

Seasonal variation in genetic types of a planktonic foraminifer

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Planktonic foraminifers have been employed in paleoceanographic studies due to two major characters: wide geographic distributions of species and chemical composition of their calcareous shells, which reflect temperature and chemistry of ambient seawater. Accumulating phylogeographic knowledge, high genetic diversity of planktonic foraminifers has been known today and these genetically isolated species are distributed in narrower geographic area than we expected. The previous studies re-established temperature dependences of genetic types according to the pattern of their geographic distributions in many area. Moreover, genetic differentiation among geographically distant populations examined the role of ocean currents in dispersal of planktonic foraminifers. In order to improve the use of planktonic foraminifers as ocean environmental indicators, understanding ecological characters of genetic types is a crucial issue. In the previous studies for molecular phylogenetic analyses, living specimens of planktonic foraminifers were collected at each site as occasion arises. The present study therefore collected samples every month for 1 and half years at same location, the Tosa Bay, where the branch of the Kuroshio Current reaches. We focused on *Globigerinoides ruber*, the most commonly used species for paleoceanography, and found this morphospecies during the whole years in the study area. Four genetic types are detected throughout our survey, though the frequency of each type varied at each sampling time. We demonstrate the effect of external environment to productivity of planktonic foraminifers by analyzing the relationship among water-temperature, chlorophyll concentration, and frequency of genetic types. We furthermore test whether the distance from the main path of the Kuroshio Current is efficiently caused to transport a population of specific genetic type. These examinations provide us the exact information to address seasonal variation of planktonic foraminifers at genetic-type level.

Keywords: time-series collection, planktonic foraminifer, genetic type, ecological feature