

consumption and in respect to that organic matter decomposition of the surface sediment and burrow walls were observed. However, if we took into account the burrow existence (e.g. their calculated surface), the estimated organic matter decomposition was $146.12 \text{ gC/m}^2/\text{month}$ comparing to $116.5 \text{ gC/m}^2/\text{month}$ without burrows. This leads conclusion that organic matter decomposition increased 1.25 times, because of the expansion of the tidal flat surface area by burrowing activity. The rate of organic matter decomposition in burrow walls therefore contribution with 20.3% to organic matter decomposition in the tidal flat. These result indicated that in situ activities of *M.japonicus* significantly influences the material cycle and it is important to consider the existence of burrow in order to understand the fluxes of materials and to evaluate the purification function of the tidal flat.

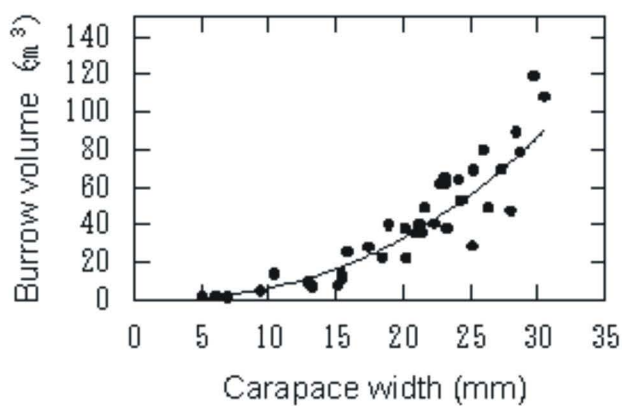


Fig.1. Relationship of carapace width with burrow volume

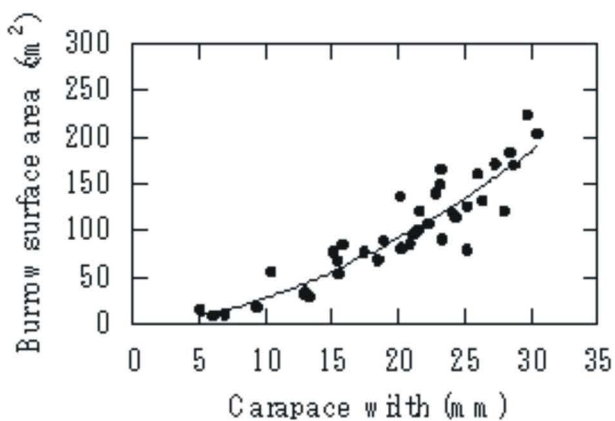


Fig.2. Relationship of carapace width with burrow surface area

Seasonal variations of fresh water residence time and their impact on the water quality at Hurun Bay, South Sumatera, Indonesia

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Hurun Bay is a semi enclosed water ecosystem that is situated at the western coastal area of Lampung Bay, southern coastal area of Sumatera and faces to the Sunda Strait (Fig.1). The environment within this area seems to be strongly influenced by monsoonal wind system that affects on the variability of the meteorological and oceanographic conditions of Lampung Bay. To understand the characteristics and control mechanism of water quality at Hurun Bay, a seasonal variations in freshwater residence time was investigated based on a series of physical (temperature, salinity), chemical (DIN; Dissolved Inorganic Nitrogen, TOM; Total Organic Matter, DIP; Dissolved Inorganic Phosphorus) and biochemical (DO; Dissolved Oxygen and phytoplankton) data observed during 2003-2004. The residence time of freshwater as indicator of the water exchange played an important role in the control of the water quality at Hurun Bay. Long freshwater residence time in both transition periods of Wet-Dry and Dry-Wet seasons has increased the DIN and TOM accumulation in the water column, and it stimulated phytoplankton bloom at Hurun Bay. This situation has caused the DO concentration decrease due to high decomposition of the organic matter. The results recommend that in both transition periods, the aquaculture activity should be limited at minimum level to reduce the risk of fish mass mortality caused by the DO depletion, diseases appearance, and particularly harmful algae bloom such as *Noctiluca sp* that appeared during these periods. DIN was a main factor of the environmental pollution at Hurun Bay due to the intervention of the anthropogenic activity through aquaculture. The DIN/DIP ratio within this area was less than 16.