Considerations on the distribution of pelagic copepods in the eastern Mediterranean

by

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The present observations are based on material examined and processed by the authors from an expedition to the eastern Mediterranean undertaken on board the M/V *Mevooth Yam*, in summer 1964, and designated as CYPRUS 03. In fact, however, the grid of stations sampled during this cruise extended far beyond Cyprus, reaching the Anatolian Coast off southern Turkey and passing close to the islands of Rhodes and Crete on its return leg.

A complete report on the plankton as a whole, comprising an inventory of identified species within certain groups of phytoplankton and zooplankton with observations on their pattern of distribution in the Levantine Basin of the eastern Méditerranean, has already been prepared [KIMOR & BERDUGO, 1967. Nevertheless, the pelagic Copepods, in view of their importance quantitatively as permanent members of the zooplankton, deserve special consideration.

The technique used in the collection of the plankton was, by making vertical hauls from 200 m to the surface, by using a standard plankton net with approximately 0.5 m mouth aperture. This technique, however, did not offer the possibility of clearly distinguishing between epipelagic species on the one hand, and mesopelagic and bathypelagic species on the other hand. Nevertheless, the examination of the relative abundance of the Copepod species in the vertical as well as in the horizontal samples collected at the same stations, revealed significant differences in their composition when the available data on the natural habitat of the species was taken into consideration [ROSE, 1933; GAUDY, 1962; FURNESTIN, 1960, 1963]. Moreover, the dominance of some littoral species in the coastal waters of the eastern Mediterranean afforded a further basis of distinguishing between the predominantly neritic forms and the oceanic ones.

Following is an account of the Copepod species recorded during the examination of the above material. Mention ought to be made, however, of the fact that among the Copepods, the Calanoids tend to be treated more fully, simply because this group happened to have been studied more thoroughly in the months preceding the preparation of this communication.

Species common to all stations, both in horizontal and vertical samples

Calanus minor Claus, *Mecynocera clausi* Thompson, *Calocalanus pavo* Dana, *Clausocalanus arcuicornis* Dana, *C. furcatus* Brady, *Temora stylifera* Dana, *Centropages violaceus* Claus, *Oncaea* sp., *Coryaceus* sp.

These species were not only common to all stations but were also represented by the highest number of individuals present in the samples. They can, therefore, be considered as primarily epipelagic in habitat.

The meso and bathypelagic species represented in the samples

a. Abundant

Euaetideus giesbrechti Cleve, *Pleuromamma abdominalis* Lubbock, *Pleuromamma gracilis* Claus, *Haloptilus longicornis* Claus, *Lubbockia squillimana* Claus.

Rapp. Comm. int. Mer Médit., **19**, 3, pp. 447-448 (1968).

b. Common

Calanus gracilis Dana (found in the Bay of Haifa and along the Turkish Coast), *Phaenna spinifera* Claus, *Lucicutia flavicornis* Claus, L. *ovalis* Wolfenden.

c. Rare or sporadic

Eucalanus elongatus Dana, *Euchirella messinensis* Claus, *Aetideus armatus* Boeck, *Scolecithrix bradyi* Giesbrecht.

The presence, generally in large numbers, of *Centropages violaceus* Claus considered as an indicator of Atlantic waters by some workers [GAUDY, 1963; DELLA CROCE, 1959] at all stations sampled during this cruise shows that this species is already well established in and an important element of the copepod fauna in the eastern Mediterranean.

In addition to the above species, the coastal stations sampled during the same cruise also revealed large populations of some neritic species like *Paracalanus parvus* Sars, *Euterpina acutifrons* Dana and *Centropages kröyeri* Giebrescht all of which were recorded only at Station 1 in the Bay of Haïfa and not elsewhere in the course of this cruise. It may be noted that the same species are also reported from the Nile Delta by EL-MAGHRABY [1965] and along the coast of Israel in the routine collections, over a number of years [KIMOR, *unpublished*].

In summing up, it may be said that the present communication reveals the presence of bathy and mesopelagic elements together with the epipelagic ones in the upper layers of the eastern Mediterranean. This pattern of distribution is most probably, at least in part, a result of the diurnal migration of the animals. It is contemplated and deemed desirable to extend this investigation to a study of the Copepod fauna at much greater depths based on the natural stratification of the water layers. Such a study would also minimize the factor of diurnal migration of the zooplankton and offer a better opportunity for observing the presence of the Copepods in their natural habitat.

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