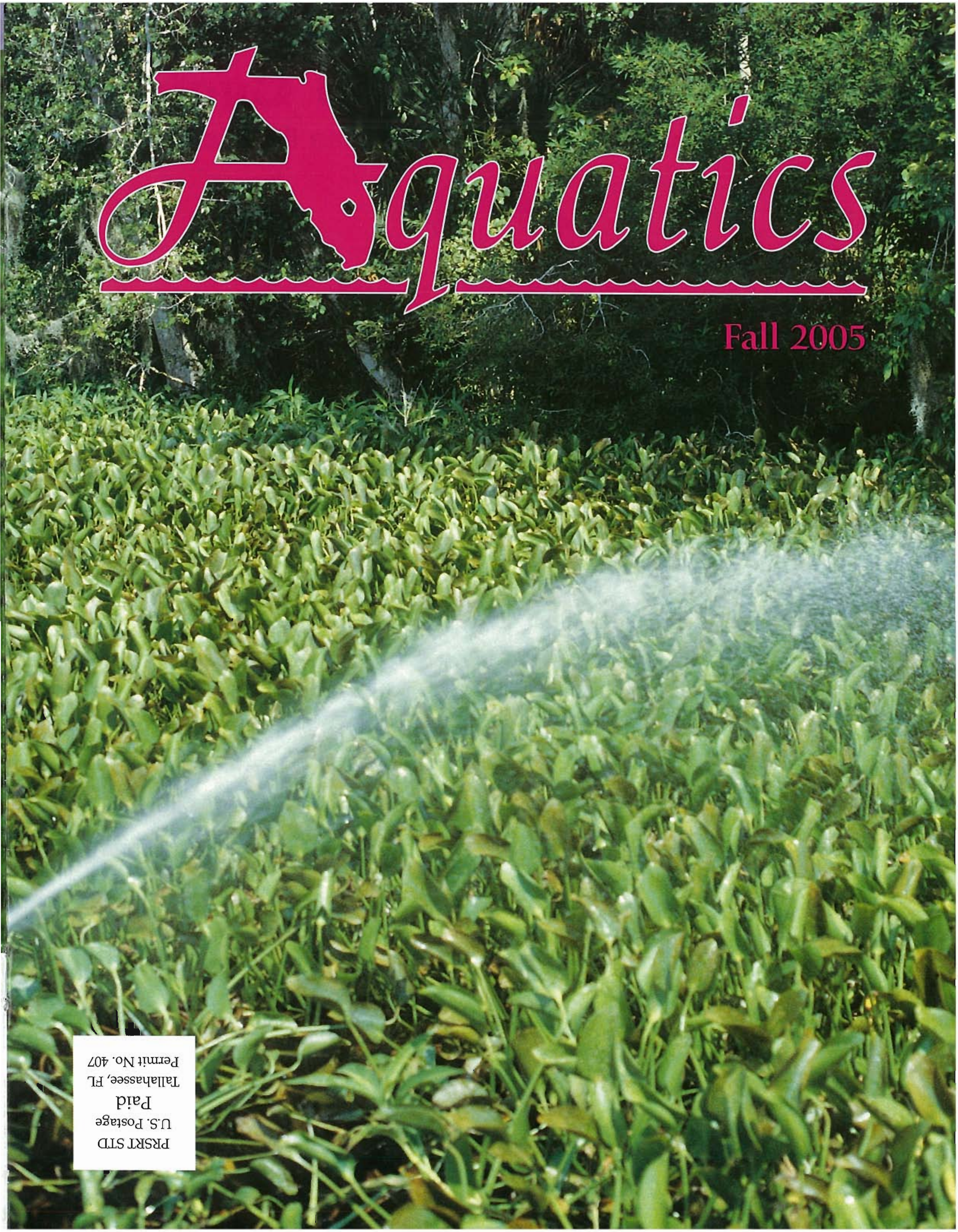
Aquatics

Fall 2005



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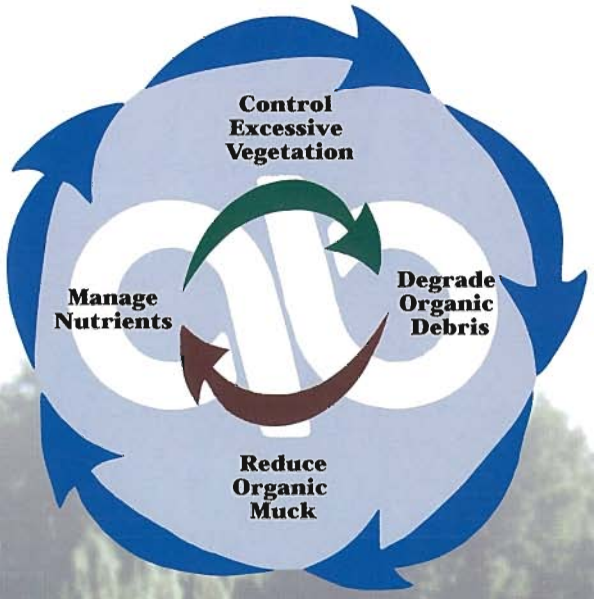

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EDITORIAL

Local chapter meetings of the Aquatic Plant Management Society are significant events that are often the target of budget cuts. Information and contacts obtained at these annual meetings are frequently important factors that allow aquatic plant managers and applicators the ability to balance unlimited weed problems with limited time and money. This issue of *Aquatics* magazine is themed to highlight our annual meeting presentations, updates, training exercises, and professional networking. Sharing our successes in aquatic plant management is beneficial to everyone in the field of weed science.

Aquatics magazine is also unveiling a new section in this issue entitled "Tips of the Trade", which presents readers with ideas about common control techniques shared by private and public applicators. Sharing this kind of information in our quarterly magazine and networking at annual meetings helps disseminate additional information often required to effectively address aquatic plant issues.

Next time your chapter's annual training meeting is on the budget chopping block, remind the decision makers how important these professional updates and informational sessions are, especially when dealing with tolerant species and higher control costs. They may be surprised to learn that the training and education provided is very cost effective.

Jeff

FAPMS Website: www.fapms.org

Seven Sisters Island hyacinth being sprayed, St. John's River. Photo by Nancy Allen

Aquatics

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Contents

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EDITORIAL: Address all correspondence regarding editorial matter to Jeff Holland, *Aquatics Magazine*.

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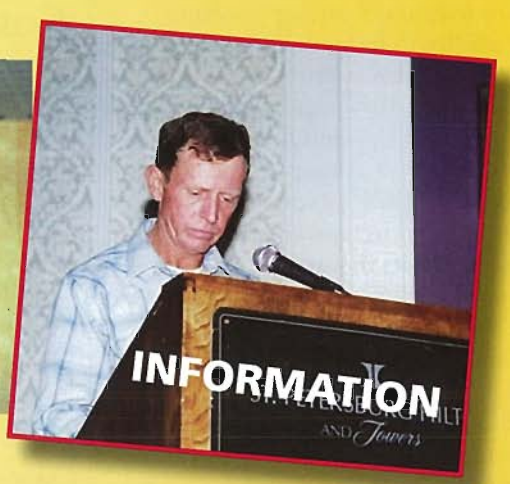
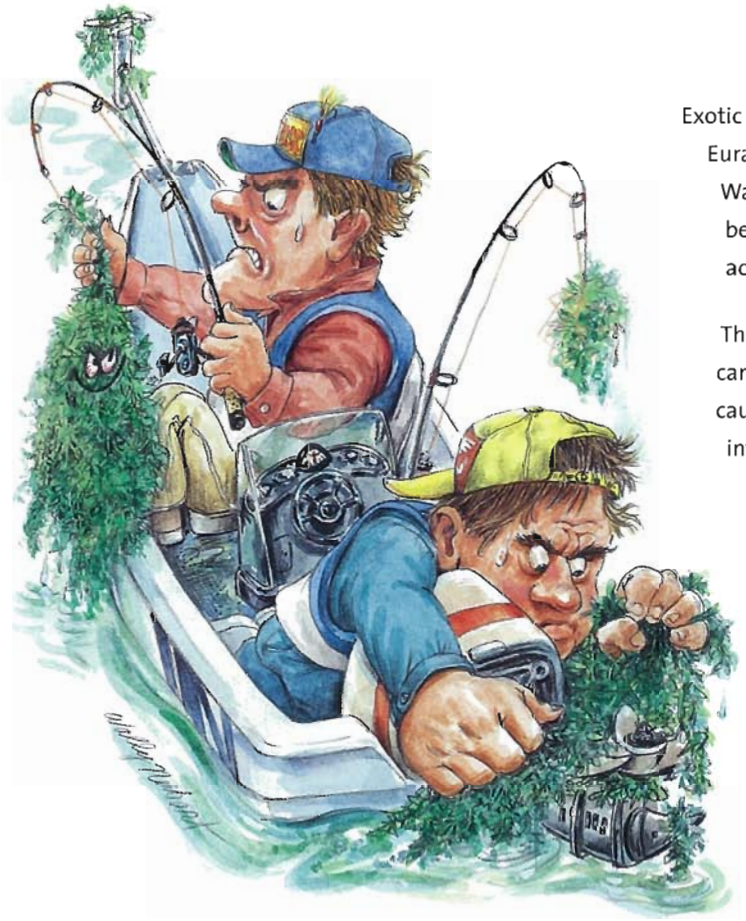


APPLICATOR

Too Many Weeds Spoil the Fishing



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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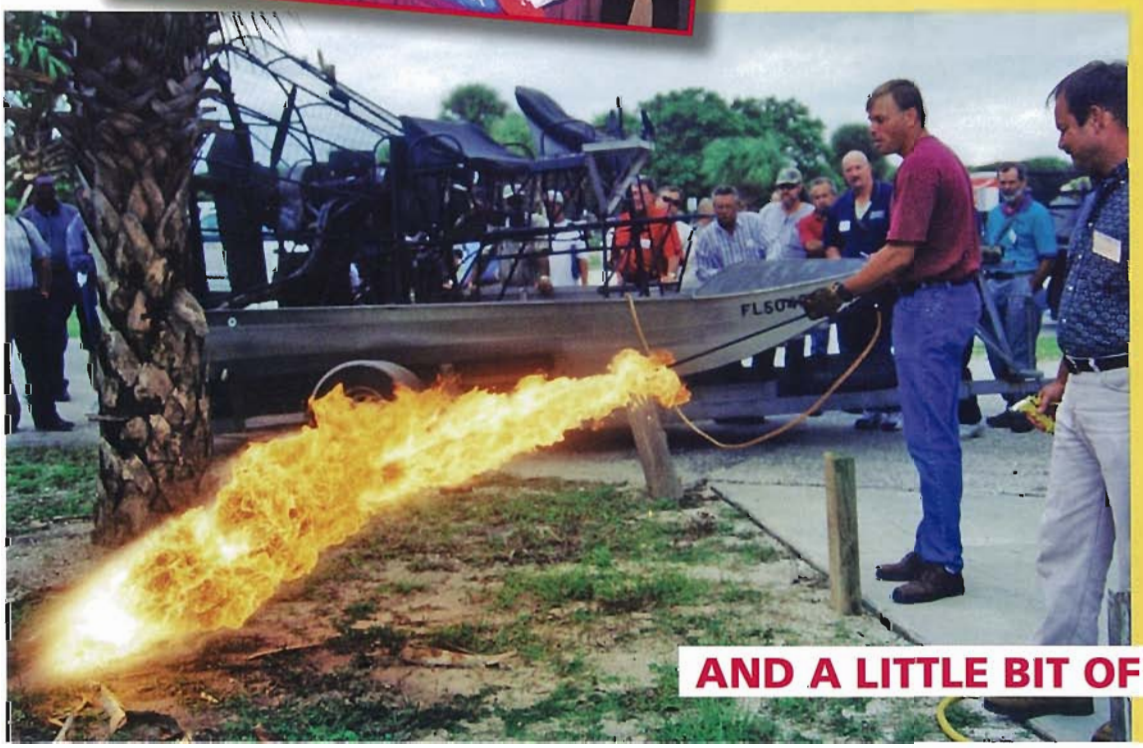

AND A LITTLE BIT OF FUN....

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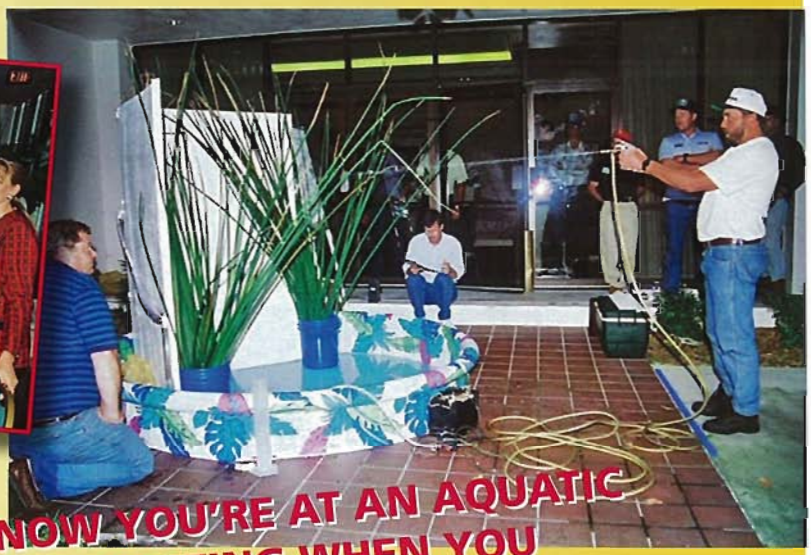
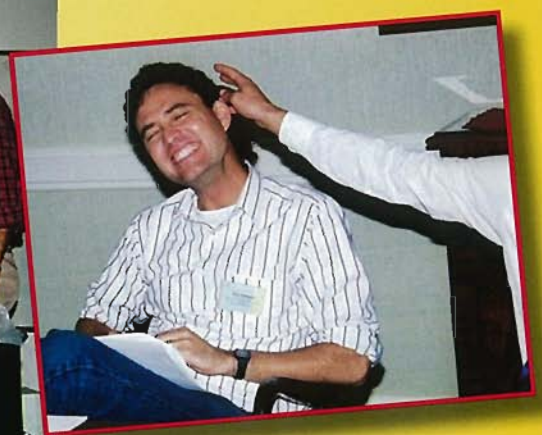


YOU KNOW YOU'RE AT AN AQUATIC WEED MEETING WHEN YOU OVERHEAR THE PHRASE "HAVING ISSUES WITH YOUR ORIFICES!"

Quote from an anonymous attendee of the 2005 IFAS Aquatic Weed Control Short Course



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Aquatic Weed Control Short Course 2005

Ft. Lauderdale, Florida

UF/IFAS Aquatic Weed Control Short Course

by Tyler J. Koschnick
University of Florida/IFAS Center for Aquatic and Invasive Plants

Every year hundreds of people from all over the United States and abroad who are involved with aquatic and invasive plant management converge on south Florida to attend the Aquatic Weed Control Short Course. The four-day Short Course is one of the largest Extension programs sponsored by the University of Florida's Institute of Food and Agricultural Sciences (IFAS). This year 469 aquatic and invasive plant managers participated to learn how to improve their job performance and personal safety, and how to minimize environmental impacts of management techniques, including damage to non-target species. There is usually a contingent that attends the Course every year from abroad, and this year two participants made the trip from Colombia, as they were interested in learning about managing water hyacinth. A tour to Lake Okeechobee was arranged so they could observe herbicide applications to control floating plants and learn about the state's policy of maintenance control of hyacinth. Thanks to the other participants for their effort in assisting to make those arrangements, and thanks to all the 31 Short Course sponsors for their support and assistance.

"Florida likely has the largest aquatic plant management program in the world, spending more than $70 million annually."

Florida likely has the largest aquatic plant management program in the world, spending more than $70 million annually. The state encourages the integration of biological, chemical, and mechanical methods to remove unwanted aquatic and invasive plants. Under U.S. federal and state laws, applicators of pesticides classified as restricted use (RU) must be trained and certified in general knowledge of proper pesticide use and safety (referred to as core requirements) and in their respective area of work (aquatic; natural areas; turf and ornamental; etc.) Though no currently registered aquatic herbicides are classified as restricted use in Florida, most employers and public agencies insist that their applicators be trained and certified to improve personal safety and application expertise.

The Aquatic Weed Control Short Course is designed primarily to provide the necessary training to certify people in natural area and aquatic weed control categories. Additional training is periodically offered for right of way weed control category. The course also is designed to offer continuing education units (CEUs) to those already certified and licensed in aquatic plant and other vegetation management categories. Licenses must be renewed every four years with CEUs in each category. The University of Florida is one of the only institutions in the country that offers a Short Course specific to aquatic plant management. The University of Florida's IFAS Center for Aquatic and Invasive Plants is dedicated to research, extension, and education as it pertains to invasive plant management on a local, state, national and international level.

"The University of Florida is one of the only institutions in the country that offers a Short Course specific to aquatic plant management."

This year's courses included equipment calibration, aquatic and natural areas weed control, core examination standards, reading and interpreting a pesticide label, basic weed science, selective weed management, plant identification, and state and fede ral rules and regulations. We had invited speakers come from all over the country, and one speaker traveled all the way from England to participate in the portion of the Course on herbicide toxicology, applicator exposures and risks, and applicator safety. There were also special Courses offered on algae management, and on how to interact with the media and the public, as many in the public are suspicious of those spraying herbicides for weed control. The Course concluded with participants taking a total of 144 exams. With thousands of certified aquatic pesticide applicators in Florida, we anticipate another successful course in 2006, with dates to be announced in the next few months.

See: http://conference.ifas.ufl.edu/aw/ for more information.

Evaluation of several triclopyr, glyphosate, and imazapyr-containing herbicides to control stump-sprouting of felled melaleuca trees[1]

By Ken Langeland and Mike Meisenburg[2]

Introduction

Melaleuca (*Melaleuca quinquenervia*) remains a serious invasive plant pest in southern and central Florida over a century after it's introduction. Distribution, environmental impacts, cultural impacts, and associated costs that have followed the introduction and spread of melaleuca in Florida were comprehensively reviewed recently by Serbesoff-King (2003). Control efforts by the South Florida Water Management District, Florida Department of Environmental Protection, National Park Service, and other agencies has resulted in significant reductions of melaleuca from public lands, but many melaleuca trees remain on private property and in urban areas. This is a problem from the public land manager's perspective, because melaleuca trees on private lands provide a constant source of seeds for further invasion and re-infestation of public lands where melaleuca has been managed.

In addition to providing a source of re-infestation of natural areas, there are many other reasons why private and commercial property owners should be encouraged to remove melaleuca. Melaleuca trees are a potential hazard during windstorms because they are brittle and shallow-rooted. Melaleuca trees burn extremely hot and are difficult to extinguish. Allowing large numbers of melaleuca trees to grow near houses, therefore, increases the threat of fire to homes. Because of the problems associated with melaleuca, it is listed on the United States Department of Agriculture's (USDA) "Federal Noxious Weed List", the Florida Department of Agriculture and Consumer Service's (DACS) "Florida Noxious Weed List", and the Florida Department of Environmental Protection's (DEP) "Class I Prohibited Aquatic Plant List." Species listed on the "Federal Noxious Weed List" may not be moved interstate, into or through the United States without obtaining a permit from USDA. Species listed on the "Florida Noxious Weed List" may not be introduced, possessed, moved, or released in Florida without a permit from DACS. "Class I Prohibited Aquatic Plants may under no circumstances be permitted for possession, collection, transportation, cultivation, and importation except by government agencies, research institutions, and wastewater treatment facilities approved by DEP. Local ordinances may also require removal of melaleuca trees under certain circumstances. While occurrence of melaleuca on private property is not construed as "possession" by any of these regulations, property owners are encouraged to remove melaleuca trees from their property to help protect Florida's natural areas, and because of the hazards associated with fire and wind events.

Control Methods

Land management agencies use an integrated pest management approach for melaleuca on public lands. Biological control agents have been released to suppress melaleuca seed production and growth. Herbicides, mechanical controls, or combinations of both are used to eliminate existing populations. Seedlings and saplings can sometimes be hand-pulled.

Herbicides are used for killing existing individual trees or populations of melaleuca trees. To control large, dense populations of mature melaleuca trees, State and Federal agencies apply by helicopter herbicides with the active ingredients glyphosate and imazapyr. These herbicides, which can be absorbed through the leaves, can also be applied with hand-held equipment to control seedling and sapling trees. Glyphosate and imazapyr can kill not only melaleuca trees but also native/non-targeted plants that they come in contact with and imazapyr can be taken up from the soil by roots as well. Helicopter applications are only made to dense stands of melaleuca where little to no non-target vegetation exists. When applied to seedlings and saplings, where desirable vegetation exists, care must be taken to apply the herbicide only to the melaleuca.

Individual trees can be killed by applying herbicide to the trees using a technique known as frill-and-girdle (or hack-and-squirt). Frill-and-girdle involves cutting away the tree's thick bark and applying an herbicide solution of imazapyr or imazapyr and glyphosate to the living portion of the trunk, which is just inside the bark (cambium). This technique leaves the trees standing, which can be unsightly and potentially hazardous when trees decay and fall.

When it is undesirable to leave trees standing, they can be felled but regrowth will usually occur from the

[1] Published as Journal Series No. R-11065 of the Florida Agricultural Experiment Station.

[2] Professor and Biological Scientist, respectively, University of Florida Institute of Food and Agricultural Sciences (IFAS), Agronomy Department, Center for Aquatic and Invasive Plants.

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stump. To prevent regrowth, herbicide is applied to the fresh cut. This method is time consuming and labor intensive but has the advantage that trees are not left standing. Land management agencies usually use an herbicide product that contains imazapyr for treating melaleuca stumps because previous research demonstrated it to give more consistent control compared to products that contain triclopyr or glyphosate (Laroche et. al. 1992, Pernas et al. 1994).

Control methods that can be used by private property owners to rid their property of melaleuca trees are similar to those used by professional land managers but will be different in scale, ranging from a single tree to several acres containing trees. Property owners with large numbers of melaleuca trees are best advised to consult a professional weed management company and consult a local agency for assistance. Property owners with a small number of trees will probably want to cut the trees down or have them cut down by a professional tree trimming company. Grinding the stumps may prevent regrowth but can be expensive. Treating the stumps with herbicide to prevent regrowth is less laborious, less expensive, results in less soil disturbance, and provides consistent results. The standard herbicide treatment used by professional land managers for melaleuca stumps is a 10% to 25% v/v Arsenal (2 lb a.e. imazapyr per gallon)-water solution. Imazapyr is readily absorbed by the roots of plants and can kill desirable plants if it comes in contact with their roots. Therefore, it is not recommended for use in landscapes. Other herbicides, Brush Killer Concentrate (0.59 lb a.e. triclopyr amine per gallon), Brush-B-Gon (0.54 lb a.e. triclopyr amine per gallon), and Roundup Super Concentrate (3.0 lb a.e. glyphosate per gallon) may control sprouting of melaleuca stumps are available in retail garden supply stores, conveniently packaged for homeowners and available in small quantities for homeowners who have only small numbers of stumps to treat. The purpose of this study was to evaluate these herbicides for their effectiveness in controlling sprouting of melaleuca stumps. Dilutions of the commercial product Garlon 3A (3 lb a.e. triclopyr amine per gallon) was also evaluated.

Methods

Stump treatments were evaluated three times at two sites as follows: 1) Corkscrew Road site located four miles east of Interstate 75 and to the north of Corkscrew Road in Lee County, FL. This evaluation was conducted in April 2002 and in July 2003 on different melaleuca stumps. 2) Holiday Everglades Park in Broward County, which was only treated November 2003. Soils are Pineda fine sand (NRCS Soil Survey) at the Corkscrew Road site and Dania muck (NRCS Soil Survey) at Holiday Park. Dry conditions (3-month cumulative rainfall=4.2 inches) prevailed before and during the April 2002 application at Cork-

screw Road. Rainy conditions (3-month cumulative rainfall=20 inches) preceded the July 2003 application at this site and soils were saturated with pockets of standing water; and rain occurred during and after the July 2003 application at this site. Wet conditions (3-month cumulative rainfall= 21 inches) also preceded the Holiday park application. At each site and treatment time, ten melaleuca stumps each were treated with the herbicide or herbicide mixtures listed in Table 1 after felling with a chain saw. All dilutions were made with tap water. Stumps of ten felled trees were not treated to serve as experimental checks. Stumps were cut parallel and <10 cm from the soil surface. All stumps were treated within 15 minutes after felling the tree. Stump diameter was measured at all locations and was summed for multiple stem trees. The April 2002 application was made with a graduated 500 ml dropper bottle. Herbicide solution was applied in sufficient quantity to thoroughly wet the stump surface just inside the bark with no run-off or puddling. The cumulative amount of herbicide used for all stumps was noted and the average volume of herbicide solution applied per stem diameter was calculated by dividing the total volume used by the average stem diameter. Stumps were treated with a constant 0.70 ml/cm using a pipette and propipette in July 2003 at Corkscrew Road and at Everglades Holiday Park. Fourteen months after herbicide application, stumps were evaluated for regrowth, stump sprouts were harvested and dried to constant weight, and weighed.

Results and Discussion

Stump diameter and volume applied

Stump diameter may affect herbicide response, however no attempt was made in this study to control this variable. Rather, trees were randomly selected for treatment to obtain a general response of herbicides over the range of resulting stump diameters. Diameter of stumps treated in April 2002 at Corkscrew Road ranged 5 cm to 45 cm and averaged 18 cm (SE=10.4), and those treated in July 2003 ranged 8 cm to 75 cm and averaged 21 cm (SE=15.4). Stumps treated at Holiday park ranged from 7 cm to 30 cm and averaged 16.4 cm (SE=7.32). The volume of herbicide solution applied in April 2002 at Corkscrew Road was determined to be .70 ml/cm.

Stump Mortality

All treatments except 50% Roundup Super Concentrate provided 100% control of melaleuca stump sprouting when applied April 2002 at Corkscrew Road, and all untreated checks resprouted (Table 1). When applied in July 2003 at Corkscrew Road, only 50% Garlon 3A, 50% and 100% Roundup Super Concentrate, and 25% Arsenal provided 100% control of resprouting. Other treatments prevented sprouting of 70% to 90% of stumps. Mortality (no sprouting) of 50% of untreated stumps at this site and application

Table 1. Mortality (%) of melaleuca stumps (n=10) treated with various herbicides and dilutions (v/v).

Treatment	Location and Date of Application		
	Corkscrew Road April 2002	Corkscrew Road July 2003	Everglades Holiday Park November 2003
	----------% Mortality----------		
Triclopyr-Containing Treatments			
Garlon 3A 5%	100	70	70
Garlon 3A 20%	100	90	70
Garlon 3A 50%	100	100	50
Garlon 3A 100%	100	90	70
Brush-B-Gon 100%	100	80	90
Brush Killer 100%	100	90	90
Glyphosate-Containing Treatments			
Roundup Super Concentrate 25%	100	80	60
Roundup Super Concentrate 50%	70	100	100
Roundup Super Concentrate 100%	100	100	100
Imazapyr-Containing Treatment			
Arsenal 25%	100	100	100
No Herbicide-Containing Treatment			
Untreated	0	50	20

date confuses the results, but all treated stumps had higher mortality than untreated stumps. Roundup Super Concentrate (50% and 100%) and 25% Arsenal again provided 100% control at Everglades Holiday Park, while other treatments provided 50% to 90% control. Mortality of untreated stumps at Everglades Holiday Park was 20% and again lower than all treated stumps. The amount of regrowth produced by stumps that were not killed was reduced compared to untreated stumps (Table 2). Differences in soil type, precipitation, and season-related growth may all have contributed to variability among treatment sites and times.

Mortality of untreated stumps is unusual and may have been influenced by physiological pressure exerted from recently introduced

biological control agents. The melaleuca snout beetle *(Oxyops vitiosa)* was released April 1997 (Center et al. 2000) and the melaleuca psyllid (*Boreioglycaspis melaleucae*) was released April 2002 (Wood and Flores 2002). High populations of the melaleuca snout beetle and feeding damage were observed at the Corkscrew Road site at the April 2002 application date and both insects and feeding damage were observed at the July 2003 application dates. Perhaps, stress imposed on the trees by the biological control agents caused an inability to resprout after cutting and the greater mortality of untreated stumps after cutting July 2003 compared to April 2002 may be because of an additional year of stress from the melaleuca snout beetle and additional stress from the melaleuca psyllid. Biological control agents were also present at the Holiday Park site. Mortality of regrowth from cut stumps has been attributed to biological controls (Paul Pratt personal communication). However this was not the case in this study because no regrowth occurred for herbivory to occur. Feeding damage was observed on all stumps that did have regrowth but mortality did not occur to any of these sprouts.

All triclopyr containing treatments resulted in similar stump-sprouting control but results were inconsistent among sites and application dates. In a previous study (Laroche et al. 1992), 69 melaleuca stumps were treated with 0.4 ml/cm of un-diluted Garlon 3A, and 85% mortality of stumps was observed, which is similar to the results of this study for the Corkscrew Road July 2003 application and the Everglades Holiday Park November 2003 application. Triclopyr-containing products provided 100% control when applied in April 2002, when low precipitation and dry soil conditions prevailed and may be effective under these conditions.

Commercial glyphosate-containing products range in concentration from 3 lb to 4 lb glyphosate acid per gallon. Roundup Super concentrate, used in this study contains 3 lb glyphosate acid and is available from retail outlet stores in convenient packaging for homeowner use. In a previous study at the Corkscrew Road site, three glyphosate containing products, Touchdown Pro (3 lb glyphosate acid per gallon), Roundup Pro (3 lb glyphosate acid per gallon), and Rodeo (4 lb glyphosate acid per gallon) were evaluated in 2001 (Langeland 2002). Touchdown Pro and Roundup Pro were applied at 100% and 50% and Rodeo was applied at 75%. Stumps were cut, as in this study and 1.5 ml/cm of herbicide solution was applied with a dropper bottle. All herbicides and rates resulted in 100% stump mortality.

Laroche et al. (1992) observed only 85% control after applying 0.4 ml of 100% Rodeo per cm stem diameter and Pernas et al. (1994) observed a maximum of 73% control after applying Rodeo or Roundup at various concentrations up to 100%. Pernas et al. (1994) did not report the amount of herbicide solution applied; and neither the height

Table 2. Average weight (g) of regrowth from stumps (number of stumps represented in parantheses) not killed with various herbicides and dilutions (v/v).

Treatment	Location and Date of Application		
	Corkscrew Road April 2002	Corkscrew Road July 2003	Everglades Holiday Park November 2003
	----------grams dry wt----------		
Triclopyr-Containing Treatments			
Garlon 3A 5%	0	15(3)	148(3)
Garlon 3A 20%	0	0.3(1)	528(3)
Garlon 3A 50%	0	0	300(5)
Garlon 3A 100%	0	23(1)	198(3)
Brush-B-Gon 100%	0	18(2)	110(1)
Brush Killer 100%	0	61(1)	298(1)
Glyphosate-Containing Treatments			
Roundup Super Concentrate 25%	0	22(2)	732(4)
Roundup Super Concentrate 50%	118(3)	0	0
Roundup Super Concentrate 100%	0	0	0
Imazapyr-Containing Treatment			
Arsenal 25%	0	0	0
No Herbicide-Containing Treatment			
Untreated	758(10)	131(5)	1669(8)

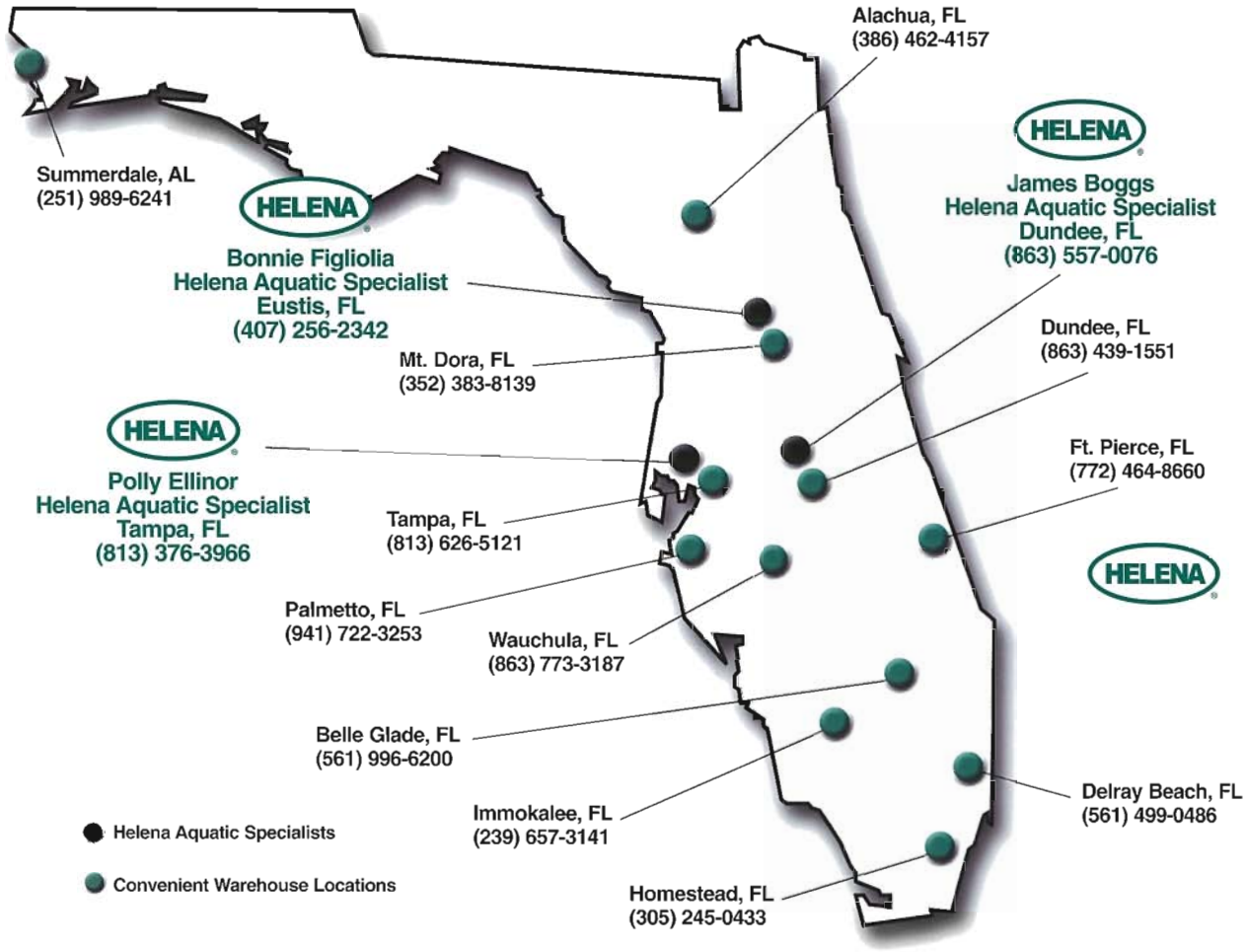
above the ground that the stumps were cut nor the time elapsed between cutting and herbicide application were reported by Laroche et al. (1992) or Pernas et al. (1994). Differences in these methods among studies may be factors that are responsible for different results. Application technique may also affect herbicide performance. Spray bottles were used for herbicide application in the studies by Laroche et al. (1992) and Pernas et al. (1994). This method may not be as effective as the method described in this study, which concentrates the herbicide in proximity to the living cambium tissue.

Based on the results of the current study, homeowners who choose to cut melaleuca trees down and treat the stumps with herbicide can expect consistent 100% mortality of stumps using a glyphosate-containing product such as Roundup Super Concentrate at 100% if the stumps are cut close to the ground, and ample amount of herbicide (at least 0.7 ml per inch stump diameter) is applied just inside the bark within 15 minutes of cutting. Triclopyr containing products such as Brush Killer or Brush-B-Gon may also be effective during low precipitation conditions.

Potential damage to non-target vegetation is a concern to professional land managers when using imazapyr for cut stump application because precipitation can wash the herbicide off of stumps where it can then be absorbed by roots of desirable vegetation. This is especially a concern when a high density of stumps are treated. Roundup Super Concentrate is similar to glyphosate-containing products available to professional land managers and based on results of this study, glyphosate may provide an alternative to imazapyr that can be used to reduce potential for damage to non-target vegetation if methods similar to those described in this study are used.

Acknowledgements

This study was funded in part with funds provided by the U.S. Department of Agriculture Agricultural Research Service as part of The Area wide Management and Evaluation of *Melaleuca quinquenervia*. Herbicide products were provided gratis by Enforcer Products, Monsanto Lawn and Garden Products, Dow AgroSciences, and



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BASF Corporation. Lee County Parks and Recreation and the South Florida Water Management District provided access to properties for conducting these studies.

Literature Cited

Center, T. D., T. K. Van, M. Rayachhetry, G. R. Buckingham, F. A. Dray, S. Wineriter, M. F. Purcell, and P. D. Pratt. 2000. Field colonization of the melaleuca snout beetle (*Oxyops vitiosa*) in south Florida. Biological Control 19:112-123.

Langeland, K. A. 2002. Evaluation of three glyphosate products for controlling adventitious sprouting of melaleuca and Brazilian pepper tree stumps. Wildland Weeds 5(4):4, 6-7.

Laroche, F. B., D. D. Thayer, M. J. Bodle. 1992. Melaleuca response to various herbicides and methods of application. Aquatics 14(2):14-19.

Pernas, T. B. Burns, and J. Cuarezma. 1994. How low can you go? Florida EPPC [newsletter] 4(4):1-3.

Serbesoff-King, K. 2003. Melaleuca in Florida: a literature review on the taxonomy, distribution, biology, ecology, economic importance and control measures. J. Aquat. Plant Manage. 41:98-112.

Wood, M. and A. Flores. 2002. Sap-sucking psyllid pesters pushy plant. Agricultural Research 50:18-19.

AQUAVINE

The Wet Weight of Water Hyacinths

A contributing factor to the weediness of water hyacinth is its wet weight. In the simplest of terms, water hyacinths are very, very heavy. The fresh (or wet) weight of an acre of water hyacinths can range from 163 metric tons per acre (from samples harvested at Lake Alice in Gainesville, FL) to 171 metric tons per acre (harvested from Paynes Prairie, Alachua County, FL) for an average of 167 metric tons per acre.*

The biomoass of water hyacinths in one square meter, as shown here by Karen Marshall UF-IFAS, weighs an average of 91 pounds. *(photo submitted by Karen Brown)*

This means that one meter square of water hyacinths weighs an average of 91 pounds!

* from "*Growth characteristics, yield potential, and nutritive content of water hyacinths*," by E.B. Knipling, W.H. West, and W.T. Haller (1970), Soil and Crop Science Society of Florida 30:51-63.

tips of the trade

- For improved duckweed control when using diquat, add a low rate of liquid copper herbicide (Komeen or Nautique, etc.)
- When using fluridone for duckweed control be sure that the treatment gets in the water column so that the roots can uptake the herbicide.
- Slender Spikerush can be cleaned out of a system with fluridone and be kept out with regular low dose treatments.
- Renovate is showing some promising results on Limnophila where it can be used.
- Sinkers. Getting your submersed treatment down to the target plants is important. A thin, lite hand gun spray can easily float around on the surface of the water. If you can't use trailing hoses, use a polymer additive and a larger spray tip for a thick and dense spray stream that will help break surface tension and get your treatment down to the target.

Submitted by Paul Mason, Aquatic/IVM Specialist, www.uaptimberland.com.

- A unique mix for controlling Limnophila in flowing canals is the application of 2 gal Diquat & 100lbs 2,4-D per surface acre.
- Nitella (Stonewort) can be stimulated to grow in hydrilla treatment zones by using Aquathol SuperK at a rate of 3ppm (80lbs/surface acre), if nitella was present before the treatments. Reason for the rapid growth of nitella is unknown, but the moderate rate of 3ppm seems to stress the macro-algae just enough to make it reproduce rapidly in Central Florida lakes.

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- Duckweed control can be improved by first determining the species composition present. Commonly when the percentage of *Lemna* decreases and other duckweed species increase (*Landoltia, Spirodela Wolffia*) duckweed control is often perceived as selected or ineffective, when in fact the shift in species composition requires a different control approach. Key duckweed identification feature: *Lemna* is either rootless or has a single root, where as other duckweed species have multiple roots.

Submitted by Scott Glasscock (Disney Pest Mgmt) & Jeff Holland (RCID).

New Invasive Lily, Be on the Look-Out

Yellow Floatingheart (Nymphoides peltata) has become well-established east of Tallahassee in Lake Cam. The numerous yellow flowers are easy to spot in the morning but are gone in the afternoon.

According to the Global Invasive Species Database: "This species can become extremely invasive (pioneer character) in shallow, slow-moving swamps, rivers, lakes and ponds." It certainly has expanded rapidly in Lake Cam.

The original plants came from a local outdoor improvement center and were placed in an ornamental pond. Subsequent flooding lead to the spread of the plant to the lake nearby. Sound familiar?.

Submitted in email from Jess M. Van Dyke, NW FL Regional Biologist, DEP/ Invasive Plant Mgt .

Calendar

November 8 –10, 2005- **29th Annual Florida Aquatic Plant Management Society Training Conference**. Hilton (727-894-5000), St Petersburg, FL. www.fapms.org.

November 9 –11, 2005- **25th International Symposium NALMS 2005**. "Lake/Effects: Exploring the Relationship between People and Water". Madison, WI. www.nalms.org.


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