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Feeding habits of the filefish, *Rudarius ercodes*, in the eelgrass (*Zostera marina*) bed in Jindong Bay

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Introduction

Rudarius ercodes (family Monacanthidae) distribute widely around coasts of the Korean peninsula and Japan, especially abundant in the seagrass beds as one of the common fish species are inhabited in close association with the seagrass (Kikuchi, 1966; Huh and Kwak, 1997; Horinouchi *et al.*, 1998). Despite of its abundance in the eelgrass bed, there are few published studies on feeding ecology of *R. ercodes* in Korean seagrass beds. Concerning in the most parts of the world, family Monacanthidae were the common fish group in the seagrass beds and the diets of them has been reported by several workers (Randall, 1967; Kikuchi, 1974; Ayling, 1976; Bell *et al.*, 1978). These studies indicated that the diets of monacanthid species are extremely diverse and opportunistic feeders.

As a first step to understanding the feeding of *R. ercodes*, this paper deals with its natural diet, emphasizing diel dietary shifts and relationships between fish size and diet.

Materials and Methods

Rudarius ercodes collected with 5m otter trawl (1.9cm mesh wing and body, 0.6cm mesh liner) in the eelgrass bed in JinDong Bay. Three or Four 6-min tows were taken as serial samples (every 3h over 24-h period). Two serial sampling were

made, the first session on 12-13 September 2001 (last quarter moon) and second session on 19-20 September 2001 (new moon) as part of a large study of the feeding habits of fish associated with eelgrass beds.

Stomachs from fish samples were preserved immediately in 10% formaline and the length and weight of each fish were recorded. Stomach contents were removed after 2 days and transferred to 70% isopropanol for storage. Stomach contents from each fish were identified as accurately as possible and (1) the occurrence, (2) number of individuals and (3) dry weight of each prey species were recorded. Berg (1979) discussed the limitations of using any single measure to evaluate the importance of a prey organism. Therefore, an index of relative importance (IRI), proposed from Pinkas *et al.* (1971), has been calculated since it incorporated all three measures and gives a better assessment of the dietary importance of a prey group. The formula used is as follows : $IRI = (N+W)F$, where N=numerical percentage, W=dry weight percentage, F=percentage frequency of occurrence. In order to describe the feeding activity, the fullness index (total weight stomach contents \times 100/total body weight) was recorded.

Results and Abstract

Feeding habits of *Rudarius ercodes* were investigated in the eelgrass bed in Jindong Bay, Korea. The main food components for *R. ercodes* (1.6~4.3cm SL) were crustacean, especially gammarid amphipods, polychaetes and eelgrass. Also *Styela* sp. (Phylum Urochordata) was important prey. Most dietary items were inhabitants of the eelgrass bed. Diel variations in diet and feeding activity occurred. The diet of *R. ercodes* underwent changes from eelgrass tissue and crustaceans such as amphipods and copepods (omnivore) at day to mainly gammarid amphipods, polychaetes, and *Styela* sp. (carnivore) at night. During the day, *R. ercodes* probably took detached eelgrass leaves from the water column and grazed live eelgrass because most of animals were rare in the water column. On the other hand, feeding on gammarid amphipods, polychaetes, bivalves and *Styela* sp. was facilitated by movement and activity of these prey during night. The feeding activity of *R. ercodes* correlated with periods of high tides.