

Evaluation of Terratrack and Aquascreen for Control of Aquatic Macrophytes

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INTRODUCTION

Shoreline control of small areas is easiest and cheapest with chemicals; however, shoreline owners are increasingly reluctant to apply herbicides on a yearly basis because of their heightened environmental awareness. Mechanical control methods are generally inappropriate for small areas, only temporarily effective or too expensive. Mayer (1978) and Perkins et al. (1980) have shown some success with

fiberglass screens acting as benthic semi-barriers. In this experiment, a small section of fiberglass screen (Aquascreen) was compared to a new material, Terratrack, a filter mat of woven polypropylene fibers.

MATERIALS AND METHODS

Terratrack T2415 is a filter mat of woven polypropylene fibers currently used for erosion control. The specific gravity of Terratrack is 0.91 and the fibers are woven tightly together to eliminate holes. The cost of the Terratrack was \$0.055 per sq ft (1979 prices) and is available from Terra-

¹Ecocern Ltd., Toronto, Ontario, M4E 3R8, Ontario Ministry of Environment, Toronto, Ontario, M4V 1P5, and Environment Canada, Burlington, Ontario, L7R 4A6, respectively.

Oxygen Concentrations above Plots

T - Terratrack
A - Aquascreen
C - control - weeded

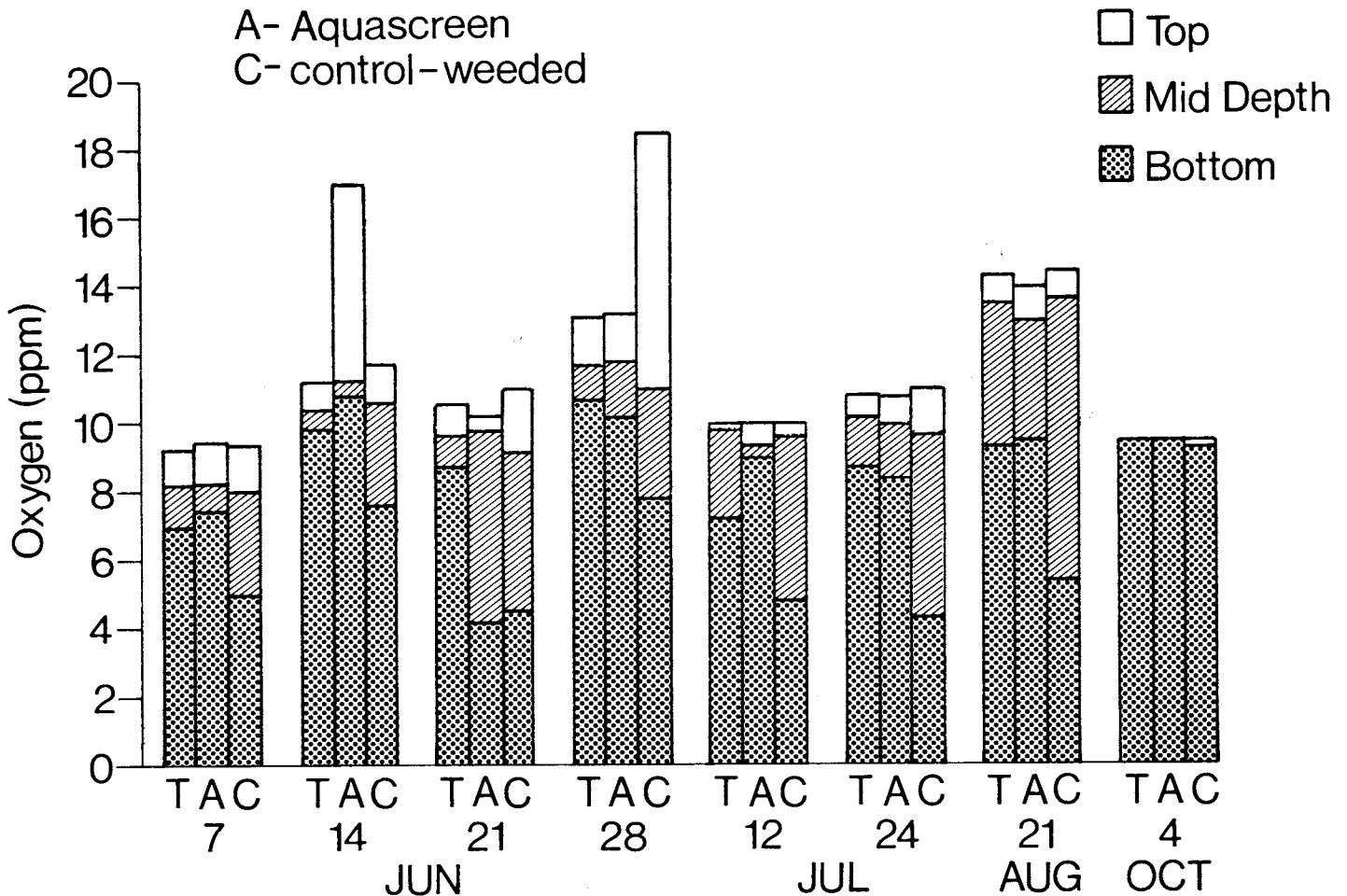


Figure 1. Oxygen concentrations at three depths over benthic screens in Buckhorn Lake, Ontario. The control plots were vegetated plots adjacent to the test plots.

fix Ltd., Rexdale, Ontario. Similar erosion control products are available from many companies at competitive prices. Aquascreen is a closely woven, coated fiberglass material with a specific gravity of 2.3. Aquascreen is available from Menardi-Southern Corp., Augusta, Georgia 30903 at an approximate cost of \$0.25 per sq ft.

Five Terratrack plots, each 17 x 50 foot sections and one Aquascreen plot (7x 50 ft) were installed in Buckhorn Lake. The plots were located over a mixed plant community dominated by *Myriophyllum spicatum* L. The Aquascreen was anchored at one end by concrete blocks and then unrolled along the bottom. The Terratrack sections had grommets stamped into the edge of the material and concrete blocks were tied to the grommets. Additional blocks were required in the middle of the Terratrack sections.

Visual observations of the effectiveness of the materials were made monthly for the first year and then yearly thereafter. Water temperature and oxygen readings were taken with a YSI oxygen meter at the surface, mid-depth and bottom on a monthly basis. Water samples for nutrient analysis were collected on three occasions during the first year.

RESULTS AND DISCUSSION

The Aquascreen was very easy to install due to its negative buoyancy. The Terratrack was very difficult to install because the material could not be stretched enough by the divers to lay flat on the bottom, presumably due to the positive buoyancy and the presence of tall plants under the sections. In another experiment one Terratrack section was secured between two dock cribbings and enough tension could be applied that the section was installed very easily.

Some silt accumulation and weed fragments were observed in all the plots during the first summer. By the end

of the first season, the Aquascreen was difficult to locate due to silt accumulation, but the water column was still weed-free. Weed fragments had rooted through the Aquascreen during the second season and the weed mass was visually equivalent to the surrounding control area. Weed fragments also accumulated on the Terratrack; however, even three summers after installation, the roots of the fragments had not penetrated the Terratrack and as a result the growth of the fragments was minimal and a weed-free water column was still evident.

No oxygen reductions were experienced over the Terratrack and Aquascreen plots compared to adjacent areas (Figure 1). Surface oxygen concentrations were similar; however, oxygen concentrations in bottom waters were significantly higher in the test plots. The elevated oxygen levels may reflect improved circulation, reduced exchange with sediments and possibly increased photosynthetic activity throughout the whole water column due to increased light penetration.

Total phosphorus concentrations in experimental plots were statistically (90% CI) lower than in adjacent weeded areas, again implicating reduced exchange with the sediments. No variation in pH, TKN or NH₄ between control and test plots was observed.

In conclusion, the Aquascreen was only effective for one season but was very easy to install, whereas the Terratrack is effective for several seasons but very difficult to install.

LITERATURE CITED

1. Mayer, J. R. 1978. Aquatic Weed Management by Benthic Semi-Barriers. *J. Aquatic Plant Manage.* 16:31-33.
2. Perkins, M. A., H. L. Boston, and E. F. Curren. 1980. The Use of Fiberglass Screens for Control of Eurasian Watermilfoil. *J. of Aquatic Plant Manage.* 19:13-19.