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〈NOTE〉

Length and Weight Relationship of *Acartia steueri* (Copepoda: Calanoida) in Ilkwang Bay, Korea

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Acartia steueri was reported in off Pusan (Kim, 1985), Masan Bay (Yoo et al., 1991) and coastal area in Chejudo (Go, 1987; Go et al., 1994) in Korea. It is also found in Ilkwang Bay, Korea, and it occupied *ca.* 37.5% of total *Acartia* spp. in biomass in the bay (Kang, 1997).

To evaluate the role of *A. steueri* in copepods, it is essential to estimate the seasonal variation of the biomass and the productivity of the species. Biomass is an important factor in the study of copepod productivity in the sea. The biomass of copepod is sometimes determined by weight measurements of each developmental stage of copepods in the field. Since sorting a target species and weighing an individual organism are laborious, it is practical and efficient to use the length and weight relationship in determining the biomass of copepod species.

We examined the length and weight relationship of *A. steueri* collected in Ilkwang Bay, southeastern coast of Korea. Samples were collected in the bay from November 1991 to September 1992 and were preserved in 5% formalin-seawater and kept in the laboratory for *ca.* 44~52 months. *A. steueri* was sorted and staged from the samples. Individuals of each stage were filtered on GF/C filter and rinsed with isotonic ammonium formate solution (6~6.5 % W/V, Omori and Ikeda, 1984). They were dried at 55 ℃ for 48hrs, kept in a desiccator at room temperature until weighing on a microbalance.

Assuming 30% weight loss of preserved samples and 47% carbon/dry weight ratio, the length and weight relationships were calculated by the equations (Fig. 1; $P<0.01$):

$$\log W = -8.508 + 3.106 \log PL \quad (r^2 = 0.920)$$

for copepodites and adults, and

$$\log W = -4.188 + 1.451 \log TL \quad (r^2 = 0.955)$$

for nauplii, where PL is prosome length (μm) and TL is total length (μm). W is body carbon weight (μg).

There are several values of weight loss caused by preservation in zooplankton. Durbin and Durbin (1978) showed that most of the loss of body contents occurred within the first 24hrs, and after 41 weeks the dry weight declined by 29.5% in *Acartia clausi* from Narraganset Bay. They also observed that the dry weight did not change between 28~41 weeks of preservation, suggesting that the chemical composition of the animals had stabilized. Twenty five percent of weight loss in the preserved zooplankton was reported by Omori (1978). Tremblay and Roff (1983) and McLaren et al. (1989) used the value of 25% weight loss caused by preservation in zooplankton. After one month of preservation in 5% formalin, 54% loss of dry weight was reported in *Calanus cristatus* by Omori (1970), and 22.4% in *A. clausi* by Durbin and Durbin (1978). In this study, we adopted *ca.* 30% from Durbin and Durbin (1978) of *A. clausi* than Omori (1978) which dealt with total zooplankton.

There are also various data on carbon/dry weight ratio in zooplankton, 45.6% in the North Pacific Ocean (Omori, 1969), 47% in unpreserved *A. clausi* in Narraganset Bay (Durbin and Durbin, 1978), and 48.22% for copepods in Inland Sea of Japan (Hirota, 1981). Uye (1982) found that the ratio varied from 35.2 to 52.8% according to the species concerned and sex in copepods, and mean carbon content was 45.5% of dry weight. Since there was no data for *A. steueri* on carbon/dry weight ratio, we used the average value of *ca.* 47% from Omori (1969), Durbin and Durbin (1978), Hirota (1981), and Uye (1982).

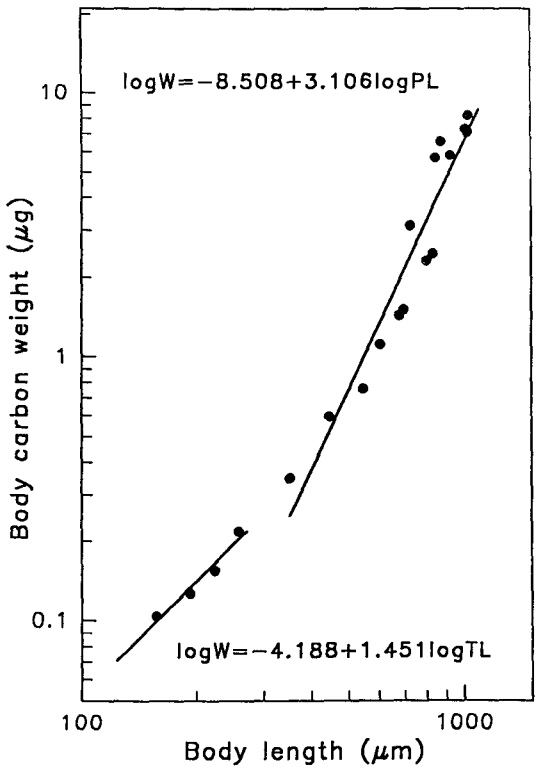

Fig. 1. *Acartia steueri*. Length and weight relationship. Body carbon weight (W) versus prosome length (PL) for copepodites and adults, and body length (TL) for nauplii.

Concerning *A. clausi* from Inland Sea of Japan, the relationship between prosome length (PL, μm) and weight (W, μgC) in copepodites was logW=−8.51+3.08 logPL (Uye, 1982), and the relationship between total length (TL, μm) and weight (W, μgC) in nauplii was logW=−7.02+2.64 logTL (Liang and Uye, 1996). Comparing the equations of the present study with those of Uye (1982) and Liang and Uye (1996), the weight of *A. steueri* of which the length was larger than that of *A. clausi*, should not be underestimated within the length range of developmental stages of *A. steueri* except the length of 6th nauplius stage. To verify the relationship between the length and weight of *A. steueri* in this study, we need to estimate the weight of the copepod by direct determination of carbon content from the unpreserved samples. Although we used the preserved sample, it is evident that our results will be useful for biomass estimation of *A. steueri*.

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