

Hubungan Parameter Fisika-Kimia Perairan terhadap Kelimpahan Fitoplankton di Situ Rawa Besar, Depok, Jawa Barat = Relationship Between Physico-Chemical Parameters and Phytoplankton Abundance in Lake Rawa Besar, Depok, Jawa Barat

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Abstrak

Fitoplankton sebagai organisme fotosintetik berperan penting sebagai produsen primer. Fitoplankton menghasilkan oksigen serta bahan organik dalam perairan yang berfungsi sebagai pilar utama dalam jaringan makanan. Kelimpahan fitoplankton dalam perairan diketahui dipengaruhi oleh berbagai faktor lingkungan fisika-kimia seperti intensitas cahaya, suhu, kecerahan, oksigen terlarut (dissolved oxygen), nitrat, fosfat, dan pH. Parameter fisika-kimia perairan diduga memiliki keterkaitan kuat dengan kelimpahan fitoplankton. Penelitian yang dilakukan bertujuan untuk mengetahui jenis serta kelimpahan fitoplankton dan mengetahui hubungan parameter fisika-kimia perairan terhadap kelimpahan fitoplankton di Situ Rawa Besar, Depok, Jawa Barat. Penelitian dilakukan pada bulan Februari—Maret 2023. Metode purposive sampling digunakan dalam pengambilan sampel dari 9 stasiun dengan 3x pengulangan. Sedgewick-rafter counting cell digunakan untuk pencacahan fitoplankton. Parameter fisika-kimia yang diukur di antaranya, intensitas cahaya, suhu, kecerahan, oksigen terlarut (dissolved oxygen), nitrat, fosfat, dan pH. Data parameter fisika-kimia dan kelimpahan fitoplankton dianalisis menggunakan metode PCA (Principal Component Analysis) dengan software R (R Studio). Rata-rata hasil parameter fisika-kimia menunjukkan konsentrasi DO sebesar 6,36 ppm, nitrat sebesar 6,77 mg/L, fosfat 0,02 mg/L, pH 9,54, kecerahan sebesar 13,30 cm, suhu sebesar 27,41°C, dan intensitas cahaya sebesar 8.201,3 lux. Hasil penelitian menunjukkan kelimpahan fitoplankton berada di rentang 27,8518.945 individu/L. Planktothrix merupakan genus dengan kelimpahan tertinggi yaitu 518.945 individu/L dan kelimpahan terendah ada pada genus Actinastrum dengan nilai 27,8 individu/L. Analisis data dengan PCA menunjukkan korelasi positif antara kelimpahan fitoplankton dengan parameter fosfat, suhu, pH, dan intensitas cahaya.

.....Phytoplankton as photosynthetic organisms play an important role as primary producers. Phytoplankton produce oxygen and organic matter in the waters which serve as the main pillars of food webs. The abundance of phytoplankton in waters is known to be influenced by various physico-chemical environmental factors such as light intensity, temperature, brightness, dissolved oxygen, nitrate, phosphate, and pH. The physico-chemical parameters of the waters are thought to have a strong relationship with the abundance of phytoplankton. The aim of the research was to determine the types and abundance of phytoplankton and to determine the relationship between the physico-chemical parameters of the waters and the abundance of phytoplankton in Lake Rawa Besar, Depok, West Java. The research was conducted in February-March 2023. The purposive sampling method was used in taking samples from 9 stations with 3 repetitions. Sedgewick-rafter counting cell is used for counting phytoplankton. The physico-chemical parameters measured included light intensity, temperature, brightness, dissolved oxygen, nitrate, phosphate, and pH. Physico-chemical parameter data and phytoplankton abundance were analyzed using the PCA (Principal Component Analysis) method with R software (R Studio). The average results of the physico-chemical parameters showed DO concentrations of 6.36 ppm, nitrates of 6.77 mg/L, phosphates of 0.02

mg/L, pH 9.54, brightness of 13.30 cm, temperature of 27.41°C, and a light intensity of 8,201.3 lux. The results showed that the abundance of phytoplankton was in the range of 27.8-518,945 individuals/L. Planktothrix is the genus with the highest abundance of 518,945 individuals/L and the lowest abundance is in the Actinastrum genus with a value of 27.8 individuals/L. Data analysis using PCA showed a positive correlation between the abundance of phytoplankton and the parameters of phosphate, temperature, pH, and light intensity.