

ABSTRAK

Kawasan mangrove Kandang Panjang yang keberadaannya berdekatan dengan kegiatan antropogenik di pesisir Pekalongan berpotensi menerima masukan bahan pencemar baik organik maupun anorganik. Nutrien seperti nitrat dan fosfat dapat menjadi bahan pencemar jika masuk dengan konsentrasi tinggi, sehingga memengaruhi kondisi biotik dan abiotik di kawasan mangrove Kandang Panjang. Penelitian ini bertujuan untuk mengetahui distribusi vertikal kandungan nitrat dan fosfat serta menganalisis keterkaitannya dengan DO *pore water* dan bahan organik sedimen. Penelitian dilakukan di tiga stasiun pengamatan dan tiga kedalaman, yaitu 0–10 cm, 10–20 cm, dan 20–30 cm, menggunakan metode survei. Pengambilan sampel sedimen menggunakan *core sampler* dan air pori dengan *pore water profiler* dengan metode *random sampling*. Analisis data dilakukan menggunakan uji korelasi *Pearson*. Hasil penelitian menunjukkan konsentrasi nitrat pada kedalaman 0–10 cm berkisar 1,84–2,95 mg.kg⁻¹, 10–20 cm sebesar 1,91–3,15 mg.kg⁻¹, dan 20–30 cm sebesar 0,92–2,66 mg.kg⁻¹. Fosfat pada kedalaman 0–10 cm berkisar 27,23–37,74 mg.kg⁻¹, 10–20 cm sebesar 36,49–48,50 mg.kg⁻¹, dan 20–30 cm sebesar 30,77–37,67 mg.kg⁻¹. Konsentrasi nitrat terakumulasi tinggi pada lapisan permukaan, sedangkan fosfat tertinggi berada di lapisan tengah. DO *pore water* berkisar antara 1,20–2,30 mg.L⁻¹. Bahan organik berkisar antara 6,23 – 8,73%. Hasil analisis *Pearson* menunjukkan adanya korelasi negatif cukup kuat antara DO dan nitrat ($r = -0,618$), serta korelasi positif kuat antara fosfat dan pH sedimen ($r = 0,512$). Proses nitrifikasi, denitrifikasi, desorpsi, serta kandungan bahan organik menjadi distribusi utama nutrien dalam sedimen mangrove Kandang Panjang, Pekalongan.

Kata kunci: air jebakan, fosfat, Kandang Panjang, nitrat, oksigen terlarut.

ABSTRACT

The Kandang Panjang mangrove area, located close to anthropogenic activities on the coast of Pekalongan, has the potential to receive inputs of both organic and inorganic pollutants. Nutrients such as nitrate and phosphate can become pollutants if they enter at high concentrations, thus affecting biotic and abiotic conditions in the Kandang Panjang mangrove area. This study aims to determine the vertical distribution of nitrate and phosphate content and analyze their relationship with pore water DO and sediment organic matter. The study was conducted at three observation stations and three depths, namely 0–10 cm, 10–20 cm, and 20–30 cm, using a survey method. Sediment samples were taken using a core sampler and pore water samples with a pore water profiler using a random sampling method. Data analysis was performed using the Pearson correlation test. The results showed that nitrate concentrations at a depth of 0–10 cm ranged from 1.84–2.95 mg.kg⁻¹, 10–20 cm at 1.91–3.15 mg.kg⁻¹, and 20–30 cm at 0.92–2.66 mg.kg⁻¹. Phosphate at a depth of 0–10 cm ranged from 27.23–37.74 mg.kg⁻¹, 10–20 cm at 36.49–48.50 mg.kg⁻¹, and 20–30 cm at 30.77–37.67 mg.kg⁻¹. Nitrate concentrations accumulated high in the surface layer, while the highest phosphate was in the middle layer. Pore water DO ranged from 1.20–2.30 mg.L⁻¹. Organic matter ranged from 6.23–8.73%. Pearson's analysis results showed a fairly strong negative correlation between DO and nitrate ($r = -0.618$), as well as a strong positive correlation between phosphate and sediment pH ($r = 0.512$). The processes of nitrification, denitrification, desorption, and organic matter content are the main distribution of nutrients in the mangrove sediments of Kandang Panjang, Pekalongan.

Keywords: Dissolve Oxygen, Kandang Panjang, Nitrate, Phosphate, Pore water.