

Study on the Copepod Ectoparasites of *Sebastes melanops* (Girard) and *Sebastes crameri* (Jordan) in Aquarium

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Abstract - Nineteen rockfishes representing two species in the family Scorpaenidae were collected from Oregon Coast Aquarium in July 2003 and examined for parasitic copepods. The parasitic copepods were taken from the gills of *Sebastes crameri* and fins of *S. melanops*. With regard to the prevalence of copepod 22.2% of the fishes were infected by *C. uncinata*, and 30.0% by *N. robusta*. Intensity of infections of *Clavella uncinata* to *Sebastes melanops*, showed a range of 4 to 6 with a mean of 5.0 per fish while *Neobrachiella robusta* to *S. crameri* was 1 to 6 with a mean of 2.7.

Key words : copepod, *Sebastes melanops*, *Sebastes crameri*, prevalence, intensity

INTRODUCTION

Copepoda such as *Clavella uncinata* and *Neobrachiella robusta* are an important parasites of the many sea fishes. The copepods which settle on the gills and fins of fishes are capable of inflicting serious damage. The final effects to the hosts are the retardation of growth, loss of weight and causing anemia (Anderson and May 1978; Eisen 1983). Under artificial cultural conditions, fishes suffer from a variety of diseases and result in losses.

This study was initiated to determine the prevalence and intensity of parasitic copepods in rockfishes collected from an aquarium.

MATERIALS AND METHODS

Collections of nineteen specimens of *Sebastes* spp. were made on July, 2003. The rockfishes were transported alive to the laboratory. All fish were examined within 48hr of collection. They were kept on ice until

necropsy. The total lengths of rockfishes were measured. After the gills and fins were removed, the rockfishes were stored in 8% formalin for later examination. Standard procedures were used to examine external parasites. Parasitic copepods were picked off the rockfishes with forceps, relaxed in tapwater, and fixed in AFA (alcohol-formalin-acetic acid). The copepods were identified with the aid of a stereoscopic microscope at magnifications up to 50 ×.

The parasitic copepods collected were listed, followed by the prevalence of infection, the mean number of copepods per infected parasites, and the range in the intensity of infection, if applicable, the body locations from which copepods were recovered. The terms of prevalence and intensity were used in accordance with the definitions established in Margolis *et al.* (1982). The species of rockfish were arranged according to Kramer and O'Connell (1995). The copepod ectoparasites were treated as described by Kabata (1969).

RESULTS AND DISCUSSIONS

Two species of the parasitic copepods were recovered

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Table 1. A summary of parasitism of rockfishes collected from Oregon Coast Aquarium

Family	Species	Length range (cm)	No. copepods	No. fishes parasitized
Scorpaenidae	<i>Sebastes melanops</i> (Girard)	34.8–52.4	9	2
	<i>Sebastes crameri</i> (Jordan)	31.5–35.8	10	3

Table 2. Prevalence and intensity of two parasitic copepods infected on *S. melanops* and *S. crameri*

Species	Prevalance (%)	Intensity	
		Range	Mean
<i>Clavella uncinata</i> (Muller 1776)	22.2	4–6	5.0
<i>Neobrachiella robusta</i> (Wilson 1912)	30.0	1–6	2.7

from matured specimens of the black rockfish, *Sebastes melanops* Girard, and the darkblotched rockfish, *Sebastes crameri* Jordan, collected from Oregon Coast aquarium. The fishes were 31.5–52.4 cm long, and relatively moderately low in infection with parasitic copepods. Of 19 rockfishes taken at aquarium, two had a total of 10 copepods on the fins, and 3 had a total of 8 copepods on the gills. *Neobrachiella robusta* parasitized on the gills, and *C. uncinata* located on the skin at the base of fins. *C. uncinata* was less abundant and seemed to utilize all fins except the anals. Records of parasitic copepods with monoxenous life cycles such as *C. uncinata* and *N. robusta* which infect *Sebastes* spp. are probably the result of interhost transfer during host capture.

The parasitic copepods were encountered in this study, infecting 22.2% of the black rockfish, and 30.0% of the darkblotched rockfish. On *Sebastes melanops* the mean number of *Clavella uncinata* was 5.0, with a range of 4 to 6, whereas *Neobrachiella robusta* examined from *Sebastes crameri* averaged 2.7, with a range of 1 to 6. The mean intensity of infection in *N. robusta* was less than that of *C. uncinata*. Considering the two species of

Table 3. Copepod Ectoparasite species recorded from *Sebastes melanops* and *S. crameri*

Parasite	Body location	Host	
		<i>Sebastes Melanops</i>	<i>S. crameri</i>
<i>Clavella uncinata</i>	fin	+	–
<i>Neobrachiella robusta</i>	gill	–	+

parasitic copepods of Lernaeopodidae collected, incident of *C. uncinata* was less prevalent than that of *N. robusta*. The infection to the fish could result in greater deleterious effects on the host since the extent of pathology is frequently determined by the intensity of infection and prevalence of parasitism (Mann 1953).

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