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ORGANIC CARBON AND NUTRIENT DYNAMICS IN MANGROVE CREEKS AND ADJACENT COASTAL WATERS OF SAWI BAY, SOUTHERN THAILAND

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ABSTRACT

Concentrations and fluxes of dissolved and particulate nutrients were measured (October 1998, April and October 1999) in three mangrove creeks draining into Sawi Bay, southern Thailand. Each creek is lined with fishing villages and sustains different levels of shrimp aquaculture. Sampling was conducted along transects from the upper reaches of each creek to the bay proper. Nutrient fluxes were also measured in proximity to a 10 ha *Rhizophora* plantation near the mouth of I Laet Creek. The slope of the regression line describing the distance-salinity relationship between each creek and the bay suggested that flushing rates were highest in Tha Takhe Creek, followed by I Laet Creek, with lowest rates in Bang Katin Creek. Bang Katin Creek, despite its low flushing rates, had considerably lower concentrations of nutrients than I Laet Creek probably because of more moderate discharge of shrimp pond effluent. The concentrations of nutrients were lowest in Tha Takhe Creek, probably because of its high flushing and lower levels of shrimp farming. Dissolved N:P ratios were high (>70) and particulate N:P ratios were low (1.7-2.5) probably as a result of the composition of pond effluent in concert with P sorption reactions taking place with abundant particles derived from pond wastes discharged and mixing with creek water. Flux measurements in I Laet Creek indicated that silicate and total dissolved P were exported from mangroves but that particulate matter was trapped within the forest. This supports other biogeochemical measurements indicating that mangrove plantations are a sink for particulate matter within Sawi Bay.