in the darkblotched rockfish, *Sebastes crameri* with metazoan parasites

Species	Location	Prevalence	Intensity	
			Average	Range
Monogenea				
Trochopus australis	Gill	40.0%	1.7	1~3
Copepoda				
Neobrachiella robusta	Gill	30.0%	2.9	1~6
Chondracanthus triventricosus	Fin	10.0%	0.3	0~1
Nematoda				
Anisakis simplex larvae	Stomach wall, Omentum, Intestine	60.0%	1.5	1~2

Table 2. Infection sites of seven third stage larvae of *Anisakis simplex* in 10 darkblotched rockfish (*Sebastes crameri*) from *Newport fish market*

Location	Number of fish infected	Percentage	Number of larvae found	Percentage
Omentum	3	30.0	3	42.9
Intestine	2	20.0	3	42.9
Stomach wall	1	10.0	1	14.4
Total	6		7	

The prevalence of infestation on darkblotched rockfish with *Trochopus australis, Neobrachiella rousta, Chondracanthus triventricosus* and *Anisakis simplex* was 40.0%, 30.0%, 10.0% and 60.0% respectively. The prevalence was high with the exceptions of *C. triventricosus* (10.0%). Intensity of the infection varied from 1 to as many as 6 parasites per host and represented in Table 1.

DISCUSSION

This study was made of the parasites of darkblotched rockfish for the purpose of obtaining parasites for identification. Four species from a total of ten *Sebastes crameri* were recovered. Eight fishes of them (80%) harbored helminths and parasitic copepods.

Nine worms of *Trochopus australis* found in the gills attached to the distal tip of a nearby primary lamella. Seven *Neobrachiella robusta* were attached to the gill rakers confined within the protected space of the opercular cavities. Only one *Chondracanthus triventricosus* was attached to the dorsal fin. *C. triventricosus* on the dorsal fin probably indicating that the fin region may be preferred as attaching site compared to the skin. The sites of attachment of the monogenea and parasitic copepods on their host were mainly gills with 94.1%. It is suggested that these parasites are greatly influenced by the strength and direction of the water flow.

The metazoan parasites cause lesions at the site of

attachment and harmful effects when it is concentrated in the gills (Kabata 1981; Campbell 1983). Rhode (1984) has reported that monogeneans impair gill functions, e.g., excretion, osmoregulation and irritate the branchial epithelium. Seven *S. crameri* were infected with nematodes ranging from one to two per fish. *Anisakis simplex* 3rd stage larvae were found coiled in the stomach wall, omentum and lumen of the intestine. Anisakiasis by *A. simplex* manifests itself clinically as abdominal pain suggesting a neoplasia associated with nausea, vomiting and fever. This nematoda larvae can finally infect man and cause pathology when improperly prepared or uncooked fish is ingested (Oshima 1972).

The prevalence of *T. australis* and *N. robusta* occurred at high levels (40.0%, 30.0%) and appeared at a distinctively high level (60.0%) in *A. simplex* but that of *C. triventricosus* showed low (10.0%). Bourgeois and Ni (1983) reported that redfish, *Sebastes fasciatus* harboured 12 species with the prevalence of 87.1%. In contrast, Manter (1955) found only 4.5% from New Zealand marine fishes. It seems evident that there is a great deal of variation in the prevalence by different hosts and areas.

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