

Vertical Distribution of Mediterranean Deep-Sea Copepods

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Summary. Data on biomass and vertical distribution of copepods collected from the surface to 3000 m are discussed.

Résumé. Données sur la biomasse et la distribution verticale des copépodes recueillis de la surface jusqu'à 3000 m de profondeur ont été analysées.

The vertical distribution of Mediterranean copepods shows the characteristic features of an isolated oceanic basin, where existing hydrological conditions are such that the structure of the zooplankton population differs markedly from that of neighboring oceanic regions (Vinogradov, 1968). The most striking quantitative and qualitative features of this distribution are outlined below based on data collected during 6 cruises from 1975 to 1979 at a fixed station in the Tyrrhenian Sea (lat. 40°30'N long. 12°30'E) using an Indian Ocean Standard net (113 cm diameter, 500 cm length, 250 μ mesh size) at the following depths: 3000-2000, 2000-1500, 1500-1000, 1000-800, 800-600, 600-500, 500-400, 400-300, 300-200, 200-100, 100-50 and 50-0 m.

Depth (m)	Volume		No.ind.		No. species	No. appearing species	No. dis-appearing species
	mm ³ /m ³	%	/m ³	%			
0-50	6.95	24.98	135.64	31.83	88	-	9
50-100	9.73	34.98	160.40	37.64	95	16	11
100-200	5.30	19.05	64.20	15.07	94	10	21
200-300	2.01	7.23	24.97	5.86	80	7	9
300-400	1.10	3.95	14.54	3.41	79	8	17
400-500	0.68	2.45	8.11	1.90	64	2	4
500-600	0.72	2.59	7.07	1.66	63	3	9
600-800	0.66	2.37	4.90	1.15	58	4	8
800-1000	0.36	1.29	3.73	0.88	50	0	8
1000-1500	0.18	0.65	1.56	0.37	43	1	10
1500-2000	0.09	0.32	0.59	0.14	33	0	11
2000-3000	0.04	0.14	0.40	0.09	22	0	-

Tab.1 - Vertical profile of biomass and faunistic diversity of copepods (mean of 7 time series).

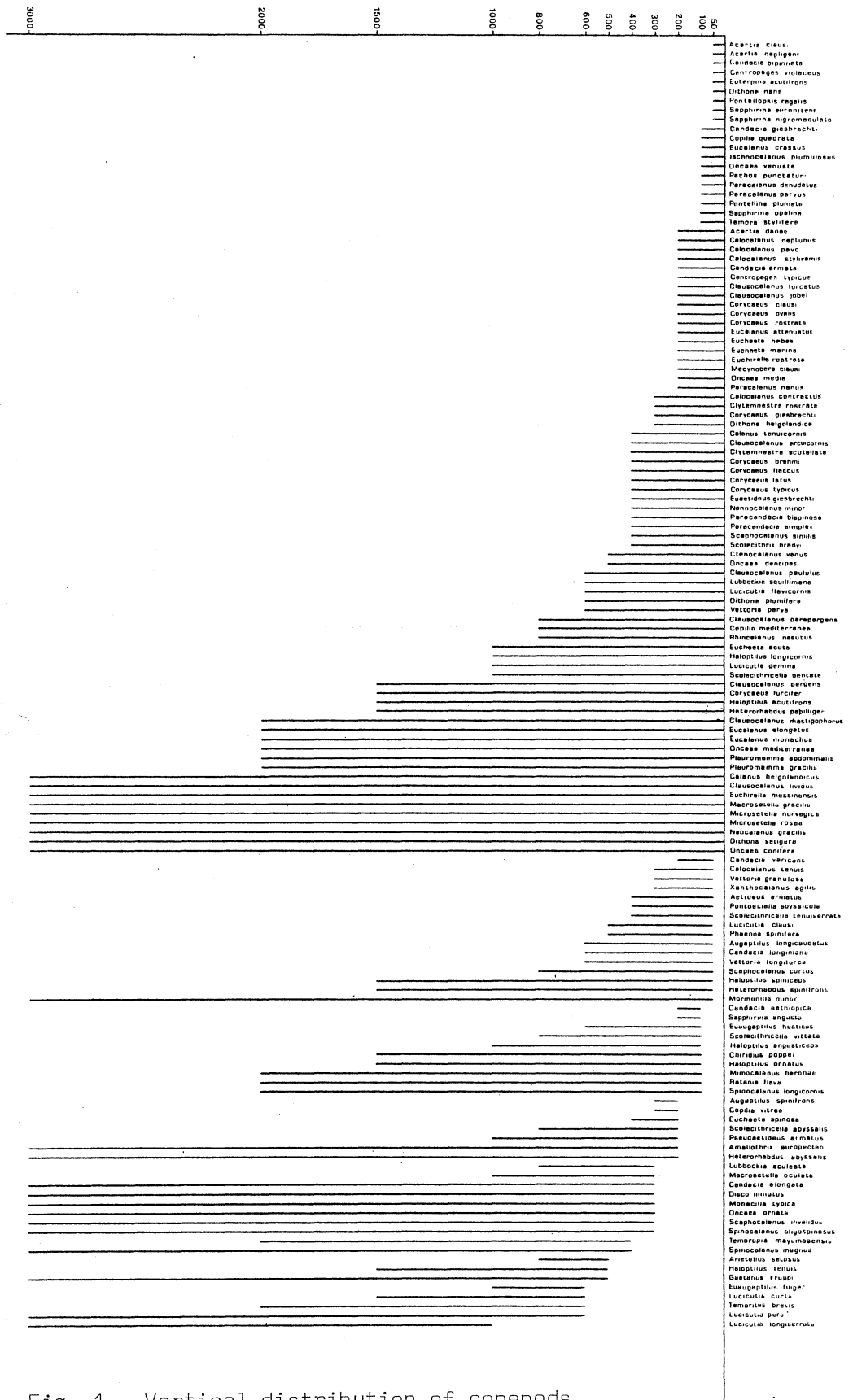


Fig. 1 - Vertical distribution of copepods.

Table 1 shows the sharp decrease in both volume and total number of individuals with increasing depth, with over 80% of the biomass occurring in the upper 200 m. Below the 1000 m depth the copepod population is only 1% of that of the total water column and has a density inferior to 1.0 ind/m³. The reduction in total number of species is less marked than that for biomass. Twenty-two species of copepods are still present at a depth of more than 2000 m, confirming the relative richness of the Mediterranean deep-sea fauna.

The distribution range for the 139 species recording during the course of the present investigation is given in Fig. 1. Except for *Lucicutia longiserrata*, none of the species were found to be characteristic of the deep waters of the Mediterranean. Instead, many intermediate-water species showed a rather ample distribution range, reaching the 3000 m depth in some cases. Almost all of the species reported are also present above the 1000 m depth at similar latitudes in the Sargasso Sea (Deevey & Brooks, 1977) and north-east Atlantic (Grice & Hulsemann, 1965). However, not one of the 47 species appearing below the 1000-2000 m depth in the Sargasso has been recorded in Mediterranean waters.

The originality in the vertical distribution of Mediterranean copepods thus lies in the fact that there are no true deep-sea species. Its depths are instead populated by a pseudo-bathypelagic fauna which includes intermediate-water species that have penetrated its deepest layers. This fauna, however, does not reach the quantitative levels of the true bathypelagic fauna at comparable depths in contiguous oceanic regions.

References

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