

Waterhyacinth Control Plan For The ST. Johns River

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ABSTRACT

Waterhyacinth [*Eichhornia crassipes* (Mart.) Solms.] has been a serious problem in the St. Johns River since the turn of the century and the U.S. Army Corps of Engineers (USACE) has been controlling the plants in the navigable portions of the river since early 1900. The plan presently being used on the St. Johns River is a maintenance control approach, aimed at keeping the plants at the lowest level possible by selective spraying in a manner consistent with ecological consideration and the public's use of the river. The plan will be used until such a time as continuing research provides acceptable biological and mechanical controls that can be integrated into the overall plan.

INTRODUCTION

The waterhyacinth was introduced into Florida in 1890 near Palatka. Approximately 3 years later the people of Palatka began experiencing difficulties with the plants blocking the bridge and wharves at that city. In 1897, upon petition of the concerned citizens of Palatka seeking relief from the navigation problems caused by the waterhyacinth, the USACE undertook an investigation of the plant on the river. As a result of this investigative report, the River and Harbor Act of 3 March 1899 was passed, authorizing the Corps to commence control operations by use of log booms and crusher boats. This was not undertaken, as experience in Louisiana had shown it to be impractical. Over the ensuing years many methods of controlling the plants have been tried with little success.

From 1902 to 1905, sodium arsenite spray was used to kill the plant; however, the highly toxic nature of the material caused this method to be abandoned. The word "poison" was always on the boat.

The plants were lifted to shore by barge-mounted conveyors and piled on the shore with grapples. These piles were left on the shore to rot and soon developed into large, stinking masses. The plants were chopped and crushed by a myriad of types of equipment, often being returned to the water to decay and sink to the bottom. Burning with kerosene was tried as was spraying with everything conceivable from live steam to whale oil soap. Seines were constructed from rope and areas were cleared along shorelines so that the plants could be dragged ashore by tugboats and tractors.

Fences and traps were constructed to control the movement of the plants. Destroyer boats were constructed that

had banks of saw blades which shredded the plants in the water. They were then left to decay and sink to the bottom. The primary method of control was to assist the plants in their movement downstream to salt water where they would die and be thrown onto the beaches or sink to the bottom.

During this period, from early 1900 to the early 50's, the St. Johns and Wekiva Rivers typically had massive border fringes of waterhyacinths with many of their tributaries completely covered with the plants. Often, the plants would pile up at bridges and form solid mats across the river for miles upstream, completely blocking navigation. For instance, in 1939, the Astor bridge jammed with approximately 200 ha of the plants.

Prior to actual field use of (2,4-dichlorophenoxy)acetic acid, (2,4-D) which begun in 1948, extensive research was performed to make certain the chemical was not injurious to fish, wildlife, and man in the concentrations used for waterhyacinth control.¹

After a thorough review of the waterhyacinth situation by the Board of Engineers for Rivers and Harbors, a new pilot project for Aquatic Plant Control was authorized by Congress in 1958 under Public Law 85-500. This project was later amended on 27 October 1965 by Public Law 89-298 to a continuing "Program" approach.

The Aquatic Plant Control program requires that "Local interests agree to hold and save the United States free from claims" and "participate to the extent of 30% of the cost of the program."

The Florida Game and Fresh Water Fish Commission (FGFWFC) was appointed by the Governor and subsequently authorized by the State Legislature to cooperate with the USACE in this program as the "local interest." It provides for the treatment of any obnoxious aquatic vegetation wherever and whenever infestations of plants constitute a serious threat not just to navigation, but also agriculture, public health, flood control, or the use of the state's waterways. It also provides for research to be performed for the development of the most economic and effective control measures.

The USACE has sponsored much of the research on the waterhyacinth weevil (*Neochetina eichhorniae* Warner) which was first released in the Fort Lauderdale area in August 1972 and has since been distributed throughout the State with releases being made in the St. Johns River in March and April 1976. These small insects spend their

¹85th Congress, 1st Session, House Document No. 37.

entire life cycle on the waterhyacinth and feed wholly on this one plant. These weevils will not eliminate the waterhyacinth, but will help to control its rapid growth.

There is a possibility that plant pathogens exist in South America, or here, which could be manipulated for use on waterhyacinths. Our research has found some that are promising,² but we must be sure they work effectively and are safe to use before they are released on the plants.

To bring all this together, we are studying the ways and means to produce a meaningful integrated program which will make use of all methods found effective. It has been our experience that certain methods have limitations. By using each method where it is most effective, our total management program would be less costly and more consistent with public use patterns and environmental considerations.

Although the Jacksonville District has previously used mechanical harvesters, these machines have met with little success; however, we still believe that the right machine can be developed and, when used properly, will assist in the battle with the plants. For this reason the District has requested and received approval from the Chief of Engineers in Washington to conduct a mechanical harvesting field test during 1976.

Constant communication between the USACE and other organizations performing aquatic plant research insures that our research program is responsive to the needs of Florida and precludes overlapping of research efforts.

PLAN

On the St. Johns River, waterhyacinth control operations are conducted under both the River and Harbor Act of 1899 and Public Law 89-298. The USACE operates on the river and its tributaries, including the Wekiva River, from Jacksonville to Lake Harney under the Removal of Aquatic Growth Project. The FGFWFC, by contract to the USACE, controls waterhyacinths from Lake Harney to the headwaters under the Aquatic Plant Control Program.

Generally, this plan is a maintenance control approach wherein the plants are kept at the lowest level of infestation possible by selective spraying. Spray operations will be programmed as much as possible to occur during periods which are consistent with public use patterns. Operations will be scheduled in general areas from knowledge of established fish and wildlife and public use patterns, and from past experience with growth rates and seasonal movements of the plants. More detailed scheduling and further refinements to the schedule will be dependent on continuous monitoring of plant levels and movements.

Operations will be programmed to maintain a high degree of effectiveness by directing treatment to the heavier areas of infestation. Single plants, very small fringes, or scattered mats of plants will not normally be sprayed. These plants will be treated only when they are grouped into dense mats or fringes by wind or water

currents. No area will be allowed to grow unchecked to the point of potentially blocking navigation or causing undue restriction to normal navigation or adverse effects to the river ecosystem.

The capacity of the river to grow waterhyacinths varies. Lakewise, air and water currents which move the plants about also vary along the river. For these reasons acceptable limits of waterhyacinths vary with the area in question and the level of treatment must likewise vary to suit these conditions.

The river has been divided into four categories to take into consideration the idiosyncrasies of plant growth and movement with a treatment schedule tailored to each type. These are:

1. Lakes or wide reaches of the river where plants are primarily moved about by wind.
2. Natural accumulation points where the plants are not flushed by wind or currents and must remain open to navigation.
3. Narrow reaches which are flushed by currents.
4. Tributaries and coves not essential to navigation.

Categories 1 and 2 will receive the most intensive control efforts to preclude build-ups of the plants. Categories 3 and 4 will receive treatment for only the hyacinths which accumulate to the point of potentially moving elsewhere and causing difficulties.

Within the four treatment areas will be additional areas of special concern and scheduling of treatment that will span the general treatment areas. Although 2,4-D has been approved for use in moving waters and potable water supplies by the Environmental Protection Agency (EPA), special precautions will continue to be taken in these areas. Plant nurseries and other areas where plants sensitive to 2,4-D are growing close to the water's edge will also receive special consideration. No spraying will be performed within a specified distance of the area. Scientific study sites have been brought to our attention where treatment of the plants may bias or hamper the study. These areas will be treated similarly to the plant nursery areas.

Special fish and wildlife use areas have received in the past, and will continue to receive, special treatment. The Manatee (*Trichechus manatus latirostris*) is known to migrate into the Blue Springs Park area in October and overwinter in the warmer water of the springs until April. We have agreed not to spray between river navigation markers 66 and 81 during this period and will continue to honor this agreement. From 1 December to 31 March is the shad (*Alosa sapidissima*) fishing season from Lake Harney to Lake Monroe. We have withheld operations in this area during this time previously and will continue minimal operations during this period. The prime bass (*Micropterus salmoides*) fishing and spawning season occurs between 1 January and 31 March in the Beechers Point to Alco area. To preclude disturbance of fishing and spawning activities, operations will be scheduled to minimize spray operations in this area during this period. Within this area a special agreement has been made with the FGFWFC to keep selected prime bass spawning areas clear

²Dept. Plant Pathology, Univ. of Florida. 1976. Personal Communication.

of waterhyacinths and restrict spraying during the actual spawning season.

Anytime monitoring of waterhyacinth levels reveals a buildup of plants sufficiently large to threaten navigation or cause adverse environmental and ecological effects to the river system, the USACE reserves the right to carry on

sufficient treatment to bring the plants back under reasonable control.

This is only a tentative plan and we will be including the use of biological and mechanical controls as quickly as we can get them to a field operational stage.