

Effects of sand on growth of sand shrimp, *Crangon uritai*

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Introduction

It is well known that there is so many abiotic factors influencing the growth and survival of aquatic organisms. Many researches are focused on the effect of salinity on juvenile growth (Bray et al., 1994; O'Brien, 1994; Guerin & Stickle, 1997; Spivak, 1999; Brito et al., 2000; Kumlu et al., 2001), and some with the effect of temperature (Wilcox, 1973; Hartnoll, 1982; Wyban et al., 1995).

The sand shrimp, *Crangon uritai* is a burrowing caridean decapod, inhabiting sandy and sandy-mud substra with shallow coastal water. The particle size affects the burying ability of the brown shrimp *Crangon crangon* (Pinn & Ansell, 1993). It is found that sand can be used a stimulus for settlement in the ghost shrimp *Callichirus major* and *C. islagrande* (Strasser & Felder, 1998, 1999), and several studies have shown that the absence of the sand cue may delay to settle and then metamorphose (Harvey, 1996; Christy, 1989; Weber & Epifanio, 1996). From above study, it seems that sand includes some biological and physical factors that can affect the growth of *C. uritai*, but there is no any study about it at all.

Then the purpose of this study is to investigate the effect of sand on growth including intermolt period and molt increment.

Materials & Methods

Samples of *Crangon uritai* were collected by a beam trawl at about 4m depth on 26th December, 2001 from Dadaepoo, Busan (35°02'N, 128°57'E), South Korea. Shrimps were transported to the laboratory and gradually acclimated laboratory conditions at 14°C, 32.5‰ and 12: 12 L: D.

To examine the effects of sand on growth, 20 females and 20 males were

maintained in 2 ℓ plastic aquarium individually with sand, and 20 females, 20 males without sand. Mesh lids were covered to prevent the escape of shrimps. Fresh food (frozen prawns) was provided at the same time each day and remained food was siphoned off after 24 hours.

Carapace length, from the tip of the rostrum to the posterior margin in the middle was measured to the nearest 0.1 mm by exuvia with wild microscope.

Results

Without sand conditions the initial mean carapace lengths were 8.9 ± 1.0 mm in female (LF), 6.1 ± 0.5 mm in male, while 8.5 ± 1.2 mm in female, 6.1 ± 0.6 mm in male with sand. Females and males without sand showed 30% and 10% survival, respectively during the experimental of period, and with sand, survival of females was 10% and males 25%. Intermolt period increases with premolt size in all of the four treatments while percentage molt increment decreased. The effects of sand on intermolt period and molt increment for females and males are variable.

Selected References

- Hartnoll, R. g., 1982. Growth. In: L. G. Abele (ed.), The biology of Crustacea, 2. Embryology, morphology and genetics: 111-196. (Academic Press, New York).
- Pinn, E. H. & Ansell, A. 1993. The effect of particle size on the burying ability of the brown shrimp *Crangon crangon*. Journal of the Marine Biological Association of the United Kingdom, 73: 365-377.
- Strasser, K. M., Felfer, D. L. 1999. Sand as a stimulus for settlement in the ghost shrimp *Callinectes major* (Say) and *C. islagrande* (Schmitt) (Crustacea: Decapoda: Thalassinidea). Journal of Experimental Marine Biology and Ecology, 239: 211-222.