

## Abstrak

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Analisis kualitatif dan kuantitatif kesan kualiti air dan hubungannya dengan taburan vertikal dan spatial fitoplankton telah dijalankan selama enam bulan di tiga stesen (1, 2 dan 3) di Taman Tasik Shah Alam. Analisis kualitatif yang dijalankan di tasik ini merangkumi keamatan cahaya, suhu air, pH, kekeruhan, konduktiviti air, jumlah pepejal terlarut (TDS), oksigen terlarut, nitrat, fosfat, silika, ferum, jumlah kealkalian dan klorofil *a*. Analisis kuantitatif yang dijalankan pula melibatkan pengecaman dan pengiraan fitoplankton manakala pengecaman beberapa spesies diatom telah dijalankan melalui kaedah mikroskop pengimbasan elektron (SEM.)

Secara keseluruhan, terdapat sebanyak 44 spesies daripada 24 genus telah direkodkan iaitu 24 spesies daripada divisi Bacillariophyta, 16 spesies daripada divisi Chlorophyta, 2 spesies daripada divisi Pyrrophyta dan 2 spesies daripada divisi Cyanobacteria. Perubahan kualiti air di ketiga-tiga stesen tersebut sepanjang tempoh enam bulan menyebabkan berlakunya perubahan di dalam taburan spesies fitoplankton secara vertikal dan spatial.

Paras permukaan di stesen 1 (Tasik Permai) mencatatkan diversiti spesies yang tertinggi dengan nilai Indeks Kepelbagaian Shannon-Weiner (3.13) dan mencatatkan sebanyak 27 spesies fitoplankton. Terdapat 48% spesies diatom daripada divisi Bacillariophyta, 48% spesies daripada divisi Chlorophyta dan 4% spesies dinoflagelat daripada divisi Pyrrophyta. Di antara spesies-spesies yang dominan adalah *Navicula cancellata*, *Cosmarium tagmasterion*, *Staurastrum pinnatum* dan *Peridinium anglicum*. Diversiti spesies yang rendah dicatatkan di stesen 3 (Tasik Raja Lumu) pada kedalaman 1.5m dengan nilai Indeks Kepelbagaian Shannon-Weiner (2.05). Terdapat sebanyak 8 spesies fitoplankton di mana spesies dominannya adalah *Ankistrodesmus falcatus*, *Pinnularia tabellaria*, *Pinnularia stricta* dan *Staurastrum punctulatum*.

Nilai Indeks Kesamaan Sorenson (S) yang tinggi didapati di antara stesen 1 (Tasik Permai) dan stesen 2 (Tasik Indah) pada kedalaman 2.5m (0.867) menunjukkan bahawa persamaan spesies di situ adalah tinggi. Jelas didapati bahawa spesies fitoplankton yang dominan di setiap stesen kajian pada paras kedalaman 0-2.5m menunjukkan peratus kelimpahan relatif yang berbeza di antara satu sama lain secara taburan vertikal dan spatial.

Kehadiran spesies-spesies dominan di ketiga-tiga stesen kajian seperti *Cosmarium tagmasterion*, *Cosmarium lundelli*, *Staurastrum pinnatum*, *Staurastrum punctulatum*, *Navicula confervacea*, *Pinnularia burkii*, *Pinnularia tabellaria* dan *Surirella spiralis* boleh dijadikan sebagai penunjuk bagi tasik oligotrofik. Oleh itu, Taman Tasik Shah Alam boleh dikelaskan sebagai tasik oligotrofik dan berada di bawah paras pencemaran hasil daripada sumbangan faktor-faktor fizikal dan kimia yang memberi kesan terhadap kualiti air tasik serta mempengaruhi taburan fitoplankton secara vertikal dan spatial.

## Abstract

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The studies on the effect of water quality and the relationship towards the vertical and spatial distribution of phytoplankton had been carried out consecutively for six months allocated at three different stations (1, 2 and 3) in Taman Tasik Shah Alam. The qualitative analysis that had been conducted during the studies were the light intensity, water temperature, pH, turbidity, water conductivity, total dissolved solid (TDS), dissolved oxygen, nitrate, phosphate, silica, ferum, total alkalinity and chlorophyll *a*. The quantitative analysis too had been carried out especially on the identification and calculation on the diversity of the phytoplankton. The scanning electron microscope method (SEM) is used to identify the morphology of a few species of diatoms.

The result showed a total of 44 species of phytoplankton from 24 genera were recorded; 24 species belong to Bacillariophyta, 16 species to Chlorophyta, 2 species to Pyrrophyta and 2 species to Cyanobacteria. The changes of the water quality at the three stations respectively caused changes in the vertical and spatial distribution of phytoplankton.

The water surface in station 1 (Tasik Permai) recorded the highest diversity (3.13) according to the Shannon-Weiner Index. It is found out that a total of 27 species phytoplankton were recorded here; 48% of the species were diatoms from the division of Bacillariophyta, 48% species were from the division of Chlorophyta and 4% species were dinoflagelates from the division of Pyrrophyta. Among the species found were *Navicula cancellata*, *Cosmarium tagmasterion*, *Staurastrum pinnatum* and *Peridinium anglicum*. On the other hand, the lowest diversity were recorded at the depth of 1.5m in station 3 (Tasik Raja Lumu) with the reading of Shannon-Weiner Index 2.05. There were about 8 species of phytoplankton and among the dominant species were *Ankistrodesmus falcatus*, *Pinnularia tabellaria*, *Pinnularia stricta* and *Staurastrum punctulatum*.

Sorenson's Index of Similarity (S) was found high between station 1 (Tasik Permai) and station 2 (Tasik Indah) at the depth of 2.5m (0.867), showing that there were high similarity of algal species between these sites. It was clearly shown that the dominant species of phytoplankton at the three stations on different depths differed in their percentage of relative abundance.

The study showed that *Cosmarium tagmasterion*, *Cosmarium lundelli*, *Staurastrum pinnatum*, *Staurastrum punctulatum*, *Navicula confervacea*, *Pinnularia burkii*, *Pinnularia tabellaria* and *Surirella spiralis* could be used as indicator for oligotrophic lake. On the whole, Taman Tasik Shah Alam could be categorized as an oligotrophic lake due to the physical and chemical factors of the water quality and the effects on the vertical and spatial distribution of phytoplankton.