

# The Study on Diatom Assemblages of the Lacustrine Sediment in the Tunlumei Pond in Central Taiwan

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Most of the paleolimnological studies in lowland lakes in the north, northeast or south of Taiwan have been done, the lacustrine records in the alpine Taiwan are still rare. To improve the understandings of paleoenvironment changes in alpine Taiwan, we drilled a 290-cm long sediment core TLM-1 in the littoral side of Tunlumei Pond (TLM), which a small pond situated in Nenggao Mountain at Nantou Country of central Taiwan. Chronologies of the core were determined by <sup>210</sup>Pb and <sup>14</sup>C dating. The sedimentation rates are approximately 0.1 cm per year. For the diatom analysis, we removed the organic matters in the sediments by using hydrogen peroxide, and identified the diatom to species level with light microscope under 1000X magnification. Consequently, the diatom valves were only preserved in upper 95 cm of the core TLM-1, and we identified 34 genera and 83 species of fossil diatoms. Most of them are benthic diatoms, but the most abundant species, *Staurosirella pinnata* dominates both in benthic and planktonic environments. The pH preference of the diatoms are mainly alkaliphilous and circumneutral, and only *Eunotia intermedia* is acidophilous. For the tropic preference, On the basis of cluster analysis, the 4 diatom stratigraphy zones were identified. There are two depths in poor diatom preservation of core TLM-1, 45cm and 85cm. Suggest the pond boundary is not reaching study site in that two periods. In zone 1 (95-70cm, 750-610 cal. BP), the alkaliphilous species *S. pinnata* was dominant (30-85%). In zone 2 (70-53cm, 610-540 cal. BP), *S. pinnata* was replaced by the circumneutral species *Planothidium lanceolatum* (20-35%). The benthic/planktonic species *S. pinnata* decreased and most of the benthic species increased. It implied that the water level became shallow in zone 2. In zone 3 (53-28cm, 540-350 cal. BP), *S. pinnata* was dominant again, but the acidophilous species *Eunotia intermedia* presented a remarkably increase during 540-470 cal BP, which may link with frequent hydrological disturbances, such as typhoon events or heavy rainfall. In zone 4 (28-10cm, 350-80 cal. BP), *S. pinnata* was continued to dominant, and another species were in low content, indicating the stable pond environment as today.

Keywords: indicator, Tunlumei Pond, precipitation