THE EFFECT OF LAND DEVELOPMENT TOWARDS THE DISTRIBUTION OF NITROGEN AND PHOSPHORUS NUTRIENT ALONG THE COASTAL AREA OF PERHENTIAN ISLAND, SOUTH CHINA SEA

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ABSTRAK

Kepekatan dan taburan nutrien nitrogen dan fosforus sepanjang kawasan persisiran pantai Pulau Perhentian telah dikaji bagi menentukan hubungan di antara taburan nutrien dalam persekitaran marin dengan pembangunan daratan.

Dua sesi penyampelan telah dijalankan untuk menentukan taburan dan kepekatan nutrien fosforus dan nitrogen di sekitar perairan Pulau Perhentian. 12 stesen telah dipilih dengan 4 stesen transek. Nutrien yang dikaji termasuk jumlah fosforus terlarut, orthofosfat, fosforus organik terlarut, nitrit dan ammonium.

Semua nutrien terkaji kecuali ammonium menunjukkan min kepekatan yang lebih tinggi untuk sesi penyampelan kedua berbanding dengan sesi penyampelan pertama. Semasa sesi penyampelan pertama (15 – 21 April 2002), min dan julat kepekatan untuk jumlah fosforus terlarut, orthofosfat, fosforus organik terlarut, nitrit dan ammonium adalah masing-masing pada 00.446 μM; 0.172 – 1.517 μM, 0.305 μM; 0.091 – 0.759 μM, 0.141 μM; 0.0179 – 0.758 μM, 0.107 μM; 0.018 – 0.237 μM and 2.053 μM; 0.349 – 8.495 μM.

Semasa sesi penyampelan kedua (22 – 24 September 2002), min dan julat kepekatan untuk jumlah fosforus terlarut, orthofosfat, fosforus organik terlarut, nitrit dan ammonium adalah masing-masing pada 0.558 μM; 0.246 – 1.316 μM, 0.350 μM; 0.125 – 0.887 μM, 0.209 μM; 0.050 – 0.734 μM, 0.128 μM; 0.014 – 0.291 μM and 0.793 μM; 0.221 – 1.702 μM.

Ujian statistik terhadap taburan nutrien secara transek tidak menunjukkan perbezaan ketara antara kepekatan nutrien di kawasan air *nearshore*, *midshore* dan *offshore* bagi kedua-dua kali penyampelan ($p > 0.05$). Bukti menunjukkan bahawa pembangunan daratan menyumbang kepada peningkatan kepekatan nutrien di kawasan persisiran Pulau Perhentian.

ABSTRACT

The concentration and distribution of nitrogen and phosphorus nutrient along the coastal area of Perhentian Island was analyzed in order to establish the relationship between marine nutrient distribution and land development.

Two sampling sessions were conducted in order to determine the distribution and concentration of phosphorus base and nitrogen base nutrients in the surrounding water of Perhentian Island. 12 stations were established with 4 transect stations. Nutrients analyzed include total soluble phosphorus, orthophosphate, soluble organic phosphorus, nitrite and ammonium.

All nutrients analyzed except for ammonium shows a higher mean concentration during the 2nd sampling session compared to the 1st sampling session. During the 1st sampling session (15 – 21 April 2002), the mean and range of concentration for total soluble phosphorus, orthophosphate, soluble organic phosphorus, nitrite and ammonium was between 0.446 μM; 0.172 – 1.517 μM, 0.305 μM; 0.091 – 0.759 μM, 0.141 μM; 0.0179 – 0.758 μM, 0.107 μM; 0.018 – 0.237 μM and 2.053 μM; 0.349 – 8.495 μM respectively.

During the 2nd sampling session (22 – 24 September 2002), the mean and range of concentration for total soluble phosphorus, orthophosphate, soluble organic phosphorus, nitrite and ammonium was between 0.558 μM; 0.246 – 1.316 μM, 0.350 μM; 0.125 – 0.887 μM, 0.209 μM; 0.050 – 0.734 μM, 0.128 μM; 0.014 – 0.291 μM and 0.793 μM; 0.221 – 1.702 μM respectively.

Statistical test on nutrient distribution by transect shows no significant difference ($p > 0.05$) in nutrient concentration between inshore, midshore and offshore water layer for both sampling sessions. Evidence shows that land development was contributing to the rising nutrient level in the coastal area of Perhentian Island.