

Restoration of Fish Habitat in the Harris Chain of Lakes

**Use of Artificial Reefs and the Planting of *Nuphar sp.* for the Re-
establishment of the Floating-Leafed Plant Community**

A Research/Demonstration Project

Submitted to:

Harris Chain of Lakes Restoration Council
Tavares, Florida 32778

Submitted by:

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Introduction

The presence of aquatic macrophytes increases the structural complexity of lake ecosystems (see Hoyer and Canfield 1996). This complexity is important for young-of-the-year largemouth bass. Without significant amounts of aquatic vegetation in large lakes like the Harris Chain of Lakes, fisheries biologists believe based on studies of 60 plus Florida lakes that there is an ecological bottleneck that adversely influences the survival of young bass to adult size (Hoyer and Canfield 1996).

Aquatic vegetation dominated Lake Griffin and Lake Apopka prior to 1940. By the 1920s, the Harris Chain of Lakes, especially Lake Apopka, had garnered national attention for recreational fishing. Communities in the region, such as Leesburg and Apopka, sponsored largemouth bass tournaments and fish rodeos to market the lakes as a major attraction (Shofner 1982).

For over 20 years, the focus of lake managers at the Harris Chain of Lakes has been on the reduction of nutrient inputs to the lakes (Canfield et al. 2000). In 2000, a management alternative to nutrient control using artificial reefs and the planting of aquatic plants was advanced to create critical fish habitat. Artificial reefs were needed not only for the young-of-the-year fish, but the prevent wind from uprooting newly planted fish Canfield et al. 2000).

The Project

Florida LAKEWATCH in partnership with the Florida Fish and Wildlife Conservation Commission will install artificial reefs in Lake Harris, Lake Dora, Lake Eustis and Lake Griffin over the next two years to function as fish attractors and critical fish habitat as described by Canfield et al. (2000). The project will also involve the experimental planting of the floating-leaved plant called spatterdock (*Nuphar luteum*) at each reef/fish attractor site.

First Year – During the first year, the focus shall be near established docks or shorelines where shoreline fishing can take place. The first demonstration project shall be at the Lake County Water Authority's Hickory Point Park. Agreement has already been reached with the park ranger to establish reefs made of either limestone or clean concrete around their pier to enhance shoreline fishing. Sites have also been identified for the experimental planting of the spatterdock.

There is an additional public shoreline fishing area at Lake Harris where the bottom mud is too deep for rock or concrete riprap. Here, the traditional fish attractor made of large oak trees shall be installed and experimental planting of spatterdock shall be done. Once Lake Harris is completed the anticipated schedule will be establishing artificial reefs at Lake Dora, then Lake Eustis, and finally Lake Griffin. Each site shall be surveyed to determine sediment depths for the purpose of determining the type of material to use for

reef construction. The schedule is subject to modification depending on necessary approvals.

Second Year – The second year’s efforts shall focus on establishing multiple limerock or clean concrete reefs to provide critical fish habitat and wind refuges for re-establishing aquatic plants through out Lake Griffin and Lake Dora. Because Lake Griffin and Lake Dora are stocked with wild adult largemouth bass, LAKEWATCH and FWCC will convene a meeting of professional bass anglers to get their opinion on reef placement and configuration to enhance the restoration of the bass and plant communities as well as angling experience.

The number of reefs established will be limited by personnel time and material costs.

Estimated Project Budget

Personnel

Senior Fisheries Biologist (2YR@1/2 TIME)	\$ 90,000
Two Graduate Students @ \$18,000/ year	\$ 36,000

Expenses

Materials, Equipment Rentals, Travel, Repairs, etc	\$ 50,190
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UF Indirect Cost (5%)	\$ 8,810
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Total Estimated Cost	\$185,000
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References

Canfield, D. E. Jr., R. W. Bachmann, and M.V. Hoyer. 2000. A management alternative for Lake Apopka. Lake and Reservoir Management 16(3):205-221.

Hoyer, M. V. and D. E. Canfield Jr. 1996. Largemouth bass abundance and aquatic vegetation in Florida lakes: An empirical analysis, Journal Aquatic Plant Management 34:23-32.

Shofner, J. H. 1982. History of Apopka and northwest Orange County, Florida. Historical Society. Rose Printing Co., Tallahassee 357 p.