

Testate Rhizopods (Thecamoebians) as pH Bioindicators in Florida Lakes

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ABSTRACT

Fifty-seven sediment samples from 35 north-central Florida lakes were studied to develop transfer functions that relate thecamoebian assemblages to both sediment characteristics (organic matter [OM], total phosphorus [TP], total carbon:total nitrogen ratio [C/N]), and properties of the overlying waters (pH, trophic state index [TSI], and TP). Organic matter content in sediments was the only variable that influenced presence/absence of thecamoebians. Samples with less than 5% OM were barren. There was no relation between diversity indices and sediment variables TP, OM, and C/N. Lakes with the highest thecamoebian diversity indices were mesotrophic to eutrophic, and had pH values ~8.0. Results suggest that water column conditions have greater influence on thecamoebian diversity than do sediment variables. Detrended correspondence analysis (DCA) showed that pH is the environmental variable that most influences the relative abundance of species. Model results indicated a strong correlation between observed and predicted pH values ($r = 0.86$). We conclude that thecamoebians hold considerable promise as potential bioindicators of modern and paleoenvironmental conditions in Florida lakes. Thecamoebian remains in lake sediment cores may be used to infer past pH changes.