



ABSTRACT

Coal mining generates acid mine drainage (AMD) with low pH and heavy metals Fe and Mn in high concentrations. AMD can enter Lematang River through surface run off and flowed directly into the river after being processed. Macrozoobenthos is one of the important components in the river ecosystem, which is often used as a river pollution bioindicator. This study investigated the abundance of macrozoobentos in Lematang River, and physicochemistry factors that determine the abundance of macrozoobenthos in Lematang River, Lahat regency, South Sumatra. The sample of macrozoobenthos and physicochemistry factor were collected from 3 research stations, station I (ST I), station II (ST II), and station III (ST III) in September, October, November and December 2017. Sampling was conducted at 3 spot (n) in each station. The lowest abundance of macrozoobenthos is found in ST II, and dominated by tolerant organisms such as *Chironomus sp.* while intolerant organisms such as *Stenelmis sp.* only found in ST I and *Hydropsyche instabilis* only found in ST III. Scraper and collector groups were found to be high in all research stations, while no shredders were found. ST II and ST III have lower pH, flexibility and higher concentration of Mn and Fe in water and sediment. Multiple regression analysis described that the most significant physicochemistry factors that affected the abundance of macrozoobentos in Lematang River are temperature, depth, concentration of Fe and Mn in the water and sediment. The interactions of physicochemistry factors have affected 75.6% to the abundance of macrozoobentos.

Keywords: coal mine, diversity, heavy metal, macrozoobenthos, lematang river



INTISARI

Pertambangan batubara menghasilkan limbah cair dengan pH rendah dan logam berat Fe dan Mn dalam konsentrasi tinggi. Limbah tambang batubara dapat masuk ke Sungai Lematang melalui *surface run off* dan dialirkan langsung ke sungai setelah diproses. Makrozoobentos merupakan salah satu komponen penting dalam ekosistem sungai, yang sering dijadikan sebagai bioindikator pencemaran sungai. Penelitian ini bertujuan mempelajari kemelimpahan makrozoobentos di Sungai Lematang, dan mempelajari faktor lingkungan yang menentukan kemelimpahan makrozoobentos di Sungai Lematang, Kabupaten Lahat, Sumatera Selatan. Pencuplikan sampel makrozoobentos dan pengukuran parameter lingkungan dilakukan di 3 stasiun penelitian yaitu stasiun I (ST I), stasiun II (ST II), dan stasiun III (ST III) pada bulan September, Oktober, November dan Desember. Sampling dilakukan pada 3 titik sampling (n) di setiap stasiun penelitian. Kemelimpahan makrozoobentos terendah ditemukan di ST II, dan didominasi oleh organisme toleran yaitu *Chironomus sp.* Sedangkan, organisme intoleran seperti *Stenelmis sp.* hanya ditemukan di ST I dan *Hydropsyche instabilis* hanya di temukan ST III. Kelompok *scraper* dan *collector* ditemukan tinggi di semua stasiun penelitian, sedangkan *shredders* tidak ditemukan. ST II dan ST III yang melewati tambang batubara mengalami penurunan pH, transparansi dan peningkatan konsentrasi logam Mn dan Fe dibandingkan ST I. Hasil analisis regresi berganda menunjukkan bahwa faktor fisik dan kimiawi yang berpengaruh sangat signifikan terhadap kemelimpahan makrozoobentos di Sungai Lematang adalah suhu, jeluk, konsentrasi Mn di air dan sedimen. Interaksi parameter lingkungan yang diukur berpengaruh sebesar 75,6% terhadap kemelimpahan makrozoobentos.

Kata kunci : batubara, keanekaragaman, logam, makrozoobentos, sungai lematang