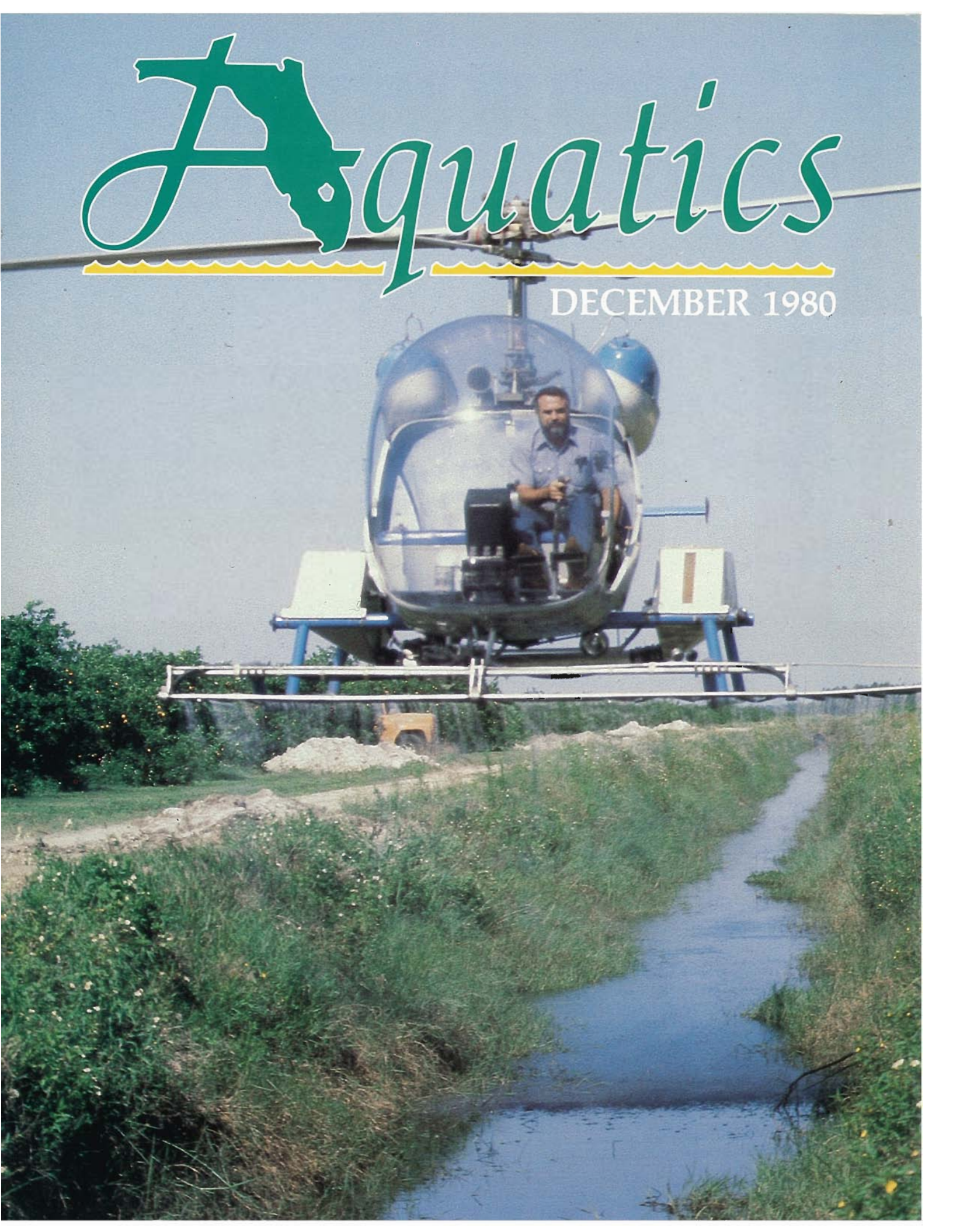
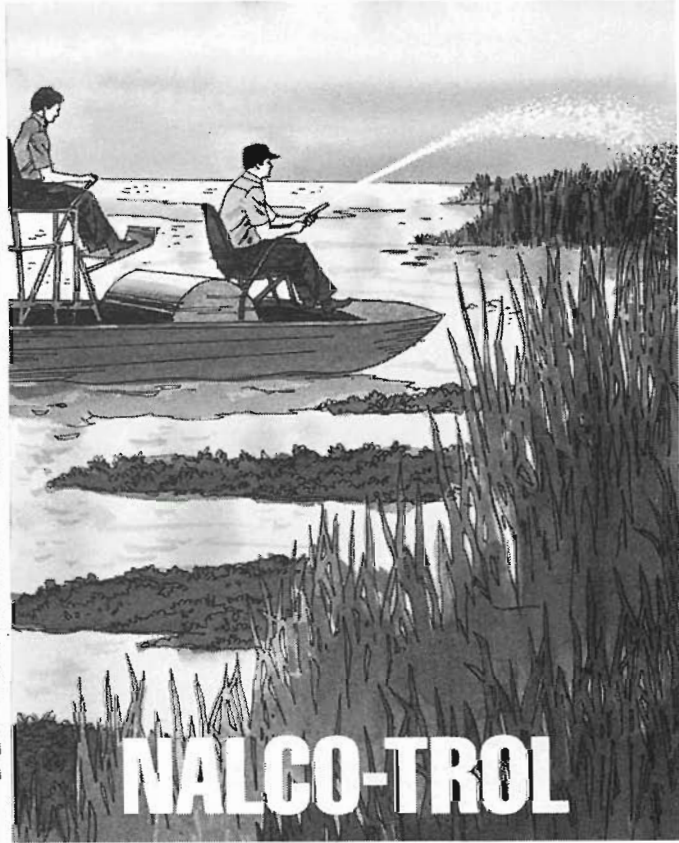
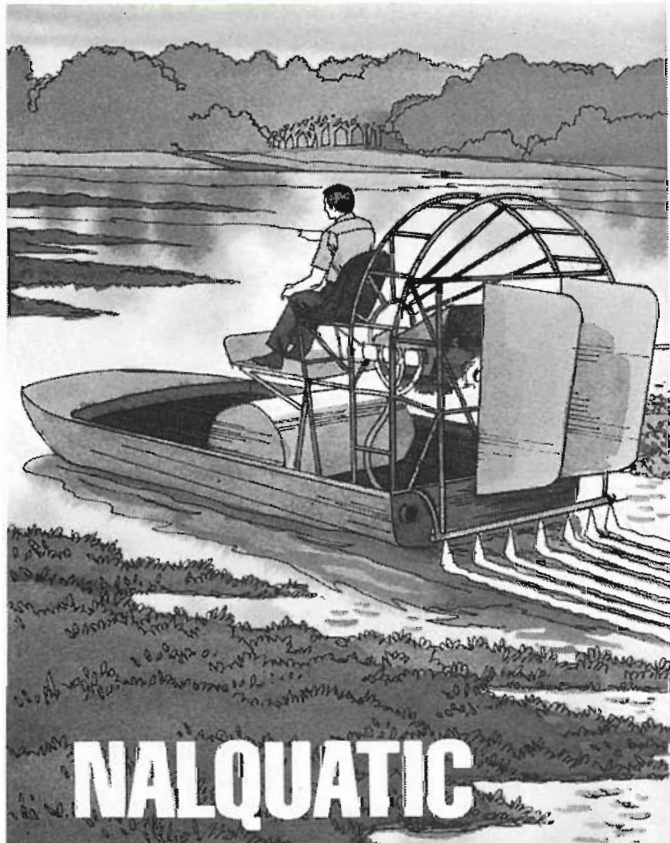


Aquatics

DECEMBER 1980



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Editorial
by William L. Maier

Aquatic plant managers are confronted with a serious situation in grass and cattail control in water. Currently there are few materials registered for use in this area. Commonly accepted materials such as dalapon, dowpon C, etc., do not have EPA required tolerances for use in water. As a result of this, most applicators are extremely limited in effective control techniques, yet the problems continue to grow.

Product registration costs continue to increase and data requirements are more and more stringent. All minor crop registrations are in serious trouble, particularly in aquatics. The impact of this void in grass and cattail control will hit hard in the agriculture and flood control systems in Florida as well as other states if something is not done soon to get an effective material on the market.

At the last meeting of the Aquatic Plant Technical Advisory Council, the members recommended to the Department of Natural Resources that they pursue all avenues possible to alleviate this serious situation.

It appears that the only potential solution is to apply for a Section 18 (emergency exemption) through the State Department of Agriculture to the Environmental Protection Agency. According to Mr. Vince Giglio and Mr. Roy Clark of these respective agencies, a lot of documentation will be necessary to verify that a true emergency exists. To prove this point will require input from all impacted programs in the state.

Two products are currently in the development stages and have received Experimental Use permits. These are Monsanto's Roundup and Elanco's Sonar. Both appear to be effective in grass and cattail control in water and are the most likely candidates for a Section 18, Emergency Use permit.

The department has sent a letter to all agencies receiving assistance through our grants programs requesting documentation which would verify an emergency situation.

It is extremely important that everyone take this seriously and assist the department with pictures, testimonial, acres of problems, and the consequences of no control. Potential economic losses and environmental consequences should be pointed out. Time is of the essence! As in most governmental processes, this will require an extensive review by numerous agencies.

Our white hat, black hat, inspectors are in the field reviewing operations. Don't get in the water without properly registered materials. Take the time to assist the profession by working with the department through proper channels, to provide safe and effective materials to accomplish our goal of a comprehensive maintenance program on noxious aquatic plants.

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Aquatics

DECEMBER 1980 VOLUME 2 • NUMBER 4

AQUATICS: Published quarterly as the official publication of the Florida Aquatic Plant Management Society. This publication is intended to keep all interests informed on 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

Aerial application of herbicides plays an important role in the aquatic weed control programs of Florida's flatwoods citrus groves. Photograph by Vernon V. Vandiver, Jr.

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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.



"Hygrophila"

Vernon V. Vandiver, Jr.¹

Hygrophila [*Hygrophila polysperma* (Roxb.)], just another pretty face in our aquariums, or another hydrilla waiting in the wings? That is a question that we hope will be answered soon. *Hygrophila* is presently under consideration by a committee of the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), for listing under the Federal Noxious Weed Act. The APHIS Technical Committee to Evaluate Noxious Weeds has been requested to consider listing *hygrophila* under the provisions of the Federal Noxious Weed Act because of a particularly troublesome infestation located in Broward County, Florida.

Infestations of *hygrophila* have apparently been present in Florida for some time. Last spring an infestation of *hygrophila* located in a Water Management Canal in Miramar, Florida, received considerable attention in the local press. At that time the City of Miramar was in consultation with Mr. Ross Hooks, Water Management Division, Broward County, for a confirming identification and possible suggestions for a control program to manage the dense infestation of *hygrophila*. Though no flowers were present on the plants in Miramar at that time, the plant was subsequently identified as *Hygrophila polysperma* by Mr. Bob Lazor of the Florida Department of Natural Resources in Tallahassee. He indicated that the plant, a native of India and Asia, was a very popular aquarium plant that had been introduced into Florida.

In addition to the infestation in Miramar, Mr. Hooks also reported another infestation in a water management canal located in the City of Margate in Broward County. Also, Mr. Bob Lazor indicated that two other *hygrophila* infestations existed on the east coast of Florida. The first was found in a border canal in Conservation Area 3 and the second was in the Palm Beach County Canal in Palm Beach County.

Hygrophila appears to be present in other locations throughout peninsular Florida as Mr. Lazor indicated that the plant is present in the Hillsborough and Alafia Rivers in the Tampa area and in



Shoot of *Hygrophila polysperma* collected from a Miramar, Florida canal. Photograph by Vernon V. Vandiver, Jr.

East Lake Tohopekaliga near Orlando. I have recently learned of other possible infestations of this plant in Lee County.

Hygrophila grows primarily submersed in the water, rooted in the soil, with stems extending upward to the surface of the water forming a rather dense mat. The plant does not undergo the extensive branching that commonly occurs in hydrilla; however, the stems do form a rather dense mass of vegetation in the body of water. The plant in Miramar reached the surface in over 2 meters of water. The plant has prominent stems with leaves that are opposite. The leaves have a rather dull green color, about 5 centimeters long and approximately 2 centimeters in width. A prominent feature which I noticed about the plant is the many adventitious roots which appear at many of the nodes along the stem. In addition the plant has very brittle stems which are easily fragmented.

Hygrophila has one characteristic which makes it somewhat troublesome from a water management point of view, and this is the fact that it apparently propagates very easily from plant fragments. These fragments easily

root in water and form new plants, so that the plant has the potential to rapidly infest a body of water.

In the Miramar infestation I noticed the *hygrophila* growing side by side with hydrilla, and it appeared that the *hygrophila* was out-competing the hydrilla. However, this competition could have been related to the weed management program in effect in the area as the herbicides being used may be controlling the hydrilla but not influencing growth of the *hygrophila*. Mr. Hooks is presently evaluating available herbicides for efficiency in *hygrophila* control. In addition, a preliminary laboratory evaluation with various herbicides is being conducted in cooperation with Dr. Kerry Steward, USDA, SEA, AR, at the University of Florida, Agricultural Research Center, Fort Lauderdale.

Mr. Hooks has observed that the infestations at Margate and Miramar are in areas which have increased nutrient loading because of effluent discharge from nearby sewage treatment plants. He feels that this increased nutrient loading may have a definite effect on increasing the availability of nutrients for growth of *hygrophila*. Mr. Lazor has described another situation in Florida which seems to indicate that *hygrophila* will not be easily controlled by a typical hydrilla management program. He reports that the Boggy Creek infestation in East Lake Tohopekaliga, an infestation which was less than 0.1 of an acre (0.04 ha) in 1979, has now expanded to an infestation of at least 10 acres (0.41 ha) in size. During this period, a hydrilla control program was in effect using invert applications of endothal plus copper. It appears that this hydrilla management

"HYGROPHILA" continued to page 11



Mr. Ross Hooks observing dense infestation of *hygrophila* in a water management canal in Miramar, Florida. Photograph by Vernon V. Vandiver, Jr.

¹ Extension Aquatic Weeds Specialist
University of Florida, IFAS
ARC, Fort Lauderdale



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Hydrilla (*Hydrilla verticillata* Royle) causes problems in many lakes, ponds, canals, and rivers in Florida. In addition, surface watercourses of agricultural irrigation systems are subject to dense infestations of this plant. Hydrilla growth in these areas restricts water flow for irrigation and drainage. Precise water control for irrigation and drainage is essential in these agricultural areas for maximum crop production; therefore, hydrilla and other associated aquatic weeds must be properly managed.

For several years we attempted to initiate a study to evaluate an integrated hydrilla control program in an agricultural system with canals and ditches; however, because final approval had not yet been obtained for introduction of grass carp into such a system, the project had not been started.

Hydrilla may be controlled by biological, herbicidal, and mechanical methods. However, hydrilla regrowth normally occurs within a relatively short time after herbicidal or mechanical treatment, resulting in costly programs to achieve effective control of the plant. Integrated control is the combining of two or more types of control techniques into

Management of Hydrilla in a Citrus Grove¹

Vernon V. Vandiver, Jr.² and David L. Sutton³



Regrowth of torpedograss in an irrigation and drainage ditch in the CONGEN Citrus Grove 5 months after treatment with herbicides in the late spring of 1980. Photograph by David L. Sutton.

¹ Cooperative demonstration between the Aquatic Weeds Research Center and the Florida Cooperative Extension Service of the University of Florida; the U.S. Department of Agriculture's Animal and Plant Health Inspection Service and the Science and Education Administration; the Florida Department of Natural Resources; and CONGEN Properties, Inc.

² Associate Professor and Extension Aquatic Weeds Specialist University of Florida, IFAS ARC, Fort Lauderdale

³ Professor and Aquatic Weed Physiologist University of Florida, IFAS ARC, Fort Lauderdale

a management program which utilizes the advantages of each individual control method. In other studies we have found that the herbivorous grass carp (*Ctenopharyngodon idella* Val.) fish are effective in preventing regrowth of hydrilla for several years. Management of hydrilla with herbicides or mechanical methods to remove dense infestations of weeds followed by stocking with grass

carp may be one way of reducing weed control cost for agricultural producers.

In fiscal year 1979, the Aquatic Weeds Research Center of the University of Florida's Institute of Food and Agricultural Sciences (IFAS) initiated a study to demonstrate an integrated management program for hydrilla in agricultural systems. Funds from the U.S. Department of Agriculture, Animal and Plant Health

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Hydrilla fills this watercourse in the CONGEN Citrus Grove with a mixture of grasses encroaching from the ditchbanks. This ditch serves as the control for the study and will not receive any control measures during the demonstration period. Photograph by David L. Sutton.

Inspection Service made possible the impetus for development of this program. This paper describes progress made in this study.

The following objectives were established for the demonstration project: (1) to demonstrate integrated management programs using biological, chemical, and mechanical systems to control hydrilla and related aquatic weeds in agricultural water supply and drainage systems; (2) to demonstrate the impact of the integrated management programs on aquatic plant growth, water quality, aquatic fauna, and aesthetics of the agricultural area; and (3) to document the economics of the integrated management programs.

Data collected during the project will provide information on weed management techniques, impacts of control techniques, and cost of the integrated management systems. The primary focus in this particular project is on increasing the effectiveness of the weed control programs in the water delivery systems in a citrus grove, but information derived from the project should be transferable to other agricultural crops and operations.

The site selected for the demonstration site is a citrus grove owned and operated by CONGEN Properties, LaBelle, Florida. The water control system in the grove is a series of canals of various sizes which supply water for irrigation and drainage for the grove.

The demonstration area is located within a 2,428 hectare (6,000-acre) citrus grove. The initial weed control treatments are being made in an area of 283 hectares (700 acres) and is an integrated control program using biological, herbicidal, and mechanical methods.

The approach to the weed control treatments in the canals and ditches was to provide initial control through a herbicidal program or through mechanical operations. Following this, a portion of the area was stocked with grass carp to

evaluate their potential for controlling regrowth of hydrilla and other aquatic weeds such as torpedograss (*Panicum repens* L.).

Stocking rates for the grass carp varied from 25 to 618 fish per hectare (10 to 250 fish per acre) and they weighed approximately 1 to 2 pounds. Supplemental herbicide applications will be made in areas stocked with fish in the event they do not maintain an acceptable level of control of weed regrowth. The intent is to maintain adequate weed control which will not interfere with the

MANAGEMENT OF HYDRILLA continued to page 10

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The FAPMS would like to recognize Phil Phillips for his contributions and accomplishments over the years.

Phil was the first person hired in the state for Aquatic Weed Control. He worked as a spray pilot for the Game and Fresh Water Fish Commission 30 years ago when water hyacinths were rampant in the state, and I believe we could say that Phil has sprayed more water hyacinths than any one individual in the world.

Phil has served the state of Florida admirably over the years and has been and

remains a credit to the agency he worked for and the organizations he is associated with.

Anyone who has ever seen Phil work would without a doubt say that the risk involved in flying the GFC Spray Plane is extremely hazardous.

Phil retired on October 31. We recognized him for contributions and accomplishments. We wish him the best for the future and expect deer and turkey to become endangered species in the Citrus-Hernando County area as a result of his retirement. ▶

Aquatic Plant Control Permits

The Florida Game and Fresh Water Fish Commission has repealed Chapter 39-8, Florida Administrative Code relating to aquatic weed permitting, effective October 23, 1980. The responsibility for issuing aquatic weed control permits was returned to the Department of Natural Resources, Bureau of Aquatic Plant Research and Control during the 1980 Legislative session. The Department has stated permits already issued by the Commission under Chapter 39-8 F.A.C. will remain valid until their expiration dates. Requests for new or amended permits should be made to the Department of Natural Resources, 3900 Commonwealth Boulevard, Tallahassee, Florida 32303
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Hydrilla Control Program in California utilizes Komeen on 370 Miles of Waterway

Federal and California state agencies are expecting to complete in October a 5½ month, \$1.5 million program aimed at controlling the waterweed Hydrilla (*Hydrilla verticillata*) that has been choking the irrigation canals and reservoirs of California's fertile Imperial Valley.

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Barriers were erected in the ditches and on the existing water control structures to prevent movement of the fish from the Citrus Grove. The barriers were constructed with offset double rows of metal rods to reduce clogging by debris floating in the ditches. Large



Irrigation and drainage ditch in the CONGEN Citrus Grove 5 months after control of torpedograss with herbicides in the late spring of 1980 and then stocked with grass carp to control regrowth of this grass and hydrilla.

Photograph by David L. Sutton.

volumes of water move in this system and the buildup of debris on the barriers would reduce the flow. Through December 1980 the fish barriers are allowing good water movement with minimum of work necessary to remove debris which catches on them.

Mechanical removal of hydrilla is being conducted in certain of the key water supply ditches to determine the cost of mechanical removal of aquatic weeds from citrus ditches. In these particular ditches, extra effort is required to keep the ditches clean using herbicides because of the high volume of water which flows through this particular section of the system.

A number of IFAS faculty are involved in the project. Arnett C. Mace, Jr., Director of the Aquatic Weeds Research Center, assists with the administration of the project; Larry O. Bagnall, Agricultural Engineering Department, is harvesting hydrilla and other weeds using equipment which he has either developed or modified to meet the constraints of the canals; Daniel E. Canfield, School of Forest Resources and Conservation, is monitoring water quality; William T. Haller, Agronomy Department, and Jerome V. Shireman, School of Forest Resources and Conservation, are help-

ing to supply grass carp for the project and are assisting with the design of the project; Lymm M. Hodgson, Department of Botany, University of Florida, is sampling and quantifying phytoplankton; Donald W. Lander, County Extension Director, Collier County, and Douglas A. Ross, Extension Agent, Hendry County, are helping with the extension portion of the demonstration; Kenneth M. Portier, Department of Statistics, is directing the statistical design and analyses of data collected; Harold M. Schramm, School of Forest Resources and Conservation, is helping with the stocking of grass carp, measuring fish populations, and tracking the grass carp using radiotelemetry. David L. Sutton, IFAS' Agricultural Research Center (ARC) at Fort Lauderdale is helping with the design of the project, assisting with stocking of grass carp, and evaluating weed growth; Thai K. Van, School of Forest Resources and Conservation, is measuring nutrients in vegetation and soil; and Vernon V. Vandiver, Jr., of IFAS' ARC at Fort Lauderdale is assisting with the design of the project, evaluating weed growth, measuring herbicide residues, and is the coordinator of the demonstration project. Mr. C. J. Neitzke, CONGEN Properties, Inc., has graciously allowed the use of the grove in which the demonstration is being conducted. His assistance and the assistance of the commercial aquatic weed control company, Harold F. Brown, Inc., which conducts the aquatic weed control program in the grove, has been greatly appreciated.

When this study is completed we will know more how the grass carp may be used in an integrated program with herbicides and mechanical equipment to control undesirable vegetation in canals and ditches in areas such as this agricultural citrus grove. Future plans are to stock another area of the CONGEN Citrus Grove with a hybrid carp. This hybrid is a cross of female grass carp and male bighead carp [*Hypophthalmichthys nobilis* Rich (formerly *Aricthichthys nobilis*)]. Because these hybrid are sterile, this reduces the likelihood of unwanted reproduction in the event they escape from the area where they are being used.

As is generally well known no single operation is able to achieve effective aquatic weed management. We hope that this project will demonstrate one way of integrating several techniques to develop an aquatic weed management strategy which will produce maximum effectiveness and reduce costs to agricultural producers. ►

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program has had little effect in controlling the hygrophila in this location.

Because of the unknown weediness potential of hygrophila, a plant which apparently has been used in Florida for some time as an ornamental aquarium plant, this situation was brought to the attention of the APHIS Technical Committee to Evaluate Noxious Weeds. It was requested that this plant which has been identified as *Hygrophila polysperma* be considered as a candidate for regulation under the Federal Noxious Weed Act. The Act which is known as the Federal Noxious Weed Act of 1974 is designed to regulate the mailing, shipment, importation, carrying, or movement into and within the United States of plants which are defined as noxious weeds under the provisions of the Act. The Animal and Plant Health Inspection Service of the U.S. Department of Agriculture is the Federal agency that has been delegated responsibility for enforcement of the Noxious Weed Act. Based on Public Law 93-629, APHIS has promulgated its Noxious Weed Regulations.

The intent of the Act is to regulate the importation and distribution in interstate commerce of noxious weeds which "... interfere with the growth of useful plants, clog waterways and interfere with navigation, cause disease, or have other adverse effects upon man or his environment and therefore is detrimental to the agriculture and commerce of the United States and to the public health." In terms of the law a noxious weed is defined as "any living stage (including but not limited to the seeds and reproductive parts) of any parasitic or other plant of a kind or subdivision of a kind which is of foreign origin, is new to or not widely prevalent in the United States and can directly or indirectly injure crops or other useful plants, livestock or poultry, or other interests of agriculture including irrigation or navigation or the fish or wildlife resources of the United States or the public health." In essence, the intent of the law is to prevent the movement into the United States and the spread of noxious weeds including noxious aquatic weeds.

If during the course of field work, aquatic plant managers observe infestations of unidentified weed growths or plants which might be recent introductions, this fact should be brought to the attention of regulatory authorities. When infestations are small, eradication measures might be effective and thus prevent the necessity of future, expensive control programs. ►

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back to its roots, Komeen, mixed with water and the adjuvant Nalquatic, has been applied by surface spray rigs moving along both sides of the canal for the entire 370 miles. ▶

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Minutes of the Aquatic Plant Advisory Council Meeting Held October 30, 1980 at Orlando

Chairman Brown called the meeting to order and recognized guests and visitors. Those board members in attendance were:

1. Harold Brown
2. Al Burkhalter
3. Joe Schweigart
4. Smokey Holcomb
5. Dr. Arnett Mace
6. Vincent Giglio
7. James Cason (non-voting for Mr. Vergara)

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8. Beverly F. Birkitt


9. Joe Joyce

An attorney representing the Indian River Citrus League questioned the meeting of the Advisory Council without public notification. The Chairman explained that it was an emergency meeting and directed the Secretary to file a report of the meeting with the Secretary of State's Office.

The Chairman, in order to save time for discussion, asked for a deviation to dispense with the reading of the minutes of the last meeting. The motion was

made by Mr. Joe Joyce to dispense the reading of the minutes and was seconded by Mr. Vincent Giglio. The Council voted to accept the motion.


The first order of business was the update of committees. Mr. Joe Joyce had prepared recommendation regarding manners in which public agencies conducting aquatic plant control could comply with the "Notification of Treatment" requirements on herbicide labels. The Council was in agreement with the committee report and recommended that the



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Department of Natural Resources (DNR) utilize it when adopting rules on state standards for application.

Because the prime consideration of the committee on rules was the interagency agreement, Mr. Joe Schweigart asked that the discussion of his committee be deferred until the item regarding the interagency agreement came up on the agenda.

Next, Mr. Smokey Holcomb gave the report of the research committee and listed their priorities for research. They are as follows:

1. Documentation of treatment impacts
2. Studies of grass carp hybrids
3. Baseline physiology of principle problem plants
4. Sterilization methods for herbivorous fishes
5. Natural growth inhibitors
6. Definition of native plant values
7. Re-establishment of vegetation (desirable)
8. Digestive enzymes of grass carp
9. Use of excess vegetation (product development)
10. Hydrilla — pep-caroxylase
11. Physiology of *Limniophila*
12. Methods of carp recapture

The research committee also discussed with Dr. Gissendanner the need for additional research funds and requested that if possible the aquatic plant research budget of the bureau be increased to the recommended figure of \$420,000.00.

Dr. Mace then presented recommendations for selection and screening of research proposals. They were as follows:

1. Utilizing the listed priorities, the interested researchers be asked to submit a one-page statement of interest, briefly describing the proposed research. This should be done at least one year prior to anticipated funding.
2. Statements will be reviewed by the research committee and placed in priority.
3. Prioritized statements will next be presented to the full Advisory Council for discussion and action.
4. After Council action, those project statements selected will be returned to researchers for proposal development.
5. Completed proposals will be returned to the Council for final action (at this time, the Council will seek outside reviews from qualified researchers).
6. Final recommendation by the Council to the Department of Natural Resources.

The next order of business was the discussion of the interagency agreement among the Department of Natural Resources, Department of Environmental Regulation, and the Game and Fresh Water Fish Commission (GFC). The following points were recommended by the Council to DNR:

1. A statement be added to the agreement that exempts those waters from aquatic plant control permits that were exempted from the Department of Environmental Regulation's water quality criteria under Rule 17-3, and that were previously exempted in the rule of GFC.

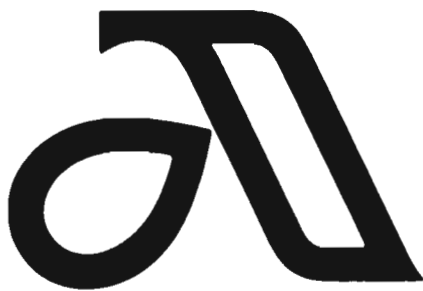
2. That the Department of Environmental Regulation review the need for Section 4, page 3, of the interagency agreement.
3. On Section 5, page 3, that the word *applicant* be substituted for *registrant*.
4. On Section 8, page 3, that the entire section be stricken.

Mr. J. L. Hassel, a visitor from Citrus County, brought to the attention of the Council that the GFC had issued permits for aquatic plant control with below label recommendation for herbicides. He felt these recommendations would provide ineffective control. Dr. Burkhalter was asked to contact the GFC and resolve this matter.

The last topic of discussion involved the absence of an approved herbicide for control of aquatic grasses. Testimony was heard for representatives of several public agencies as well as private individuals concerning problems with aquatic grasses and the lack of a legal herbicide for control. Discussion also ensued on the possibility of requesting a Section 18, *Emergency Exemption for Round-up* (glyphosate). The Advisory Council recommended that the Department of Natural Resources investigate the complaints to determine if indeed an emergency does exist and if so, to coordinate the request for the exemption of a product for control of aquatic grasses.

With that the discussion ended. Dr. Mace made a motion to adjourn, seconded by Mr. Joyce and the meeting ended. ▶

AQUA-VINE continued to page 15



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4th Annual Florida Aquatic Plant Management Society Meeting

Another extremely successful annual meeting was held in Orlando. Over 300 persons registered and attended the 2½ day program. The presentations were extremely informative and panel discussions were more productive than ever. Common problems in aquatic plant management were brought out by the applicators and an excellent exchange of potential solutions ensued. Everyone went home satisfied and with a feeling of tremendous success that this organization has put together in its relatively short history.

A number of by-law changes were passed by the membership. The most significant being an increase in the number of board members. This will provide for greater representation from the membership at large. The following officers were elected unanimously and will take office January 1, 1981. ►

- President: Joe Joyce
- President-Elect: Bill Maier
- Secretary: Bill Moore
- Treasurer: Carlton Layne
- Editor of Aquatics: Paul Myers
- Directors — 2 years
- Elroy Timmer
- Len Bartos
- Rue Hestand
- Ross Hooks
- Ray Spirnock

Awards Received at the Annual Meeting

The FAPMS initiated three new awards in 1980. They were the Motto, the Florida Aquatic Plant Manager of the Year and the Photo Contests.

A contest to establish an official motto for the society, to go with the logo was held. This contest was won by Leonard F. Bartos who is employed by the Southwest Florida Water Management District. The winning motto was "Preserving Florida's Water Heritage."

The other two contests will be annual events. The Florida Aquatic Plant Manager of the Year Contest was established to provide a means of recognition for outstanding achievements in the field activities of aquatic plant control and to enhance professionalism in aquatic plant control in Florida. This award was won

jointly by Louis German and Phillip Jones for 1980. They are a spray crew working for the Southwest Florida Water Management District.

The Photo Contest was established late in the year and was publicized only in the last newsletter. Therefore, many interested persons did not have adequate time to prepare their entries. The result was a low rate of participation in this contest for 1980.

There were four categories with first, second, and third place ribbons awarded for each. There were only ten entries for the twelve possible winning places, so, everyone who entered the contest was a winner. These winners were as follows:

Aquatic Scene

- 1st Place Vernon Vandiver
- 2nd Place David Tarver
- 3rd Place Len Bartos

Chemical Aquatic Plant Control

- 1st Place Vernon Vandiver
- 2nd Place Vernon Vandiver
- 3rd Place Vernon Vandiver

Biological Aquatic Plant Control

- 1st Place David Tarver

- 2nd Place Len Bartos
- 3rd Place No Entry

Mechanical Aquatic Plant Control

- 1st Place Vernon Vandiver
- 2nd Place Vernon Vandiver
- 3rd Place No Entry

Nineteen door prizes were given away at the annual convention.

There were contributions of \$100 from Chevron, \$100, plus two door prizes from Pennwalt, one door prize from KDM and \$300 from FAPMS, which went toward financing the door prizes and the plaques and ribbons for the contests. ►

The Florida Aquatic Plant Management Society at its Annual Board meeting, approved a motion to provide all active members of aquatic plant management societies, throughout the country, complimentary issues of the Florida "Aquatics" magazine. This will increase our circulation considerably and provide valuable information to aquatic plant managers throughout the United States. ►

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