

ZOOPLANKTON DENSITIES AND DISPERSION IN A SHALLOW RESERVOIR RECEIVING HEATED EFFLUENT

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Lake Fairfield, Freestone County, Texas is a 953 hectare cooling reservoir for the Big Brown Steam Electric plant. The zooplankton community was sampled monthly from August 1974 to August 1975 and oxygen and temperature values were recorded.

A total of 56 species were identified over the collection period. Mesocyclops edax was the most abundant crustacean and Brachionus caudatus the most abundant rotifer. Analysis of variance was used to detect significant differences in species diversity and evenness, seasonal abundance, abundance between stations, depth distribution of the dominant species at each station and migration tendencies.

There were no differences between the diversity, and evenness among stations receiving the thermal effluent and those unaffected by the thermal plume. However, the heated effluent does appear to affect changes in abundance between stations by possible recruitment of animals or increased food resources. Migration tendencies appear to be strongest in the stations receiving heated effluent. These tendencies are suggested to be the result of feeding in the surface layers followed by retreating to the cooler layers.

Depth distributions are also effected by the thermal plume with the bulk of a species population concentrated on one side or the other of the interface between the heated effluent and the cooler non-effluent waters. These tendencies weaken as the integrity of the plume becomes diffuse.

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