

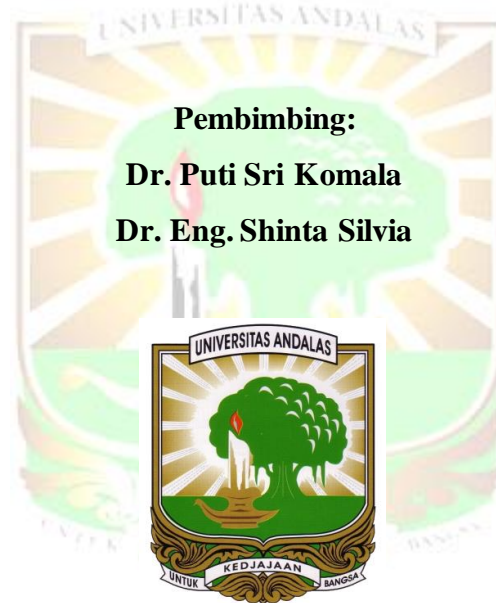
**ANALISIS SPASIAL DAN TEMPORAL STATUS TROFIK DAN
BIOAKUMULASI LOGAM BERAT PADA FITOPLANKTON
DI DANAU MANINJAU**

TESIS

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ABSTRAK

Penelitian ini bertujuan untuk menentukan secara spasial dan temporal status trofik dan bioakumulasi logam berat pada fitoplankton. Pengambilan sampel dilakukan pada 10 (sepuluh) lokasi sampling dalam 3 (tiga) perioda sampling. Sampel air diambil berdasarkan SNI 6989-57-2008 dan sampel fitoplankton pada *Ecological Methods for Field and Laboratory Investigation*. Status trofik dianalisis dengan metode *Comprehensive Trophic State Index (CTSI)* terdiri dari kecerahan, total fosfat, total nitrogen, klorofil-a dan *Chemical Oxygen demand (COD)*. Pada fitoplankton dilakukan identifikasi dan menganalisis indeks keanekaragaman, indeks kemerataan dan indeks dominasi serta analisis parameter lingkungan. Analisis bioakumulasi logam dengan *Factor Biokonsentrasi (BCF)* pada sampel air dan sampel fitoplankton. Analisis statistik menggunakan korelasi Pearson untuk melihat hubungan status trofik dan fitoplakton. Hasil penelitian menunjukkan secara spasial temporal, status trofik Danau Maninjau pada kondisi *moderate-eutrophication*. Perubahan status trofik 2018-2022 disebabkan aktivitas domestik dan KJA, dengan kondisi *hyper-eutrophic* hingga *moderate-eutrophication*. Secara spasial dan temporal, fitoplankton yang teridentifikasi sebanyak 9 (Sembilan) kelas, indeks keanekaragaman sedang dan indeks kemerataan relatif sama/ merata. Dan tidak terdapat genus fitoplankton yang mendominasi genus lainnya. Berdasarkan analisis statistik, status trofik berperan penting dalam membentuk keanekaragaman, dominasi, dan kemerataan komunitas fitoplankton tetapi tidak berkorelasi dengan bioakumulasi logam berat. Secara spasial bioakumulasi logam berat pada fitoplankton didominasi oleh logam $Ni > Pb > Cd > Cu$ dengan urutan nilai tertinggi 1,03-1,13; 0,97-1,69; 0,71-1,08; 0,53-1,20; yang bersifat akumulatif rendah karena nilai $BCF < 100$.

Kata kunci: Danau Maninjau, status trofik, fitoplankton, biakumulasi logam, spasial-temporal.

ABSTRAK

This study aims to determine spatially and temporally the trophic status and bioaccumulation of heavy metals in phytoplankton. Sampling was conducted at 10 locations in 3 (three) sampling periods. Water samples were taken based on SNI 6989-57-2008 and phytoplankton samples on Ecological Methods for Field and Laboratory Investigation. Trophic status was analyzed using the Comprehensive Trophic State Index (CTSI) method of brightness, total phosphate, total nitrogen, chlorophyll-a, and Chemical Oxygen demand (COD). In phytoplankton identification and analysis of diversity index, evenness index, and dominance index as well as analysis of environmental parameters. Analysis of metal bioaccumulation with Bioconcentration Factor (BCF) in water samples and phytoplankton samples. Statistical analysis using Pearson correlation to see the relationship between trophic status and phytoplankton. The results showed that spatially and temporally, the trophic status of Lake Maninjau was moderate eutrophication. Changes in trophic status in 2018-2022 are caused by domestic activities and KJA, with hyper-eutrophic to moderate-eutrophication conditions. Spatially and temporally, 9 (nine) classes of phytoplankton were identified, the diversity index was moderate and the evenness index was relatively equal. And there is no phytoplankton genus that dominates other genus. Based on statistical analysis, trophic status plays an important role in shaping the diversity, dominance, and evenness of phytoplankton communities but does not correlate with heavy metal bioaccumulation. Spatially, heavy metal bioaccumulation in phytoplankton is dominated by Ni>Pb>Cd>Cu metals with the highest order of values 1.03-1.13; 0.97-1.69; 0.71-1.08; 0.53-1.20; which is low accumulative because the BCF value <100.

Keywords: *Maninjau Lake, trophic status, phytoplankton, metal bioaccumulation, spatial-temporal.*