

## Ecological studies on development of diagnostic guideline of “*Isoyake*”

Yukio Agatsuma and Kazuya Taniguchi

Graduate School of Agricultural Science, Tohoku University

The vegetation in subtidal rocky bottom reflect a seral phase in algal succession, which alternate reduction and expansion of marine forest or coralline flats cyclically (Taniguchi and Hasegawa 1999). The five life form classification by thallus size and longevity allow the seral phase of the present fisheries ground to evaluate (Taniguchi 1996). Growth and gonad development of sea urchins as primary consumer is greatly affected by the kind and the abundance of marine algae.

In the present study we ascertained growth and gonad development of the two sea urchins *Hemicentrotus pulcherrimus* and *Strongylocentrotus nudus* in relation to each sere and the algal species at Oga and Hachimori in Akita. And we also studied in *Eisenia bicyclis* bed at Shiogama and Utatsu in Miyagi. The algal succession was in the climax and in late sere dominated by Fucales in Oga and small perennial algae in Hachimori, respectively. Growth and gonad development of *H. pulcherrimus* was most greatly promoted at Fucales bed, followed at small perennial red alga *Chondrus ocellatus* communities. Whereas it was lowest at the small perennial brown algae Dyctyotaceae and the red algae *Laurencia* communities, which produce feeding deterrent chemicals against sea urchins and abalones. The highest growth and gonad development of *S. nudus* was found in the climax *Eisenia bicyclis* bed. At late sere, the clear difference was also found in between *C. ocellatus* and the chemical defensive algae. The growth and gonad development at crustose coralline corresponding to early sere are lower than that at late sere (Agatsuma 1997). Therefore, it is concluded that the growth and gonad development of *S. nudus* closely relate to each sere and the algal species.