

INVASIVE AQUATIC PLANT EXPANSION IN WALTER F. GEORGE LAKE

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Abstract: Walter F. George Lake, a large multipurpose reservoir on the Chattahoochee River, is operated by the U.S. Army Corps of Engineers (Corps) for the primary purposes of navigation and hydropower, and secondary purposes of recreation, regulation of stream flow, and fish and wildlife conservation. The lake has not historically had problems with invasive aquatic plants. Hydrilla (*Hydrilla verticillata*), an invasive non-native species, was first discovered on the lake in 1991 at the East Bank Public Use Area. This plant spread slowly for several years, but in 2002 several new infestations were identified on the lake. Herbicidal treatments have proved to be expensive and largely ineffective in reducing the rapid expansion of hydrilla and other invasive species. Annual interagency surveys have revealed that invasive nuisance aquatic plants are now well established and expanding within the lake, with hydrilla found on approximately 2,400 acres in the 2006 survey. A comprehensive management plan is being developed by the Corps to address aquatic vegetation management issues on the lake and the Corps is coordinating with appropriate Federal and State agencies, as well as local stakeholders, on development of this plan. The plan will delineate existing vegetation levels; develop an estimate for reasonable spread of aquatic plants within the lake based on reservoir/water conditions and plant biology; identify management objectives; evaluate management options and resource impacts (including no action); select best plan; describe implementation strategy, and define monitoring plan. The plan will include adequate public and agency involvement/input, as well as preparation of an Environmental Assessment. At this stage in the plan development, the Corps believes the best option is to manage hydrilla by the introduction of the triploid (sterile) grass carp (*Ctenopharyngodon idella*). The proposed action is to introduce the grass carp at a relatively low stocking rate into the lake at areas of high hydrilla concentration since the hydrilla infestation is a relatively small percentage of the lake at this time. Delays in implementation of this action would miss a “window of opportunity” and significantly increase the management cost and reduce the likelihood of successful control of this invasive species.

INTRODUCTION

Walter F. George Lake, was created by the construction of the Lock and Dam, located at approximate river mile 183 on the Chattahoochee River about one mile north of Fort Gaines, Georgia. This multipurpose reservoir was completed in 1963 with the primary purpose of navigation and hydropower, and the secondary purpose of recreation, regulation of stream flow, and fish and wildlife conservation.

Walter F. George Lake has not historically had problems with invasive aquatic plants; however, the invasive aquatic plant hydrilla was discovered on the Lake in 1991. The area was treated with herbicides, and treated again the following year. From 1992-2000 small patches of hydrilla were found and treated with herbicides. By 2002 the problem escalated in which each subsequent year the infestation approximately doubled (**Figure 1**). The 2006 interagency aquatic plant survey revealed that approximately 2,400 acres of the 45,190 acre Lake is infested with hydrilla. The infestation is still in its early stages on the lake, with a density of approximately 30% in the infected areas resulting in 720 vegetated acres. A large infestation is located in one area of the lake, but other areas are growing at an accelerated rate. The areas within sloughs and backwaters are treated

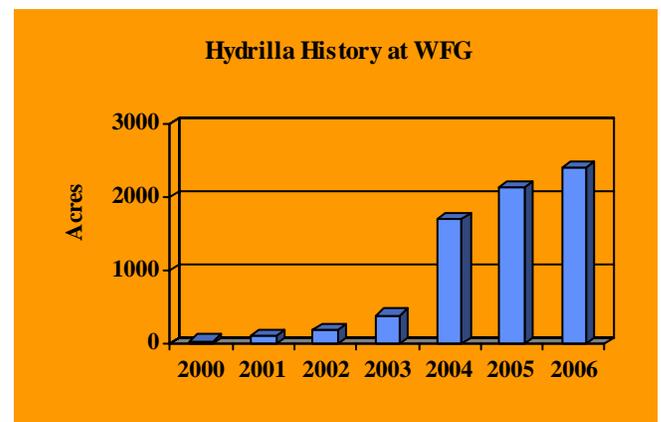


Figure 1 – Hydrilla growth history at Walter F. George Lake from 2000 – 2006.

with herbicides, however, the infestation within the river is difficult to treat due to the flow and dilution hampering the effectiveness of the chemicals. The rapid expansion of hydrilla is depicted in the upper part of the lake as shown in **Figure 2** comparing the hydrilla coverage between the years of 2002 and 2006.

Hydrilla is not native to the United States, and therefore does not have its natural controls, e.g., predators from its native environment. Herbicidal control applications have been the most effective technique, however the repetitive applications have not adequately reduced hydrilla and are extremely costly.

Hydrilla is a submersed plant in which it can grow to the water surface and form dense mats. Hydrilla and other aggressive aquatic plants are known to “create their own habitat” as plant beds extend into deeper waters by the ability of the plant beds being able to calm wind/wave induced suspended sediments and to reduce turbidity levels. Currently, hydrilla has been found rooted out to the approximate 10-foot depth contour in several locations in Walter F. George Lake. Given these plant characteristics, a reasoned judgment indicates that hydrilla will continue to expand to cover somewhere between the 10- and 20-foot depth zone in Walter F. George Lake (**Figure 3**), covering greater than 25,000 acres.

Vegetation coverage at this level might be beneficial for a single-purpose fishery resource, however, the Corps, the agencies, stakeholders, and the public must recognize that the majority of littoral zone area that

is most vulnerable to expansion by these invasive nuisance aquatic plant species will directly conflict with the reservoir areas in most contact with the public, e.g. swimming beaches, boat ramps, and private waterfront development. The continued expansion would create more widespread adverse impacts to small boat navigation, access to public use areas, swim beach access, and adverse impacts on water quality. Each year that hydrilla has increased, it has resulted in increased expenses for herbicides, and decreased visitation ratios to the lake. Invasive aquatic plants like hydrilla can also cause adverse impacts on water quality by creating large areas of low dissolved oxygen underneath their surface matted vegetation, create problems at water intake structures by blocking intake screens, and adversely affect fish populations and access to popular fishing areas.

The applications of herbicides have not only become increasingly expensive; they have been largely ineffective in controlling the explosive expansion of this invasive species, particularly in the wide open main body of the lake. It has been proposed between coordination with the Corps, and Federal and state agencies, that an alternative measure of management is needed.

OBJECTIVE

The principal objective of the effort is to manage the hydrilla on Walter F. George Lake. The Corps is preparing National Environmental Policy Act (NEPA)

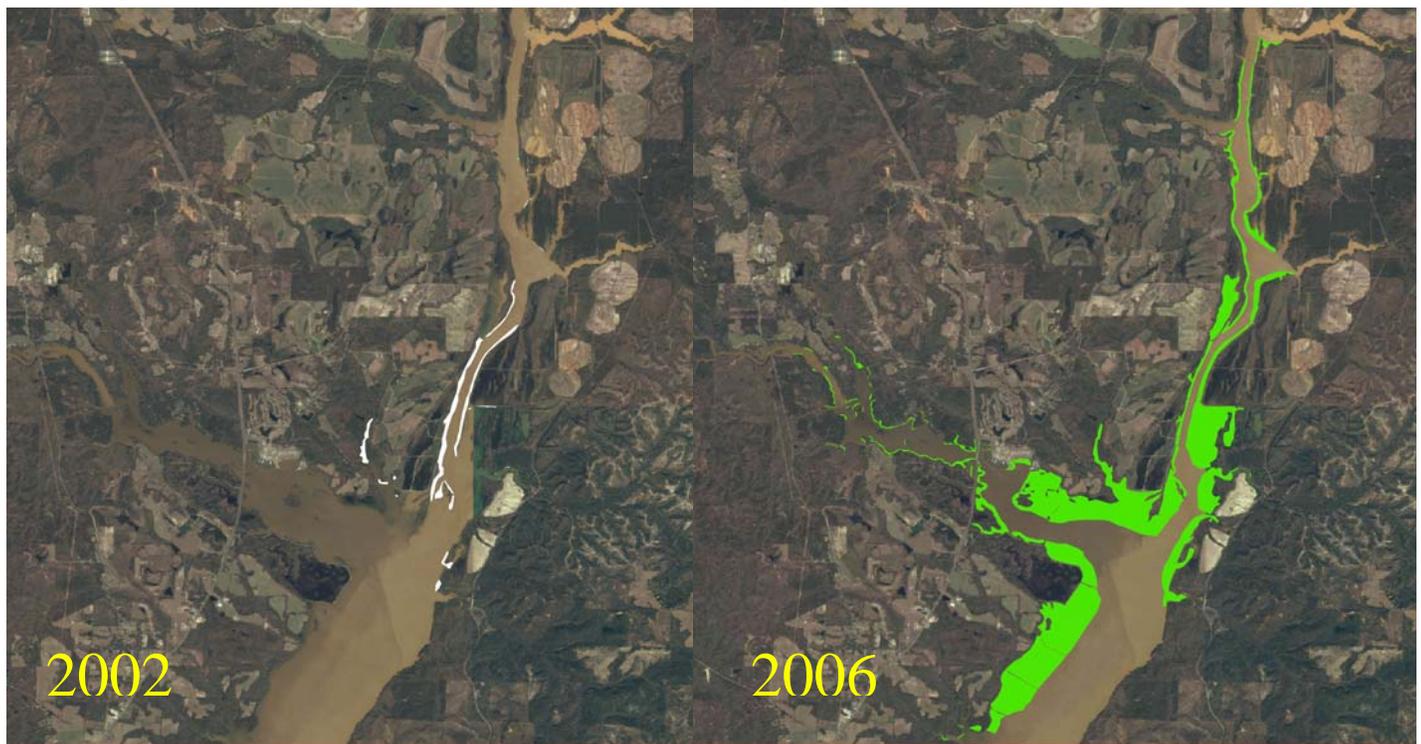


Figure 2 – Comparison of 2002 and 2006

documentation in an Environmental Assessment (EA) that is a complete and objective appraisal of the positive and negative environmental effects of the proposed action. The EA will evaluate alternative methods and cumulative impacts and from the evaluations determine if there is Finding of No Significant Impacts or if an Environmental Impact Statement (EIS) will be needed.

All reasonable alternatives will be considered including the No Action Alternative as required by the

Council on Environmental Quality regulations to identify the existing baseline conditions against which potential impacts will be evaluated. This alternative will evaluate the anticipated future conditions of aquatic resources without the implementation of any reasonable alternative identified during the EA analysis.

One proposed alternative developed by the Corps is that the triploid (sterile) grass carp be introduced at a relatively low stocking rate to aid in the management of hydrilla. Grass carp are herbivores and are natural predators to hydrilla and the principal method of control that appears to have the most promise from an effectiveness and economic standpoint. It has been proposed that the grass carp be released at approximately 10-15 fish per vegetated acre. To avoid a high probability of mortality from predatory fish, the grass carp should be a minimum of 12 inches total length. Herbicidal treatments would continue at critical areas in the lake to also aid in the control of expansion. An additional feature of this proposed alternative would be to monitor the growth of native aquatic vegetation and possibly plant native species that would be beneficial to fish and wildlife species.

This alternative is proposed to introduce 11 triploid grass carp per vegetated acre in the Spring of 2007, bringing the total number to 7,920 grass carp, giving Walter F. George Lake one (1) grass carp for every 6 acres. It is proposed that the grass carp be released into the lake at areas of high hydrilla concentration. To reduce the probability of mortality from predatory fish, the grass carp should be a minimum of 12 inches in total length.

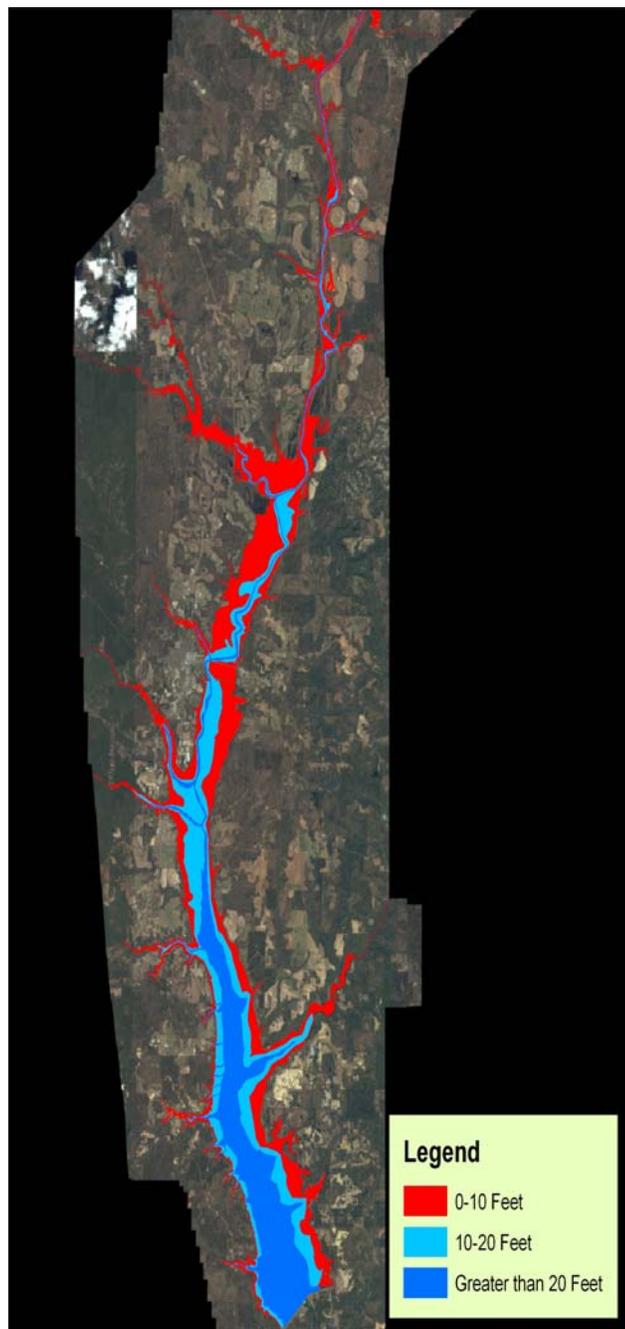
With the infestation still in early stages, the low number of grass carp should be able to impact the expansion without a major impact on native vegetation. The herbicidal treatments will be used to help reduce the biomass of the hydrilla and give the grass carp an advantage to the hydrilla progression.

If the grass carp are not released until Fall 2007, the hydrilla expansion would exponentially increase to 3,200 infested acres with a 40% density bringing the total vegetated acreage to 1,280. With the equation of grass carp release of 11 grass carp per vegetated acre, the total number of grass carp would be 14,080.

Other alternatives that will be evaluated include alternative herbicides and herbicide delivery systems, mechanical harvesting, lake drawdown, and other forms of biological control.

PROJECT STATUS

The scoping process for the EA is underway. Open communication with all Federal and State agencies and stakeholders is being conducted. Alternatives are being evaluated. The Corps plans to complete the



Map data made available by King Fisher Maps Inc.

Figure 3 - Depth levels of Walter F. George Lake with increments of 10 feet.

coordination and the NEPA process by Spring 2007 and optimistically implement the proposed action by Spring/Summer 2007.