

## HORIZONTAL DISTRIBUTION OF FREE-LIVING MARINE NEMATODE IN THE SUBTIDAL AND INTERTIDAL ZONE SEDIMENTS AT THE SETO INLAND SEA, JAPAN

**SUPAPORN YODNARASRI<sup>1</sup>, KUNINAO TADA<sup>1</sup>, AND SHIGERU MONTANI<sup>2</sup>**

<sup>1</sup>Department of Life Sciences, Faculty of Agriculture, Kagawa University, Miki, Kagawa, 761-0795  
Japan

<sup>2</sup>Graduate School of Fisheries Sciences, Hokkaido University, 3-1-1 Minato, Hakodate, 041-8611  
Japan

Free-living marine nematodes are the most numerous in the marine sediment. They are important function for marine benthic sediment eco-systems. This investigation was observed in a tidal flat (subtidal and intertidal zones) at the Seto Inland Sea, Japan. Many investigations were carried out in this area. Mostly, they showed the difference data between subtidal and intertidal zone sediments. However, the nematodes are never investigated in this area. This investigation observed the distribution patterns of nematode in subtidal and intertidal zone sediment and then compared the nematode distribution pattern of both zones. The samples were collected 10 stations in subtidal zone. Intertidal zone had 15 stations; 3 transects (A, B and C) were established and 5 stations were located at each transect line (Stn.1 was located in the low tide shoreline and Stn.5 was located in low tide river stream). The fauna samples had 2 replications at each station. Then the samples were identified species and densities of free-living marine nematodes. The species and densities of free-living marine nematodes were analyzed using the computer software package PRIMER (Plymouth Routines In Multivariate Ecological Research). The sediment samples were measured sediment parameters (e.g. total pigments, AVS, TP, TOC, TN, grain sizes). The species and densities of nematode in subtidal sediments were higher than intertidal sediments. Nematodes distributed 73 and 46 species in subtidal and intertidal zone stations, respectively. The densities of nematode were in the ranges of 457 to 1983 and 89 to 1157 inds 10cm<sup>-2</sup> at subtidal and intertidal zone sediments, respectively. Mostly, dominant species of subtidal zone represented by non-selective and selective deposit feeders and epigrowth feeders (e.g. *Daptonema* sp.A, *Sabatieria*, *Terschellingia longicaudata*, *Nannolaimoides*, *Paralongicyatholaimus*, *Microlaimus* spp.). While, intertidal zone dominated by omnivores/predators, epigrowth feeders, non-selective and selective feeder groups (e.g. *Meyersia*, *Cyatholaimus*, *Spirinia*, *Leptolaimus*, *Paralinhomoeus*, *Thalassomonhystera*, *Daptonema* sp.A). The PRIMER analysis results showed the clearly differences of nematode distribution patterns between subtidal and intertidal zones. In subtidal zone, nematode distribution patterns separated to 3 groups (group I was Stn.4, group II was Stn.1-3 and 5-8 and group III was Stn.9 and 10). The distribution patterns of group I related with total pigment concentrations and AVS content. Group II related with the food sources and group III related with the macro-algae and seagrass that covered on the sediment surface. Intertidal zone, the nematode distribution patterns arranged to 2 groups (Group I was Stn.1 in B transect line and Stn.1 and 2 in C transect line and group II was the remaining stations). In this zone, the zonation patterns had effecting from tidal current more than riverine effects. Group I, dominant species were non-selective deposit feeders and epigrowth feeders. On the other hand, group II dominated by omnivores/predators, epigrowth feeders, selective and non-selective deposit feeders. In this area, particle size of sediment and food sources had effect to the dominant species. This present study, the densities of nematode were not shown the clearly relation with the sediment parameters in both

subtidal and intertidal zone sediments. From the results of this investigation, we conclude the nematodes had difference distribution patterns between subtidal and intertidal zone sediments.