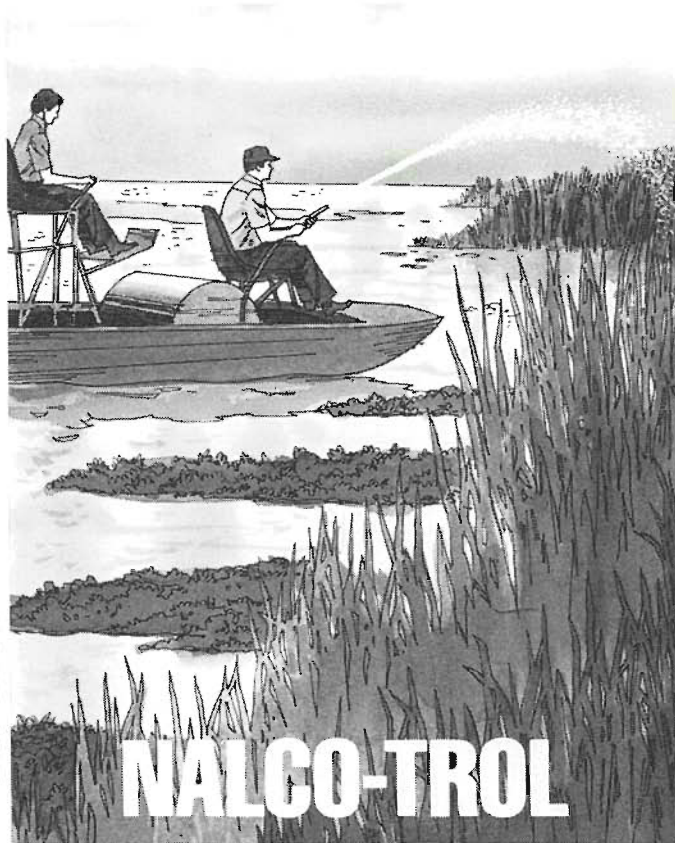
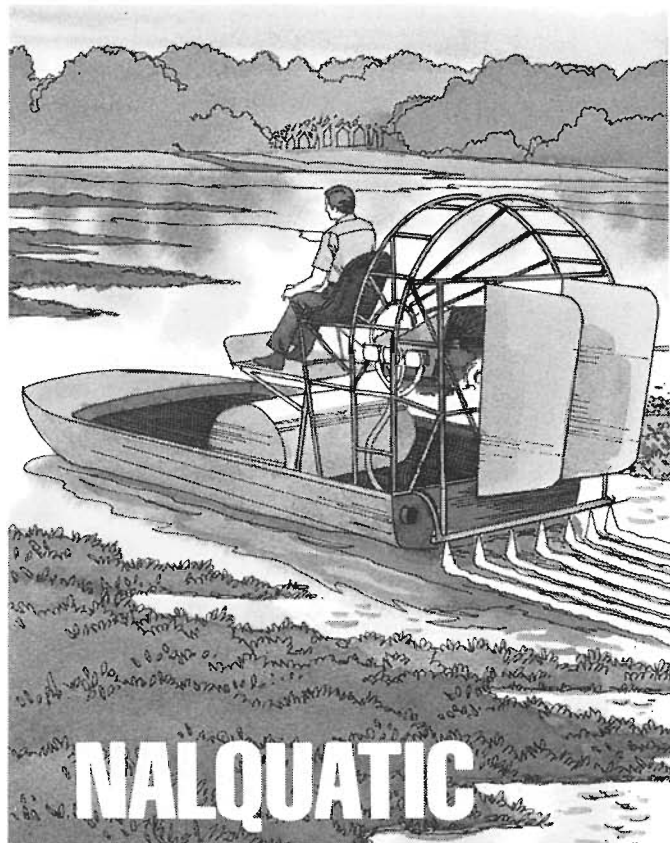




Aquatics

JUNE 1980

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EDITORIAL By Dr. William Haller, President

It seems that budget time has become a year around event for many people working in aquatic weed control. Planning for the weed to grow and it doesn't, or having a problem in areas never before considered problematic doesn't help in planning ahead. Programs which have their weed problems under maintenance control have additional problems. How do you justify weed control programs and maintain funding levels from administrators when they see "no weeds" and hear "no problems" from the public? Out of sight — out of mind! Fortunately, most everyone now realizes that aquatic plant management is based on constant vigilance and solving problems while they are still minor.

Presently it appears that the Federal Government will be cutting the COE Aquatic Plant Control budget by 1.15 million dollars next year. This cut amounts to a 25% decrease in the matching funds program. While the decrease in funds is not yet final, it is advisable that all operational programs plan on decreased funding levels due either to inflation or budget cuts. One way to offset these cuts is to become as efficient as possible in all aspects of the control programs. Beyond this, there is little we can do except provide less weed control until budgets and priorities are re-aligned.

Surprisingly, while operational budgets are being reduced, research funding is being increased at the Federal level by EPA and USDA. We welcome EPA in taking a more active role in aquatic plant research and praise USDA for increasing funding levels in their ongoing research and establishing new programs. We are not sure of what type of coordination is being worked out between the 4 or 5 Federal agencies involved in aquatic weed research funding, but hope excessive duplication of research effort is avoided. These new programs are also an opportunity for new research programs to be developed in operational aspects of Aquatic Weed Control. Unfortunately, few administrators of these funds are cognizant of the problems in operational aquatic weed control programs, but they welcome input from field personnel. So if you have a problem, don't sit on it. Talk about it now and at the Annual FAPMS Meeting in Orlando October 28-30.

Another current item of interest to FAPMS is the establishment of a recertification plan for those who are Certified Aquatic Applicators. After initial certification, the testing and re-certification program remained in limbo for 2 or 3 years. At this time there is renewed interest by regulatory agencies to establish a re-certification program and the Society supports this action in our by-laws. It is essential that our water resources and aquatic plant management programs be in the hands of the best and most qualified individuals.

Society membership is moving along at well over the 500 member level at this time. Although Joe Joyce will take a lot of the credit for this, it was really his wife Pam who addressed nearly 1,100 letters and mailed out membership solicitations to all Certified Aquatic Applicators. Through this membership drive we have been able to return to active status several original charter members who attended the Bartow meetings.

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Aquatics

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AQUATICS: Published quarterly as the official publication of the Florida Aquatic Plant Management Society. This publication is intended to keep all interested in matters as they relate to aquatic plant management, particularly in Florida.

CORRESPONDENCE: Address all correspondence regarding editorial matter to William L. Maier, Editor, AQUATICS Magazine, 3315 Whirlaway Trail, Tallahassee, Fla. 32308.



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COVER

Beautiful Boggy Creek south of Orlando offers an excellent recreational opportunity free of noxious weeds.
(Photo by Wm. Maier)

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CALENDAR NOTES

- July 11 FAPMS board meeting, Orlando
- July 13-16 The Aquatic Plant Management Society's Annual Meeting, Hyatt House, Sarasota

The Aqua-Vine Section of "Aquatics" has been added to provide information on current events and recent publications from industry and government to increase the dissemination of aquatic plant control techniques and regulatory changes. Complete copies of reports mentioned in this section can be obtained on request to the respective authors or the Editor of "Aquatics".

The Florida Aquatic Plant Management Society, Inc., has not tested any of the products advertised in this publication nor has it verified any of the statements made in any of the advertisements. The Society does not warrant, expressly or implied, the fitness of any product advertised or the suitability of any advice or statements contained herein.



BLADDERWORTS — AQUATIC CARNIVORES

by John Rodgers*

Probably one of the most unique and diverse groups of aquatic plants are the bladderworts. The genus *Utricularia* consists of about 120 species of worldwide distribution with 12 species occurring in Florida. This taxon occupies a wide variety of habitats. Usually appearing partially submersed or free floating in lakes and ponds, many species thrive in roadside ditches and in hardwood swamps. In several species, the stems and their associated branches are completely buried in the substrate. There are even two species found in Brazil that are known to grow in the water-filled leaf axils of certain species of bromeliads. Bladderworts lack true roots; however, their fleshy stems frequently serve as suitable anchoring devices. The stems of *U. neottiorides* and *U. rigida*, from South America and Africa respectively, are used to cling to wet rocks in swift flowing streams.

The species of bladderwort occurring in Florida are *Utricularia subulata* L., *U. cornuta* Michx. (horned bladderwort), *U. juncea* Vahl., *U. radiata* Small, *U. inflata* Walt. (big floating bladderwort), *U. purpurea* Walt. (purple bladderwort), *U. foliosa* L., *U. gibba* L. (cone-spur bladderwort), *U. fibrosa* Walt., *U. biflora* Lem., *U. resupinata* B. D. Greene, and *U. floridana* Nash. This genus is in need of additional taxonomic classification. Some taxonomists believe *U. inflata* and *U. radiata* are the same plant, while others have combined *U. cornuta* with *U. juncea*.

The stems and leaves of bladderworts are not easy to differentiate from each other. In fact, botanists often disagree with one another as to the distinction between stems, branches, leaves, and modified shoots. The main axis or stem is slender to 10mm wide and from several cm to over 2m long. Two types of leaves may be observed on the free-floating species. *U. inflata* and *U. stellaris* have 4-10 modified leaves consisting of inflated petioles and tips that are capillary dissected. These floats, as they are sometimes referred to, are circular in cross section and function in keeping the

aerial flowering stalk erect. The submersed and floating species have leaves, whorled or alternate, which are deeply dissected into linear-shaped repeatedly branched segments. Terrestrial species tend to exhibit reduced branching. Their leaves are usually very slender and sometimes unbranched.

Attached to the stems and/or leaves are numerous small, hollow bladder-like traps. These traps are usually stalked and range from ovoid to pear-shaped. Their function is to capture micro-organisms such as crustaceans, aquatic larvae, and small fish fry. Each trap has an aperture or mouth with a surrounding collar at its narrow end. A valve-like door is attached to the inside wall of the bladder and only opens inward. Four to six branched bristles or hairs, arranged in two sets, arise from the edge of the collar and serve as an irritation organ. When an animalcule touches one of the bristles, a stimulus is transmitted to the concave walls and causes them to expand outwards. This produces a sudden entry of water and the prey is sucked into the empty bladder cavity. Since there are no digestive enzymes secreted, bacterial decay is solely responsible for the decomposition of the entrapped organism.

The inflorescence consists of an erect peduncle and 1-20 pediceled flowers. In the majority of the species, the flowers are yellow, but in several species they are white or

purple. The individual flower is two-lipped, the upper one being entire or 2 lobed while the lower lip is usually 3 lobed with a spur located just beneath. Each flower has 2 stamens and a one-celled superior ovary. An ovoid fruit capsule contains numerous minute seeds which are of various shapes according to species. Reproduction of bladderwort is by seed and fragmentation.

Several species, especially in the cooler temperate regions, produced

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Utricularia foliosa L. growing in a late successional lake.



Utricularia cornuta Michx. carpeting a moist shoreline.



Closeup view of *Utricularia purpurea* Walt showing its whorls, leaves and violet flowers.

*Biologist, Natural Resources



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Aquatic plants continue to be an economic, biological and social problem in Florida. It is estimated that public agencies in the state spend millions of dollars annually for control of these plants, particularly for two major exotic species — hydrilla and water hyacinth. These two plants now infest over 1.2 million acres of water in Florida. Infestations also are increasing throughout the Sunbelt states, making further coordination of research and management programs among state and federal agencies and institutions essential for the development of efficient and effective programs.

The Center, Its Scientists, and Management

The Aquatic Plants Research Center is a multidisciplinary unit which conducts research and educational programs throughout Florida on the management of aquatic plants. A functional part of the University of Florida's Institute of Food and Agricultural Sciences (IFAS), this Center was designated by the 1978 Florida

Legislature to be the lead agency for coordinating and developing research projects related to noxious aquatic plant control. It was directed to coordinate all such programs with other affected agencies.

Scientists of the Center — and other researchers of the University of Florida, Florida State University, Central Florida University, Rollins College, the Department of Natural Resources, Game and Fresh Water Fish Commission, U.S. Department of Agriculture, Environmental Protection Agency, Corps of Engineers, and other state and federal agencies — form the largest and most diverse group of aquatic plant scientists in the United States. Together they already have provided significant information on the management of aquatic plants and promise to continue to play a leading role in solving complex problems in this area throughout the southern and western United States.

In creating the Center in 1978, the legislature provided \$300,000 for a

new laboratory and an additional \$200,000 in recurring funds for three new faculty positions, with supporting career service positions, to increase research activities. These new positions have added to the expertise of the faculty in their primary research which is focused on biological, chemical and mechanical management techniques and their associated impact on aquatic ecosystems.

Represented among scientists who are part of Center activities are specialists in aquatic plant ecology, pathogens, entomology, fisheries, limnology, physiology, growth and reproduction, phycology, and mechanical and chemical management. Scientists of the Center are faculty members in their discipline departments and participate in Center activities to varying degrees.

The Director of the Center, a functional unit of IFAS, reports directly to the Dean for Research and Vice President of the Institute of Food and Agricultural Sciences. Thus, the Director has state-wide research coordination and management responsibilities.

Following recommendations of the American Assembly Conference on Management and Control of Aquatic Plants in Florida, the Department of Natural Resources and Center negotiated an Agreement to further clarify the role and responsibilities of each group. The major components of this Agreement are:

1. The coordination of the state's aquatic plant management research programs shall be conducted by the Center. The Center shall administer the research programs funded by monies of the Aquatic Plant Control Trust Fund under program priorities established by the Council and statutes pertaining to audit responsibilities. Seven of the members of the Council shall consist of representatives of:

- a. the Game and Fresh Water Fish Commission
- b. the Department of Natural Resources
- c. the Department of Environmental Regulation

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OVERVIEW OF A WATER MANAGEMENT DISTRICT'S RESPONSIBILITIES

By
Gordon Baker*

Ever since white man first set eyes on the inland areas of the lower part of Florida, he has dreamed of bringing it under control for agricultural use. Its rich soils and the mild weather that prevails generally impressed him with its fantastic possibilities.

But the struggle has been a long one. When this land was turned over to the State of Florida in 1850, private interests undertook extensive reclamation, with a general record of failure. Then in a second phase, the State of Florida, through a public agency, attempted to open up the area. Some headway was made, but again success was not complete enough to satisfy and the quest for complete control of the

area has continued. A third phase came into being in 1949 with the entry of the Federal Government into the picture, cooperating with state and local agencies in the Central and Southern Florida Flood Control Project.

The American people through their elected representatives at all levels of government are currently engaged in an intensive program to achieve maximum conservation and use of the nation's natural resources. One of the most important facets of this program is conservation and beneficial use of water resources.

The Flood Control Project has served as a proving ground for many theories concerning the best methods of establishing cooperative

enterprises involving natural resources development in which the Federal Government and local interests are cooperating. The project is large in terms of land area affected, population served and dollar value of property benefitted. The impact of this system on the future economy of the State of Florida and the nation will not be fully realized for another decade.

Following a disastrous flood in 1947, the problems of the area came to a climax. This flood, plus the experiences of the drought in 1945 and the intrusion of salt water into the water supply fields and land of the east coast area, made it imperative that immediate corrective action be started to prevent further loss of life and damage to property because of floods, and to conserve water for beneficial uses during periods of drought. Out of these years of experience came the realization that certain lands would be better for cattle, others for citrus trees, still others for varied agriculture and some suitable only for conservation and recreational use. The development of the entire area required a single, carefully engineered water-control plan which would make the greatest total acreage available for the safe use of the people.

As approved by Congress, the plan provided a basic framework and laid down the fundamental principle of a project designed to prevent the majority of damage due to recurring floods and droughts. The plan provided an interrelated and comprehensive system of water control to improve ground water conditions throughout the ten million acre area of the District. In varying degrees this plan was also designed to benefit cross-state navigation, recreation, water supplies, municipal and agricultural development, agricultural production, wildlife and fresh water fish, public health and sanitation, conservation of soils and water, ground-water recharge, and the control of both salt water encroachment and over-drainage. These objectives are being accomplished by an integrated system of reservoirs, channels, levees, pumps, spillways, control gates, and salt water barriers.

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continued on page 10

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continued from page 6

- d. the Department of Agriculture and Consumer Services
- e. the State University System
- f. the Florida Aquatic Plant Management Society
- g. the Institute for Food and Agricultural Sciences

provided that the above listed agencies desire to participate in said Council. If any of the above listed agencies do not desire to participate, the Executive Director of the Department and the Executive Director of the Commission shall jointly appoint a non-state employee representative to fill the vacancy created by any such non-participation. The eighth member of the Council shall be a representative of a water management district appointed jointly by the Executive Director of the Department and by the Executive Director of the Commission. The appointment of the representative from the water management district is for a two-year term with no opportunity for reappointment until the other four water management districts have served, and this shall be on a continuing rotating basis. The Executive Director of the Department, the Executive Director of the Commission, and the Vice President of Agricultural Affairs at the University of Florida shall each appoint one member to the Council, each of whom shall not be state employees and shall be appointed for a two-year term with one opportunity for reappointment.

2. The Department and the Center recognize the need for the Council and support the concept of a single unified Council to coordinate state funded aquatic plant research programs. Therefore, both the Center and the Department agree to abolish all currently organized Advisory Councils pertaining to state funded aquatic plant research programs and shall recognize the Council as the body that shall serve this purpose.

3. Utilizing the Council and other scientific expertise where appropriate, the Center shall seek the best available scientific expertise by contracting with agencies, institutions, and private organizations to conduct aquatic plant research. Final authority for approval of research contracts of the

State's aquatic plant trust funds shall remain with the Board of Natural Resources.

4. Funding of the aquatic plant research program from Aquatic Plant Control Trust Funds shall be specifically identified as research items in the overall aquatic plant control program budget submitted annually to the Legislature. This research budget shall be prepared by the Department in cooperation with the Center utilizing the Council to develop priority research programs.

5. The Center shall be provided base sustained support funds as appropriated by the Legislature in establishing the Center.

6. State funded research programs should be coordinated with ongoing and new federal programs through the Executive Director of the Department and Director of the Center or their designees, as appropriate, utilizing the Council.

7. Both parties recognize the need for additional transfer of research information to user groups and shall strive to obtain funding for a technology transfer program. This technology transfer program shall consist of an educational program and a technical assistance program. The educational program shall be the responsibility of the Center and the technical assistance program shall be the responsibility of the Department.

This agreement will facilitate efficient coordination of research. Furthermore, the Council, consisting of multi-discipline interest, agencies, and representatives of user groups will assist the Center, Department, and Commission in establishing research and operational priorities.

One word of caution pertains to funding available for the forthcoming year. Funds of the Center (approximately \$200,000) are committed to the new faculty positions and their support. Also, the research component of the Aquatic Plant Control Trust Funds to be transferred from the Department to the Center are essentially totally committed for the next 2-3 years. Thus, the opportunity for additional funding exists through new state and federal funds for aquatic plant research.

The New Facilities

The Center will move from scattered offices and laboratories throughout the University of Florida

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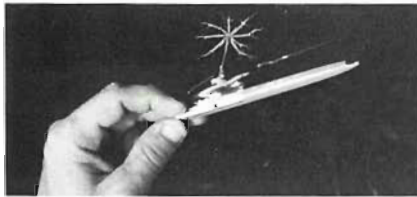


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Utricularia radiata Small with its inflated floating petioles and upper leaves. (Photos by John A. Rodgers)

well developed turions or dwarf shoots from .5-5 cm long. The function of these turions is for perennation or adapted survival by vegetative means.

The vegetation parts of bladderwort provides excellent shelter and breeding areas for small fishes and aquatic invertebrates. However, the entire genus is of little significance as a waterfowl food source or as a game browse.

Bladderwort can occasionally become a problem to navigation or impede water flow in canals. Silvex and Diuron were effective in controlling bladderwort, but the registration of these two herbicides has since been cancelled by the Environmental Protection Agency. Diquat at 2 gallons per surface acre with 3-5 pounds of a copper ion complex is also effective, although complete coverage is essential. Two other herbicides used for bladderwort control are Hydrothol 191 and Hydout at 1-5 ppm. Both of these herbicides are toxic to fish; therefore, application should be restricted where fisheries are an important resource. ▼

control works as required to maintain optimum ground water levels, provide irrigation water and remove excess flood water to storage, the maintenance and operating unit of the District's organization is constantly engaged in maintaining those works at the peak of their operating efficiency. This work includes Aquatic Plant Management in the canals and lakes.

The implementation of an aquatic weed control program in District canals was necessary to use the facilities for their intended purposes. With the warm sunshine and year-round growing season typical of Florida, aquatic weeds soon clog all primary and secondary canals, reservoirs, and most waterways if left uncontrolled. The entire system would cease to be functional. In the rainy season when excess water must be moved and stored to avoid flooding, canals back up and overflow if they are choked with vegetation. Large pumping stations are not able to pump very long before weeds are sucked into intake gratings halting the use of, and causing possible damage to this expensive equipment.

It is absolutely essential that an effective aquatic weed program be conducted. The South Florida Water Management District's program is designed and operated on a year-round basis to keep the canals free and clear of aquatic growth. Without a determined effort to control aquatic vegetation these noxious

weeds could:

1. Successfully block all primary and secondary canals, reservoirs, and most waterways.
2. Clog water drains, irrigation canals, and agricultural spray equipment and pumps.
3. Impede the navigation of boats.
4. Interfere with swimming, skiing, fishing and other water oriented activities.
5. Reduce fish population by competing for water space and basic nutrients in the water.
6. Furnish ideal breeding grounds for mosquitoes and other insects.

The basic concept of the District's aquatic weed control program is to control, to the highest degree possible, all exotic nuisance vegetation, while maintaining native vegetation in its most natural balance, to that degree which is compatible with the primary functions of the facility at a given time. Therefore, for adequate protection of water supply and fisheries production, vegetative growth between "little" and "moderate" is acceptable. That is, submersed growth up to 25% of the design capacity may be acceptable during part of the year, while floating and emersed or ditchbank infestation up to 10% may be allowable. The reproductive potential must be considered in establishing allowable deviations from design capacity. Hyacinth mats are known to double in size in about a month. Hydrilla infestations in canals 15 feet deep have been observed to regrow to the

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to its new facilities in September, 1980. These facilities will improve the capability to perform laboratory analysis and will house a nucleus of scientists whose major research commitments are focused on aquatic plant research. The Center will include seven faculty offices, a conference room and library, water analysis laboratory, plant tissue laboratory, and a large steel strand combination laboratory storage facility.

Much research being conducted is

field oriented on public and private aquatic ecosystems throughout the state. Therefore, other existing laboratories and offices which are in use throughout the University, including the Agricultural Research Center at Fort Lauderdale, other institutions, and other state and federal agencies, will continue to function as an integral part of on-going programs as well as of new ones.

The Center's Programs

Center personnel will focus attention on research to test potential integrated management systems, man-

agement strategies, impact of management practices on the aquatic and related ecosystems, and reproductive and growth characteristics of plants.

Although chemical treatment continues to be the most used management system, it is necessary to investigate integrated systems to reduce costs, potential environmental impacts, energy consumption, and to increase management effectiveness.

A second major emphasis of Center scientists is the evaluation of impact of alternative management systems on the aquatic ecosystem. The body of knowledge in this area is limited, particularly the effect on water quality, native fisheries, other aquatic flora and fauna, and the overall balance of these sensitive ecological systems.

A third major research area centers on obtaining basic information on the reproduction, growth and succession of the major noxious aquatic plants — hydrilla and water hyacinth. This basic information is a prerequisite to developing effective management systems and potential use of the plants for energy and/or food supplies. The potential production of methane from aquatic plants, the use of the plants for livestock feed, or a means of tertiary treatment of waste water requires additional basic ecological and physiological information.

Programs of the Center are funded from varied sources. In addition to state support, contracts and grants from state and federal agencies provide a significant amount of funding for research conducted by Center scientists. As the Center fulfills its responsibilities for statewide research leadership and coordination in seeking to provide information which responds to both current and future needs, this strong, continuing support becomes even more important.

The Technical Advisory Council will be a great asset in providing program priorities and assisting in acquiring additional sources of state and federal revenue. In this context, we seek your input, suggestions, and support for identification of high priority research programs. ▼

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surface in as little as 30 days. During the rainy season (May - November) aquatic plant management must be such that the design capacity of each work will be approached as closely as possible. In other words a greater degree of maintenance is required.

Maintenance of lakes and water storage areas is a different concept. The District's program in these areas is twofold. First, aquatic vegetation will be removed from any area where it interferes with the flow of water into or out of the lake. Secondly, and more importantly, nuisance exotic vegetation will be controlled to eliminate the possibility of spreading the infestation, to provide access to areas for recreation, and to enhance wildlife utilization.

Other right-of-way areas are also maintained in the area of weed control. Here, the right-of-way must be kept open for access purposes as well as for control of nuisance exotic plants.

The first step in the implementation of an aquatic weed program is to determine what species or types of aquatics are prevalent in the canal or waterway. The proper treatment for different types of

aquatics varies greatly. Aquatic plants comprise a large, diversified group of families which can be broken into four major categories based upon the physical location in the environment in which they exist. The floating aquatics are those that live on the surface of the water. They can cause a reduction in water levels because of evapotranspiration rates of up to four times that of normal evaporation from open water surfaces. The second group is the submersed plants. These are rooted in the bottom soils and extend upwards to the surface of the water. Canals which are fully infested with submersed weeds can sustain substantial head losses over a distance of several miles. The third group is the emersed plants, those that inhabit the shallow areas of waterways. These have submersed parts anchored in the bottom of the waterway and leaves and stems extending above the surface of the water. These plants can hinder the flow of water, obstruct access to the water body, and generally hinder boating and recreational uses of the water. Finally, there is the ditch-bank and aquatic grasses and brush. These plants harbor pests, hinder

uses of the water, and obstruct access.

The second step is the determination of the method of treatment. This is dependent, of course, on the growth form of the plant, the niche in which it is located, the uses of the water body, and the types of equipment available. There are four methods of control: mechanical, chemical, biological and physical, i.e., water-level fluctuation. Of these, the District is actively engaged in the first two, while also making limited use of the third and fourth. All of these methods may be employed independently or in combination. Mechanical control methods were used by the District primarily against submersed vegetation until about three years ago when a transition to chemical methods was initiated. The overall operation of machinery is slow, cumbersome, non-selective and expensive in terms of time, effort, and money. Machinery tends to fragment plants and many submersed plants can generate whole new plants from small fragments. Thus, for many weeds, mechanical control methods tend to spread the infestation. However, mechanical removal of vegetation does transfer a certain amount of nutrients away from the aquatic ecosystem. But the amount of nutrients removed is more than made up for by those nutrients entering the system from other sources.

In recent years advances in chemical technology have allowed the uses of specific chemicals for specific needs in aquatic weed control. Chemical control methods are speedy, cost-effective, and longer lasting than mechanical methods. There are certain environmental considerations and temporary adverse effects which are inherent in the use of chemical methods of control. However, with proper caution and training, these effects can be limited to acceptable levels. Because the chemicals are specifically designed to interfere with specific plant life processes they are selective for target species. In addition chemicals can reduce the reproductive potential of plant populations and thus reduce the overall treatments over a period of time. This results in less production of nutrients by exotic plants. In other words, chemical applications are directed at the



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A NEW ASSOCIATION BEGINS

During 1979 a new organization named "Association of Special Districts, Inc." was formed in South Florida, but members from all parts of the state can benefit equally as active members. Originally a group of water control districts started the Association but other special service districts were so interested that the name and structure was expanded to include any of them. Membership now includes Fire, Hospital, Port Authority, and Inlet Districts.

The "Special District" concept is typically American in that government is kept close to the governed. Whatever service is provided is paid for by the people served who in turn select their governing boards or other managing body from their own community. Aims of the new Association are quite parallel to the Florida Aquatic Plant Management Society since both groups can be a source of information to operators and managers as well as to the legislature and the general public.

The first general meeting including a program and election was held at the Wellington Polo Club on November 7, 1979. Speakers for the occasion were: Col. Herbert C. Gee, well known engineer; Senator W. D. Childers, Rep. Ray Liberti, Rep. Mary Ellen Hawkins, Attorney Terry Lewis. Rep. Tom McPherson was a guest.

Officers for 1979-80 are: Robert P. Blakeley, President; A. W. Glisson, Vice-President; C. W. Knecht, President-Elect; Joe McCrary, Treasurer; Madison Pacetti, Secretary.

Directors are: James Dixon; William Bowman; Frank Stewart;

Joe Easthope; Nancy Roen; Frank Donahue; Fred Greene; Les Bitting; Ed Lowder; Bob Hutzler; Jenny Graf; Pat Junod.

The Association is in contact with legislators at all times. ▼

If you or a friend would like to have more information, you may call or write:

Mr. Blakeley, P.O. Box 15405, Plantation, Fla. 33318 Phone 305 — 472-5596

Mr. McCrary: Rt. #1, Box 9, Clewiston, Fla. 33340 Phone: 813 — 983-6124

Madison Pacetti: P.O. Box 2775, Palm Beach, Fla. 33480 Phone: 305 — 655-0620

CONTROL OF BRAZILIAN PEPPERS WITH BANVEL 720 IN SOUTH FLORIDA*

For the tourist traveling in South Florida, as well as for the native Floridian, one of the most attractive sights along road ways, canals and fence-rows is the beautiful waxy-leaf shrubs with bright red berries variously called Florida holly or Brazilian pepper (*Schinus terebinthifolius*). Besides its beauty, the fully-grown tree, in many cases, provides a useful screen along canal banks and canal rights-of-way as well as along fence-rows in pastures. Since the introduction into South Florida decades ago, little concern has been expressed over its rapid propagation and spread. However, in recent years it has become clear that the bush had developed beyond its original intended bounds, and in many areas has reduced the utility of acres of land. In addition, it had choked off canals and canal rights-of-way to the point of masking the presence of the canal and making access to canal rights-of-way difficult, if not impossible. At some sites the problem is aggravated by well-meaning attempts to trim back the larger shrubs. In such cases, the remaining intact root system with stored energy reserves supports a rapid regrowth of the original stock, as well as the vigorous proliferation of several new shoots from the same base. Without frequent pruning efforts on a regular basis, the original shrub can produce a dense canopy of regrowth almost impossible to penetrate.

Recently we have accumulated data from a series of studies utilizing

Banvel 720 and the invert application methodology, to insure maximum activity of the Banvel 720 herbicide on Florida holly with minimum loss due to drift or volatility. The applications on Florida holly were made at the South Florida Water Management District Homestead offices and the Hollywood Reclamation District, Hollywood, Fl. ▼

*Dr. Richard H. Wilson, Area Manager Velsicol Chemical Corporation, Gainesville, Florida 32601

AND

*Walter Matheny, Jr., Industrial Vegetations Control Department, Velsicol Chemical Corporation, Marietta, Georgia 30062

WHAT'S HAPPENING WITH YOUR AWARDS COMMITTEE

The major functions of the Awards Committee of the Florida Aquatic Plant Management Society are the responsibilities of establishing methods of honoring deserving leaders and rewarding motivated workers in the field of aquatic plant control. The committee is currently in the process of standardizing a President's Plaque to be presented to the outgoing president at each annual meeting.

A new award to be presented for the first time at this year's annual meeting is being established to recognize an Aquatic Plant Manager of the Year in Florida. This should provide some incentive for everyone involved in aquatic plant management in Florida to become more motivated to accomplish effective weed control. Guidelines are being established by the committee to determine eligibility, a method of choosing the winner, nomination procedures, and prizes. Anyone interested in making a nomination for this award should contact one of the committee members.

A contest is being held this year to determine an appropriate motto for the Society. The procedure for choosing the winner will include membership participation. The prize for the winner is yet to be determined. Motto suggestions should be sent to any committee member.

The Society has allocated \$300 for the committee to purchase prizes for these awards, contests, and door

prizes to be given away at the annual meeting. Any additional contributions by individuals or industry are encouraged to provide for better prizes.

Awards Committee members at this time include,

- (1) Danny Riley, Chairman, Department of Natural Resources
- (2) Ron Dempsey, South Florida Water Management District
- (3) Jerry Perryman, Florida Game and Fresh Water Fish Commission
- (4) Leonard Bartos, Southwest Florida Water Management District ▼

continued from page 12

competition which naturally exists between populations of different species. For example, it is well known that hydrilla maintains a great competitive edge over most native submersed vegetation due to its ability to use a lower level of light intensity to begin its photosynthetic processes. Therefore it grows faster sooner and shades out the native types of plants. By using specific chemicals which attack hydrilla and leaves other plants unharmed, the native vegetation is allowed the chance to grow and become reestablished to the extent that hydrilla can no longer compete with them. The District is thus managing the structure of the aquatic plant communi-

ties by removing and stressing certain exotic or nuisance plant species while encouraging other native plants to become established. The plants being encouraged are of less nuisance and a more natural part of the South Florida aquatic ecosystem.

It can definitely be said that under mechanical operations we were progressively losing ground to hydrilla, whereas under chemical operations we are making substantial gains in the management of this nuisance aquatic weed. Perhaps one of the most important and under-recognized decisions made by the District in the last decade has been the one which resulted in being permitted to transition from mechanical to chemical methods of hydrilla control. No finer example of our success in this program could be cited than that which involved the movement of tremendous quantities of water through our primary canals during the deluge of April 24-25 1979 which was estimated to be on the order of a 1:100 year storm. If such a storm had occurred during the days of mechanical control, the District would have been "up to its neck" in submersed vegetation problems, and backwater conditions would have been worsened without a doubt.

Aquatic weed control can be an expensive undertaking. Within the boundaries of the District, weed control maintenance of the primary waterway system is presently costing in excess of \$3.0 million per year. This is a considerable increase over what the District expended six years ago (\$0.5 million). Such an increase has resulted from an expanded project facility inventory as well as the inflationary spiral effect on wages, equipment, and chemical costs. The magnitude of cost involved certainly generates a desire to find methods of control that produce results which act in harmony with the environment and at the same time reduce costly, repetitive, and expanded treatments. In this light, our present technology data base indicates superior results for submersed weed control through skilled application of herbicides as contrasted with mechanical control methods. Once a problem aquatic plant can be brought under control (that is, from a level of runaway-infestation to a proper level of maintenance) the costs of maintenance can be reduced to a minimal amount. ▼

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