

# A Comparison Of Various Methods For The Control Of Florida Elodea In Orange County, Florida

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## INTRODUCTION

A formal program for the control of elodea has not been established in Orange County because of the lack of financial support. It became necessary, however, to begin evaluating various control methods nearly two years ago when property owners on Lakes Killarney, Conway, Clear, Holden and Jessamine became alarmed at the rapid loss of these waters to elodea. By the time these irate taxpayers began calling their commissioners and demanding action, the problem had progressed to the stage where it was no longer possible to boat, ski, fish, or swim.

Hampered by the lack of funds and by a lack of experience in aquatic weed control, we investigated every available source of information in order to learn what we could about Florida elodea and its control. Based on our meager fund of information we tried successively mechanical cutting, copper sulphate, Aquathol Plus, Hydrothol 191 and acrolein. The results of our efforts are as follows:

## MECHANICAL CUTTING

A small sickle bar type mower was attached to the bow of a "John" boat for cutting. A rake was used to remove the vegetation. A 3-acre area was cleaned. We did not have to wait long for evaluation of the method, it was like shaving for the first time—the whiskers really grew. So we discarded mowing.

## COPPER SULPHATE

We selected five canals in Waterfront Estates in Lake Conway. Each canal covered approximately an acre and averaged 4 feet in depth. There was no water flow except for storm water emptying into the canals. On August 23, 1965 we distributed 1100 pounds of copper sulphate in these canals.

Two weeks later, the extremely heavy growth of Florida elodea was 90% eliminated. Six weeks after application, there was a heavy regrowth on the bottom in the whole area. After 10 weeks the weed had regrown to the surface. The Isle of Catalina Subdivision on Clear Lake in the summer of 1966 was unable to use the lake. The Orlando City Commission and the Orange County Commission spent \$2000.00 each for the seeding of the 344 acre Clear Lake with copper sulphate. We made an inspection by air boat and found about 150 acres of clear water in the center. We systematically spread 13,200 pounds of copper sulphate over the infested area during the last week in September, 1966. At this time there were huge islands of Florida elodea so dense that land birds such as cranes and coot were alighting and walking on the plants.

We made weekly inspections for three months and then reduced the observations to once a month. The Isle of Catalina residents had been treating their canals with fairly heavy doses (approximately 20 ppmw) of copper sulphate and had obtained fairly rapid action. However, this massive dose did not have the same result because 13,200 pounds in 200 acres gave a concentration of only 0.8 ppmw. The plants were affected slowly with a gradual breaking up of the island masses and defoliation of the stems. By the middle of December, or 10 weeks after treatment, the lake was usable if the boaters were careful not to get entangled in islands of defoliated Florida elodea floating just under the surface.

The time of year is important and relates directly to temperature and temperature appears to have a major influence on results with copper sulphate.

## AQUATHOL PLUS

We selected two areas for trial applications with Aquathol Plus (endothall which in 7-oxabicyclo (2.2.1) heptane-

2,3 dicarboxylic acid plus 2-(2,4,5-trichlorophenoxy) propionic acid). One was a borrow pit of approximately 3 acres, completely landlocked except for three storm drain inlets. High water control was provided by a drain well. The second area was a 3-acre cove at the southeastern corner of Lake Holden. This area was partially sheltered from the lake by an island. The entrance was roughly 200 feet across and was open to northwest winds.

We treated each area in November, 1965 with 300 pounds of granular Aquathol Plus. Both areas reacted similarly to treatment. Within 30 days almost complete defoliation had occurred and both areas had an algae-green color. Two months after treatment the green color disappeared and both areas were clear of Florida elodea. The borrow pit remained clear until the last of April, 1966 when new growth was found about 10 feet from shore completely around the perimeter. The Lake Holden cove was covered completely. We treated the borrow pit with 50 pounds of Aquathol Plus in June, 1966. The Florida elodea disappeared and the pit stayed clear until April of this year when the same perimeter ring of weed was observed.

The cove, on the other hand, was treated with 300 pounds of Aquathol Plus in July, 1966 with little or no result. A heavy growth remained all summer and fall. We treated the area with 200 pounds in November. By February, 1967 the water was clear with a black silty material floating near the bottom. It remained this way through April 3, 1967. We were advised of a regrowth on April 18. We checked this area again and found evidence of a mossy sort of growth both in and out of the water, but no sign of elodea.

You will note the complete divergence of results with the second treatment. We have no explanation for this difference particularly with regard to the slow reaction of the chemical. Perhaps temperature of air and water was the important factor.

#### HYDROTHOL 191

We have had only one brief contact with Hydrothol 191 (Mono [N. N dimethylalkyl amine] salt of endothol).

In the summer of 1966, a large island of elodea kept moving toward the eastern shore of Lake Holden propelled by northwest winds. Mr. Andy Price of Pennsalt treated this island with Hydrothol 191 and Orange County purchased the material. Extreme difficulty was encountered in the application of this material due to the dense mass of weed. Results were very inconclusive and the island finally broke up late in the fall.

#### ACROLEIN

Our last trial was with the Shell chemical acrolein (acrylaldehyde). We selected three areas; one, the mouth of a canal in Clear Lake completely open to the lake, two, a sheltered lagoon off Clear Lake with a very small opening to the lake, three, one of the Waterfront Estates canals mentioned above in connection with copper sulphate. The chemical was applied by Southern Mill Creek Products from an air boat. We used 55 gallons to cover approximately 5 acres at a rate of about 7 ppmw on November 16, 1966. Five days later, Florida elodea had completely disintegrated in all three locations. Periodic inspections showed no regrowth. Our last inspection of April 18, 1967, five months after treatment showed all three areas still clear.

#### CONCLUSION

We are still in the same predicament we were in two years ago. We do not have a formal control program because we have no money for one. As to material, acrolein suggests itself as the answer, but the cost of application to all the lakes of Orange County where Florida elodea now grows or will grow is astronomical. Therefore, we still need a material which will do the job at a price which is feasible. This is a challenge to research people—we need a material which will give reliable control at a price we can afford to pay—and that price will have to be far below the costs we have incurred in our work with Florida elodea to date.