



AQUATIC PLANT NEWS

A newsletter of the Aquatic Plant Management Society, Inc./ No. 27, Feb. 1988

Aquascaping

Aquatic plants are being utilized in the restoration and creation of a diversity of freshwater ecosystems, including lakes, retention ponds, catchment basins, drainage ditches and marshes. **Aquascaping** can provide biofiltration, aesthetic improvement, fish and wildlife habitat enhancement, and mitigation for dredge and fill activity.

In aquascaping, native aquatic plants are installed along the littoral shelf according to their depth preference within three general zones: the upper zone (+.5 foot to -.5 foot), middle zone (-.5 foot to -3 feet), and lower zone (-3 feet to -5 feet) (see Figure 1). Depths are established from the system's normal water level (NWL). Aquatic plants which may be utilized in Florida projects include:

Upper Zone

Sand cordgrass	<i>Spartina bakeri</i>	(+.5' to NWL)
Soft rush	<i>Juncus effusus</i>	(NWL to -.5')
Golden canna	<i>Canna flaccida</i>	(+.5' to -.5')
Blue flag iris	<i>Iris virginicus</i>	(+.5' to -.5')

Middle Zone

Pickereelweed	<i>Pontederia cordata</i>	(-1' to -3')
Arrowhead	<i>Sagittaria lancifolia</i>	(-1' to -3')

Lower Zone

Fragrant white water lily	<i>Nymphaea odorata</i>	(-3' to -5')
Soft-stem bulrush	<i>Scirpus validus</i>	(-3' to -5')

Although these plants may be planted at different depths than those listed, this classification produces good aesthetics and rapid coverage.

Aquatic plants for installation may be purchased from nursery sources. Typical growing configurations include two (2) and four (4) inch trays and one (1) gallon containers. Plant size is important for project success. *Spartina*,

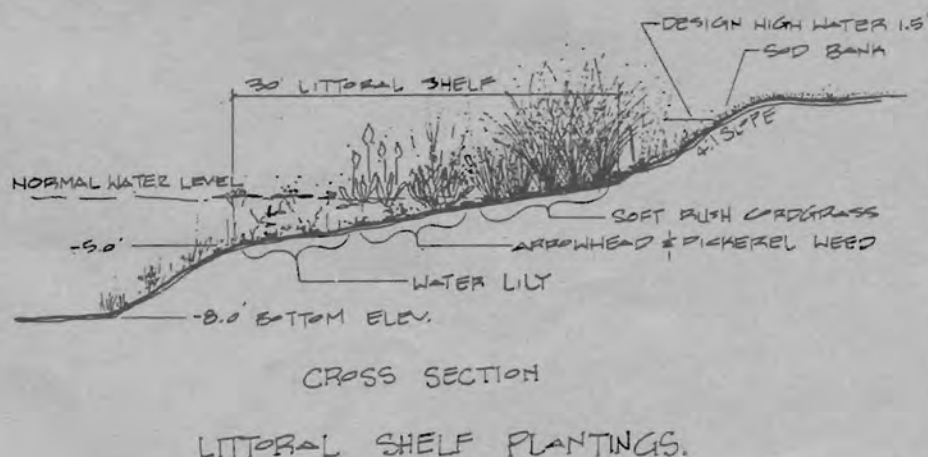
Juncus and *Scirpus* should be a minimum of twelve to twenty-four inches (12-24") in height with six (6) to twenty (20) stems per plant. *Pontederia*, *Sagittaria*, *Iris*, and *Canna* should be a minimum of twelve inches (12") in height with three (3) to five (5) petioles per plant. *Nymphaea* should be three (3) to five (5) feet in length with three (3) petioles per tuber. All plants



should exhibit healthy white roots with active-growing bud sites.

For transportation to the project site, plant material should be packaged or protected to prevent dehydration. Plant quantities shipped to the project should be installed within a forty-eight (48) hour period. Plants should be staged in the water until installed.

See page 7



Submit Papers

for 1988 Annual meeting in New Orleans by
April 15.

(See inside)

January Board Meeting

A Marathon 7 hour Board of Directors Meeting was held January 8th at the Fairmount Hotel in New Orleans, LA. The hotel, in the French Quarter, will be the site of our Annual Meeting this July, and it is a beautiful hotel with the elegance and charm appropriate to our meetings.

Much time and discussion went into deliberating a dues increase for the society (to \$35.00/year). We have been unable to add significantly the past 3-4 years to the reserve fund (currently approximately \$8,000). The Board continues to feel that we should have one years operating expense (Approx. \$24,000) in reserve and in order to do this over a 3 year period, a \$10 increase in dues will be necessary. This proposed increase will be voted upon by the membership at New Orleans.

Some reasons for the increase include increased printing costs of the Journal, improving quality of the newsletter (remember the old xeroxed newsletters?), increased postage costs for all mailings, and our activities in student awards and reduced registrations as well as our increased activities in CAST. The Board has reduced costs wherever possible, but to maintain our increased activities we have to have additional funding.

Program chairman and President-Elect Couch is putting together a fine program with concurrent sessions likely on Tuesday. A hydrilla session, Lake and Reservoir Management Symposia and a computers and aquatic plants session are expected.

President Comes reported on APMS/WSSA representation and in-

dicated that our legislative committee chair automatically sits on the WSSA legislative committee. The APMS Board of Directors feels this is a major opportunity for increasing our knowledge and activities in this important arena.

Local arrangements Chairman, Don Lee, presented several options for the "Tuesday Night" affair in conjunction with our annual meetings. Looks like a bit of Cajun music, dancing and food at the former site of the Worlds fair is in order with final details to be arranged.

Student affairs Committee Chair, Don Riemer, attended and presented his report which was promptly acted upon by the Board. The important thing is that after missing last years Savannah meeting due to illness, Don is looking and feeling great. The Board felt that students should be discouraged from presenting the same paper in succeeding years and that evaluating review versus original research papers should be reviewed by the committee. Generally, we should not restrict students participation in the student paper program, but some more explicit guidelines should be developed. (Editor's note: these changes are apparent in the call for student papers in this issue.)

A placement service will be made available by the placement committee at the Louisiana meetings.

Outgoing CAST representative Haller gave his CAST and Editor's report. New CAST representative, Joe Joyce, will attend the February CAST meeting in Washington with Haller to ensure a smooth transition. Haller ex-

pressed his appreciation to the Board for being allowed the honor of representing APMS in CAST the past nine years. The Editor indicated that the January issue of the Journal is complete and almost on time with mailing expected by mid-February. The July 88 issue will contain the 25 year Author and subject index as well as new instructions to contributors.

The mid-South chapter had extended an invitation to APMS to hold our annual meetings in Mobile, AL in 1991. In order to give our site selection committee time to operate, the Board accepted the invitation and is scheduling the meeting for Mobile. Director Zolynski indicated he could likely have a battleship and a submarine tied up at the river docks as part of the equipment demonstration. The corps and the mid-South chapter recently held their meetings in Mobile and everyone had a great time, so we hope we can do as well. In addition, the Board instructed the site selection committee to investigate the mid-West as a possible meeting site in 1992, with a Florida meeting tentatively scheduled for 1993.

President Comes adjourned the meeting at slightly past 5 p.m. by complimenting those who were able to attend the meeting despite freezing rain and snow throughout the southern U.S. which prevented several people from attending. The President then treated the Board to coffee and orange soda in the Boom-Boom Room prior to leaving the hotel. -W.T. Haller

1988 Florida Aquatic Plant Management Society Meeting

The Florida Aquatic Plant Management Society will hold its twelfth annual meeting at the Holiday Inn Surfside, Daytona Beach, Florida on October 25-27, 1988. This meeting will highlight the latest aquatic plant management technologies for lakes, ponds, rivers and canals. The most advanced information in all methods of aquatic plant management and regulatory activities will be made available through presentations, panel discussions, and exhibits. Everyone who shares a concern for the management of surface water resources should attend. For further information contact:

Bill Moore
FAPMS
210 Valencia Shores Dr.
Winter Garden, FL 32787
305/656-5838

CAST Releases Report on Safety of Herbicide 2,4-D

Each year, millions of acres of farmland, forests, home lawns and golf courses are treated with the herbicide 2,4-D. Public concern over the safety of 2,4-D has focused on whether it causes cancer in humans.

A new report from CAST — the Council for Agricultural Science and Technology — concludes that given current evidence, "as it is generally used, 2,4-D does not represent a significant health threat." However, the report "Perspectives on the Safety of 2,4-D" warns users to handle the herbicide with the caution necessary when applying any chemical that can cause harmful effects. The report also notes that several epidemiologic studies now in progress will provide further data on possible links between cancer and herbicide use.

Written for a lay audience, the report discusses how scientists assess the potential harmful effects on human

health of any chemical, and 2,4-D in particular. The recent Kansas Farm Worker study — in which agricultural use of 2,4-D was associated with an increase in one type of cancer — is discussed in detail. Other studies of human exposure to 2,4-D are reviewed, and the use of laboratory animal studies to determine the effects of chemicals on humans is explained.

A ten-member task force of epidemiologists, toxicologists, and agricultural scientists prepared the report. Dr. Lawrence J. Fischer of the Center for Environmental Toxicology at Michigan State University, East Lansing, chaired the task force.

"Perspectives on the Safety of 2,4-D", a 16 page publication, is available for \$2.00 from CAST, 137 Lynn Avenue, Ames, Iowa 50010-7120. For more information, contact Dr. William W. Marion, executive vice president of CAST, (515) 292-2125

Aquatic Plants and Medicine



Lizard's Tail (*Saururus cernuus* L.)

A team of University of Florida scientists lead by Dr. Koppaka V. Rao is studying a compound called manassantin A, that is contained in lizards tail (*Saururus cernuus* L.), a common wetland plant of the Southern United States. According to Rao, "Many years ago we found that an injected extract from lizards tail would depress the central nervous system in mice. The animals would just sit in a corner, not sleep, but not wanting to be disturbed. We also injected the mice with amphetamine, which usually would make them run around and hiss at you. But when we injected them with manassantin A, they calmed down, so we realized the drug may be active as a neuroleptic."

Manassantin A is particularly interesting because it is the only one of thousands of neuroleptic compounds that is not basic and does not contain nitrogen.

Manassantin A is the first naturally occurring tranquilizer to be discovered in 35 years.

EPA Complies with Congressional Mandate to Delay Start of Endangered Species Labeling Program

Implementation of a plan to limit use of pesticides that would harm endangered species, an effort criticized by manufacturers, states and farmers, will be delayed until the 1989 growing season, the Environmental Protection Agency announced Jan. 7.

The decision complies with a congressional mandate ordering EPA not to spend agency funds to enforce the plan before Sept. 15. The prohibition was added by Congress to the fiscal 1988 appropriations legislation signed by President Reagan Dec. 22, 1987.

The congressional action scuttled EPA's hopes to have at least part of the plan implemented by February 1988. Deferral of the plan was announced in a statement by John A. Moore, EPA assistant administrator for pesticides and toxic substances.

Moore said discussions with the departments of Interior and Agriculture as well as state pesticide officials revealed that basic elements of the program were not developed sufficiently to implement it before the 1988 growing season. He also referred to the congressional prohibition.

The proposed plan will be published

in the Federal Register for a 90-day review and comment period. Publication of the plan will not mean the agency is beginning enforcement. In addition, EPA will hold public hearings on the proposal, with at least one in Washington, D.C. A task force of officials from EPA, Interior, and Agriculture will meet to examine the endangered species and pesticides issue.

With the additional time, Moore said EPA would solicit comments from the public, conduct a public education effort, and refine scientific data.

According to the Jan. 6 statement, endangered species have been identified by the Fish and Wildlife Service as being potentially jeopardized by pesticide use in approximately 910 of 3,050 counties in the United States. EPA said the plan is necessary to bring the agency into compliance with the Endangered Species Act. Moore said the labeling plan would have affected approximately 110 active ingredients in pesticides. (Chemical Regulation Reporter Vol. 11, No. 40) - O.N. Nesheim, Pesticide Information Coordinator, UF, IFAS.

Hydrilla Control in Lake Conroe, Texas

Dr. Rich Noble (NCSU) reported the final results of a study which he conducted in Texas to determine the environmental effects of using grass carp for hydrilla control in a large (21,000 ac.) reservoir, at the North Carolina Interagency Council on Aquatic Weed Control held January 5, 1988 in Raleigh. Between September 1981 and September 1982, approximately 280,000 8-9 inch grass carp (30/vegetated acre) were stocked in Lake Conroe. The hydrilla population, which had covered 45 percent of the lake, began to decline during the stocking year and reached zero biomass after 1.5 years. The grass carp grew rapidly, some surpassing 20 pounds in weight by the end of the second year. Following weed control, water quality indicators showed a slight shift toward eutrophication (reduced water clarity, more phytoplankton, more blue-green algae), but no water quality problems developed. Populations of vegetation-dependent sunfishes declined precipitously as the hydrilla was removed, but they were replaced by rapidly expanding populations of minnows along the newly cleared shorelines. With weed removal, the largemouth bass population shifted from many small fish to fewer but larger fish. The increase in average size of fish, however, did not fully compensate for the decline in numbers and the total biomass of the bass population declined slightly. Fishermen caught fewer bass per hour after weed control but the weight of their catch per hour did not change. Shad populations increased sharply following hydrilla control in response to increased planktonic algal production. In turn, the greater abundance of shad was followed by dramatic increases in the populations of pelagic predators such as white bass and yellow bass. Changes in the system had not reached stability by the end of the study.

Stay Cool Under Those TYVEK Suits

Cool vests help pesticide applicators do just that. This vest holds crushed ice or reusable ice packs, giving an average of one hour of cooling according to the manufacturer, ILC Dover, Inc. A centrifugal pump circulates chilled water throughout the vest. ILC Dover claim that worker productivity in a hot environment can be increased three fold by using the cool vest. Contact them at P.O. Box 266, Frederica, Delaware 19946, Telephone (302) 335-3911

1988 IFAS Aquatic Weed Short Course, June 20-23, 1988

It's time for the 1988 Aquatic Weed Control Short course. The Florida Aquatic Weed Control Short Course is sponsored by the University of Florida, Institute of Food and Agricultural Sciences and the Florida Aquatic Plant Management Society. The purpose of the short course is to provide training for new people in the aquatic plant management profession or as a review for more experienced persons. Basic topics in aquatic plant management, including herbicide technology, mechanical removal, biological control, aquascaping, aquatic plant identification, and more will be presented. The Aquatic category test for Florida Certified Pesticide Applicator Certification will be administered at the end of the training. The agenda should be in the mail by late March. If you have not received one by April 1st drop KEN LANGE LAND a note or call him at the Center for Aquatic Plants.

This year's short course will include an evening barbecue and, in lieu of a field trip, a field day held at the training site. The course will be held the week of June 20th at TREEO, the University of Florida's Center for Training, Research and Education for Environmental Occupations, in Gainesville. This facility is off campus so parking will not be the usual problem.

Further details, the agenda, and registration are available from:

Center for Aquatic Plants
7922 NW 71st Street
Gainesville, FL
904-392-9613
Suncom 622-9613

Special Events Planned for the '88 APMS Meeting

In addition to the usual fine array of contributed papers dealing with all aspects of aquatic plant management, a number of special events are being developed for the Aquatic Plant Management Society meeting at the Fairmount Hotel in New Orleans July 10-13, 1988.

The first of these special events will be launched by a keynote address given by Dr. Ron Raschke, current president of the North American Lake Management Society (NALMS).

Dr. Raschke's presentation will be followed by a workshop entitled "Lake/Reservoir Ecology and Management". Dr. Wayne Poppe, TVA, Chattanooga, and a former director and officer for NALMS will start this workshop with a presentation on the topic "Lake/Reservoir Ecology". This presentation will be followed by presentations from representatives for the Bureau of Reclamation, the Corps of Engineers, the Tennessee Valley Authority discussing current practices for the management of large public reservoirs under their jurisdiction and responsible. One or more individuals with responsibility for management of small, private lakes will discuss the management of these aquatic ecosystems. We hope to add an international flavor to this workshop with discussion by individuals from Europe, the Middle East, etc. dependent on who will be able to attend the '88 meeting. All the individuals making presentations will then serve on a panel to answer questions from the audience and discuss the topic "Lake and Reservoir Ecology and Management" with the goal of answering the question "how are we doing with the

wise management of our aquatic ecosystems called lakes and reservoirs?"

A second workshop is being organized and will be conducted by D. Lars Anderson, USDA/ARS Aquatic Weed Research Lab, Davis, California. Lars is planning five presentations to be followed by a panel discussion on the topic "Hydrilla Biology and Management". Topics to be discussed by the invited speakers include an overview of hydrilla biology, a comparison of monoecious and diecious types of hydrilla, the uptake of herbicides by hydrilla, and the competition and interaction of hydrilla with beneficial aquatic plants.

Dr. John Rodgers, University of North Texas at Denton, is planning and will conduct the third workshop. This workshop will deal with the topic "The Use of Computers in Aquatic Plant Management Programs". Invited participants will bring their computer systems, describe how they use their system, and then be available for one-on-one discussion of application to interested parties.

A final event is being planned by Dr. Dave Sutton, University of Florida at Fort Lauderdale. Dave is planning and will conduct the first ever "Photo Contest" for the Aquatic Plant Management Society. Look for details of this contest in this and future issues of the Newsletter. Plan to submit your "prize photo".

We invite your participation in the '88 meeting of the Aquatic Plant Management Society at the Fairmount Hotel in New Orleans July 10-13th. See you there!!!

Attention Shutterbugs!!

Dave Sutton is organizing the first Aquatic Plant Management Society Photo Contest to be held at the 1988 Annual Meeting in New Orleans. So get your telephotos, wide angles, and filters out, or favorite old photos and follow Dave's rules listed below:

Rules for Entry of Photographs

1. Contest is open only to members of the Aquatic Plant Management Society (APMS).

2. Photographs containing subject matter related to aquatic plants will be considered for entry into the contest.

3. Each contestant may enter up to three prints, but can win only one cash prize.

4. Prizes will consist of ribbons and cash prizes of \$100 for 1st, \$75 for 2nd, \$50 for 3rd, \$25 for 4th.

5. Photographs can be either color or black and white prints. All prints must be 8 by 10 inches in size, and should be mounted. Prints smaller or larger than 8 by 10 inches in size will not be considered for judging. Vertical or horizontal format will be considered.

6. Information to be included on the back of each print shall be the following:

a. Title of print (can be included on front of mounted prints).

b. Name and address, or business card of contestant.

c. Negative or slide from which the photograph was made.

d. Optional information may include camera used, film, and camera settings.

e. If the photograph contains recognizable people, then a model release form must accompany the print.

7. APMS retains the right to keep any or all photographs. Any photographs retained by APMS become the property of APMS for their exclusive uses. Photographs not retained by APMS will be returned to the contestant.

8. Entries must be submitted in person to the registration table prior to noon of the first full day of the meeting.

9. Contestant must attend meeting to win.

10. Entries will be judged on:

- Subject matter,
- Composition, and
- Technical merit.

Student Paper Contest - 1988

Each year since 1975 the Aquatic Plant Management Society has conducted a student paper contest in conjunction with its annual meeting. The winner of that first contest, held 14 years ago in San Antonio, was Mr. Ernest S. Del Fosse, then a student at the University of Florida. Since that time, winners have come from a number of colleges and universities throughout the country and one winner, Robin Anderson, represented McGill University in Montreal, Canada. The objectives of the contest are to encourage student participation in Society affairs, to provide students with the opportunity to gain experience in preparing and presenting scientific papers, and to recognize outstanding achievements by student members of the Society.

Last year in Savannah we had one of our biggest and best contests to date.

with nine students from six different universities participating. The competition was keen and this was reflected in the narrow range of final scores awarded by the judges. This year we look forward to an even bigger and better contest in New Orleans.

Graduate students and advanced undergraduates who have had the opportunity to do independent research are encouraged to present their findings in the 1988 contest. **Papers presented in the student paper contest should be the results of the student's original research and should contain information not previously presented at an APMS meeting.** Lodging for students participating in the contest will be provided by the Society and their registration fee for the meeting will be waived.

Submit Papers for 1988 Annual Meeting

You are invited to submit a title and abstract for a paper to be presented at the 1988 annual meeting of The Aquatic Plant Management Society, Inc., to be held July 10-13, 1988 at the Fairmount Hotel in New Orleans, Louisiana, U.S.A. Type title, authors, organization, and location exactly the way they are to appear on the program. If more than one author is listed, place an asterisk after the name of the author who is to present the paper. Fifteen minutes will be allowed for each presentation. Projection equipment for 35mm slides will be provided. Special requests for additional time or specialized projection equipment should be directed to the Program Chairman, and will be considered on the merits of the individual request.

Deadline:

Abstracts and titles must be in the hands of the Program Chairman by April 15. This scheduling will permit mailing of the printed program to members by May 15, 1988.

(PLEASE DETACH AND RETURN)

Title _____

Author(s) _____

Organization _____

Address _____

Telephone () _____

Abstract (75 words or less)

Submit titles to:

Richard Couch
Biology Department
Oral Roberts University
Tulsa, OK 74171

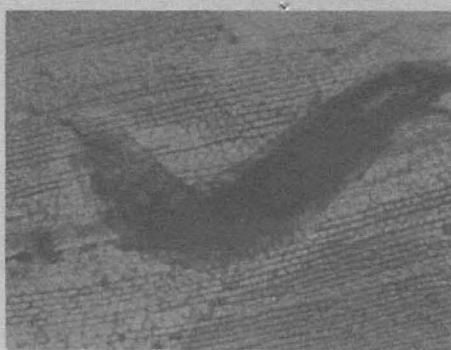
Submit student paper titles to:

D. N. Riemer
Cook College
Dept. of Soils and Corps.
PO Box 231
New Brunswick, NJ 03903

DEADLINE FOR SUBMISSION IS APRIL 15, 1988.

Biological Suppressant for Hydrilla Released in Florida

A small Indian fly, *Hydrellia pakistanae*, whose larvae mine inside the leaves of hydrilla, was released October 29, 1987 by the Corps of Engineers at Lake Patrick (Polk Co., FL). The fly, which was previously studied by entomologists in Pakistan in the 1970's, was imported by ARS/USDA researchers into the Gainesville, FL, quarantine laboratory in 1985. Fifty species of aquatic plants were included in host range tests that confirmed the safety of this fly. Females lay eggs on hydrilla or other surface vegetation. Larvae crawl to hydrilla leaves and eat most of the internal tissue before moving to new leaves. Approximately twelve leaves are eaten by each larva. Damaged leaves are transparent. It is hoped that in the absence of natural enemies, fly populations will increase to levels high enough to retard or suppress growth of hydrilla. This fly was the second insect released against hydrilla in Florida during 1987; a tuber-eating weevil was released in April. - Gary Buckingham.



Hydrellia pakistanae larvae.



Hydrellia pakistanae adult.

MidSouth Aquatic Plant Management Society

The MidSouth Aquatic Plant Management Society recently concluded its sixth annual meeting on October 14-16, 1987, with a record attendance in Decatur, Alabama. More than 70 registrants from seven states participated in the 2½ day meeting that included a field trip to TVA's Aquatic Research Laboratory and the U.S. Department of Interior Wheeler Wildlife Refuge. A variety of research papers, including three student papers, covered such topics as biological control, vegetation-fisheries interactions, regional aquatic weed problems, and operational programs.

A number of valuable door prizes, such as a fish finder, hunting bow, rod-reel combination, and folding knives were used as "encouragement" to attend all sessions. The last paper, preceding the grand prize drawing, was well attended.

Plans are being made for the Mississippi Department of Wildlife Conservation to host the seventh annual meeting in Gulf Shores State Park, Gulf Shores AL, October 12-14, 1988. Contact Ray Cooper (205) 261-3471, for details.

Grass Carp Stocking For Lake Marion Proposed

On January 21, 1988, the South Carolina Aquatic Plant Management Council approved a proposal to stock sterile grass carp, a plant-eating fish, in the Clarendon and Sumter County area of Lake Marion to control nuisance aquatic weeds including hydrilla and Brazilian elodea. The Aquatic Plant Management Council, in association with the South Carolina Water Resources Commission, has developed a proposed plan to stock 100,000 grass carp in the Packs Flats and Elliotts Flats area of Lake Marion

during the spring and summer of 1989. An additional 100,000 fish would be stocked in other areas of upper Lake Marion during both 1990 and 1991. The effectiveness of the grass carp in controlling nuisance weeds would be monitored throughout the three year period. If successful, use of the fish would be continued for long-term weed control and would replace some of the present use of herbicides which has resulted in only temporary, short-term weed control. When fully implemented,

the Santee Cooper lakes which contain approximately 176,000 acres of water, may be the largest lake system ever stocked with triploid grass carp for aquatic plant control. A final decision on whether to proceed with the proposed plan will be made during March 1988. Additional information on the grass carp stocking proposal may be obtained by contacting Steve de Kozlowski, South Carolina Water Resources Commission, phone 737-0800.

IDENTIFICATION MANUAL FOR WETLAND PLANT SPECIES OF FLORIDA

Used by
The Florida Department of Environmental Regulation
in
Determining the Landward Extent of Waters of the State
by

Robert L. Dressler, David W. Hall, Kent D. Perkins, and Norris H. Williams

NOW AVAILABLE!

This field guide was developed to facilitate the identification of wetland indicator species. The genera and species described are those the Florida Department of Environmental Regulation uses to determine the landward extent of Waters of the State of Florida under Chapter 403, Florida Statutes. This softcover edition consists of 308 pages and is beautifully illustrated with 491 color photographs and approximately 80 line drawings. It is indexed and contains a glossary with some terms illustrated for clarity.

ISBN 0-916287-04-1

ORDERING INFORMATION:

copies of *Identification Manual for Wetland Plant Species of Florida*, @ \$18.00 each (includes postage and handling)

Florida residents: please add 6% sales tax (\$1.08 per copy)

TOTAL

Make check or money order payable to "University of Florida."

Mail orders to: Publications
IFAS Building 664
Gainesville, FL 32611-0001

Name _____
Address _____
City _____ State _____ Zip _____

Sonar Usage Shows No NMF Produced

For the past several months, the aquatic herbicide Sonar (fluridone, Elanco) has been widely discussed within the scientific community, by special interest groups, and in the marketplace. Sonar is manufactured and sold by Elanco Products Company.

These discussions have dealt with a potential Sonar photolytic breakdown product called N-Methylformamide (NMF) and how it might affect human

health.

In response to questions posed by interested people, the Environmental Protection Agency and Elanco each conducted a risk assessment for this compound. These risk assessments showed that if NMF were present from the breakdown of Sonar, even under "worst case" conditions, those NMF concentrations would not adversely affect human health.

Even so, the company chose to conduct further experiments to determine if NMF was a breakdown product. In the fall of 1987, Elanco Products Company, in cooperation with the University of Florida, Institute of Food and Agricultural Sciences (IFAS), initiated field trials near Lake City, Florida.

Two sites were treated - one with Sonar A.S., a liquid formulation, at 1.7 lbs/acre active ingredient, and one with Sonar SRP (slow release pellets) at 2.1 lbs/acre active ingredient. In each case, the rate of Sonar used was equivalent to a theoretical concentration of 0.15 parts per million, the maximum acceptable residue level in potable water. In addition, a new method for detection of extremely low concentrations of NMF in water was developed. This methodology has a sensitivity level of two parts per billion.

Samples from these sites were analyzed using the new method for detection. In each sample analyzed, no NMF was detected. These water samples were collected periodically up through 12 weeks after the Sonar was applied.

These results are very positive and support the company's original position that Sonar is a safe and effective aquatic herbicide. Elanco and IFAS will continue to monitor the results from the application of Sonar.

NC State Aquatic Weed Program

We will probably be hearing a lot from the aquatic weed research and extension program at North Carolina State University in Raleigh, especially in the areas of alligatorweed biology and control and some innovative approaches to aquatic plant management. The lead position in this program, which has been vacant since Fall, 1986 was recently filled by Stratford H. Kay.

Strat received his PhD under Bill Haller at the University of Florida in 1980, and was previously employed under IPA by Waterways Experiment Station in Vicksburg, MS where he was working in the area of contaminated dredged material. I know Strat's happy



Stratford H. Kay

to be back in aquatics, and we're happy to have him back.
WELCOME BACK STRAT.

Aquascaping - from page 1

Planting shelves may be variable in size and shape. An optimal littoral shelf designed for planting is thirty feet (30') in width with an eight to one (8:1) slope. Prior to plant installation, the water elevation should be stable at the NWL, the shoreline banks above the NWL sodded, and planting zones staked for identification by installation

crews.

Lower zone plants and floating water lilies are installed first. *Nymphaea* is installed in clusters of three (3) to five (5) plants every twenty-five feet (25') and *Scirpus* three feet (3') on center. Middle zone plants are installed in staggered rows with *Sagittaria lancifolia* and *Pontederia* three feet (3') on center. Upper zone emergents are

installed in staggered rows with *Juncus* and *Bakeri* two to three feet (2-3') on center. Flowering *Canna* and *Iris* are installed in clusters in areas of aesthetic or visual importance.

Coverage of the planted shelf is dependent upon the quality of plants, planting season, and planting density. Typically, one hundred percent (100%) coverage can be achieved within six (6) to twelve (12) months if nursery-grown stock is utilized. *Canna*, *Sagittaria*, *Pontederia*, and *Nymphaea* produce flowers throughout the spring, summer and fall months of the seasons, while *Iris*, although very showy, only flowers briefly in the spring.

Once the system is planted, a maintenance program is established to hand remove any nuisance vegetation, including *Typha* and *Ludwigia* which may invade shallow areas. Maintenance must be conducted on a regular monthly or bimonthly basis for a period of one year.

As a general figure, aquascaping projects cost approximately \$2,000 to \$10,000 per acre, dependent upon the system's environmental characteristics, plants selected, and planting density.

-Will Miller



APPLICATION FOR MEMBERSHIP

There are three regular classes of membership available upon application made in accordance with the Charter adopted in 1961. These classes are:

- A. Active Membership \$ 25
B. Student Membership \$ 5
C. Commercial Sustaining Membership \$200

Name of Applicant _____ Spouse's Name _____

Home Address _____ Zip Code _____

Present Title & Employer _____

Business Address* _____ Zip Code _____

Business Phone _____ Home Phone _____

Amount of Remittance \$ _____ Signature of Applicant _____

Membership Type: ACTIVE: _____ COMMERCIAL SUSTAINING _____

STUDENT: _____ SUBSCRIPTION _____

*Please indicate address to be used by our business office.

AQUATIC PLANT MANAGEMENT SOCIETY, INC.

The Aquatic Plant Management Society, Inc., is an international organization of scientists, educators, administrators and concerned individuals interested in the management and control of aquatic plants. The membership reflects a diverse collection of federal, state and local agencies; researchers, professors and students from universities and colleges around the

world; corporations; commercial applicators; and others dedicated to promoting research and sharing information about aquatic plant management.

Originally called The Hyacinth Control Society, Inc., when founded in 1961, The Aquatic Plant Management Society, Inc., has evolved into a respected source of expertise in the

aquatics field. The Society has grown to include several regional or state chapters; and through these affiliates, annual international meetings, newsletters, and the *Journal of Aquatic Plant Management*, members keep abreast of the latest developments in biological, mechanical, chemical and integrated methods of aquatic plant management and control.

The Aquatic Plant Management Society, Inc.
P.O. Box 16
Vicksburg, MS 39180