

Dinoflagellate Cyst Assemblage and Marine Sediment Characteristics of Colombo Port, Sri Lanka

Dulanjali Wijethilake*¹ and R R M K P Ranatunga¹

Abstract— The present study was to investigate dinoflagellate cyst assemblage in relation to characteristics of sediments in Colombo Port. Sampling was conducted between June and October 2013. Sediment samples collected using small (2cm) and large (18cm) core samplers and analyzed for occurrence of dinoflagellate cysts, particle size and organic content of the sediment. Sea Surface Temperature (SST) and Sea Surface Salinity (SSS) were also measured at each sampling site. Eight dinoflagellate cysts were recorded from the sediment samples. They were *Protoperidinium leonis*, *Protoperidinium pentagonum*, three other *Protoperidinium spp.*, *Scrippsiella spp.*, *Spiniferites spp.* and *Polykrikos spp.* The *Scrippsiella spp.* is known to form harmful algal blooms which lead to fish mortality. The mean SST varied between 28–29.5°C and SSS between 15.5–33.5 ppt. Organic content was between 6.63–14.02% and sediment texture ranged from very fine sand to coarse sand. The study revealed that the dinoflagellate cysts were associated with fine sediments and showed inverse relationships with organic content. Port environment and adjacent coastal environments should be closely monitored for non-indigenous species which would otherwise cause deleterious effects on native biota.

Keywords—Colombo Port, Dinoflagellate Cysts, Organic Content, Particle Size.

Spiniferites spp. cysts and in contrast fine grained sediment mostly occupied by *Protoperidiniids* [8]. The use of sediments properties and oceanographic data can determine cyst distribution in surface sediments [2]. The other phenomenon is that there are inverse relationship between particle size and organic content. Fine grained sediments are richer in organic content than coarse grained sediments [3]. General objective of the study is to identify dinoflagellate cysts and to analysis sediment in Colombo port. Specific objective of the study is to identify distribution and possible areas where dinoflagellate cysts can aggregate and find any relationship between sediment characteristics and dinoflagellate species availability.

II. MATERIALS AND METHODS

Sampling was conducted between June 2013 and October 2013 at monthly intervals. Sediment samples were collected using small (d=2cm) and large (d=18cm) core samplers with the assistance from divers. Samples were collected at day time from 9.00am to 3.00pm. Ten sites were selected (Table 1) for collection of sediment samples representing less disturbed isolated areas since dinoflagellate cysts prefer to inhabit in undisturbed and slow water moving regions over a long time.