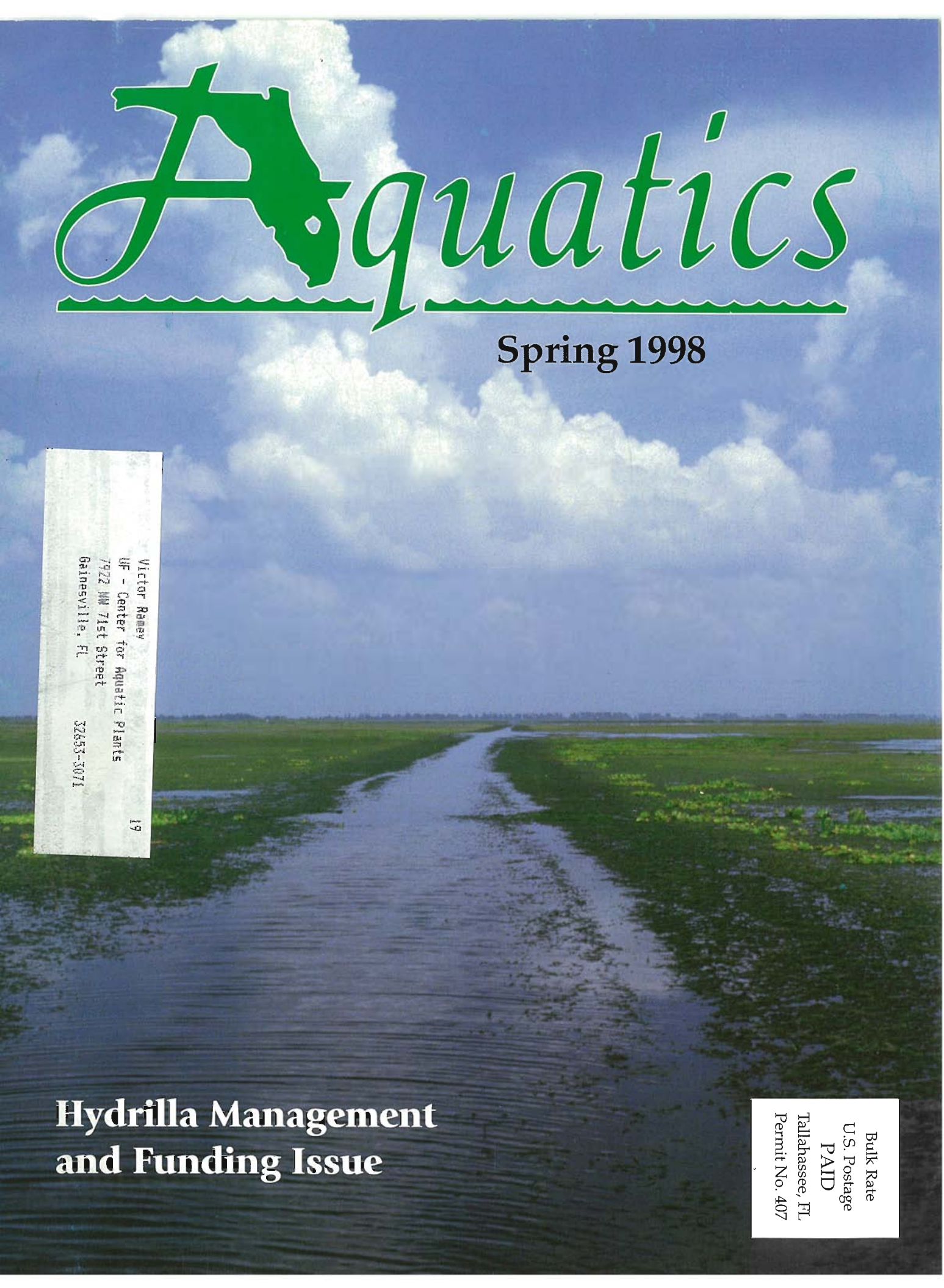

Aquatics

Spring 1998

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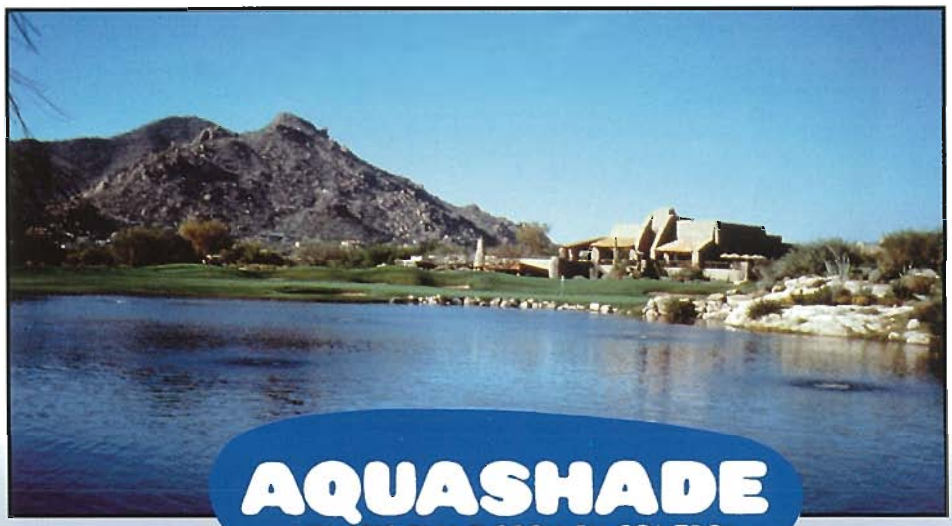

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Editorial

As of January 1, 1998, I became *Aquatics'* newest editor. I am preceded by a talented lineage of editors that have infused *Aquatics* with their own style and expertise. Under their dedicated direction, *Aquatics* magazine has become an important resource for those in the field of aquatic plant management. I hope to continue that tradition and have some "big shoes to fill" as they say! I invite all of you, as have past editors, to submit articles, ideas, or letters, to share your experience, research, and thoughts on aquatic plant management. Previous editor, Dr. Ken Langeland, put it best when he wrote "it is the entire FAPMS membership and your contributions that provide the contents for the editor and make *Aquatics* what it is."

The focus of this edition is hydrilla management and the continuing saga of obtaining adequate, recurring funds. Once again, the tenacious efforts of home owners, lake associations, FAPMS members, and FAPMS lobbyists will be needed during the 1998 legislative session to sustain the momentum towards adequate funding of aquatic plant management.

Grassroots efforts which resulted in additional, short-term funds, coupled with favorable weather, has enabled aquatic plant managers to reduce hydrilla from approximately 100,000 acres in 1994 to less than 44,000 acres in 1997. Lawmakers have taken notice and are listening more and more to our pleas. The Solid Waste Management Trust Fund Review Commission has issued a report supporting aquatic plant management and is recommending sources of additional funds. These recommendations are currently being transformed into legislative bills.

Yes, I am an optimist, but it seems this year the climate is more favorable than in recent years for recurring funds to become a reality. When (or if) funds become available, maintenance control of hydrilla should be attainable for many of Florida's public waters. Your continued dedication to the goals of maintenance control is critical for the future of Florida's aquatic plant management program, just as your support is important to the continued success of *Aquatics* magazine. I look forward to working with you on future issues of *Aquatics*!

Judy Ludlow

Boat trail through Lake Okeechobee hydrilla

Photo by Jeff Schardt

Aquatics

Spring 1998/Vol. 20, No. 1

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AQUATICS (ISSN 1054-1799): Published quarterly as the official publication of the Florida Aquatic Plant Management Society Registration No. 1;579,647. This publication is intended to keep all interested parties informed on matters as they relate to aquatic plant management particularly in Florida. To become a member of FAPMS and receive the Society newsletter and Aquatics magazine, send $20.00 plus your mailing address to the Treasurer.

EDITORIAL: Address all correspondence regarding editorial matter to Judy Ludlow *Aquatics* Magazine.

The Future of Hydrilla Management in Florida

By
Jeff Schardt
Florida Department of Environmental Protection

INTRODUCTION

The Florida Aquatic Plant Management Society Board of Directors has, for the past three years, funded a lobbyist to inform the governor and state legislators of the additional revenues needed to accomplish successful hydrilla management in Florida's public waters. The legislative and budgeting process moves slowly in the environmental arena, especially when additional or new funding sources are required. Spending for all environmental agencies amounts to about 4% of the state's budget, ranking far below health care, education, and judicial matters.

We taxpayers have sent strong messages to elected officials to continue or improve services without charging additional fees to pay for them. Consequently, particularly in environmental cases, an increase of funds in one worthy program often results in a corresponding reduction in another. The legislature is therefore reluctant to transfer funding from one program to another without a convincing argument from the public which supports information provided by bureaucrats and lobbyists. This is essentially the path that hydrilla management funding has followed over the past 12 years.

FUNDING HISTORY

As directed in s. 369.22, Florida Statutes, the Bureau of Aquatic Plant Management (bureau) has filed an annual report identifying the need for additional funding for proper hydrilla control since 1986. Before additional funding would be considered, program efficiency had to be demonstrated. A major overhaul was conducted on the state's aquatic plant management program in the late 1980s. State funding assistance was discontinued for non-sovereign waters such as public works and residential canal systems, and for all waters without public boat ramp access. State and federal revenues administered by the bureau are now used exclusively to benefit state and federal waters with access to all taxpayers. Despite this focus and other efficiency measures, state and federal funding continued to decline, and hydrilla continued to expand.

While the bureau petitioned the legislature for more than $10 million per year for hydrilla control

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in the early 1990s, an average $4.2 million was provided. The bureau's warnings of flood control, navigation, and habitat problems generated by hydrilla were often countered by testimony of the need for hydrilla to support fishing and water fowl hunting success. Lacking a united effort from managers and water users, funding increase efforts were doomed. Simply put, the dilemma facing the legislature was: why detract from one environmental program to fund aquatic plant management when there were few public complaints and little agreement that hydrilla needed to be controlled in the first place. Predictably, hydrilla , which had been held in check for a decade with program adjustments and minor funding increases, exploded from 50,000 to nearly 100,000 acres in just two years (1992-1994). Managers and FAPMS leadership argued that insufficient funding, not technology, prevented achieving the legislative mandate of maintenance control of hydrilla.

THE CRISIS

At the height of the infestation, some of Florida's most important waters were nearly covered with dense mats of hydrilla. For example; nearly two-thirds of the 65,000 acres of water in the Kissimmee Chain of Lakes were covered with hydrilla. More than 95% of 27,000 acre Lake Istokpoga was matted with hydrilla. With dense populations of hydrilla covering so many water bodies, the spread to new systems accelerated. Hydrilla was reported in 185 public waters (41%) in 1992; by 1996, 210 waters (47%) supported hydrilla.

When hydrilla reached record levels in 1994, professional and grassroots lobbying efforts increased and became united. The response from home owners, lake associations, and environmental groups echoed what the bureau had warned for years; if not continuously managed, hydrilla can overwhelm most of Florida's shallow waters in short order. The leadership of the Bass Anglers Sportsman's Society (BASS) is also contributing by imploring the Governor and Department of Environmental Protection (DEP) Secretary to establish sufficient, recurring funding to keep hydrilla in check and preserve fishing in Florida.

FUNDING AND MANAGEMENT

The legislature responded to the public outcry by providing about $6.8 million for hydrilla control in 1996, $11.1 million in 1997, and $12.0 million in 1998. While hydrilla covered more than 97,000 acres of public waters in 1994, the statewide total was reduced to 66,000 acres by the end of 1996. In 1997, aquatic plant managers took advantage of the most conducive weather conditions in recent memory to further reduce hydrilla to fewer than 44,000 acres, the lowest level in a decade. Apparently, the El Niño weather pattern greatly reduced tropical storm activity over Florida. Most large-scale hydrilla management is conducted in Florida using fluridone herbicide. With rain falling in small to moderate, evenly spaced events, water exchange in rivers and flood control reservoirs was minimal. Lake levels remained low so less fluridone was needed to maintain effective doses.

The hydrilla management efforts during the two previous years are truly commendable. These efforts are largely responsible for the legislature providing record funding in 1998. Lawmakers are impressed with results. However, the funding provided since 1996, has been piecemeal from other programs and from the balance of the Aquatic Plant Trust Fund. The trust fund was depleted to provide the 1998 funding, and no dedicated source has yet been found to sustain the previous two years' gains. Without legislative action, only an estimated $2.0 million will be available for hydrilla control in 1999 and beyond.

THE FUTURE

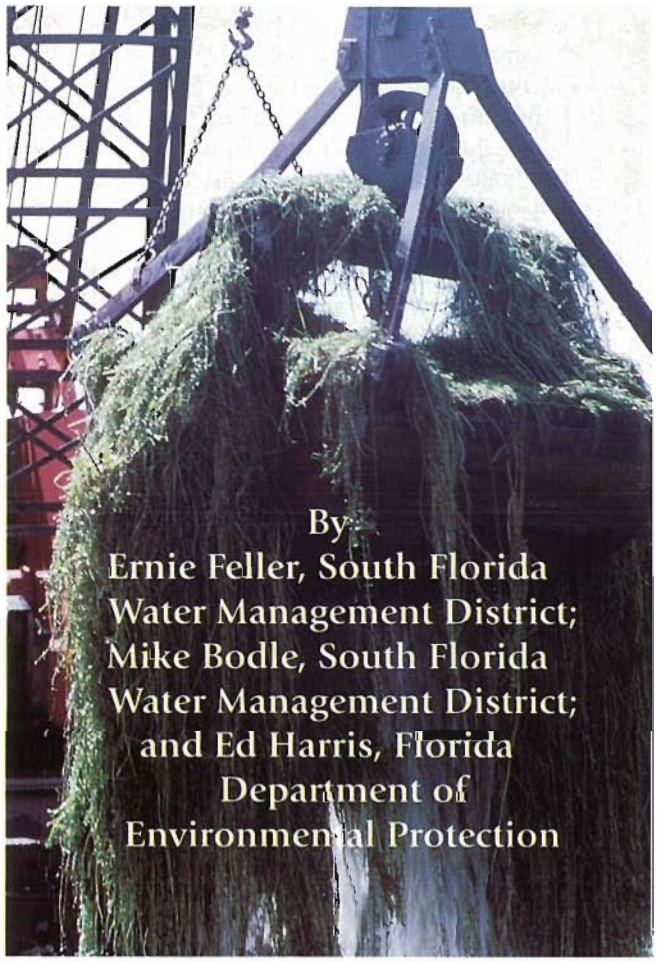
When the legislature appropriated $6.0 million for aquatic plant management from the Solid Waste Management Trust Fund for 1998, it created a 14-member review commission to assess the Solid Waste, SWIM, and aquatic plant control programs, report on their necessity and effectiveness, and make recommendations on funding. The commission's final report was filed with the Governor's office, Senate President, and House Speaker on January 21, 1998. Regarding aquatic plant management, the commission found that the program is well run and appropriately located in the DEP. Further, the Commission recommended funding from a dedicated source totaling $17.5 million annually to achieve legislatively mandated maintenance control of invasive aquatic plants.

Commissioners and legislative members are impressed with problems presented by unmanaged, invasive aquatic plants. They are equally impressed with the organization, and accomplishments of aquatic plant managers when sufficient funds are provided to do their jobs. The hydrilla maintenance equation currently has two major components, operations and funding. With cooperative weather, a further reduction to 25,000-35,000 acres is attainable in 1998. The maintenance control level for hydrilla probably lies somewhere within this range. To sustain maintenance levels, dedicated funding is imperative. There are already several proposals under consideration to address the funding problem during the 1998 legislative session. Some solve the problem, some fall short. With continued hard work, both in the field and in the legislature, there is the opportunity to secure maintenance control of hydrilla, like water hyacinth, into the next millennium. This is an opportunity reserved to no one but us.

Hydrilla verticillata

The Progression of Hydrilla Management in the Kissimmee Chain of Lakes

By
Ernie Feller, South Florida Water Management District;
Mike Bodle, South Florida Water Management District;
and Ed Harris, Florida Department of Environmental Protection



INTRODUCTION

The Kissimmee Chain of lakes, noted for its wide variety of wildlife and productive fisheries, consists of 21 natural lakes connected by 15 navigable, man-made flood control canals. This ecosystem, which represents 83,000 surface acres of public waterways and wetlands, is located south of Orlando and is the headwaters of the Kissimmee River.

Central Florida's warm climate and large waterbodies provide a near-tropical haven for invasive exotic vegetation, including water hyacinth (*Eichhornia crassipes*), water lettuce (*Pistia stratiotes*), and hydrilla (*Hydrilla verticillata*). Annual vegetation management in the Kissimmee chain includes the chemical, mechanical, and biological control of 15,000 acres of exotic and native plants. This program is primarily funded by the Florida Department of Environmental Protection (FDEP) and is contracted through the South Florida Water Management District (SFWMD). The overabundant growth produced under these environmental conditions, coupled with insufficient funding, has prompted vegetation managers to prioritize work projects to maximize cost-effectiveness. Simply put, managers must make their best judgments on what gets done using the available money. On the Kissimmee chain, vegetation management is a team effort; decisions are made by an interagency working group which has members from federal, state, and local agencies as well as representatives from the general public.

Priority Ranking

Flood Control - With 1.75 million residents in the central Florida area, prevention of flooding is the primary objective.

Navigation - The second priority is to maintain navigation in the federal navigation channels created by the connection of this chain of lakes to the Kissimmee River and Lake Okeechobee.

Fishery enhancement and wildlife protection - The Kissimmee chain provides beneficial habitat for one of the best largemouth bass fisheries in the country. In addition, these lakes are a birdwatcher's paradise with many native and endangered species. Vegetation treatments are used to open fishing access, increase native plant diversity, and provide beneficial habitat for endangered species like the bald eagle, the Everglades snail kite, and the whooping crane.

Aesthetic improvements - Vegetation managers receive hundreds of requests for the control of nuisance vegetation in and around lakefront properties or private canals. Although FDEP funding is usually not available for this type of work, some relief may be provided to residents as a by-product from the operations performed according to the above listed priorities.

Since 1982, hydrilla has been a major problem in several of these lakes. Boat channels and fishing holes have been opened in dense hydrilla stands using mechanical harvesters and contact herbicides, but managers have turned to the aquatic herbicide fluridone (Sonar™) for large scale control projects. Fluridone has been used in these lakes in increasing amounts since 1986, with 115,000 acres of hydrilla treated at a cost of $15 million.

Fluridone inhibits carotenoid pigment synthesis and results in the photo-degradation of chlorophyll, chlorosis in the leaves and stems, and the slow death of the plant. Hydrilla is particularly susceptible to this herbicide and is often controlled with fluridone concentrations between 5 - 8 parts per billion (ppb), a rate much lower than that needed to control

many other plants. During the eleven years since the registration of fluridone, it has been possible to modify and improve application techniques to maximize the amount of hydrilla controlled for each acre that is actually treated. Factors including available funding, water movement or dilution, plant species present, bottom sediment type, and infestation size, will modify the application strategies for effective hydrilla management using fluridone in different waterbodies. This article describes some of the practices utilized to achieve the most cost-effective hydrilla management in the headwater lakes of the Kissimmee River.

METHODS OF TREATMENT

Whole lake treatment plus triploid grass carp - Of the 21 lakes in the chain, Fish Lake (210 acres) is unique because it is a nearly closed system with a single outflow, which contains a grass carp barrier. In 1983, 20 acres of hydrilla were treated under an experimental use permit with 2 lbs active ingredient / acre of fluridone and a chelated copper herbicide. This treatment was effective for four years; after that time, 70 percent of the lake was covered with hydrilla. In 1988, 33 acres of hydrilla were treated with 2 lbs active ingredient /acre of fluridone. That treatment was followed by the stocking of 640 triploid grass carp. The combination of herbicide and grass carp maintained sufficient control for four more years. By 1992, hydrilla had re-grown from tubers and was expanding due to a decline in the grass carp population. In 1993, 20 acres of hydrilla were treated with the same rate of fluridone and an additional 650 grass carp were stocked. The 1997 FDEP annual survey revealed that less than one acre of hydrilla was present in the lake. This level of control is proof that the integration of herbicide and biocontrol agents can reduce herbicide applications to once in at least five years and continues to reduce the annual average cost for herbicides and fish with each passing year.

Whole lake, split treatments - When sufficient funding is available, treatment of an entire waterbody with fluridone is the most effective method of controlling extensive hydrilla infestations. Lake Jackson, a 1,500 acre lake in the Three Lakes Wildlife Management Area, is noted for its tremendous fishery and wildlife value. At times, hydrilla has covered nearly 50 percent of its surface. Because of its high turnover rate of water, single applications of fluridone did not provide sufficient herbicide contact time to be effective.

However, hydrilla has been controlled in the entire lake by applying fluridone at a rate of 2 lbs active ingredient /acre to 250 acres of the lake if the total application is split evenly over a four week period. Such a treatment can cost $150,000 and has reduced hydrilla coverage for more than a year. Long term control of hydrilla can be achieved if funding allows annual

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Aerial herbicide treatment of hydrilla in the Kissimmee Chain of Lakes.

treatments of the entire lake for four or five consecutive years. Because hydrilla propagules remain viable in the hydrosoil for that period of time, annual treatments to control germinating plants in the spring and to prevent reproduction in the fall would eventually diminish the propagule supply in the sediments.

Similar results were achieved in Lake Hatchineha (6,660 acres) in 1997. A total of 990 acres was treated over a six week period at a rate of 2 lbs active ingredient /acre. By utilizing the FasTEST sampling method developed by the SePRO Corporation, managers were able to monitor fluridone concentrations in the water and make adjustments to the treatment schedules to compensate for unexpected water movement or dilution. Hydrilla acreage was reduced from 5,100 acres to 1,150 acres in a single year. However, continued treatments of this scope are needed to extend these results beyond a single year.

Partial lake treatments adapted to water movement - A whole lake treatment of Lake Kissimmee (34,960 acres) could cost as much as $4.5 million. In 1997, one of the largest hydrilla treatments in the Kissimmee chain was conducted on Lake Kissimmee as a partial lake treatment; more than 3,100 acres of hydrilla were treated at a cost of $2 million. In situations like this, treatments must be conducted to provide the maximum impact on hydrilla populations.

Each year, treatments are made to the areas of the lake with the greatest hydrilla infestations and these locations vary from year to year. Prior to 1994, these treatments were divided over a four week period. However, applications were halted in some years (e.g. 1987) prior to completion due to large discharges of water into the Kissimmee River. This caused a significant reduction in the herbicide contact time in the treatment areas.

In 1994, rather than making applications in 25 acre blocks over a four week period, applications were made over seven weeks and the herbicide was applied in strips around the shoreline of each bay that was treated. Using this strategy, hydrilla was controlled in the bays by a method which approximated a whole lake treatment. It also allowed applications to continue when water discharges into the Kissimmee River were greater than could have previously been tolerated. FasTEST monitoring was also utilized during these treatments to monitor fluridone concentrations in the treatment areas and the adjacent open water areas.

This treatment strategy has proved to be successful in most areas of Lake Kissimmee and has provided twelve to eighteen months of control from each treatment. However, the northwestern portion of the lake at the

mouth of the canal from Lake Hatchineha (C-37) has been problematic for several years. For reasons that have yet to be determined, fluridone applications in this area disperse rapidly. This dispersion appears to be independent from any other water movement in or through the lake; this phenomenon was established during dye movement tests conducted by the University of Florida in 1996. In order to be effective, treatments must be repeated at least twice a year in this area.

Lake Cypress is a 4,100 acre lake which has inflow canals from Lake Tohopekaliga (C-35) and Lake Gentry (C-34). In addition, there is a major outflow to Lake Hatchineha (C-36). It was determined that treatment of the whole lake was likely to be unsuccessful due to the rapid turnover of water in the southern half of the lake. Therefore, fluridone applications were made to the northern half of the lake and treatment of the southern half was restricted to applications of contact herbicides to maintain boat access from the public boat ramp to the connecting canals. In reality, low flows during the treatment period enabled some fluridone to disperse into and remain in the southern end of the lake long enough to have a moderate impact on the hydrilla. Again, herbicide levels were monitored with FasTEST.

Over the past several years, improvements in the efficiency of partial lake treatments and the existence of sufficient funds have enabled efforts to decrease hydrilla infestations in Lakes Kissimmee and Cypress. Once a level of control is established, however, sequential treatments must occur every year to maintain proper control. Similar treatment regimes have also proven effective in East Lake Tohopekaliga (12,540 acres) and Lake Marian (5,700 acres).

Partial lake treatments to enhance fishery habitat - Like Lake Kissimmee, Lake Tohopekaliga (18,000 acres) is large enough to be considered for whole lake treatments in years of sufficient funding, despite hydrilla infestations which have covered 45 percent of the lake. In 1987 and 1988, water levels were lowered to facilitate the mechanical removal of organic sediments from the littoral zone in an effort to restore sport fish spawning habitat. After the lake was refilled, these cleared areas were rapidly colonized by dense stands of hydrilla. This type of site has become a primary target for hydrilla control in an attempt to continue the habitat restoration and to provide access to anglers.

In 1993, 50 acres in a restored area were treated with 2 lbs active ingredient /acre of fluridone, applied over an 8 week period in 7,000 foot long strips along the shoreline. In this site, which was

subjected to noticeable water movement parallel to the shore, these treatments were estimated to have exposed the hydrilla to a 15 ppb concentration of fluridone for more than 8 weeks. This treatment selectively controlled hydrilla in 300 acres for more than a year and caused minimal impacts to native plants, a very important consideration in habitat restoration.

As a consequence of this treatment, shoreline strip treatments over 6 to 8 weeks have been adopted as the primary fluridone treatment technique for most of the applications in the Kissimmee chain of lakes. This 50 acre site has been used as a test to determine the long term effects of successive treatments on native vegetation. Fluridone was applied at the same rate and with the same technique over the next 4 years.

Vegetation monitoring by the Kissimmee Fishery office of the Florida Game and Freshwater Fish Commission (GFC) has revealed that native plants, especially eelgrass (*Vallisneria americana*), have expanded in this area and the fishery has greatly increased. In addition, anglers are reporting excellent catches of fish in an area which had no access to fishing prior to the fluridone treatments.

In 1996 and 1997, a similar drawdown and habitat restoration project was undertaken on Lake Kissimmee. Although the monitoring and follow-up vegetation treatments have not been completed, GFC biologists are optimistic that even greater positive impacts will result from this massive project.

CONCLUSIONS

Based on our industry's growing experience and collaborative research, strategies for applying fluridone are continually improving to achieve control of the maximum amount of hydrilla with the often limited funds available. In the Kissimmee chain of lakes, there has been a successful integration of chemical, mechanical, and biological control methods over the past fifteen years. We have the technology and the tools to effectively manage this menace to our aquatic ecosystems; however, the ability to implement that technology is often hampered by the lack of funds. Efficient management of hydrilla in small lakes or priority areas of large lakes does work, and vegetation managers responsible for these public waterways will continue to cooperate in research projects addressing the hurdles which arise along the way. Increasing the success of treatments in the northwestern area of Lake Kissimmee is one of our immediate goals. However, the future of these fragile ecosystems and the progress we have achieved is threatened if our legislative leaders do not secure a sufficient, dedicated funding source.

The Politics of Aquatic Plant Management

adapted from an article by Douglas Pullman
in The Northern Lakes Manager
a publication of the Midwest Aquatic Plant Management Society

If "politics" can be defined as, "the art or science concerned with guiding or influencing government policy," then there is a lot of politics involved in any government program to control aquatic plants. No matter what you do, including nothing, someone will be opposed to it and will try to influence a change in policy.

Someone once gave this good advice, "when dealing with the public, find out exactly what they want. If the lake or river could be exactly the way they wanted it, how would it be?" This is a great approach, but the answer received will depend upon those with whom you talked.

Riparian Property Owners want aquatic plants completely cleared from around their docks and swimming areas so their children can safely swim and play in the water.

Bank Fishermen want aquatic plants cleared from the shoreline so they can fish without getting tangled up in plants.

Bass Fishermen want aquatic plants wherever they believe it will improve fishing, provided they have access to "hot spots" without getting their motor caught in aquatic plants.

Sun Setters want to view the sunrise and sunset, possibly stroll along the shore of the lake, but do not actually use the water for recreational purposes. For some this means clearing the shoreline of aquatic plants, for others it means not disturbing the shoreline at all.

Pleasure Boaters and Water Skiers want a waterbody free of aquatic vegetation, at least in any area where pleasure boating and skiing are possible.

Anti-boaters would almost prefer solid aquatic plant cover if it would prevent jet skis and power boats from disturbing their peace and quiet.

Sail-boaters don't mind aquatic plants in shallow water, but aquatic plants in deeper water makes sailing difficult, if not impossible, and they want those plants removed.

Farmers often use lakes and rivers as a source of water to irrigate their crops or provide freeze protection in the winter. Many farmers prefer to see all aquatic plants removed since the plants might interfere with irrigation equipment. Some are also

concerned that aquatic herbicides may damage their crops. Many riparian owners who irrigate their lawns and flowers share the concerns of the farmers.

Naturalists think aquatic plants, native or not, are great. They believe that nature will take care of invasive plant infestations if we just leave it alone. Many naturalists are opposed to the use of herbicides, and aquatic plant management in general.

Government planners sometimes believe that intensive watershed management and further research will solve invasive aquatic plant problems. While these actions certainly benefit other aspects of lake management and water quality, they usually do not, by themselves, cure aquatic plant problems.

Flood Control Engineers generally want all aquatic vegetation removed since it may impede water flow and damage flood control structures.

Aquatic Plant Managers want to do their best for the environment. Aquatic plant managers consider the recreational uses of water bodies as well as the protection of fish and wildlife habitat. They must also consider the riparian rights of property owners, while protecting the public's right to use these waters. They must consider the protection of water quality, flood control, navigation, irrigation, potable water supply, erosion control, and the economic and environmental values of wetlands. Unfortunately, what is best for one of these interests is not always best for another.

These are but a few of the considerations involved in the politics of aquatic plant management. Aquatic plant managers must be knowledgeable, flexible, and responsive to the many varied demands that are made upon them. Managers must have the authority as well as the necessary funds to implement, and evaluate their aquatic plant management plan. The key to success is *cooperation* of all involved agencies and the general public, *understanding* the problems and available management alternatives, and *education* of everyone involved in developing the aquatic plant management program.

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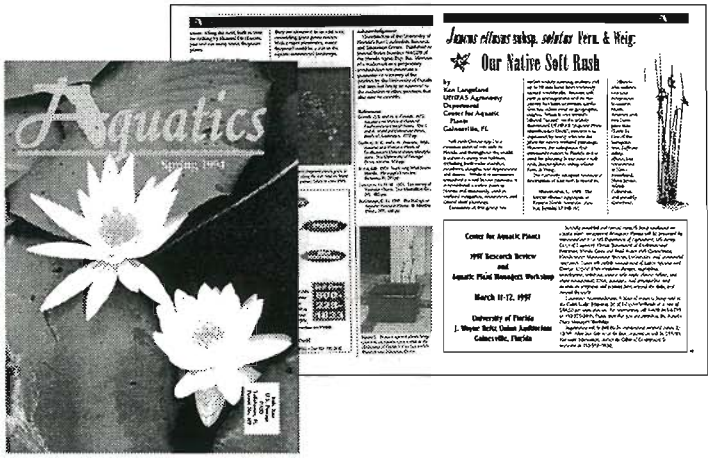

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AQUAVINE

Dave Bowman Retires (sort of)

After 30 plus years of dedicated federal service, Dave Bowman retired from the U.S. Army Corps of Engineers on January 5, 1998. He is, however, still working for a few more years with the Florida Department of Environmental Protection (DEP), Office of Greenways and Trails. Once he finally retires, he plans to travel the world. Dave has the distinction of working on the Cross Florida Barge Canal from day one, starting as a Park Ranger and moving up to Project Manager. He is one of the few that remembers the Ocklawaha River before Rodman Reservoir was created, and he is now working towards the river's restoration with DEP. Good Luck Dave!

We are saddened to learn that **Mr. Chil Rossbach**, and **Mr. John Fernandes** recently passed away. Chil worked for Helena for many years. John was the owner of Aqualogics. Both men will be greatly missed.

More Changes in the U.S. Army Corps of Engineers (USACE)

Charlie Ashton has joined the USACE Aquatic Plant Control Section in Jacksonville. Prior to this new position, Charlie worked for 12 years in the USACE regulatory program, 4 years as the biologist on Lake Seminole, and, during college, with the National Marine Fisheries Service and the EPA. Welcome Charlie!

Christine Bauer has transferred to the USACE Planning Division, Environmental Branch and will be working on beach renourishment and coastal projects. She is looking forward to the challenges of her new job. She really enjoyed working with everyone that she met in the aquatics field. Good Luck Christine!

MEETINGS

Seventh Annual Southeastern Lakes Management Conference, Hosted by the Florida Lake Management Society, "Integrating Water Resources and Growth Into the 21st Century," April 15-17, 1998, Call Carey Cordell 407-880-6334 for further information.

Aquatic Weed Control, Aquatic Plant Culture, and Revegetation Short Course, May 11-14, 1998, Fort Lauderdale Research and Education Center and the Rolling Hills Hotel and Conference Center, Call Dr. Vernon Vandiver, 954-475-8990.

13th Annual Florida Exotic Pest Plant Council Symposium, co-hosted with The Florida Native Plant Society, June 2-4, 1998, Palm Beach Gardens Mariot, Palm Beach Gardens, FL, Call Tony Pernas at 941-695-4111 ext. 23 for further information.

Natural Resources Forum, Linkages In Ecosystem Science, Management, And Restoration, June 9-10, 1998, Radisson Hotel, Gainesville, FL, Call Dr. Randall Stocker 352-392-9613 for further information.

10th International Symposium on Aquatic Weeds, "Towards an integrated aquatic plant management," Lisben, Portugal, September 22-25, 1998.

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With more than 800 color photographs and 1,000 entries, Florida Wetland Plants is a definitive work, covering a majority of the plant species found in the Florida Wetland Delineation Methodology, 1994 (Chapter 62-340, F.A.C.)

This new resource is a completely revised and rewritten update to the *Identification Manual for Wetland Plant Species of Florida*, published in 1987. Like its predecessor, Florida Wetland Plants represents the collaborative effort of many of Florida's foremost botanical authorities.

Features of this manual include a glossary and index to families, and an index for scientific and common names. Color coding of the four main groups of vascular plants, and an alphabetical listing of the families and genera make this comprehensive resource easy to use. Recreational enthusiasts and scientists alike should find this reference an invaluable guide.

SP244, Florida Wetland Plants: An Identification Manual, is available for $35.00 from UF/IFAS Publications, P.O. Box 110011, Gainesville, FL 32611-0011. Add $4.00 shipping and handling and appropriate county sales tax per copy. Order by credit card by calling 800-226-1764.

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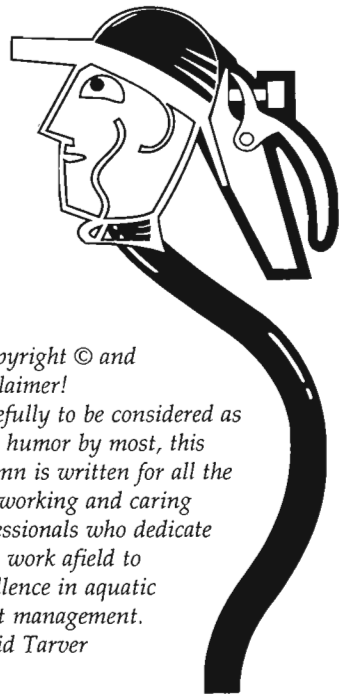

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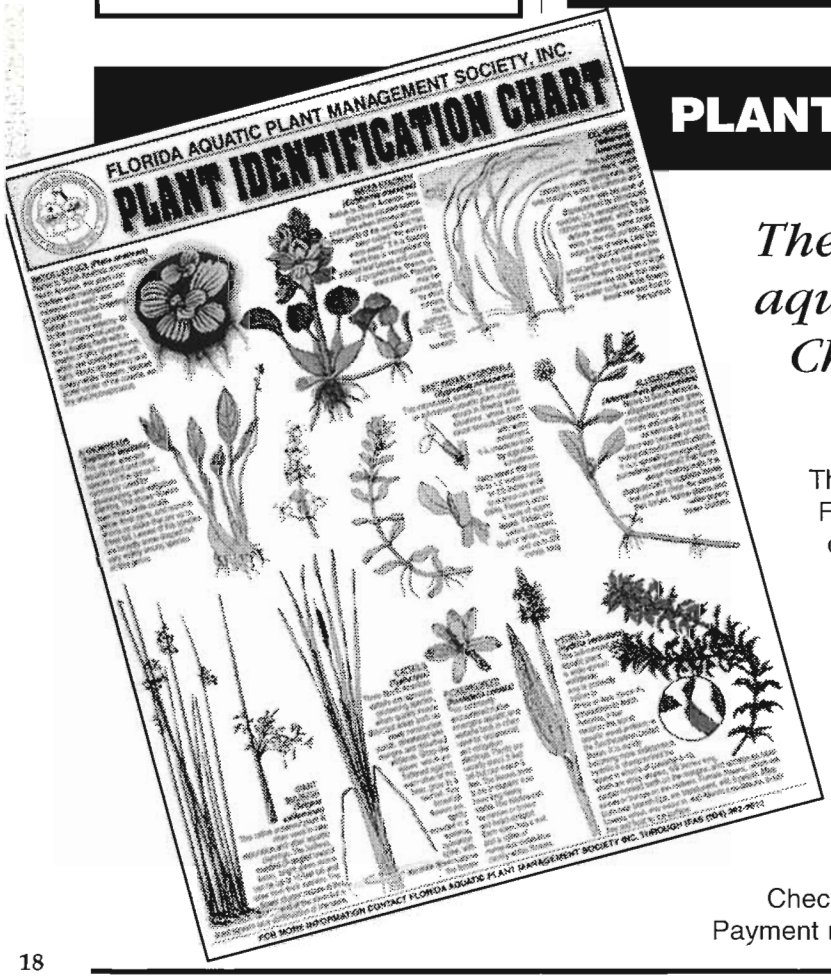
Hopefully to be considered as light humor by most, this column is written for all the hardworking and caring professionals who dedicate their work afield to excellence in aquatic plant management.
David Tarver



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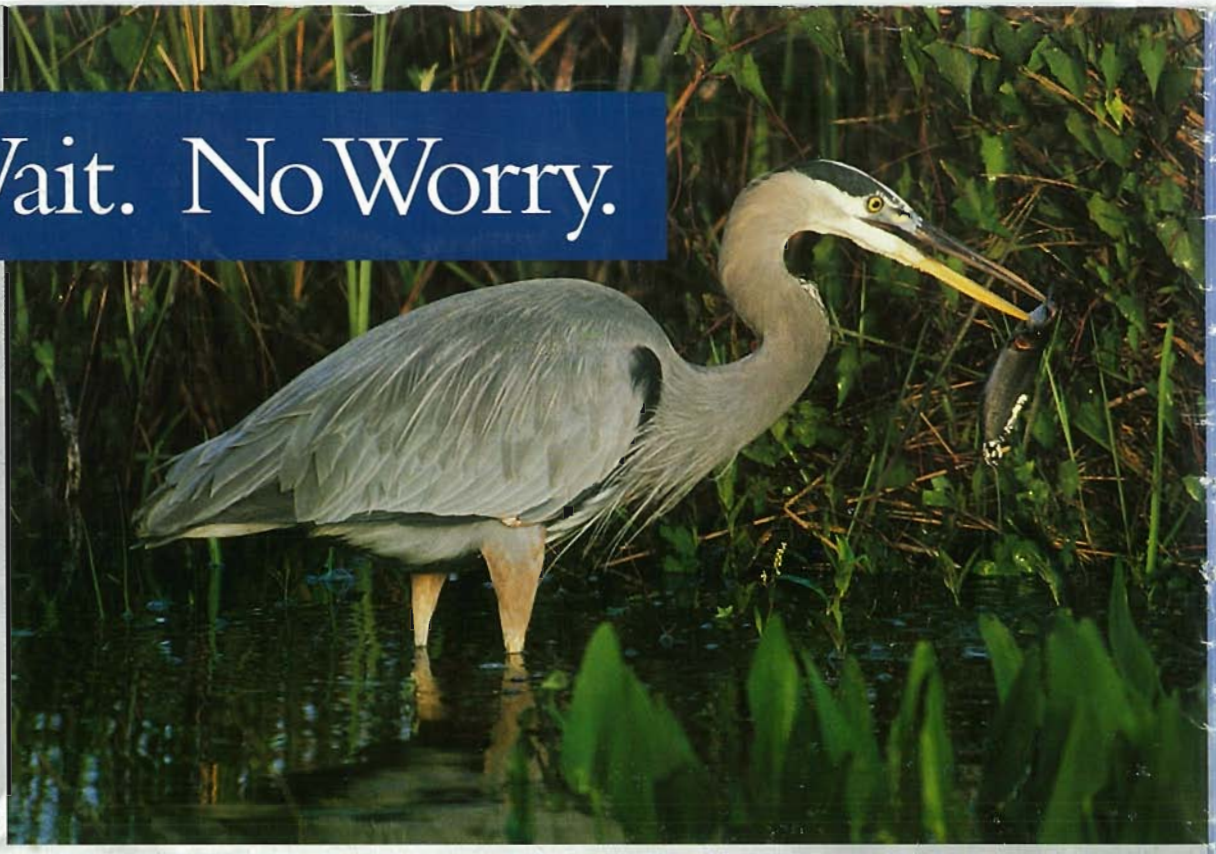

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