

**DOES MANGROVE FUNCTION AS SINK OR SOURCE OF  
PHOSPHORUS FOR ITS ADJACENT RIVER? A CASE STUDY IN  
MANGROVE DISTURBED BY TYPHOON IN CAN GIO MANGROVE  
BIOSPHERE RESERVE**

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**ABSTRACT**

A vast area of mangrove in Can Gio Mangrove Biosphere Reserve was destroyed by a typhoon named Durian in December 2006. After the typhoon, trunks, branches and twigs were left on the spot. The decomposition of these materials was expected to affect the nutrient dynamics in the mangrove sediment and tidal creek. Therefore, this research was conducted to study the phosphorus dynamics in a tidal creek and test if this mangrove functions as a source or a sink of phosphorus for its adjacent river.

The surface water and floating litter were taken during 24 hours on spring tide from a tidal creek connecting the mangrove and its adjacent river. The physicochemical properties of the creek water were measured directly in field. The content of soluble reactive phosphorus (SRP), total particulate phosphorus (TPP), and phosphorus (P) content in the floating litter were determined to calculate the amount of P exchanged between the mangrove and river. Map Info Professional was used to calculate the cross-section area of the creek and the data analysis was performed with SG Plus Centurion XVI.

Most of the floating litter were twigs and small wood pieces from the mangrove (62% of the total weight of floating litter). The average amount of floating litter exported from the mangrove was 305.83 gh<sup>-1</sup>. The average amount of P exported from the mangrove through the floating litter was 452.3 mgh<sup>-1</sup>. SRP in the creek derived from the higher nutrient concentration pore-water from the mangrove sediment which came into the creek during the ebb. The amount of P entering the mangrove was 2013.56 gday<sup>-1</sup>, while the amount of P exported from the mangrove was 2232.78 gday<sup>-1</sup>. Due to the decomposition of trunks and branches remained on the mangrove floor after the typhoon, the disturbed mangrove functioned as a source of P for its adjacent river.

**Key Words:** Mangrove creek, litter, phosphorus