

Chemically and Mechanically

How One City Manages Aquatic Weeds

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Roy Campbell shows how a Prentice grapple hook loader, ordinarily used for handling logs, comes in handy during aquatic weed harvesting. He's refueling a harvester.

WINTER PARK, FLA., a suburban community of 27,000 residents, is engrossed in a major lake weed program that is costing thousands of dollars. It is unique for a city, let alone the Parks and Recreation Department, to be involved in lake weed management.

We have 14 lakes part or wholly within the city. These lakes represent 800 acres of surface water and more than 20 miles of shoreline. The lakes, which vary in depth from 30 to 85 feet, are surrounded by 417 homeowners, and are used by thousands of swimmers, boat owners and water skiers.

We are not troubled by pollution per se, but by eutrophication, caused by society and its affluence. In this enriched water (which is not harmful for recreational use, nor is it devoid of oxygen), plant material such as submerged aquatic weeds grow abundantly. This is the problem we are trying to combat by both mechanical and chemical means.

The problem has been with us for quite some time but not of the magnitude that it is today nor of the same type of weeds. Earlier in 1963, the major weeds in the lakes were:

- Vallisneria americana*—Eelgrass
- Najas gaadalupensis*—Southern Naiad
- Eichhornia crassipes*—Water Hyacinth

Today the lakes have changed in their process of eutrophication to contain almost entirely *Hydrilla verticillata*—Florida Elodea. To ob-

serve our three major lakes—Lake Virginia, Lake Osceola, and Lake Maitland—would indeed be a study in lake ecology. Lake Virginia has changed from *Vallisneria* to almost all *Hydrilla* in the past two years. Lake Osceola has both *Vallisneria* and *Hydrilla* in abundance. Lake Maitland now has many patches of *Hydrilla* and still contains a large amount of *Vallisneria*.

Active Program Began in 1963

The City of Winter Park recognizes this problem of lake eutrophication as one that must be managed to preserve our lakes for their economic and aesthetic value. We have been aware of this problem since before 1963, when we began an active program of lake weed management.

Under the guidance of Robert D. Blackburn of the Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture, test plots and programs were set up and followed to the point that we do not have a problem with the earlier listed weeds, such as eel grass, water hyacinth, or southern naiad.

In the scientific research area of our program, the City of Winter Park is involved in an aquatic weed research group headed by C. W. Sheffield of the Orange County Water Conservation Department and Rollins College. We are also involved at this time in individual research with the 3M Corporation of St. Paul, Minn., and with Robert D. Blackburn.

Mechanical Harvesters Bought

In October of 1963, the City purchased from the Aquatic Controls Corporation of Waukesha, Wis., an amphibious, self-propelled harvester and an amphibious, self-propelled barge, to help with the aquatic weed problem. This unit was primarily for the harvesting of eel grass.

The harvester and barge work together, requiring an operator each. The harvester cuts the aquatic weeds from 12 inches to 4½ feet in depth. This first harvester is still in operation. In 1966 it removed 1,149 tons of *Vallisneria* and in 1967 it removed 1,585 tons.

With the advent of the new weed, *Hydrilla*, and its rampant growth, the city has embarked upon a three-point program: applied research, scientific or basic research, and operational methods.

Lakes Board Formed

To aid in the development of the applied research and operational methods, the city established a Lakes and Waterways Board in January of 1968, with Robert S. Witherell as chairman. This board is composed of active, enthusiastic lake-front homeowners who wish to save our lakes.

Through the action of the Lakes and Waterways Board, we purchased in January a large Scavenger from the Aquatics Control Corporation of Waukesha, Wis., and in August we purchased a second large Scavenger. These new units are one-man operated and combine the operation of the older harvester in that they act



The Prentice loader will transfer a harvester load of weeds to a truck in about three 1,000-lb. bites. In the foreground, Andy Price, Pennwalt Corporation aquatic biologist, visits with Jay Blanchard, Winter Park's director of parks and recreation.

as a cutter and barge in one piece.

They cut aquatic weeds to a depth of 5 feet and unload the harvested weeds on the shore by reversing its process. The three harvesters augmented with a hydraulic grapple loader to load dump trucks, 4 barges, 2 boats with sprayers, and the dump trucks give us more than \$135,000 in Lake Weed Management inventory.

With this expanded inventory we harvested last year 9,610 tons of Hydrilla from the lakes, compared with 2,734 tons in 1966 and 1967.

Through August of this year, we have harvested 6,665 tons with three months to go.

Herbicide Usage

Along the herbicidal lines of the program, we have in the past 2½ years spread a total of 17½ tons of Hydrothol 191 at a cost of \$14,425.

In the past we have been treating the shoreline on a hit or miss basis with the individual homeowner purchasing the herbicide and the city spreading it for them. This way many areas have been left untreated.

We incorporated a trial program in Lake Osceola in 1968 to herbicide the lake perimeter by the volunteer cooperation of the individual lake-front homeowners. This was accomplished at a cost of \$5,300 per application with 2 more applications following in December 1968 and September 1969 as the need arose.

In the 1968 budget year, we expended in labor, operational expense, herbicides, and research more than \$42,632, along with \$92,000 in capital purchases, giving a total of \$134,-

632 for the year. This compares with \$18,160 for 1966 and \$25,705 for 1967.

In this year's budget, we formed a Lakes Division under the Parks and Recreation Department and this budget is in excess of \$100,000, and by the time some new equipment is added it will approach \$180,000.

A city-wide one-mil levy, effective Nov. 1, will bring in money specifically earmarked for our aquatic weed management program.

Operational Approach

We propose not to cut all the weeds in each lake, but to construct islands, or leave islands of aquatic weeds. These will be marked off by floating buoys for all to easily distinguish. These islands will be in various places in the lakes, keeping in mind the boats, water skiing, fishing needs, scenic boat routes, and crew racing lanes.

The islands will be left so there will be a balance between the lake weeds and the excess nutrients. If we tried to remove all the weeds, we would have a good chance of the

lakes progressing into another class of eutrophication.

In herbicide management, we treated the entire built-up areas of three lakes out to 35 feet.

To help with this cost, the City either procured the herbicides and applied them at a pro rate per front foot of beach area or subcontracted with Pennwalt or 3M Company.

We also treated only 300 to 400 feet of beach at a time and skipped 300 to 400 feet in order to give fish the chance to leave the area temporarily. After a few days, we returned and treated the skipped 300 to 400 feet.

Along with this treatment, we marked the treated areas with signs to notify the residents so they would not inadvertently use the lake water for irrigation for about 7 days.

The present method of herbicide treatment with liquid Hydrothol 191 at 4 ppm costs the homeowners \$33 per 100-foot of beach front.

Herbiciding has proved very effective in the shallower water but is far from being permanent. It must be repeated as is the mechanical operation. We feel both methods have a valuable part in our lake weed management program.

Cost-Sharing Needed

The City of Winter Park does not feel it can adequately tax just the lake-front homeowners for the lake weed problem.

We feel that because of the value of the chain of lakes to the city as a whole it is a community problem, a county problem, a state problem, and it is a federal problem.

Therefore we would like to see the State of Florida and the federal government help municipalities like Winter Park with a 50-50 matching fund program as well as other bodies or agencies. In this manner those cities, counties, areas, districts, and agencies that are trying to combat the problem will get the assistance they need.

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