KEANEKARAGAMAN MIKROALGA DI KOLAM LIMBAH INSTALASI PENGELOLAAN AIR LIMBAH (IPAL) SEWON, KABUPATEN BANTUL, DAERAH ISTIMEWA YOGYAKARTA

Alfian Bani Kusuma

Fakultas Biologi, Universitas Gadjah Mada, alfian.bani.k@mail.ugm.ac.id

INTISARI

Instalasi Pengelolaan Air Limbah (IPAL) Sewon, Bantul, merupakan instalasi yang bertujuan untuk mengelola limbah cair rumah tangga yang berada di wilayah Daerah Istimewa Yogyakarta (DIY). IPAL Sewon memiliki 3 jenis kolam yang berbeda yakni kolam *pretreatment* atau *inlet*, kolam fakultatif, dan kolam maturasi yang masing-masing mempunyai fungsi tersendiri untuk mengolah air limbah menjadi air yang aman untuk dibuang kembali ke badan perairan terbuka. Mikroalga adalah salah satu mikroorganisme yang dapat hidup di dalam kolam limbah dan mempunyai peran penting dalam penguraian zat polutan organik. Penelitian ini bertujuan untuk mengetahui keanekaragaman mikroalga, mengetahui indeks keseragaman mikroalga, dan mengetahui faktor yang mempengaruhi keanekaragaman mikroalga di ketiga jenis kolam. Penelitian ini dilakukan di tujuh stasiun pengamatan: satu kolam *inlet*, empat kolam fakultatif, dan dua kolam maturasi. Identifikasi mikroalga dan perhitungan densitas dilakukan dengan cara menyaring sampel air sebanyak 50L menggunakan *plankton net*, selanjutnya di identifikasi dengan mikroskop yang terpasang *optilab*, perhitungan densitas menggunakan SRCC. Indeks keanekaragaman menggunakan formulasi Shannon-Wiener dan Indeks keseragaman menggunakan formulasi Sorensen. Parameter lingkungan yang diukur meliputi pH, suhu air, suhu udara, jeluk, penetrasi cahaya, DO, dan BOD. Hasil penelitian menunjukkan terdapat 41 genus mikroalga dari lima jenis grup fungsional di tujuh stasiun yang diamati. Indeks Shannon-Wiener menunjukkan kategori rendah-sedang (H'<6,9). Indeks keseragaman Sorensen antar jenis kolam tidak berbeda jauh satu sama lain. Faktor lingkungan yang mempengaruhi keanekaragaman mikroalga adalah jeluk, penetrasi cahaya, DO dan BOD.

Kata kunci: keanekaragaman mikroalga, IPAL Sewon, Indeks keseragaman, DO, BOD, jeluk, penetrasi cahaya.

MICROALGAE DIVERSITY IN SEWON WASTEWATER TREATMENT POND (IPAL), BANTUL REGENCY, SPECIAL DISTRICT OF YOGYAKARTA

Alfian Bani Kusuma
Faculty of Biology Gadjah Mada University, alfian.bani.k@mail.ugm.ac.id

ABSTRACT

Sewon Wastewater Treatment Pond (IPAL), Bantul, is an installation that aim to manage municipal waste water from Daerah Istimewa Yogyakarta (DIY) region. IPAL Sewon has 3 different types of ponds: pretreatment or inlet, facultative, and maturation pond which every pond has different role to process the municipal waste water before released it into open water body. Microalgae is one of microorganisms that can live inside the waste water ponds and has significant role for degradation of organic pollutant. The objectives of this research were to understand the diversity of microalgae, the similarity index of microalgae, and factor that regulates the diversity of microalgae in 3 different types of ponds. The research was conducted in seven research stations: one inlet pond, four facultative ponds, and two maturation ponds. Microalgae identification and enumerations were conducted with filtering 50L of municipal waste water into plankton net, identification was conducted below light microscope with optilab, enumeration of microalgae were conducted with SRCC. Diversity index was conducted with Shannon-Wiener formulation and similarity index conducted with Sorensen formulation. Parameters measured included pH, water temperature, air temperature, depth, light penetration, DO, and BOD. The results showed that there were 41 genera in five different types of microalgae functional groups within seven research stations. Shannon-Wiener Index result showed a low-mediocre category of diversity (H'<6,9). Sorensen similarity index showed that there was no difference on microalgae diversity between all 3 different types of ponds. Factor that regulate the diversity of microalgae were depth, light penetration, DO, and BOD.

Keywords: Microalgae diversity, waste water treatment ponds (IPAL) Sewon, similarity index, DO, BOD, depth, light penetration.