

RELATIONSHIPS BETWEEN DRY WEIGHT AND CALORIC VALUES OF  
NET-ZOOPLANKTON OF THE ADRIATIC SEA

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Abstract

The linear regression analyses of dry weight and caloric values of the net-zooplankton of the Adriatic Sea showed that only during the cold season a higher dry weight corresponds to a higher caloric value. This seems to be the result of a qualitative composition of the zooplankton because of the prevailing crustaceans species (more than 80%) during the winter.

The net-zooplankton biomass of the Adriatic Sea was investigated by several authors (i.e. Vučetić, 1961; Karlovac et al., 1974), but no attempt was made to indentify the energy content per unit weight of the zooplankton. According to Platt et al. (1969) and Bamstedt (1981) we have tried to indentify the caloric content of net-zooplankton and to relate it's dry weight using the linear regression analyses for results from four seasons.

This is a preliminary report on relationships between dry weight and caloric content values of the net-zooplankton collected in September-October, 1974 ( $Y_1$ ), April-May, 1975 ( $Y_2$ ), February, 1976 ( $Y_3$ ), and June, 1976 ( $Y_4$ ) over the Adriatic Sea. Samples were taken from surface layers (30-0 m) by means of the IOSN plankton net, vertical tows, 250 microns mesh netting. The samples were dried at 60°C, and incenerated at 800°C. The caloric content was calculated according to the following formula:

$$Y = (-3370 + 136x - 0.514x^2) 4.186 \quad (\text{Platt et al., 1969})$$

$$Y = J \text{ g DW}^{-1}, \quad x = \% \text{ organic matter of dry weight.}$$

Table 1. Net-zooplankton of the Adriatic Sea - Averages, standard deviations, minimum and maximum values for dry weight and caloric value.

Month	Dry weight (mg m <sup>-3</sup> )				Caloric content (J mg DW <sup>-1</sup> )			
	Min.	Max.	Aver.	St.dev.	Min.	Max.	Aver.	St.dev.
Sept.-Oct. 1974	2.25	25.90	12.26	6.22	10.56	18.59	15.27	2.02
April-May 1975	4.89	22.10	10.58	4.60	10.99	19.70	17.51	2.13
February 1976	0.25	15.36	5.71	4.26	15.29	20.39	18.43	1.24
June 1976	1.31	17.32	5.68	3.98	11.67	19.27	17.26	1.83

The dry weight values were at their highest in autumn, but the caloric content was at its lowest (Table 1). The opposite relationship was found in winter. This could be a result of the qualitative composition of the

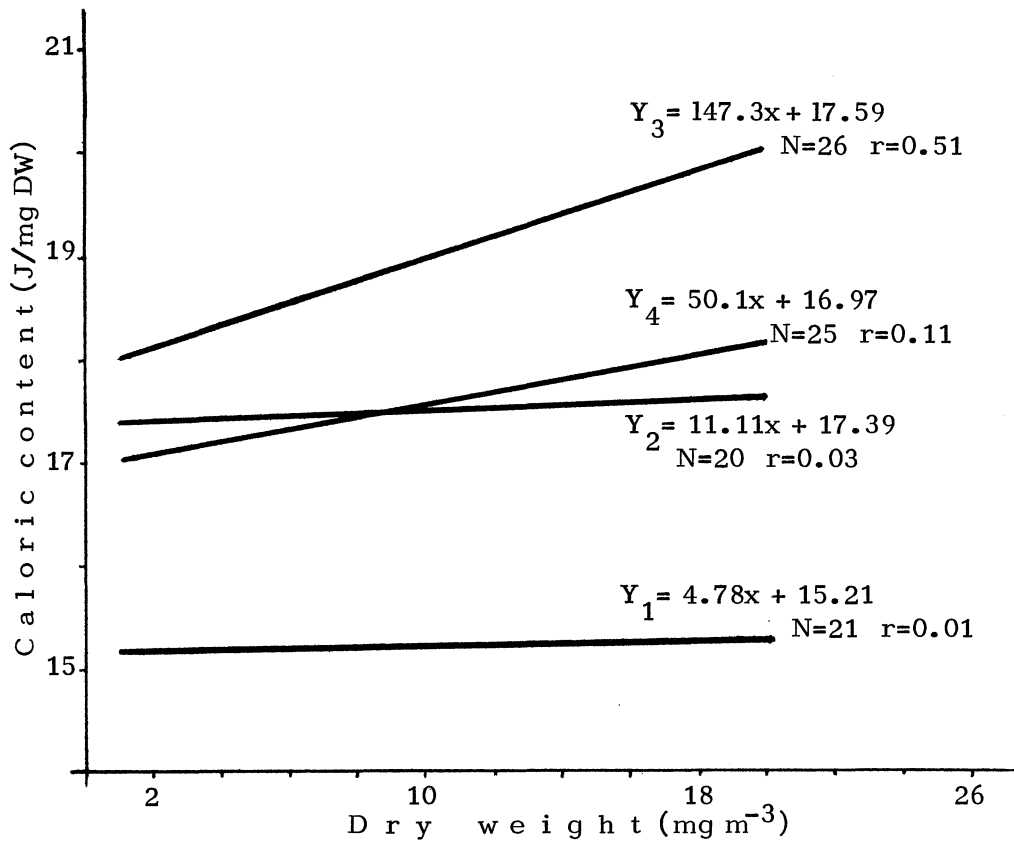


Fig. 1 Net-zooplankton of the Adriatic Sea - Relationship between caloric content and dry weight in September-October, 1974 (Y<sub>1</sub>), April-May, 1975 (Y<sub>2</sub>), February, 1976 (Y<sub>3</sub>), and June, 1976 (Y<sub>4</sub>).

net-zooplankton and domination of copepods during the winter (more than 80%) in all the samples from the Adriatic Sea. The linear regression analyses (Fig. 1) of caloric content and dry weight show that there is no correlation during autumn, spring and summer when non-crustaceans zooplankton groups were present in a higher percentage (autumn: copepods-less than 40% in all the samples). The caloric content was calculated (Platt et al., 1969) for all the samples and it was about 30% lower than it should have been according to Bamstedt (1981). Probably, the difference between the two methods of calculation is due to the "bulk zooplankton" which was used by Platt et al. (1969) as well as we did, and the "clean" specific species used by Bamstedt (1981).

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