

GENUS *HALOPTILUS* (COPEPODA: CALANOIDA) FROM THE  
EQUATORIAL REGION OF THE INDIAN OCEAN

K. SARALA DEVI

*Regional Centre of National Institute of Oceanography, Cochin-682 018*

AND

T. S. S. RAO

*National Institute of Oceanography, Dona Paula, Goa-403 004*

ABSTRACT

The genus *Haloptilus* from the equatorial zone of the Indian Ocean (5°N-5°S) was represented by 8 species, namely, *H. longicornis*, *H. paralongicirrus*, *H. ornatus*, *H. spiniceps*, *H. mucronatus*, *H. acutifrons*, *H. oxycephalus* and *H. austini*. The species of the genus were present in greater numbers towards south of the equator. Their peak abundance was noticed at the westernmost transect (52°E) where probably upwelling occurs.

The oceanic region of the tropical zone shows a variety of water structures and consequently provide varying environmental conditions affecting the distribution of plankton (Vinogradov, 1970). According to Radzikhovskaya (1965), the tropical zone can be divided into waters of equatorial and neighbouring tropical and subtropical zones. The equatorial region south of tropical divergence is characterised by general upwelling. In tropical areas, complicated ecosystem tends to develop and support large number of species (Rao, 1973).

Information regarding the genus *Haloptilus* from the equatorial waters is limited to a few investigations. Grice (1959) recorded a new species of the genus, viz., *Haloptilus austini* from equatorial and subtropical waters of east central Pacific Ocean. Subsequently Grice (1962) studied the calanoid copepods from equatorial waters of Pacific Ocean. His report is based on 14 collections made between 5°N-5°S of the equator. Six species of *Haloptilus*, namely, *H. austini*, *H. acutifrons*, *H. fertilis*, *H. longicornis*, *H. spiniceps* and *H. ornatus* were reported from this area.

During the International Indian Ocean Expedition, the samples collected from equatorial belt (5°N-5°S) of the Indian Ocean provide material for studying the genus *Haloptilus*. An attempt was made to study the spatial variations found among the different tropical species and their east-west preference in the region under investigation.

The research vessel *Argo* conducted a cruise 'Lusiad' along the equator between 5°N-5°S during the south-west monsoon (April 16th - October 15th). The first part of the cruise consisted of an east-west line of stations along the equator and the return track included four north-south lines along equatorial current system at 52°, 62°, 79° and 89°E. During this cruise, 94 standard samples were collected from the upper 200 m using the IOSN (Currie, 1963). Of these, 89 samples have been used

for this study. Details regarding the sampling and stations are given in the IOBC Handbook (1969). Average number/std. haul for different species was calculated in the four tracks for comparison of numerical abundance in the north and south of the equator.

The genus *Haloptilus* was represented in 91% of the total samples. Eight species, namely, *H. longicornis*, *H. paralongicirrus*, *H. spiniceps*, *H. ornatus*, *H. acutifrons*, *H. mucronatus*, *H. oxycephalus* and *H. austini* were encountered. *H. paralongicirrus* and *H. austini* are reported here for the first time from the Indian Ocean.

Comparatively this genus was more abundant towards south of equator. Average number/std. haul at 52°E transect was six times higher (12 and 71) and at 79°E it was about three times greater (21 and 67) towards south than towards the north. This difference was not well marked at the other two transects. In the east-west track comparatively low population was noticed. Maximum number of 5 species of *Haloptilus*, namely, *H. longicornis* (237/std. haul), *H. paralongicirrus* (18/std. haul), *H. ornatus* (19/std. haul), *H. spiniceps* (25/std. haul) and *H. acutifrons* (5/std. haul) were observed at the 52°E transect. Of the other three species the highest density of *H. mucronatus* (25/std. haul) and *H. austini* (8/std. haul) was noticed at the 79°E transect and of *H. oxycephalus* (4/std. haul) was found only at the 62°E transect.

Of the 12 species recorded from the Indian Ocean, 8 were found to occur in the equatorial belt (Fig. 1). *H. longicornis* was the most dominant and wide spread species. The region south of the equator sustained higher population density of *Haloptilus* (average number 45/std. haul) than in the area north of the equator (average number 19/std. haul). Gopalakrishnan and Brinton (1969) found that some Euphausiid species were abundant along 0-5°S zone, but were rare in 0-5°N except towards the west through the Somali current. Studies on 'Lusiad' collections indicate that aggregate of large populations of major groups of zooplankton contributed to maximum biomass values in regions west of 55°E and the species diversity of Chaetognaths was more distinct in this area (Vijayalakshmi, 1976). Abundance of the species belonging to the genus *Haloptilus* was also pronounced in the western-most transect (52°E) where upwelling occurs during south-west monsoon. Further, south-west monsoon currents also carry part of the Somali population towards the east. The peak numbers of 5 species of *Haloptilus* towards the west may be correlated with the enrichment taking place in this region. Grice (1962) has reported 6 species of *Haloptilus* from the equatorial region, of the Pacific, of which, 4 species were taken from a station where equatorial under current prevails. The studies of Knauss and Taft (1964) show that an equatorial under current similar to the equatorial under current of Pacific and Atlantic exists in the Indian Ocean also. There is no evidence that it is restricted only to one phase of the monsoon, although its maximum development occurs during the end of northeast monsoon. The tendency for the under-current to develop in the Indian Ocean is more marked on the eastern side of the ocean than on the western side. There is inter-connection between Indian and Pacific Ocean through Malay Archipelago and this interchange of water between the two oceans could result in an identity of the fauna (Sewell, 1929). The presence of the Pacific equatorial species of *Haloptilus* in the Indian Ocean may be due to the influx of the Pacific water.

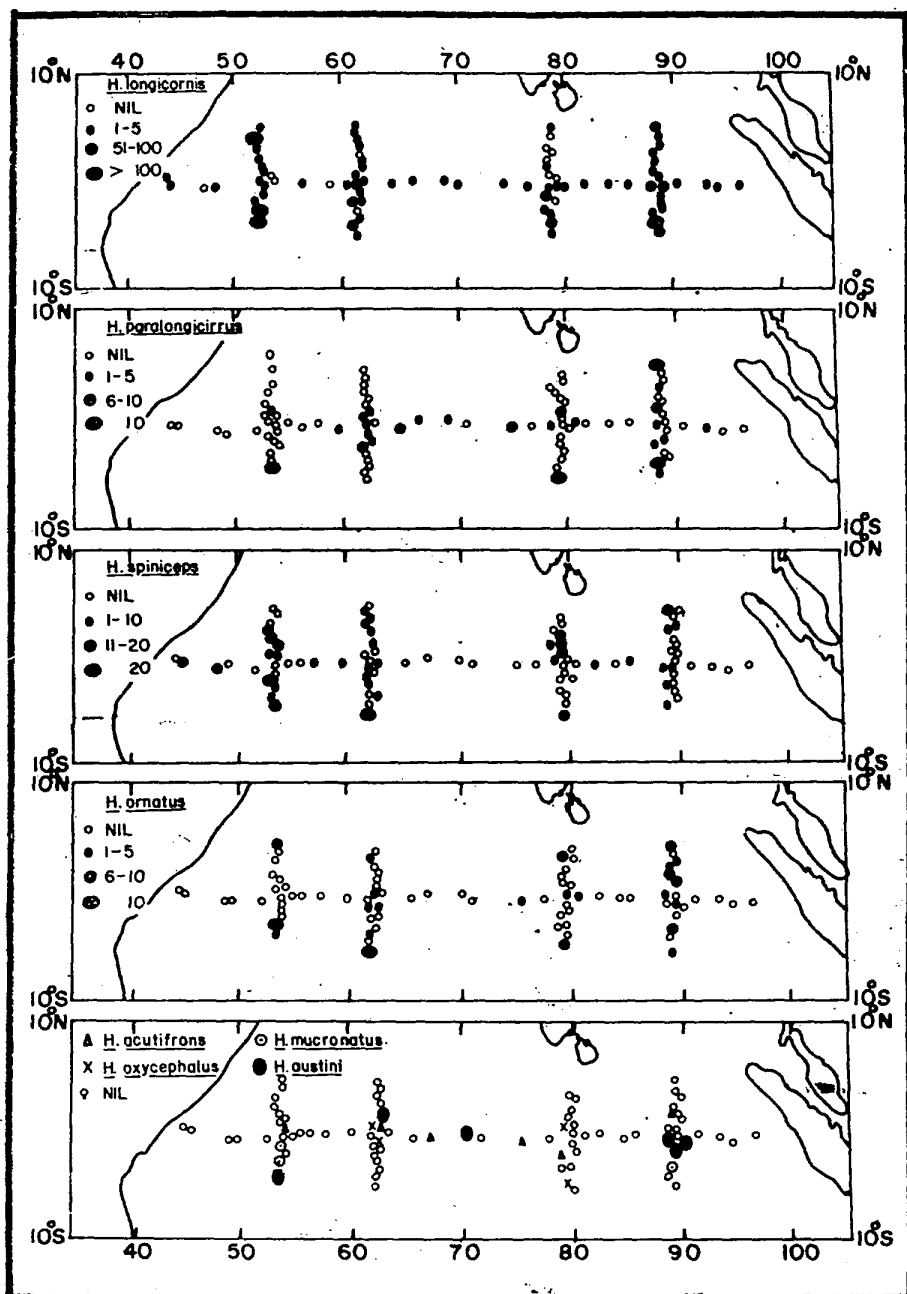


Fig. 1. Distribution of different species of *Haloptilus* in the equatorial region of the Indian Ocean.

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