

MONTICELLO ECOLOGICAL STUDIES  
PROGRAM

A Progress Report Covering 1974  
Prepared for  
Northern States Power Company  
Minneapolis, Minnesota

Parameters Studied:

Macroinvertebrates

1. Adult Insects
2. Aquatic Insects

by  
Dr Alfred J Hopwood  
Department of Biological Sciences  
St Cloud State University  
St Cloud, Minnesota

## SUMMARY

During 1974, four studies on the biota of the  
Mesa River were completed in the vicinity of the NSP  
Monticello Nuclear Generator:

1. Adult insects were collected daily in light traps at three locations. A total of 536 samples were collected during the period from July 17, 1973 through July 14, 1974. Specimens were identified to the lowest taxa possible, sorted, counted, and weighed. Seasonal cycles of abundance were plotted. Abundance, biomass, and cyclicity of adult insects from an upstream station were compared to those of a downstream station.

Responses of insects to the heated-water discharge were species-specific within some groups. Abundance cycles at the downstream station were similar to those observed in the control area upstream. More insects were produced in the zone affected by the heat plume than in the control area.

2. Immature insects were collected monthly on concrete artificial substrates beginning September 6, 1973 and ending September 19, 1974. From a total of 312 samples, insects were identified to the lowest taxa possible, counted, and weighed. These data were converted to number or weight per unit area. Current velocity, temperature, and depth of the water over sampling stations were recorded weekly.

Responses to the heated effluent varied according to taxon. Insects were more numerous in the heated zone than in the unheated area from November through February. During

the remainder of the year, the responses varied from month to month, and between taxonomic groups.

3. Invertebrate drift was studied above and below the power plant effluent from July 27, 1973 to July 23, 1974. This work was prepared as a master's thesis by William J Matter, and is presented in another section of this report (see Appendix A).

4. Fisheries studies during 1973 and 1974 included delineation of spawning areas used in the Mississippi River near the power plant, the conditions under which the areas were used, and biological parameters such as fecundity, and physical condition of the spawning population. This work was prepared as a master's thesis by Lee W Eberley, and is presented in another section of this report. (see Appendix B).