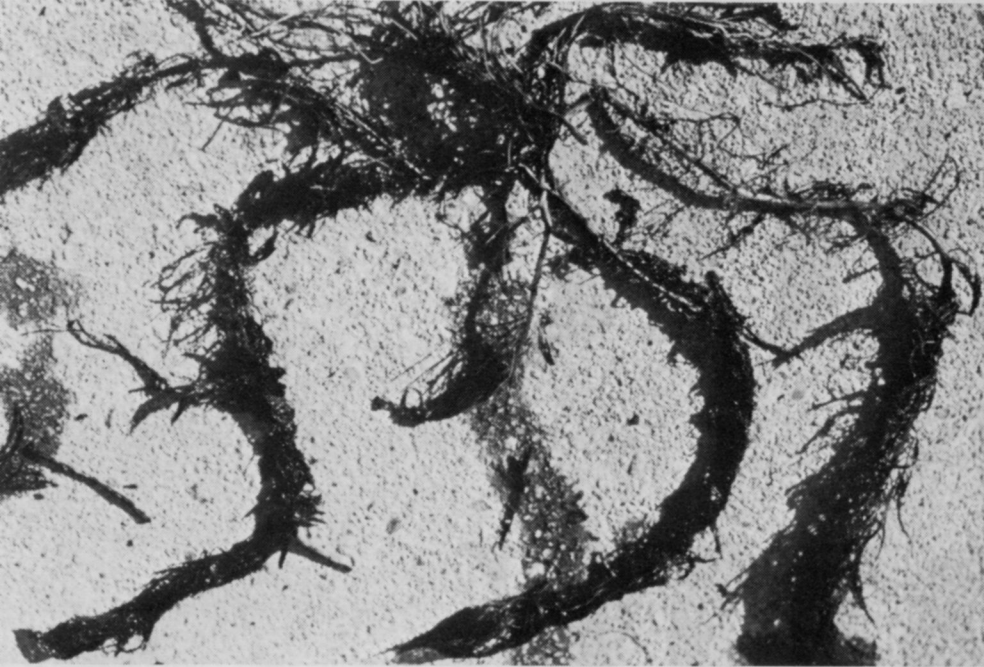


By JASON M. CORTELL,
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Lake Mahkeenac in western Massachusetts became covered with such a lush carpet of aquatic weeds that the community around it was nearly killed before the problem was whipped. The monster was Eurasian watermilfoil (*Myriophyllum spicatum*) shown below.



The Monster Of Stockbridge Bowl

SO CLEAR AND CLEAN were the waters of Lake Mahkeenac, also known as Stockbridge Bowl, that, until the turn of the century, it was called the Mountain Mirror.

It drew vacationers, visitors and admirers from far beyond Massachusetts' borders year after year. Before mid-century had been reached, however, the natural beauty of the 375-acre lake had disappeared.

The proud lake and its community

were being choked to death by a lush carpet of aquatic weeds.

The community, which serves as the summer home for the Boston Symphony Orchestra as well as the Stockbridge Bowl Association, was of course deeply concerned.

The once beautiful lake was now being described as "a hideous eyesore," "a swampy morass, useless as a bathing, boating and fishing area," "a murky puree of weeds and mud." And it was, in fact, growing to fit that description.

Several member organizations of the Bowl Association, the Mahkeenac Boat Club, the Stockbridge Parks and Playground Commission and the Sports School Day Camp, took action by employing skin divers to pull out weeds by hand.

Community Declines

For ten years or more, the lake was all but unusable due to the overgrowth of weeds and water plants. "For Sale" signs began to appear on homes around the lake.

Despite local opposition to the use of chemicals, in 1960 the Bowl Association contracted to have the lake sprayed with an arsenical herbicide. The experiment was ineffective, but



was tried again the following spring with better effect.

The following year, conditions seemed to have worsened; weeds were more abundant than before the spraying had been done, and critics of the operation became increasingly more vocal. Some maintained that only smaller growth had been killed, making room for the profuse growth of more virulent weeds along the bottom of Lake Mahkeenac. Others said snails had been killed, which decomposed and encouraged more weeds. Some wanted to put Japanese carp into the lake to take care of the growth "naturally."

State Sanitary Bio-Engineer Mario Boschetti stated that weeds were more abundant in Stockbridge Bowl due, possibly, to the unusually long spring of 1963. He said that once there is weed growth in a lake, the prospect for increased growth is greater, since existing weeds create fertilizer for future growth.

He added that algae flourished in the kind of weather then being experienced . . . "real hot spells with a great deal of sunlight." Followed by several dark days, as happened, the algae would make huge demands on the oxygen content of the water

and could, in effect, cause fish to suffocate.

While the controversy raged, the Bowl became even more choked by weeds in 1964. The Stockbridge Park Commission, responsible for maintaining the town beach, used a mechanical device to remove more than two truckloads of weeds from the swimming area.

The device, an angle iron attached to a cable, was rowed out to the end of the area and dropped into the water. The cable was then pulled into shore by a Jeep, dragging the angle iron with its load of weeds to dry land.

Mechanical removal, while producing immediate results, proved to be extremely costly and time-consuming and soon after was discontinued.

Allied Biological to Rescue

At this point, the director of Camp Mah-Kee-Nac, Joseph Kruger, con-

tacted Allied Biological to survey the lake, determine the weed problem and the chemical make-up of the water, and to prescribe a control program.

Our report was that the major problem at that point (though it had been a secondary one in 1960) was Eurasian watermilfoil (*Myrio-phylum spicatum*).

The submerged weeds had indeed grown profusely and formed large masses around the perimeter of the lake. Though rooted, they are easily dislodged, and many had washed ashore in large numbers interfering with bathing, boating and fishing, and causing an odor nuisance upon decomposition.

Many of the local people who had previously dealt with watermilfoil at the Bowl felt this problem was impossible to control, that the only alternative was to live with it, or else restrict water activities to areas not yet infested.

Unique Approach Needed

We knew differently, but realized the Stockbridge Bowl problem could not be solved by conventional methods. Working with Amchem Products, of Ambler, Pa., we agreed on a new approach for tackling the job. Because of the great depths involved (22 feet average depth), a liquid herbicide would, at least initially, be costly and possibly hazardous to fish.

We were convinced that by using a new granular herbicide called Aqua-Kleen 20, the problem could be solved without endangering wildlife. Camp Mah-Kee-Nac's director agreed to finance our plan to field-test the bottom-release granular chemical.

We began the experiment on a two-acre plot in front of the camp. The trial run proved so successful, an additional 15 acres around the cove at the upper end of the Bowl, were approved for treatment by the State Department of Public Health.

Strangely enough, local opposition to the use of chemicals in the lake grew even louder.

But biologist Boschetti, heading the State Public Health Aquatic Weed Control Section, decreed the spraying operation as safe, and this

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*The Jenicke family talks
about cemetery maintenance*

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Monster of Stockbridge Bowl

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became a prime catalyst in the decision to undertake the extensive Bowl project in 1965.

A special act of the State Legislature provided the necessary funds to begin work on reclaiming the rest of the 375-acre body of water.

In June 1965, ten tons of the granular Aqua-Kleen (20% 2,4-D) were applied to Lake Mahkeenac at a rate of 100 pounds per acre, utilizing a newly developed Aeri-Blower. Three days were used for the entire operation, and in the relatively short time of only four weeks the lake was clear again for the first time in perhaps 20 years.

Together with Boschetti, a complete post-treatment biological survey was conducted early in September, 1965. Our survey showed that 95 percent of the watermilfoil growth in the Bowl had been killed, and the few remaining patches of weeds showed signs of disintegration.

Needless to say, the results were extremely encouraging. They proved that our method and type of program could be carried out without endangering the public or wildlife.



Allied Biological Control Corporation determined that its aircat airboat method of spraying liquid herbicide, as is being done above, would not be practical because of the lake's depth . . .

Community Awakens

"For Sale" signs have disappeared from around the lake and renewed vacation home building is taking place. But work on the Bowl is far from completed. The aquatic weed problem has not been eliminated,

but it is now under control.

Under a state supported program, surveys and spot-treatments are being carried out annually. New species, such as pondweed (*Potamogeton*), are being attacked as soon as they appear.

LETTER TO THE PUBLISHER

Air Pollution Negligible From Burning Wood

I'm writing with reference to the April article regarding the burning of wood, brush and leaves, by William H. Bartles of Hyde Park, N.Y.

He is not alone on this subject. We of the Fairmount Park Commission of the City of Philadelphia are confronted with the same problem. I have been under the same impression that the burning of these materials is of little, if any, contamination of the air.

Certainly a chipper is not the answer, since this equipment is designed for grinding up brush or wood and the chips used as a mulch.

In my opinion, an analysis of the actual, if any, smoke from the burning of these materials should be made to determine the chemical content, whether poisonous or non-poisonous.

We run into the problem of tree diseases, such as Cankerstain of Plane and Dutch Elm Disease.

The recommendations are that the trees be disposed of by burning.

I would like to quote from the book, "Trees," by Andreas Feininger, published in 1968:

"Wood certainly does not look as though it is made of water and air — it is neither liquid nor gaseous but heavy, substantial stuff. Nevertheless, that these are the components of wood can be proved easily by burning wood in a fireplace.

"At the end of several days of burning and the consumption of perhaps a 100 pounds of wood, all that is left is a few handfuls of fluffy, almost weightless ashes — the mineral components of the tree. The 'substantial stuff' has burned.

"Since well-seasoned logs are relatively dry, already having lost most of their water content through evaporation, what is left — the dry wood — must have come from the air.

"It is indeed carbon, which the tree has taken from the atmosphere in the form of carbon dioxide and used to build its tissues. During the burning process this carbon combines once more with oxygen to form carbon dioxide and escapes into the air as a gas, returning to the great reservoir from which it came."

Air pollution certainly is a serious problem and should be dealt with by the proper authorities. I believe the burning of the aforementioned materials is of very little consequence, but disposal by other methods is certainly a very large problem.

I would like to congratulate you on your magazine and I look forward to every issue. I do hope that more people will show an interest in the burning of wood, and so forth, and a solution will be reached. — **BRUCE M. HUNTER**, Park Arborist, City of Philadelphia, Pa.



... and instead pressed into service a newly developed Aeri-Blower to apply a granular herbicide that would sink 22 feet to the bottom. Ten tons of Aqua-Kleen (20% 2,4-D) applied at the rate of 100 pounds per acre cleared the lake for perhaps the first time in 20 years.

John E. Gallagher, the Amchem research coordinator who worked on the project, observed that "The achievement of the program is notable in that the lake is now well on the way to being reclaimed."

Similar undertakings can be handled just as effectively in other parts of the country. Before attempting them, however, several important points should be taken into consideration.

Proper use of herbicides is vital, and should be left to professional aquatic applicators to handle. Selecting the proper chemical for the particular problem is equally important, and again, should be left to the experts. Results can be bad, if not disastrous, if these basic points are overlooked. Getting community approval of the project is very important; convincing the public that the

operation is safe and that it will bring good results.

A combination of factors contributed to the success achieved by Al-

lied Biological at Stockbridge Bowl, including the cooperative efforts of state and local officials, lake association and chemical manufacturer.





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