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Distribution of planktonic ciliates and their roles
in the East China Sea, the southern Korean
waters, and the East Sea (Sea of Japan)

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Planktonic ciliates play an important role as a linkage from lower to higher trophic levels in the food web in a marine ecosystem. The ciliates are generally divided into loricated type (so-called tintinnids) and naked type (so-called oligotrichs) according to lorica absence or presence. Of these, tintinnids are also used as indicator species for water mass analysis. This study was carried out to clarify the distribution of planktonic ciliates in terms of temporal and spatial variation based on samples collected in the East China Sea, the southern Cheju coast, the southern Korean waters, the East Sea (Sea of Japan) from July 1998 to June 2000.

Tintinnids comprised 9 species in the East China Sea, 9 species in the southern Korean waters, and 13 species in the East Sea, respectively, from the summer sampling. However about 40 species were identified in the southern coast of Cheju Island throughout the yearly sampling. The abundance of tintinnids ranged from 0 to 240 cells l^{-1} and showed a reverse relationship with the distribution of chlorophyll *a* in the summer of 1998. Dominant species included *Dadayiella ganymedes* and *Eutintinnus tubulosus* in the East China Sea, *Amphorides quadrilineata* in the southern Korean water, and *Amphorellopsis acuta*, *Amphorides quadrilineata*, and *Salpingella* sp. in the East Sea, respectively. Warm-water and oceanic species dominated the southern Korean waters and the East Sea, whereas warm-water and neritic species were dominant in the East China Sea. The one-year observation in the southern Cheju coastal waters represented a different pattern of tintinnids in terms of seasonal dynamics. The warm-water and neritic species including genus *Favella*, *Leprotitinnus*,

Steenstrupiella, *Tintinnopsis*, *Eutintinnus* were dominant from April to October, which means that the species distribution were affected by increasing of the Changjian River flow and decreasing of the Tsushima current conversely in this period. However the warm-water and oceanic species dominated the southern Cheju waters from November to March, which means that the Tsushima current strongly affected this area in winter.

The total abundance of loricated and naked ciliates ranged from 0 to 1,620 cells l^{-1} showing a peak in July 1998. The naked ciliates represented an apparent seasonal variation during the study period, showing more than 490 cells l^{-1} in the summer and less than 50 cells l^{-1} in the winter. The loricated ciliates averaged an abundance of 37 cells l^{-1} , while the naked ciliates averaged 234 cells l^{-1} . It suggests that the naked ciliates were dominant 5 or 6 times more than the loricated one and play an important ecological role as an intermediate predator or/and prey in the study area.