Distribution and Ecology of Recent Pteropods and Planktonic Foraminifera in the Mediterranean Sea

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Abstract. The present-day distributions of epiplanktonic foraminifers and pteropods follow the strong east-west temperature and salinity gradients being represented by temperate as well as by tropical species. Mediterranean taxa have counterparts in the world ocean in similar climatic zones. Mesoplanktonic Mediterranean species have no analogs in terms of species diversity and relative frequency in the world ocean at equivalent depths.

Distributional Patterns and Ecology. The distributional patterns of living planktonic foraminifera and pteropoda are closely related to water-mass characteristics, hence their usefulness as "biological indicators" and in the reconstruction of ancient oceanographic conditions. Mediterranean epiplanktonic species have counterparts in the world ocean in similar climatic zones. In contrast, mesoplanktonic Mediterranean species which inhabit warm and very saline sub-surface water masses have no analogs in terms of species diversity and relative frequency in the world ocean at equivalent depths. Only three mesoplanktonic foraminifers inhabit the Mediterranean: Globorotalia scitula, Globorotalia inflata, and Globigerina pachyderma (dextral), while thirteen species are known from the world ocean. A similar pattern is exhibited by pteropods (Herman, in press). The difference is probably due to water-mass characteristics, the Mediterranean sub-surface water is much warmer and more saline than that of the world ocean. Each Mediterranean basin has its characteristic fauna. The Levantine basin assemblages are dominated by epiplanktonic Globigerinoides gomitulus, which appears to be the most successful Eastern Mediterranean species, having adapted to the high salinities, high temperatures and meager food supply of this region. The Aegean fauna is characterized by the high frequencies of low-salinity

tolerant Globoquadrina dutertrei. Western basins contain higher percentages of temperate species: the relative abundance of Globigerina bulloides and Globigerinita uvula gradually increases from east to west and south to north. The pteropods exhibit very similar distributional patterns to the foraminifers (Herman, in press). Cuvierina columnella, Limacina bulimoides, Limacina lesueurii, Covolinia uncinata, Diacria quadridentata and Diacria trispinosa are considered indicators of Atlantic surface and sub-surface water (Herman, 1971; Rampal, 1975; Furnestin, 1979; Herman, in press). The eastern basins' assemblages are dominated by Limacina inflata, Creseis acicula, Styliola subula and Limacina trochiformis (ibid). The species diversity is lower in the eastern than in the western basins due to the more extreme temperature and salinity values of the former.

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