

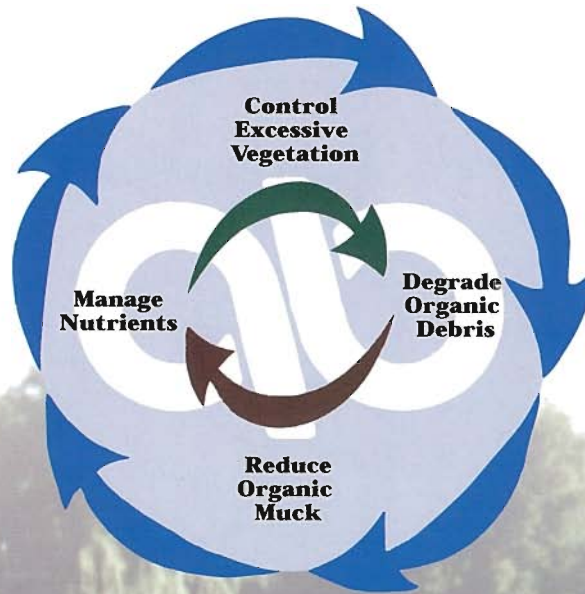
Aquatics

Spring 2004

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FAPMS PRESIDENT'S EDITORIAL

At the end of last year while clearing out some old files I found some FAPMS memorabilia. The aging documents and past issues of the Society publications inspired my thoughts of how far we have come and the great effort put forth by our Past-Presidents, officers and active members.

Belonging to a statewide organization of professionals in any industry is beneficial for the exchange of ideas and in the implementation of new technology. A unified base can better afford to provide environmental education for members and to help familiarize youngsters with career opportunities in our field.

Society goals for my term of office, in my opinion, should include:

- A solid effort to maintain existing members through better communication with the general membership.
- Increased society benefits that attract new members.
- More educational outreach and an increased number of student members.
- Establishing closer "partnerships" with other organizations.
- Greater member participation in committees and stronger membership support for society officers.
- Participation by FAPMS representatives in community events throughout the state. (such as youth fishing events, cooperative efforts with school programs).
- Better communication with legislators.

In closing, I would like everyone to know how proud I am to have been chosen as your President for 2004. I enjoy the interaction of our group and look forward to helping the Society achieve its full potential.

FAPMS Website: www.fapms.org



*Scenic lower Aucilla River in Panhandle Florida.
Photo by Judy Ludlow.*

Aquatics

Spring 2004/Vol. 26, No. 1



Contents

Avian Vacuolar Myelinopathy in the Southeast
by *Lynn Lewis-Weis and John Fischer* 4

North American Weed Choking Wetlands in Australia
by *Lalith Gunasekera* 8

Status of the Aquatic Plant Maintenance Program in Florida Public Waters
by *Jeff Schardt* 14

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Avian Vacuolar Myelinopathy in the Southeast

by
Lynn Lewis-Weis
and
John Fischer
University of Georgia

(Reproduced from
Southeastern Cooperative
Wildlife Disease Study
(SCWDS) Briefs)



Editors Note: For more information about this disease please visit the University of Georgia website at www.uga.edu/scwds/index2.htm or the USGS National Wildlife Health Center website at www.nwhc.usgs.gov/mainavm.html

Avian vacuolar myelinopathy (AVM) is a neurologic disease that has killed at least 100 bald eagles (*Haliaeetus leucocephalus*) in Arkansas, Georgia, North Carolina, and South Carolina since 1994. AVM also is responsible for the deaths of hundreds of American coots (*Fulica americana*) and has been detected in very low numbers in other avian species, including several species of ducks, Canada geese (*Branta canadensis*), great-horned owls (*Bubo virginianus*), and a killdeer (*Charadrius vociferus*). The cause of AVM remains undetermined despite extensive diagnostic and research efforts; however, a man-made or natural neurotoxicant is suspected because the lesions are consistent with toxicosis and there has been no evidence of viruses, bacteria, prions, or other infectious agents.

Avian vacuolar myelinopathy

first was recognized as a fatal neurologic disease of bald eagles in the winter of 1994-95 when 29 eagles died at DeGray Lake, Arkansas. In 1996, when AVM killed 26 eagles in the same area, it became apparent that American coots also were suffering from neurologic disease and had identical brain lesions. Since then, AVM has been found at nine

sites in the Southeast (Figure 1). It was then hypothesized that eagles acquire AVM by ingesting affected coots. Affected birds have erratic flight or are unable to fly, may crash land, swim tipped to one side with one or both legs or wings extended, or be in the water on their back with their feet in the air. On land, birds stagger and have difficulty walking and may fall over unable to right themselves.

The apparent impact of AVM on wild birds in the Southeast during the migratory and wintering seasons of 2002-2003 and 2003-2004 did not appear as severe as in previous years. During the fall and winter of 2002-2003, three bald eagles from Lake Thurmond on the Georgia/South Carolina border were either confirmed (2) or suspected (1) of having AVM. During the past winter (2003-2004), only one affected eagle has been found. This is a considerable reduction from the fall and winter of 2000-2001 and 2001-2002, when AVM was confirmed or suspected in 16 and 7 bald eagles, respectively. Furthermore, clinical disease was not observed in other avian species such as American coots, Canada geese, killdeer, or great-horned owls as it had been during 2000-2002.

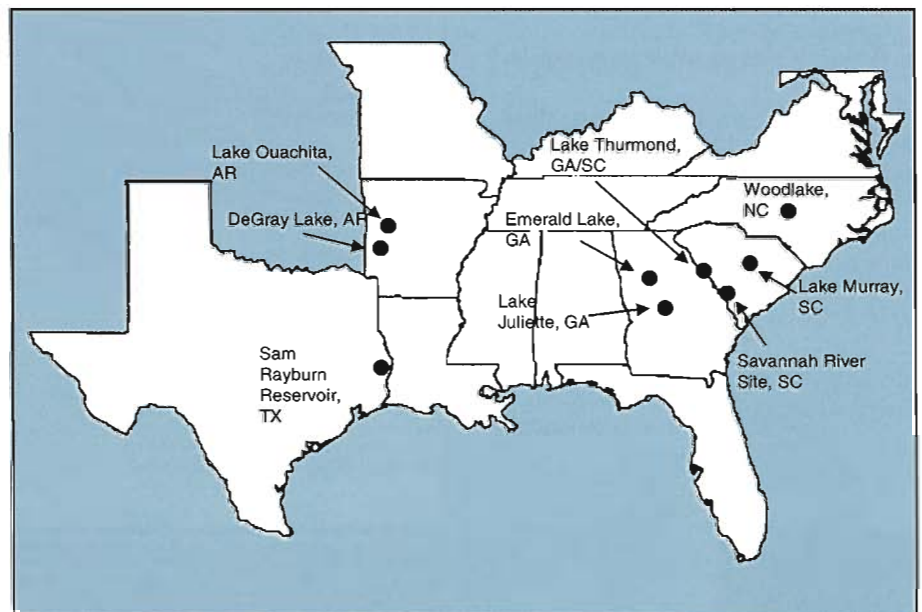


Figure 1. Locations in which avian vacuolar myelinopathy has been found in wild birds in the Southeast.

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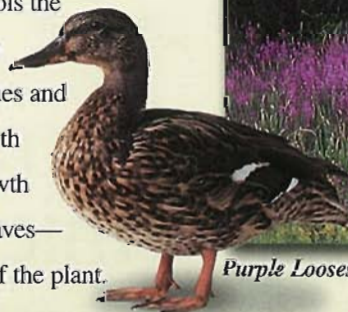
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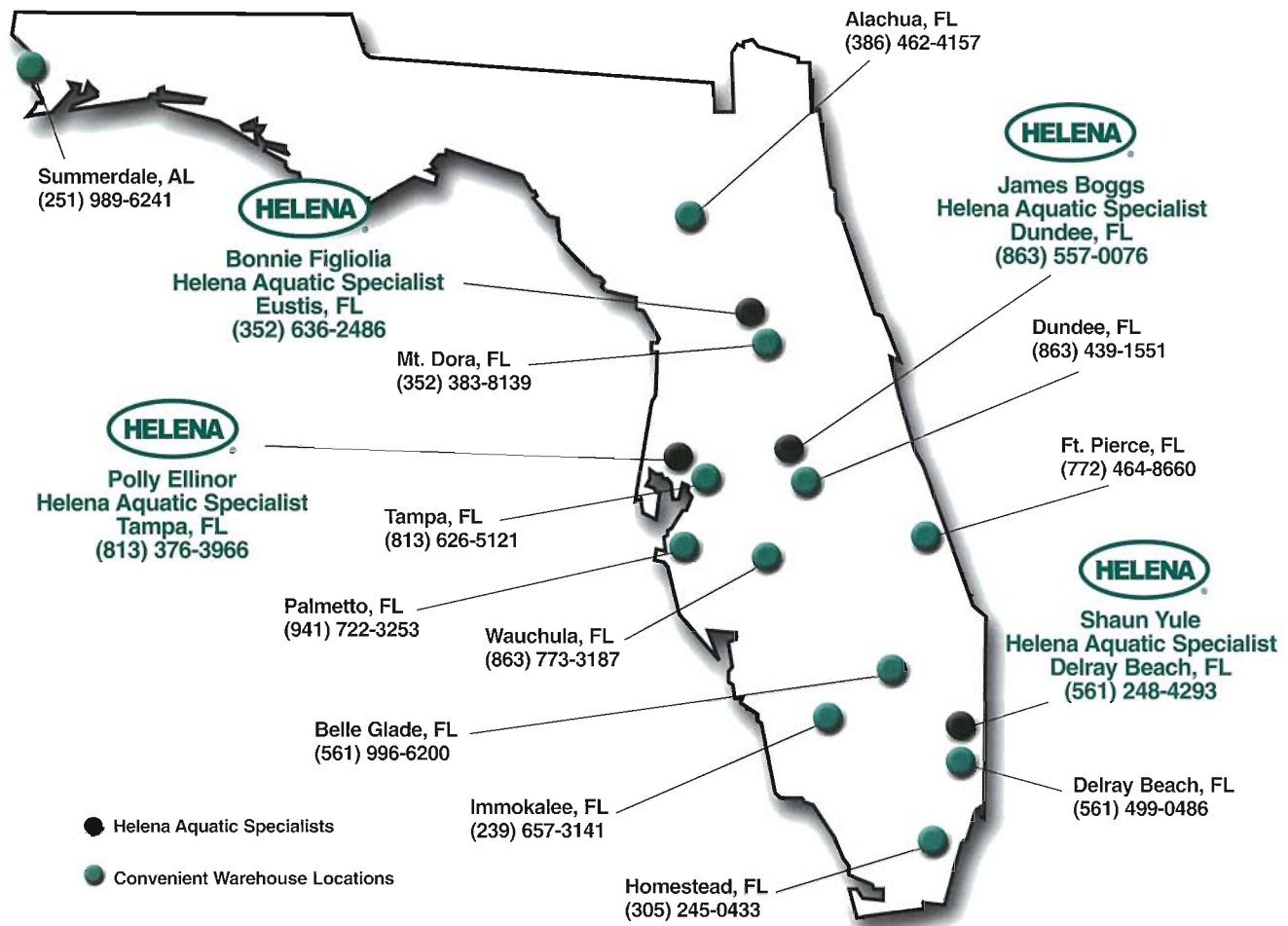
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Investigators of the cause of AVM had been frustrated by a long list of negative test results. Diagnostic tests for infectious agents and known toxins have yielded uniformly negative results, and many feeding trials had failed to produce neurologic disease or brain lesions; however recent breakthroughs have expanded our knowledge of AVM. In sentinel trials conducted by the National Wildlife Health Center (NWHC), clinical disease and brain lesions developed in healthy coots and mallards from an unaffected site shortly after they were released at Woodlake, North Carolina, during an AVM outbreak. Conversely, however, susceptible birds that were co-housed with affected birds taken to a remote facility failed to develop signs or lesions of AVM. The results of these studies suggest that exposure to the causative agent occurs on site and may not be transmissible from bird to bird.

SCWDS first reproduced the disease in rehabilitated, unreleasable red-tailed hawks (*Buteo jamaicensis*) via ingestion of affected coot tissues. This confirmed the theory that raptors, like bald eagles and great-horned owls, acquire AVM by ingesting other affected birds. SCWDS researchers reproduced AVM in domestic chickens following the same techniques in the red-tailed hawk study. These findings demonstrated that chickens are susceptible to AVM, adding another species and a new order, Galliformes, to the susceptible list. This also strengthens theories that AVM probably affects a wider range of wild avian species than has been documented in field studies.

Researchers at Clemson University in South Carolina, recently reproduced AVM in pen-reared ducks by feeding them aquatic plant material (*Hydrilla verticillata* and associated materials) collected during a confirmed AVM outbreak. In addition, SCWDS did the same in chickens. These results indicate that the causative agent is associated with submerged vegetation at lakes with AVM-affected birds. Although

these studies demonstrate acquisition of AVM through consumption of aquatic vegetation, the exact etiologic agent has yet to be identified. The cause of AVM is most likely present in the materials associated with submerged vegetation because the vegetation itself (hydrilla) is not present at all AVM positive sites. Future studies will include attempts to isolate the causative agent from the aquatic vegetation.

Additional laboratory trials and further field research currently are underway at SCWDS, NWHC, Clemson University and others in an effort to determine the cause of AVM, its source, and the range of susceptible species.

Organizations participating in these studies include among others the SCWDS, National Wildlife Health Center, U.S. Fish and Wildlife Service, North Carolina Wildlife Resources Commission, Clemson University, Georgia and South Carolina Departments of Natural Resources, U.S. Army Corps of Engineers, and the National Oceanic and Atmospheric Administration

Publications on avian vacuolar myelinopathy

Lewis-Weis et al. 2004. Attempts to reproduce vacuolar myelinopathy in domestic swine and chickens. *Journal of Wildlife Diseases* In Press.

Birrenkott et al. 2004. Establishing a food-chain linkage between aquatic plant material and avian vacuolar myelinopathy in mallard ducks (*Anas platyrhynchos*). *Journal of Wildlife Diseases* In Press.

Larsen et al. 2003. Failure to transmit avian vacuolar myelinopathy to mallard ducks. *Journal of Wildlife Diseases* 39:707-711.

Augsburger et al. 2003. Vacuolar myelinopathy in waterfowl from a North Carolina impoundment. *Journal of Wildlife Diseases* 39:412-417.

Fischer et al. 2003. Experimental vacuolar myelinopathy in red-tailed hawks. *Journal of Wildlife Diseases* 39:400-406.

Rocke et al. 2002. Epizootiologic studies of AVM in waterbirds. *Journal of Wildlife Diseases* 38:68-684.

Larsen et al. 2002. Clinical features of AVM in American coots. *Journal of American Veterinary Medical Association* 221:80-85.

Fischer et al. 2002. AVM: a newly recognized fatal neurological disease of eagles, waterfowl, and other birds. *Transactions of the 67th North American and Natural Resources Conference*.

Thomas et al. 1998. Epizootic vacuolar myelinopathy of the central nervous system of bald eagles and American coots. *Veterinary Pathology* 35:479-487.

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North American Weed Choking Wetlands in Australia



Elodea canadensis
Photo by Robert
H. Mohlenbrock
@ USDA-NRCS
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Elodea infestation at Frog Hollow wetland in Victoria - Australia. Photo by Dr. Lalith Gunasekera



Dr. Lalith Gunasekera holding elodea plants at an infested wetland in Victoria-Australia.

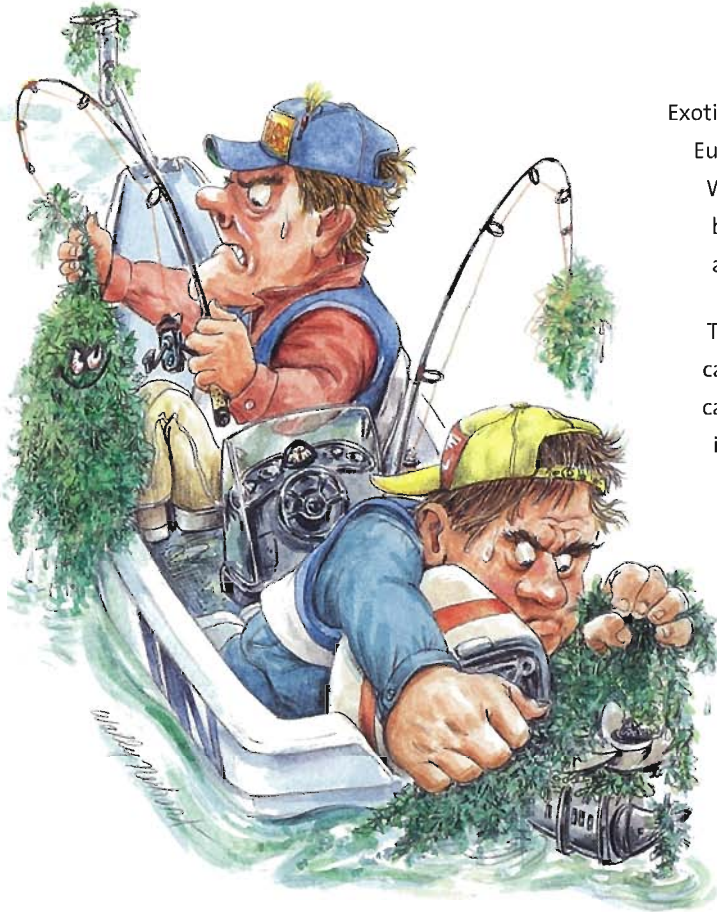
by Dr. Lalith Gunasekera
CRC for Australian
Weeds Management
Department of
Primary Industries
Victoria-Australia

Elodea (*Elodea canadensis*) or Canadian pondweed is a member of the monocotyledonous, Hydrocharitaceae family. The plant is a submerged; attached, much branched perennial aquatic plant that first appeared in Australian mainland in 1958 in the southern Riverina of New South Wales. After-

wards, elodea progressively spread throughout the irrigation districts of New South Wales and adjacent areas of Victoria and some parts of Tasmania. Elodea is native to temperate North America and introduced, probably through aquarium trade, in several countries besides Australia, including the United Kingdom, much of Europe and both islands of New Zealand. It was introduced to New Zealand and Tasmania in the 1960's. It is a major weed of irrigation systems, restricting water flow to 60-80% of design capacity and sometimes causing canals to overflow. In water storages, elodea interferes with hydroelectric output

and urban water supplies. Elodea infestations disrupt river channel water traffic, limit recreational use of streams, and significantly alter native aquatic ecosystems. Elodea can be confused with the Australian native plant Hydrilla (*Hydrilla*

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Exotic invasive aquatic plants such as Hydrilla, Eurasian Watermilfoil, Curlyleaf Pondweed, Water Chestnut and Water Hyacinth can be detrimental to a healthy fishery in lakes across the country.

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Our mission:

- to promote sound and appropriate technologies for the management of aquatic vegetation
- to provide opportunities for the educational advancement of its members
- to encourage relevant scientific research
- to promote the exchange of information among members
- to expand and develop public interest in the discipline

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verticillata). But hydrilla leaves have slightly toothed margins.

This aggressive waterweed is located at one of the new wetlands developed by the Melbourne Water in Endeavour Hills, 35 km away from Melbourne City in Victoria. This wetland was developed to purify storm water coming from a nearby creek. But six months later, elodea invaded the wetland. This was the biggest elodea infestation in Melbourne metro area. Elodea is a popular plant in aquariums and fish bowls with a few strands floating languidly to provide cover for fish, but in the wild this submerged aquatic plant can grow stems up to 3 meters long. Its leaves occur in whorls of three, rarely four leaves, and the small inconspicuous flowers float on the water surface in summer. Only male flowers are recorded in Australia and only female flowers are recorded in New Zealand. Propagation is mainly by stem fragmentation in the autumn. Elodea is tolerant of low water temperatures and, in winter, will adopt a dormant form in which the axis crowds on the ends of the stem. This plant does not grow well in water that lacks iron and appears to have a high light requirement for maximum growth. Elodea has been declared noxious in Tasmania, South Australia and the Northern Territory.

Submerged weeds are among the most difficult to control and elodea is no exception. There is no registered herbicide to use on elodea in Australia. Acrolein has been used in the past in irrigation systems but this chemical can only be applied by specially trained personnel and treated water cannot be used for 48 hours. Mechanical/manual removal is being used in some places but it is laborious, expensive and spreads the plant by fragmentation.

In North America, elodea is kept in check by natural predators such as ducks, fish, and insects. This does not happen in Australia. We need to find a better solution to manage this invader's journey.



Status of the Aquatic Plant Maintenance Program in Florida Public Waters

Fiscal Year 2002-2003 Annual Report

by Jeff Schardt

Florida's aquatic plant management program mission is to reduce negative impacts of invasive non-indigenous plants like floating water hyacinth and submersed hydrilla, as well as nuisance native plants, including floating islands (tussocks) that jeopardize navigation, bridges and flood control structures. **Invasive, non-native plants infest 94% of the 450 public lakes and rivers inventoried in 2003 that comprise 1.26 million acres of fresh water where fishing alone is valued at over \$1.5 billion annually.** Once they establish, eradicating invasive plants is difficult or impossible; therefore, continuous maintenance is critical to sustaining navigation, flood control, and recreation while preserving native plant habitat on sovereignty state lands.

The goals of Florida's invasive aquatic plant management program include:

- Reducing the abundance of invasive exotic aquatic plants polluting Florida public water bodies.
 - with an emphasis on management of water hyacinth, water lettuce, and hydrilla
 - by eradicating new infestations of invasive aquatic plants, and
 - initiating management of established stands of other aquatic plants.
- Managing established invasive exotic aquatic plants through maintenance programs to sustain attributes such as navigation, flood control, and recreation while preserving or enhancing diverse native vegetation com-

munities for fish and wildlife habitat.

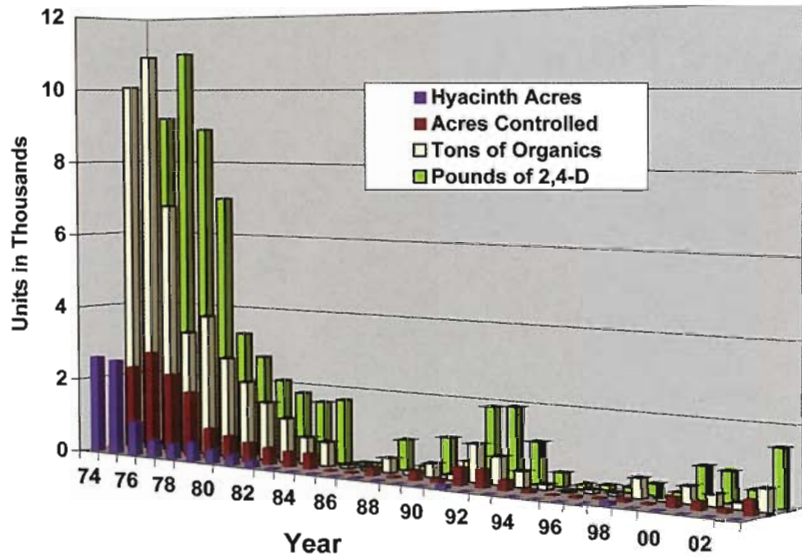
- Integrating biological, chemical, mechanical, and physical control techniques into cost-effective and environmentally compatible invasive plant management programs.
- Assessing and incorporating, where appropriate, new technologies and techniques that enhance invasive exotic aquatic plant management objectives

Maintenance Control

§369.22 (3), Florida Statutes requires that non-indigenous aquatic plants be managed at the lowest feasible levels, a concept known as maintenance control, in order to reduce:

- sedimentation (lake aging),

Water Hyacinth Maintenance Control, Suwannee River, 1974-2003



sediments were produced by shedding root and shoot material and from controlled plants. Hundreds of acres required control using thousands of pounds of herbicide. Crisis management was replaced by maintenance control efforts in the late 1970s. Since achieving maintenance control in 1985, relatively little management has been necessary, reducing environmental and economic impacts. Native plants have returned to the shores and marshes of the Suwannee River, restoring fish and wildlife habitat.

Challenges

Aquatic plant management is a craft that blends predictable sciences of chemistry and hydrology with the highly variable parameters of biology and meteorology, for application in venues with boundaries defined by human behavior and economics.

The greatest challenges facing Florida aquatic plant managers heading into 2004 include:

- sufficient, recurring funding,
- variable tolerances of hydrilla

- native plant damage,
- management costs,
- navigation problems,
- transportation problems,
- flood control problems,
- loss of habitat,
- loss of recreation,

- loss of property values,
- use of herbicides.

The Suwannee River Example

Water hyacinth covered 2,300 acres of the Suwannee River in the early 1970's. Thousands of tons of

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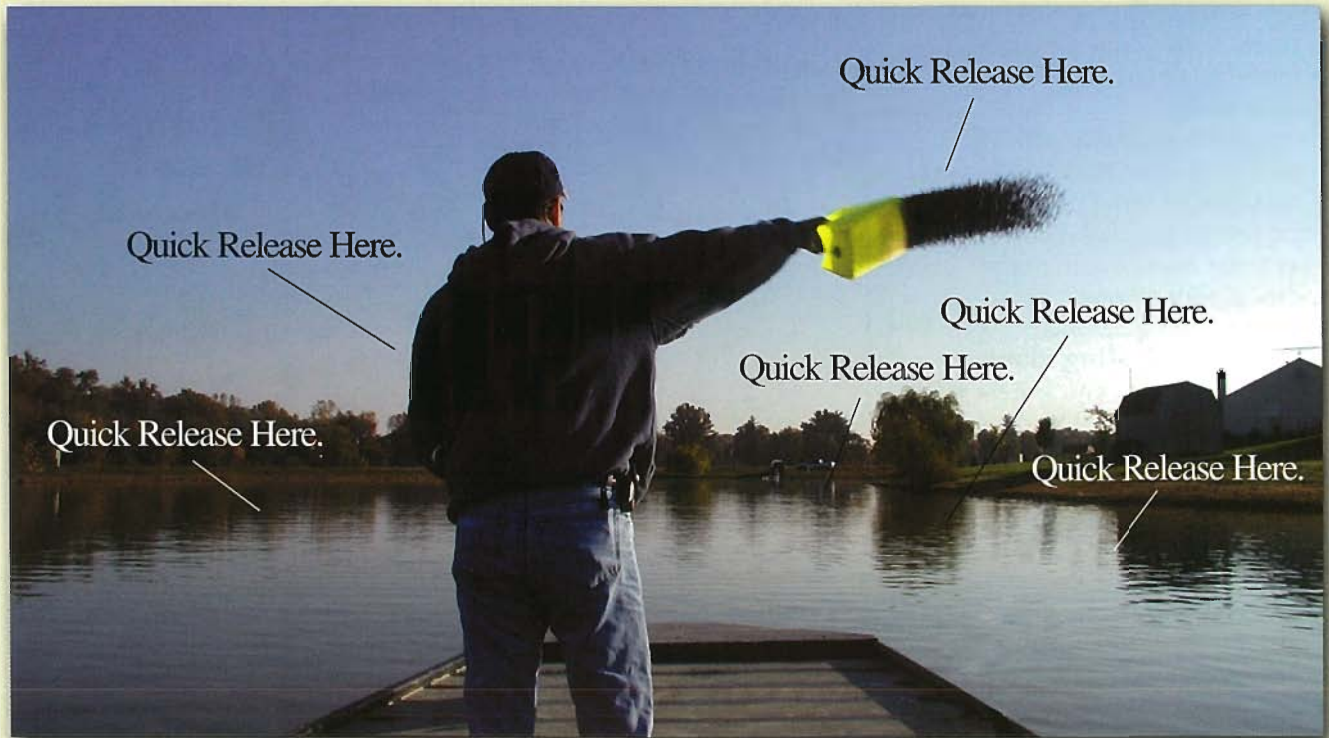
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- cost effective hydrilla control in multi-use central Florida reservoirs,
- managing floating tussocks of plants and sediments that form as water levels return to pre-drought conditions.

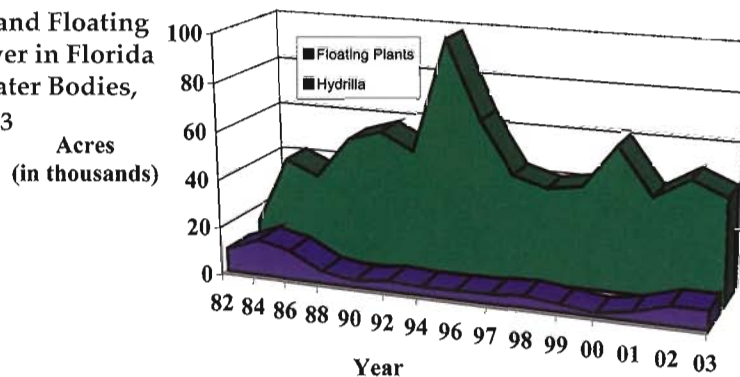
Operations - Floating Plants

As droughts end, and waters re-flood, water hyacinth and water lettuce seeds germinate resulting in an explosion of new growth. At the height of the drought in 2000, managers reduced floating plants to their lowest levels in public water bodies (1,500 acres) since records have been kept (a high of 125,000 acres was recorded in the early 1960s).

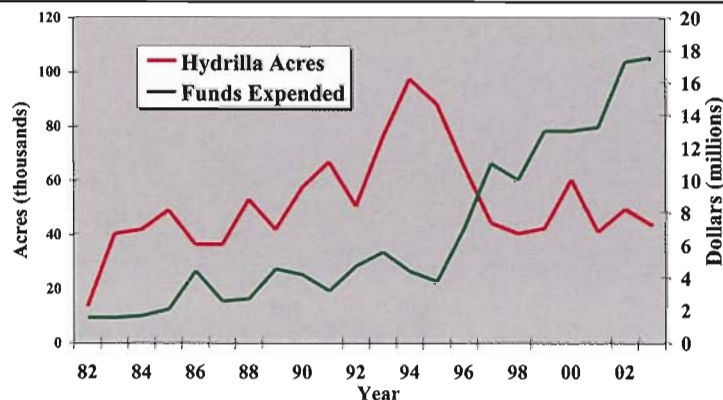
About 30,021 acres of floating plants were treated in public waters in FY 02-03;

- approximately 60% water hyacinth and 40% water lettuce,

Hydrilla and Floating Plant Cover in Florida Public Water Bodies, 1982 - 2003



Hydrilla Growth vs. Funding



Aquatic Plant Management Society

Announces Annual Student Paper Contest for Upcoming July 2004 Meeting in Tampa, FL

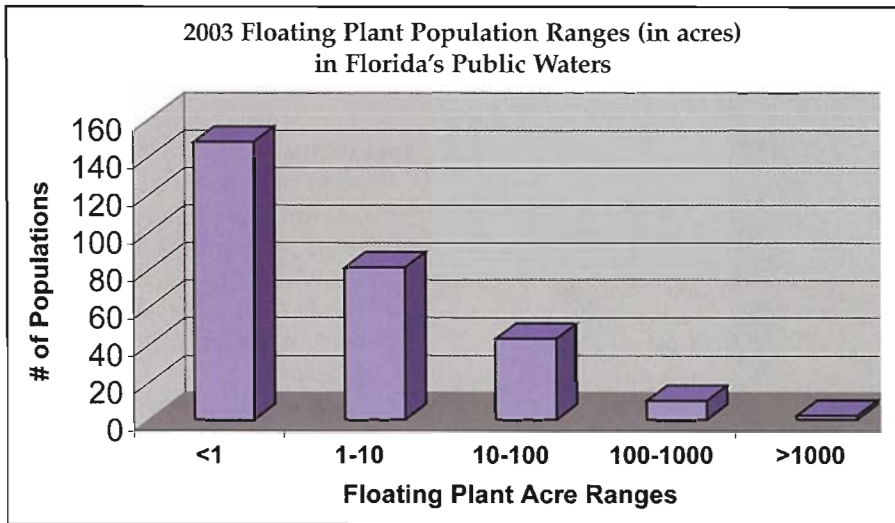
The Aquatic Plant Management Society is soliciting student papers for their upcoming annual meeting to be held July 11-14, 2004, at the Hyatt Regency in Tampa, FL. Presentations of original research on the biology or ecology of aquatic and wetland plants, control methods (biological, chemical, mechanical, cultural) for invasive or nuisance native plants, and restoration projects involving wetland or aquatic plants are solicited. Papers that emphasize nuisance algae control or ecology, the impact of aquatic plant management on fisheries, and the relationship between aquatic plant management and water quality are also highly encouraged for this year's meeting.

The Society encourages students that have conducted original research to present their findings and gain a valuable perspective on aquatic plant problems and various management applications throughout the U.S. The meeting locale in Tampa, Florida provides an excellent opportunity for students from the South-eastern U.S. to attend and present research on aquatic plant management in this region.

The APMS has a strong ethic of student support and all qualified attendees will be provided room accommodations (based on double occupancy) and waiver of registration fees. In addition, 1st, 2nd, and 3rd place prize money will be awarded. This meeting presents an opportunity for students to develop their presentation skills, learn about the field of aquatic plant management, and meet with key Government, University, Industry representatives and peers with similar educational and professional interests.

Please log on to www.apms.org to learn more about the Aquatic Plant Management Society. For more information about the contest, please contact:

Dr. Michael D. Netherland, USACE-ERDC
Center for Aquatic and Invasive Plants
7922 NW 71st Street
Gainesville, FL 32653
E-mail: mdnether@ifas.ufl.edu
Phone: (352) 392-0335



- 6,800 more acres than in FY 01-02
- 10,100 more acres than the previous, five-year average.

Managers spent about \$3.4 million controlling floating plants during FY 02-03;

- \$0.3 million more than in FY 01-02,
- \$0.7 million more than the previous five-year average,
- about 30% spent by the USACE on Lake Okeechobee and the St Johns River.

2003 inventories recorded 7,608 acres of floating plants - only 70 fewer acres than in 2002:

- found in 284 (63%) of public waters inventoried,
- floating plants are under maintenance control in 98% of Florida's waters,
- 3,012 acres of water hyacinth were reported in 262 water bodies,
 - 99% under maintenance control,
 - 233 water bodies contained less than 10 acres of water hyacinth,
- 4,596 acres of water lettuce were reported in 158 water bodies,
 - 98% under maintenance control,
 - 122 water bodies contained less than 10 acres of water lettuce.



Water hyacinth seedling germinating among recently re-flooded bulrush in Lake Okeechobee

Department contractors appeared to turn the corner in floating plant management toward the end of 2003. Since most lake and river water levels have been at full capacity and above for more than a year, seedling germination should decline in 2004. Likewise, floating plants flushed into lakes and rivers from adjacent marshes should decline as waters are returning within their banks.

While there is little room to improve upon the 98% maintenance level reported in 2003, the goal for 2004 is to reduce the overall acres of floating plants in public waters. About 40% of that acreage was reported in just two public waters in 2003; Rodman Reservoir and Lake Okeechobee. More than 1,600 acres of water lettuce were recorded in Rodman Reservoir in only the second year after the most recent drawdown. Water lettuce is diffi-

cult to control in this flooded timber reservoir as it grows among trees inaccessible to airboat and helicopter management crews.

Operations - Hydrilla

Florida's hydrilla control program focuses on containing or eradicating pioneer colonies, before they become large-scale maintenance projects, and reducing established populations to sustain the various uses of Florida's public waters. Hydrilla infested as many as 280 public lakes and rivers. That number was reduced to 186 in 2003; ¾ of which covered 10 acres or less. Most of the hydrilla control budget is spent on 20-25 waters; however these are some of the largest and most important in the state.

About 26,300 acres of hydrilla were treated in 106 public water bodies in FY 02-03;

- 1,500 more acres than in FY 01-02
- about 14,300 more acres than the previous 5-year average

Managers spent about \$ 17.5 million treating hydrilla during FY 02-03;

- about \$200,000 more than FY 01-02.
- about \$4.3 million more than the previous 5-year average

2003 inventories found 43,415 acres of hydrilla standing in 186 public water bodies:

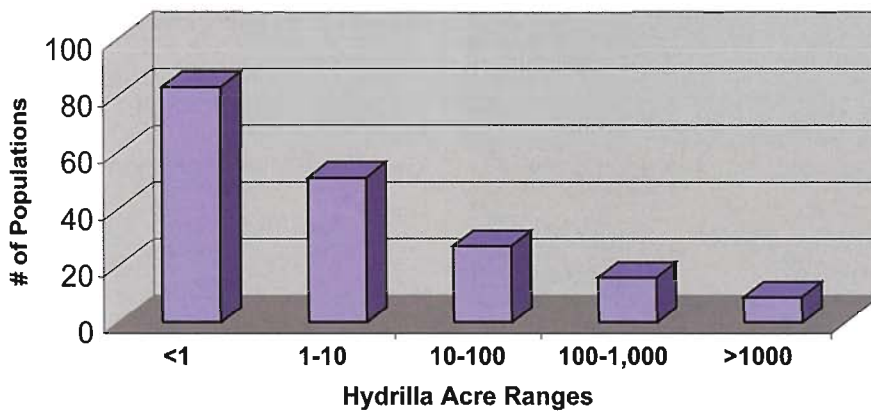
- a 5,300 acre reduction from 2002, hydrilla infested 280 public waters during the past 10 years,
 - therefore, tubers are likely present in as many as 280 public waters,
 - tubers cover an estimated 98,400 acres of public water bodies,
 - tubers represent the potential for immediate regrowth,
- hydrilla is under maintenance control in 97% of Florida's public water bodies,
 - waters of the Kissimmee Federal Navigation and Flood Control Projects contain 55% of the state's hydrilla standing crop.

Hydrilla was controlled in much



Helicopter loaded to apply fluridone herbicide to Lake Istokpoga (background) - Istokpoga water control structure in foreground.

2003 Hydrilla Population Ranges (in acres) in Florida's Public Waters



of the Kissimmee Chain of Lakes in 2003, but regrowth from tubers brought hydrilla back to the water surface by the end of the year. When highly susceptible clones dominated hydrilla populations, one fluridone treatment killed the standing crop as well as regrowth from sprouting tubers for several months. Fluridone residues remained in the 3-5ppb range for extended periods due to slow release from the pellets. The result was nearly two years of control as regrowth could not begin in earnest until late in the growing season or early the following year.

With tolerant hydrilla now dominating most large central Florida lakes, the standing crop is reduced by a high dose of fluridone, but the concentration cannot be maintained at the 16-21ppb dose now needed to kill sprouting tubers. Funds are

insufficient, the prolonged high dose may impact native plants, and summer rains can flush expensive treatments from the flow-through lakes. Low rates of endothall have a synergistic effect on hydrilla with low fluridone residues and will be

applied as follow-up spot treatments in high use areas as part of the 2004 control campaign.

Operations - Other Plants

Prior to 1994, about \$150,000-\$350,000 were spent annually managing plants **other than** water hyacinth, water lettuce, and hydrilla:

- funds were insufficient to control higher priority hydrilla problems, so
- little was affordable for other invasive plants.

2003 inventories found 17,703 acres of other invasive plants present in 87% of Florida's public waters. With the exception of about 11,000 acres of torpedograss in Lake Okeechobee, most populations are small and comingled with native plants making their detection and control difficult.

Alternating periods of severe drought and flooding created floating vegetation and organic sediment islands, or tussocks, in many lakes. More than 4,500 acres of tussocks were identified at the end of 2003. About half are drifting freely with many of these blocking access and navigation or jamming against bridges and clogging flood control structures. Those with the potential for damaging public structures are the highest management priorities for 2004.

\$3.7 million were spent controlling 5,025 acres of other plants in public waters in FY 02-03:

- 62% to remove floating tus-



Shredding floating tussocks drifting toward the Highway 60 bridge and Kissimmee outfall structure after heavy rainfall and sudden water level increase

FAPMS SCHOLARSHIPS AVAILABLE !!

The Florida Aquatic Plant Management Society Scholarship And Research Foundation Inc. Announces the availability of the following scholarships.

FAPMS DEPENDENT SCHOLARSHIP - provides up to a \$1,500 scholarship to deserving dependents of FAPMS members. The scholarship is based on:

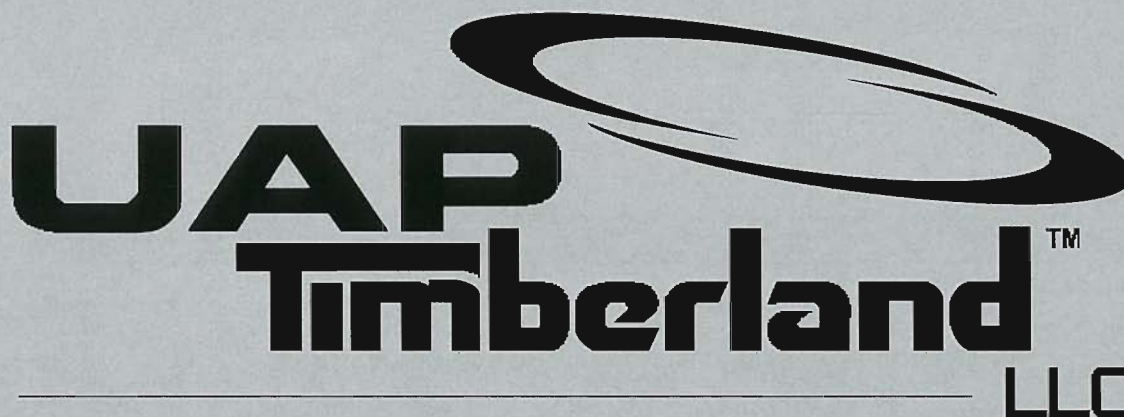
1. The applicant's parent or guardian having been a FAPMS member in good standing for at least three (3) consecutive years.
2. Financial need. Will be determined based on need and the expected family contribution amount indicated on the processing results of a Student Aid Report (OMB No. 1845-0008). This report is available by completing a Free Application for Federal Student Aid Federal Form.
3. The applicant being a high school senior entering college the next academic year, attending junior college or be a college undergraduate.
4. An evaluation of the quality of the application and required essay by the Scholarship Selection committee composed of three FAPMS members and four FAPMS Scholarship and Research Foundation members.
5. Submission of a completed application by June 1, 2004.

WILLIAM L. MAIER JR. SCHOLARSHIP - provides up to \$1,000 to a deserving student who is :

1. Enrolled in an accredited Florida University or College.
2. A U.S. citizen.
3. Majoring in a field of study directly related to the management of aquatic vegetation for the ecological benefit of aquatic and wetland habits. Eligible fields of study are listed in the application packet.
4. The quality of the application and required 500-1000 word essay as determined by the FAPMS Scholarship and Research Foundation's Board of Directors.
5. Submission of a completed application by August 1, 2004.



application to apply for the above scholarships please contact Don Doggett, PO Box 60005, Ft. Myers, Florida, 33906, (239)-694-2174 If requesting an application please specify as to which scholarship you are applying.



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FY 02-03 Management Statistics

Acres of Aquatic Plants Treated and Treatment Expenditures in Florida Public Waters During Fiscal Year 2002 - 2003

(Data represents compilation of all contractor activities within each water management district)

Acres Trtd.	Northwest	Suwannee	St. Johns	Southwest	S. Florida	TOTAL
Floating	1,017	702	8,848	5,062	14,393	30,021
Hydrilla	656	80	275	2,797	22,498	26,307
Other Plants	115	83	1,272	1,635	5,086	8,191
TOTAL	1,788	865	10,396	9,494	41,977	64,520
Expenditures	Northwest	Suwannee	St. Johns	Southwest	S. Florida	TOTAL
Floating	\$ 66,482	\$ 55,437	\$1,013,484	\$ 653,469	\$ 1,590,648	\$ 3,379,520
Hydrilla	141,182	54,709	194,689	1,794,248	15,360,141	17,544,970
Other Plants	382,090	11,689	235,702	1,739,634	1,371,892	3,741,007
TOTAL	\$589,754	\$121,836	\$1,443,875	\$4,187,351	\$18,322,681	\$24,665,497

Federal, State and Local Funds Expended during Fiscal Year 2002 - 2003 Managing Aquatic Plants in Florida Public Water Bodies

Government / Plant	Intercounty	Intracounty	TOTAL
Federal			
Floating Plants	\$ 1,228,752	0	\$ 1,228,752
Hydrilla	0	0	0
Other Plants	0	0	0
Subtotal	\$ 1,228,752	0	\$ 1,228,752
State			
Floating Plants	\$ 2,083,038	\$ 33,865	\$ 2,116,903
Hydrilla	17,008,655	268,157	17,276,813
Other Plants	3,622,501	59,253	3,681,754
Subtotal	\$ 22,714,195	\$ 361,275	\$ 23,075,470
Local			
Floating Plants	0	\$ 33,865	\$ 33,865
Hydrilla	0	268,157	268,157
Other Plants	0	59,253	59,253
Subtotal	0	\$ 361,275	\$ 361,275
TOTAL			
Floating Plants	\$ 3,311,790	\$ 67,730	\$ 3,379,520
Hydrilla	17,008,655	536,314	17,544,970
Other Plants	3,622,501	118,506	3,741,007
GRAND TOTAL	\$ 23,942,947	\$ 722,550	\$ 24,665,007

Plant	2002 Acres Present	FY 02-03 Acres Treated	FY 02-03 Dollars Spent	FY 03-04 Acres Approved	FY 03-04 Dollars Allocated
Hydrilla	*98,390	26,307	\$ 17,544,970	25,800	\$ 17,495,200
Floating plants	7,608	30,021	3,379,520	17,200	2,181,121
Torpedograss	15,260	2,965	655,968	3,153	530,549
Wild taro	712	13	1,808	138	28,024
Paragrass	1,263	5	7,978	45	5,325
Hygrophila	252	0	0	60	28,250
West Indian marsh grass	184	15	4,875	11	1,200
Aquatic nightshade	86	11	3,575	75	11,250
Water spinach	1	0	0	1	350
Giant salvinia	0	0	0	0	0
Other plants	222,703	2,389	732,441	5,087	1,581,299
Floating tussocks	4,500	2,794	2,334,362	1,995	685,150
TOTAL ESTIMATE	350,959	64,520	\$ 24,665,497	49,271	\$ 22,547,717

* estimated area impacted by hydrilla tubers

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socks, especially in the marshes that connect open pools within the Tsala Apopka marsh and Lake Runnymede.

- 18% for invasive plants,
 - \$655,968 / 2,965 acres of torpedograss
 - \$7,978 / 5 acres of para grass
 - \$4,875 / 15 acres W. Indian marsh grass
 - \$3,575 / 1 acre of aquatic nightshade
 - \$1,808 / 13 acres of wild taro
- 13% to control native plants for access and navigation and in support of drawdowns to restore fishery habitat.
- 4% to harvest the exotic Eurasian watermilfoil and lyngbya, an exotic filamentous alga, from the endangered manatee sanctuary in Crystal River.

Funding Needs

The table on page 19 lists acres of aquatic plants and floating tussocks inventoried during 2003 in Florida's 1.26 million acres of public lakes and rivers. The table also includes acres of plants treated and associated management costs for FY 02-03 along with estimated acres of plants that will need control in FY 03-04 and respective cost allocations from the FY 03-04 Legislative Spending Authority for this control.

Summary

Florida plant managers have the tools and infrastructure to control aquatic plants, and floating tussocks as well as the motivation to continually improve upon their craft. Consequently, Florida's aquatic plant management program has long served as a model for other states and countries interested in building comprehensive invasive species control programs.

Providing sufficient funding to apply their crafts acknowledges the confidence of Floridians in their managers, and ensures that Florida's public water bodies will remain unobstructed from invasive aquatic plant problems.



Enclosures protecting planted eelgrass from turtle predation in Lake Walk-in-Water after hydrilla control and muck removal.



1,000-acre imazapyr herbicide test plots in 16,000-acre torpedograss infestation in Lake Okeechobee marsh.

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Aquatic Plant Scholarship Grant !

The South Carolina Aquatic Plant Management Society, Inc. is seeking applications for its annual scholarship grant. The Society intends to award a \$2,000 grant to the successful applicant in the Fall of 2004.

Eligible applicants must be enrolled as full time undergraduate or graduate students in an accredited college or university in the United States. Course work or research in an area related to the biology, ecology or management of aquatic plants in the Southeast is also required.

Applications must be received no later than May 1, 2004 and are available on the internet at <http://water.dnr.state.sc.us/water/envaff/aquatic/scapms.html>. Other factors being equal, preference will be given to applicants enrolled in Southeastern and South Carolina academic institutions. The successful applicant may be requested to present an oral report at the annual meeting of the Society.

For additional information, contact
 Danny Johnson
 SC Department of Natural Resources
 2221 Devine Street, Suite 222
 Columbia, SC 29205
 803-734-9099, or e-mail,
johnsond@water.dnr.state.sc.us

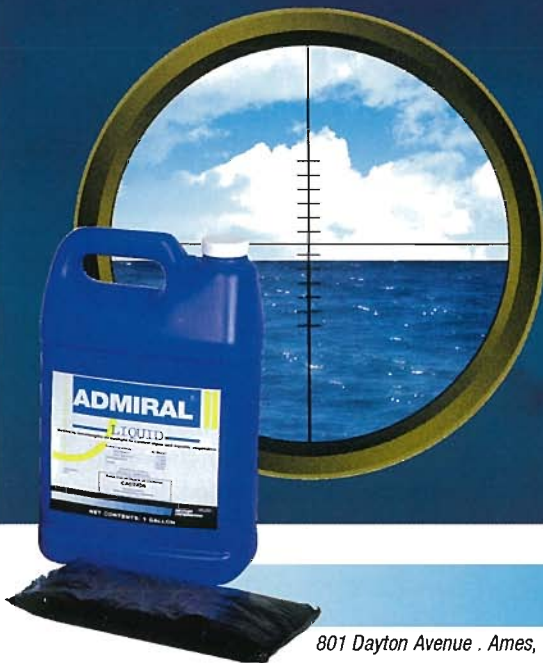
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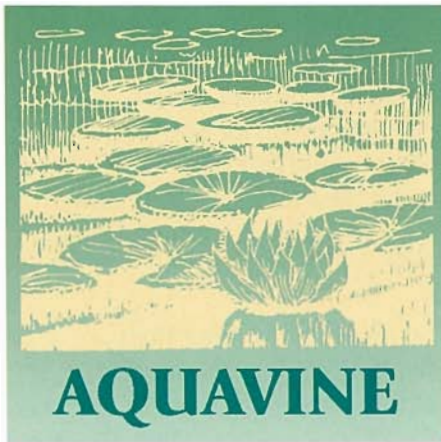
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☞ LET'S REMEMBER ☜

A good friend of the Florida Aquatic Plant Management Society, Paul Brewer, recently died of natural causes on December 31st, 2003. Paul was one of FAPMS' charter members and attended annual meetings until his retirement 15 years ago. He was the founder of Brewer International and was always grateful for the friends he made within the Society and the great fun and spirit he experienced when he met with his "Aquatic buddies" in the field or at the meetings. He will be missed.

2004 Aquatic Weed Control Short Course

May 3-7, 2004 Fort Lauderdale Marriott North. This year's short course includes sessions on aquatic, upland, and invasive weed control, calibration and equipment demonstrations, airboat safety review, aquatic plant identification, and reviews for certification exams. Visit the Short Course website at <http://conference.ifas.ufl.edu/aw/>

Updated Federal Funding Catalog Now Online

EPA has updated its Catalog of Federal Funding Sources for Watershed Protection. This catalog is now online easy-to-use, to use, searchable website. The site provides information for watershed practitioners and others on 84 federal funding sources that may be available to help fund various watershed related projects. The website enables quick interactive searches to find relevant federal funding programs, the level of

funding available, the average grant amount, contract information, and other useful background data on the fund. EPA plans to update this site on an ongoing basis. The catalog is online at <http://cfpub.epa.gov/fedfund/>.

Habitat® Herbicide Receives Full Label Approval from EPA for Aquatic Weed Control

BASF's Professional Vegetation Management (ProVM) group announced that Habitat® herbicide has received full label approval from the U.S. Environmental Protection Agency (EPA). Habitat herbicide is labeled for controlling undesirable emergent, shoreline and woody wetland aquatic vegetation in and around standing and flowing water. For more information on *Habitat herbicide*, visit www.forestryfacts.com.

"Weed Control in Ponds"

This helpful booklet (formerly "Weed Control in Aquaculture and Farm Ponds") is now available from the IFAS Extension Bookstore by calling 800/226-1764 or on the Internet at <http://ifasbooks.ufl.edu>. Whether you're a homeowner or a landscaper, this lavishly-illustrated booklet will provide you with everything you need to know about aquatic weeds and how to control them. Includes sections on site selection and construction, weed control with fertilization, mechanical harvesters, herbivorous fish and herbicides. Appendices include a full-color guide to aquatic weed identification, a guide to herbicides and their use, and a handy conversion table.

Florida Lake Management Society 2004 Conference and Meeting, "A Tail of Many Waters: Florida's Limnic Resources."

June 7-10, 2004 Saddlebrook Resort, Tampa, Florida, Contact Dr. Jim Griffin SWFWMD, 352-796-7211 for more information.

Fourth International Weed Science Congress

Durban, South Africa, June 20-24, 2004. Contact Christiaan Mulder

at mindmelt@icon.co.za

Thirteenth International Conference on Aquatic Invasive Species

Ennis, Ireland, November 19-23, 2004, Contact Elizabeth Muckle-Jeffs, 800-868-8776, or profedge@renc.igs.net, or visit www.aquatic-invasive-species-conference.org

FWC RESTRICTS POSSESSION AND SALE OF MALLARDS

Florida's mottled ducks may be on a collision course with extinction because of mallards people sometimes keep as pets or release into the wild. The Florida Fish and Wildlife Conservation Commission (FWC) moved to reduce the problem by adopting tighter restrictions on possession and sale of mallards.

Wild mallards are migratory ducks that visit Florida during winter and migrate back north before the closely related mottled ducks are ready to mate. Captive-reared and released mallards, however, don't migrate and frequently mate with Florida's mottled ducks. The resulting mottled duck/mallard hybrids could force mottled ducks out of existence.

Mallards already released into the wild, may continue to cause problems throughout their 10-year average lifespan. The hybrids also reproduce, and that compounds the problem.

The new FWC rule prohibits possession of mallards (with exemptions for licensed shooting preserves, dog field trials and dog training), requires proper caging for permitted ducks and prohibits sale of mallards to anyone who is not properly permitted. It takes effect July 1.

More information about mottled duck conservation is available online at www.wildflorida.org/duck.



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