

TOTAL PHOSPHORUS CONTENT OF *Neomysis integer*

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SYNOPSIS

Measurements of total phosphorus in *Neomysis integer*, showed an inverse relationship between the total phosphorus content and body weight (wet). Immature forms, presented higher content of phosphorus. Some possible implications of these results are discussed.

INTRODUCTION

As pointed out by BARNES AND BARNES (1956) determination of total phosphorus content of aquatic animals, is essential for a proper understanding of their nutritional requirements, in relation to the environment. HUTCHINSON (1957) pointed out the importance of phosphorus as an ecological element, and the essential role of phosphorus in the metabolism has long been recognized. The biochemical constituents of *Neomysis integer* have been studied by RAYMONT, AUSTIN AND LINFORD (1964, 1966). The present note includes the determination of total phosphorus.

MATERIAL AND METHODS

The mysids were obtained from Plymouth and kept alive in aquaria containing aerated sea water. The animals were divided into mature females, males and immature individuals. They were dried on filter paper to remove excess water and quickly weighed. The animals, were then digested with concentrated sulphuric acid, clarified with hydrogen peroxide, and the total phosphorus, estimated by the colorimetric method of Fiske-Subharov, UMBREIT *et al.* (1959).

RESULTS AND DISCUSSION

The mean value obtained for mature females, was 217 μg , whereas the males had a higher phosphorus value, 443 μg . The immature animals gave an estimate of 396 μg (Table I).

Exposed as a fraction of the body weight, the values for mature females, were 53.5 $\mu\text{g}/\text{mg}$; for mature males, 41.0 $\mu\text{g}/\text{mg}$; and for immature individuals, 128.6 $\mu\text{g}/\text{mg}$.

Thus the immature young animals, showed a higher phosphorus content, which may perhaps be correlated with a higher metabolic rate. Further, there appears to be an inverse relationship, between the phosphorus content, per unit weight, and the total body weight (wet weight). Fig. 1.

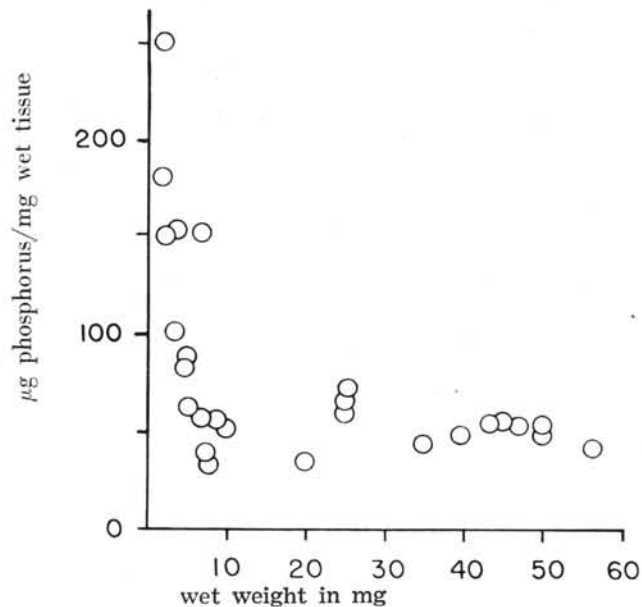


Fig. 1 — Total phosphorus and body weight (wet) in *Neomysis integer*.

TABLE I — Total phosphorus content of *Neomysis integer*

	Body weight (mg)		Total phosphorus (μg)		μg of P/mg wet tissue	
	Range	Mean	Range	Mean	Range	Mean
	Female *	25 — 57	45.2	170 — 250	217	43 — 66
Male +	8 — 20	11	240 — 675	443	30 — 55	41
Immature * stages	2 — 7	4.1	300 — 510	396	60 — 250	128.6

* — Ten determinations

+ — Five determinations

The values obtained in this study, for mature females (0.50% wet weight) and for males (0.40% wet weight) amounts approximately to 2.5% dry weight, (females) and 2% dry weight, (males). These values compare favourably with the 2% dry weight, quoted by VINOGRADOV (1953, tab. 246, p. 398) for *Mysis flexuosa*. However, they are lower than those quoted by BARNES and BARNES (1956) for the fresh water *Cyclops* sp. or *Daphnia* sp.

In recent years, JOHANNES (1964a, b) has shown the importance of the smaller crustaceans in the phosphorus turnover, and demonstrated the increase in excretory rate of phosphorus with decrease in body weight in marine planktonic animals.

The inverse relationship, between body weight and phosphorus content per unit weight, found, seems to suggest the importance of these smaller animals in the phosphorus cycle.

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RESUMO

Determinação de fósforo total em *Neomysis integer* demonstrou uma relação inversa entre quantidade de fósforo em μg e peso úmido de animal. Formas imaturas apresentaram maior quantidade de fósforos que machos e fêmeas. Algumas implicações possíveis são discutidas.

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