Assessment of carbon and nitrogen stock in mangrove sediment: the impact of anthropogenic activities.

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Mangrove ecosystems are vital in carbon emmission reduction and nitrogen pollution mitigation and started to gain attention in recent years. In this experiment, we quantified the C and N stocks in sediment at the Klang Isles mangrove vicinity in the west coast of Peninsular Malaysia. Three areas were chosen based on their anthropogenic activities; Klang island (natural mangrove habitat), Ketam island (mangrove habitat close to villages and aquaculture activities) and Telok Gong (mangrove habitat near to industrial activities). Sampling was conducted in three seasons in 2016; wet (Nov-Dec), dry (Jun-July) and intermediate (Apr-May). In each site, 4 replicates of sediment at every 25 m distance from the sea fringe to landward were sampled. Sediment was cored at 1-metre deep and separated into 4 layers; 0-15, 15-30, 30-50 and 50-100 cm according to published method. Soil carbon in each layer was determined using the loss of ignition (LOI) method to obtain organic matter and converted to organic carbon using a regression value obtained from another published study. Soil nitrogen was determined using Kjedahl and Distillation Method. Result indicated that carbon and nitrogen sediment stock were highest in the natural mangrove habitat (Klang island), with the value of 645.99 t ha^{-1} and 21.61 t ha^{-1} respectively, followed by Telok Gong and Ketam Island. These results conclude that anthropogenic activities have potential to reduce the carbon and nitrogen stock and hence may eliminate sequestration potential.

Keywords: Klang, Selangor, Straits of Malacca, forest, soil.

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