

AU SABLE RIVER BIOLOGICAL REPORT

-ABSTRACT-

A two-year biological study of the Au Sable River Watershed was conducted between September, 1971, and June, 1973. This study was designed to complement concurrent investigations into the physical, economic, and recreational user characteristics of the basin. The geological and topographical characteristics of the basin encourage a high yield of ground water, resulting in excellent conditions for recreational use. However, use of the system for disposal of sewage and urban-type surface runoff have altered plant and animal communities, and caused changes that are aesthetically displeasing.

There are 67 dams in the watershed ranging from less than 2, to more than 35 feet of head (at power-producing dams). Stressed environs are associated with impounded areas of the river, as reflected by changes in composition of fish and bottom-dwelling insect communities within and below these basins. Large quantities of sediment have been introduced to the river from bridge construction, pipe-line crossings, and access points. Sediment loading is associated with detrimental effects on trout reproduction, trout food organisms, and competition with less desirable species. Increasing development of river frontage for homesites also constitutes a threat to quality of water and habitat.

Overall water quality of the Au Sable is excellent, and those parameters tested were all within standards adopted by the Michigan Water Resources Commission for total body contact. Nuisance growths of algae and rooted aquatic plants have been related to nutrient input from sewage outfalls at Grayling and Roscommon. Small, shallow streams of low turbidity, such as the upper Au Sable, are very sensitive to enrichment, and response in production of aquatic plants is dramatic. The stoppage of effluent discharge to the river at Grayling in November, 1971, has already resulted in favorable changes in certain water quality parameters, and a positive response of sensitive bottom-dwelling organisms. Sewage discharge at Roscommon is also scheduled for diversion from the river. A stream improvement program is well underway to correct erosion problems, and to reduce sediment input along the Mainstream and major tributaries.

A Greenbelt zoning ordinance is in effect over much of the basin, to minimize ecological impact from continued development. With certain amendments, the ordinance could be a meaningful tool in retarding degradation of river frontage and stream ecology. Community development and its associated adverse effects should be restricted to upland areas, away from sensitive areas along the river channel. Recreational use must also be well planned and designed, in order to insure the longevity of this high-quality river system.

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SECTION I. INTRODUCTION

Objectives of the Study

The broad objectives relate to three "areas" of interest, as seen in the following.

1. Baseline and biological data, including:

The chemical and physical aspects of water quality.
The effect of impoundments on habitat and water quality.
Levels of biological productivity at various points in the river system.
Temperature regimes in the Mainstream and major tributaries.
The density, diversity and distribution of bottom-dwelling insects and fish.
Density of trout populations at various stations.
Levels of sediment in transport.

2. Effects of human activities in the watershed on river habitat:

Any unusual water quality parameters and probable causes.
The qualitative nature of storm water runoff from Grayling and Roscommon and its effects on the river.
Changes in bottom fauna and fish communities.
Changes in stream channel below Grayling, due to dredging, filling and sedimentation.
Long-term changes in the fish fauna, by comparison of collections from the 1920's with collections in 1972.

3. Preparation of management guidelines that would promote the longevity of the Au Sable River System (and other coldwater river systems) by protecting the natural characteristics of both streambed and uplands alike.

The development of models that would allow more comprehensive management of the Au Sable Drainage, by providing predictive capabilities in assessing the probable results of various management options.