

# AQUAPHYTE

## Center for Aquatic Plants

with support from

The Florida Department of Environmental Protection,

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## You Have Been Deleted!

As of this issue, *EVERYBODY* on the **AQUAPHYTE** mailing list has been deleted, whether this is your first issue or your thirtieth. (Regular purging of our mailing lists is required by the government.)

If you want to continue receiving the printed version of **AQUAPHYTE**, *you must contact us in writing*, through regular mail or via E-mail, verifying your name and mailing address. **Please see pages 14 and 15.**

There *is* an alternative. You do not have to re-subscribe to the printed version of **AQUAPHYTE** and can simply read (and print, if you want to) the online version of this newsletter. In fact, we would *prefer* that you read it online rather than expect an expensive printed version delivered by mail. Online **AQUAPHYTE** is accessible through the APIRS Internet Web site at <http://aquat1.ifas.ufl.edu/>

## A View on Melaleuca...from Down Under

by Tim Low, Queensland, Australia

Very few Australians realize that our paperbark tea tree (*Melaleuca quinquenervia*) has become a weed in Florida. In Australia, it is a well known tree often planted in parks. It is also an important source of honey to beekeepers, and the bark is sometimes gathered to line plant pots, and to make bark "paintings".

The paperbark is a very successful tree in temperate eastern Australia. In pre-European times it formed vast forests on coastal swampy land. It replaces eucalypts on seasonally-inundated alluvial soil, forming monotypic forests or woodlands. It also grows within swamps and along the banks of streams in the lower reaches of catchments.

Paperbark forests are not a diverse habitat. Often there are no other tree species present. Where the ground is slightly elevated, eucalypts grow as emergents, especially the forest red gum (*Eucalyptus tereticornis*), and also the swamp mahogany (*Lophostemon suaveolens*). Where the soil becomes saline, paperbarks are replaced by swamp oak (*Casuarina glauca*).

In paperbark forests, the ground cover is usually blady grass (*Imperata cylindrica*). This grass is very widely distributed in Australia, Asia, and Africa, and it has spread to the United States to become a serious weed. Very few shrubs grow within paperbark forests, and only one vine is common, strawpod (*Parsonia straminea*).

## Environmental Professionals To Be Licensed?

Should "environmental professionals" be regulated and licensed by the state in the same way that other professionals are, such as engineers, surveyors, geologists and bankers? The Florida Association of Environmental Professionals, the Florida Lake Management Society, and other organizations think so. They have formed a coalition to file a bill with the Florida Legislature for consideration in its spring 1997 session. Four years in the writing, the bill would require anyone who wants to "practice environmental management" (make ecological predictions or environmental determinations) to have a license, or to work under the guidance of someone who does. Owners and managers of private companies that offer environmental services in the state would be affected. Government workers in general would be exempted, "provided their work is reviewed and/or prepared under the supervision of a licensed environmental professional". The management of agricultural and aquacultural resources are exempt.

According to the bill, a licensee must provide proof of "having earned a four-year college degree in one of the environmental management sciences", "having completed a minimum of 5 accumulative years of experience" and "having met the continuing education requirements." A "grandfather clause" is included in the bill, which allows some applicants to substitute experience for a degree in environmental management.

Licensure is a good idea, according to Dr. Tom Cuba, because the general public needs more assurance that reliable ecological decisions are made and that environmental professionals are more liable for their actions; and because there is "too much tax money wasted" on and environmental damage caused by bad environmental management advice

[See Professionals on Page 2]

[See View on Page 10]

## APIRS Update

### To Download Search Results From The APIRS Database

These are instructions as to how remote users can download search results from the APIRS database. First, be sure to follow the new "log on" instructions to be found on the database page of our Web site:

<http://aquat1.ifas.ufl.edu/database.html>

**Here is the solution for downloading to your computer the results of a database search.** (This would be much easier if APIRS could afford a \$17,000 software interface, but this works.) For example, suppose you did the following search, and you want the results at your computer so that you can print them out on your printer.

At the search screen, suppose your search was: **eichhornia\$ and (biogas\$ or methan\$)**

The number of "hits" for this query comes to 170 documents, and you want to look at them at your leisure. For demonstration purposes, let's call this printout "biogas".

- 1) You have completed your search of the database, and you are at a blank "Enter search request [Options]" line. Press **<return>**. Also press **<return>** after each of the following actions.
- 2) You are at the "Options" screen. Choose **"R"** to "Redirect documents".
- 3) The full pathname to type here will be: **/usr/guest/biogas**  
(Note the direction of the "/"--make sure it's right.)
- 4) Enter your selection [F]: **f**
- 5) Enter documents for redirect: **all**
- 6) Press **<return>** when prompted.
- 7) You are back at the search screen. Follow instructions to **log off** (and **quit** the database).
- 8) **Quit** your telnet program (your "terminal session").
- 9) **Start** your FTP program.
- 10) Using FTP commands, you will **transfer your search file** (in this example, "biogas") from the database computer to your computer.

FTP programs are different; some require FTP commands, some use easy menu choices.

For those that require FTP commands:

- 11) At "ftp" prompt, type: **ftp aquat1.ifas.ufl.edu** (Note that there is a single space between "ftp" and "aquat1")
- 12) At user, type: **guest**
- 13) At password, type: **datalist2**
- 14) At "ftp" prompt, type:  
**get /usr/guest/biogas c:\mydirectory\biogas** (Note that 1) there is a single space between "get" and "/usr..." and between "biogas" and "c:\my...", and 2) "mydirectory" is the name of the directory on your computer where you want the search file to go.)
- 15) After transfer, at "ftp" prompt, type: **bye**
- 16) **Quit** FTP
- 17) **Start** word processor; **load** "biogas" file. (You may have to convert the file to ASCII (DOS) Text or some other compatible format for your word processing program.)

### [Professionals, from Page 1]

and activities. Cuba is the Executive Director of the Environmental Professionals Action Coalition, a lobbying organization that has been shepherding the bill.

As of now, according to Cuba, only British Columbia requires licensing of its environmental professionals. However, five states are monitoring the progress of Florida's bill. "I am very optimistic that it will pass this spring," says Cuba. He is interested in comments and suggestions: **Dr Tom Cuba, Delta Seven, Box 54697, St. Petersburg, FL 33739 (813/532-0709).**

V.R.

### We are looking for plant material to draw!

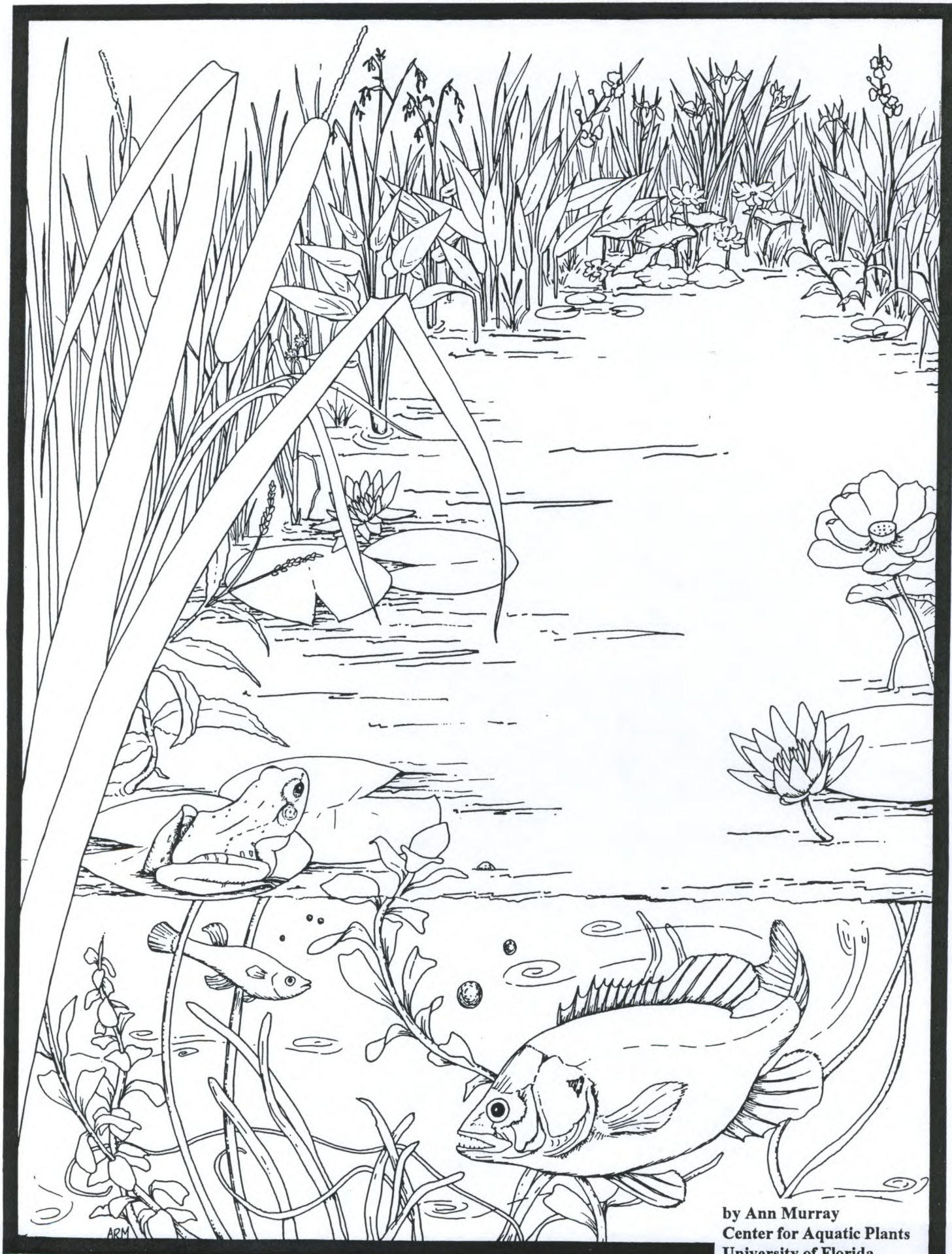
If you have an aquatic or wetland plant specimen that you need a botanically accurate drawing of, please send it to APIRS. We will make the drawing, send you a free reproduction of it, and include the drawing in our line-drawings package. (See page 13 for a list of plants already drawn.)

**Please contact Vic Ramey at APIRS for more information:**  
vramey@nervm.nerdc.ufl.edu or 352/392-1799.

### Coloring Page



This drawing of a Florida scene by Ann Murray is ready to color. Simply tear out or photocopy the page. Give it to some children, or keep it yourself, and color it. Send the colored pictures to APIRS and we will display them on our Web site for all to enjoy. Plants depicted include cattail (*Typha*), fire flag (*Thalia*), duck potato (*Sagittaria*), lotus (*Nelumbo*), water lily (*Nymphaea*), red ludwigia (*Ludwigia*), blue flag (*Iris*), smartweed (*Polygonum*), bur reed (*Sparganium*), and tape grass (*Vallisneria*).



ARM

by Ann Murray  
Center for Aquatic Plants  
University of Florida  
(352/392-1799) 12/96

## 4-H Wetlands Programs

St. Lucie County 4-H realizes the importance of Florida's wetlands. A wetlands 4-H school enrichment program was developed by 4-H Agriculture Agent Susan Munyan and 4-H Program Assistant Debbie McNeill to bring appreciation and understanding of our wetlands to students. In the classroom, 4th and 5th grade students learn what a wetland is, some of the different forms of wetlands, and typical wetland plants and animals.

The program is concluded with a wetlands field trip that tests their classroom studies. Students visit several natural and man-made wetlands. Using the University of Florida produced "Aquatic Plant Identification Deck", teams of students are asked to identify plants and signs of wildlife found in the wetlands. This team approach encourages students to collectively use their wetlands knowledge.

Through classroom and hands-on experience, 795 students are to be an interactive part of the St. Lucie County 4-H wetlands program. These students will be able to determine a wetland by the plants and animals found. Students also begin to understand the significance of Florida's wetlands to the environment.



Fourth grade student identifying bog buttons.

**APROPOS** - the aquatic plant management strategy planner is under development by the U.S. Army Corps of Engineers and needs "beta testers". This is "a computer -assisted tool to help the aquatic plant manager integrate all the information available for developing management plans." The main menu will allow the user to access a planner, as well as literature databases, simulation tools, field techniques toolbox, control technique toolbox, database menu, and, of course, a "help menu". If you are interested in testing and commenting on APROPOS, contact John Madsen (E-mail: madsenj@ex1.wes.army.mil; (214/436-2215)) or Bob Gunkel (E-mail: gunkelr@ex1.wes.army.mil; (601/634-3722)).

**HANDBOOK NEEDS AUTHORS** - *The Handbook of Aquatic and Wetland Plants of the Caribbean and Bahamas Islands* is being coordinated by Drs. Rodulio Caudales and Efren Vega of the University of Botswana. They have put out a request for scientists interested in writing sections on various families of plants. For more information, contact Dr. Rodulio Caudales, University of Botswana, Private Bag 0022, Gaborone, BOTSWANA; E-mail: caudales@noka.ub.bw

## Aquatic Exotic News

### Hydrilla in Connecticut

The Fall 1996 issue of *Aquatic Exotics News* includes an account of the spread of *Hydrilla verticillata* into New England. Prof. Donald Les discovered the federally prohibited plant densely grown to the surface in a Connecticut pond. Les was lead to the site when he happened to recognize an error in a herbarium record: what Les recognized as *Hydrilla* had been misidentified by the herbarium in 1989 as *Egeria densa*. Thus, hydrilla was introduced to Connecticut at least seven years ago.

*Aquatic Exotics News* is the newsletter of the Northeast (USA) Sea Grant Network at the University of Connecticut at Avery Point. Ms. Nancy Balcom edits the 4-8 page newsletter, and it is published twice a year. The latest issue included the report cited above, as well as a zebra mussel update from Vermont; a notice about the "storm drain stencil program" in Connecticut and purple loosestrife publications; and information about upcoming lake management meetings.

For information on subscribing to *Aquatic Exotics News*, contact Nancy Balcom, Connecticut Sea Grant Marine Advisory Program, University of Connecticut, 1084 Shennecossett Rd., Groton, CT 06340-6097. *Aquatic Exotics News* and other information from the Connecticut Sea Grant Program also may be accessed on the World Wide Web at: <http://www.ucc.uconn.edu/~wwwsgo>

## Prohibited Aquatic Plants - Out and About?

In an effort to not curtail the sale of commercially valuable plant species, the Florida Department of Environmental Protection, Bureau of Aquatic Plant Management, is revising its Florida Administrative Code, Rule 62C52 on Aquatic Plant Importation, Transportation, Non-Nursery Cultivation, Possession and Collection, to allow the sale of prohibited aquatic plant material proven to be non-viable. Commercial uses for prohibited plants include selling the bright red berries of Brazilian pepper, *Schinus terebinthifolius*, as ornamentals at Christmas. The berries are sterilised using heat and methyl bromide fumigation treatments. The new rule will allow permits for the collection, transportation and sale of the berries providing collection and transportation methods are secure against accidental dispersal and the plant material is proven to be sterile.

The rule change was considered partly in response to complaints from commercial growers and members of Florida's Asian community who have shown a strong desire to grow water spinach, *Ipomoea aquatica*. Water spinach is widely grown and eaten as a vegetable in Vietnam and other areas in Asia. It repeatedly has been found growing illegally in Florida waterbodies and commercial nurseries, and being sold in Asian food markets. Growers in Hillsborough County signed a legal consent order agreeing to destroy their crops if inspectors could obtain a positive identification of the plant by a third party. Dr. Dan Austin, a botanist with the University of South Florida, grew

plant samples to the flowering stage and verified that they were indeed *Ipomoea aquatica*. Under the new rule, permit applications would be evaluated based on the demonstrated non-viability of the plant material. Research is now underway at the University of Florida, Fort Lauderdale Research and Education Center, on methods of rendering *Ipomoea aquatica* non-viable, possibly using irradiation. If this is accomplished to the satisfaction of DEP, growers may begin cultivating water spinach under quarantine conditions.

Another product which so far has been allowed is the sale of *Hydrilla verticillata* in powdered, capsuled form. (In Florida, the powdered material is made from hydrilla which has been mechanically harvested and left on the banks of Lake Seminole, so the plant is not being cultivated.) The product is billed as "100% Hydrilla, a unique, 'wild harvested' freshwater herb, the most recently discovered antioxidant,



*Schinus terebinthifolius*



An aquatic plant manager equipped with backpack sprayer wades through waste deep water infested with water spinach, *Ipomoea aquatica*. The infestation was found in Alligator Lake in Pinellas County, Florida. Photograph provided by Mr. Rob Kipker, Florida Department of Environmental Protection.

phytonutrient, complex enzyme, whole food concentrate, a muscle builder, energy enhancer, nutrient provider, anti-arthritis, free radical scavenger, with applications for stress management, skin disorders and age associated diseases..." The product's purveyors also claim that hydrilla "helps control toxic reactions caused by drugs and chemical exposures from our diet and environment."

Meanwhile, hydrilla is the number one aquatic weed problem in the state of Florida, with approximately 13 million dollars allocated for its control during the 1996-1997 fiscal year. Ninety capsules retail for about \$36.00. Step right up, folks!

K.B.

Florida bills and legislation may be viewed on the WWW. For bills prefiled for the 1997 session, substitute "1997" for "1996".

House: [http://www.scri.fsu.edu/fla-leg/bill-info/1996/house\\_index.html](http://www.scri.fsu.edu/fla-leg/bill-info/1996/house_index.html) Senate: [http://www.scri.fsu.edu/fla-leg/bill-info/1996/senate\\_index.html](http://www.scri.fsu.edu/fla-leg/bill-info/1996/senate_index.html)



Participants from the 1996 International Workshop and 8th Macrophyte Group Meeting - International Association on Danube Research, on Lake Bohinj, Slovenia. The proceedings were contributed to the *APIRS* collection by Olga Urbanc Berčič and Alenka Gaberščik.

## *APIRS* Seeks Proceedings

The Aquatic Plant Information Retrieval System (*APIRS*) collects literature of all sorts for inclusion in the database. This includes "proceedings" from relevant meetings held throughout the world. 'Grey' literature of this type is particularly difficult to locate for researchers, students and others, especially after several years.

To archive the proceedings from your meeting and to make them available to others throughout the world, please send them to *APIRS*. They will be cataloged for inclusion in the database and housed with our permanent collection of aquatic and wetland plant literature, a collection of more than 43,000 items.

## Meetings

### **INTECOL VII INTERNATIONAL CONGRESS OF ECOLOGY. July 19-25, 1998. Florence, Italy.**

Organized by the International Association for Ecology (INTECOL) in conjunction with the Italian Ecological Society (SIIE), the motto of this congress is *New Tasks for Ecologists after Rio 1992*. It is an invitation to all ecologists to come together to examine the relationships of human activities and the environment in both scientific and social dimensions.

Contact: Almo Farina, Secretariat VII International Congress of Ecology, c/o Lunigiana Museum of Natural History, Fortezza della Brunella, 54011 AULLA, Italy; WWW: <http://www.tamnet.it/intecol.98>

### **WORKSHOPS--WORKING WITH WETLANDS AND WILDLIFE. January 28-29, 1997, Houston Texas. February 25-26, 1997, Atlanta, Georgia.**

These two day workshops are to "demonstrate the most effective and efficient means of planning and implementing wetlands restoration, creation, and management projects, and to promote pro-active management of wetlands for maximum benefits." The workshops are sponsored by the Wildlife Habitat Council in cooperation with the US EPA, the US Army Corps of Engineers, the USDA Natural Resources Conservation Service, the Tennessee Valley Authority, the US Fish & Wildlife Service and Svoboda Ecological Resources.

Contact: Wildlife Habitat Council, 1010 Wayne Avenue, Suite 920, Silver Spring, MD 20910; telephone: 301/588-8994; fax: 301/588-4629; E-mail: [whc@cais.com](mailto:whc@cais.com); WWW: <http://www.wildlifehc.org/wildlifehc>

### **SECOND NORTHEAST CONFERENCE ON NON-INDIGENOUS AQUATIC NUISANCE SPECIES. February 7-8, 1997. Burlington, Vermont.**

Connecticut Sea Grant, University of Connecticut, and the Vermont Department of Environmental Conservation are sponsoring a two-day conference to discuss current research on non-indigenous aquatic species in the northeastern United States.

Contact: Nancy Balcom, Sea Grant Marine Advisory Program, 1084 Shennecossett Rd., Groton, CT 06340; telephone: 860/405-912

### **VIII INTERNATIONAL CONFERENCE ON HARMFUL ALGAE. June 25-29, 1997. Vigo, Spain**

Contact: Beatriz Reguera, Conference Coordinator, Instituto Espanol de Oceanografia, Apartado 1552, 36280 Vigo, Spain.

### **1997 RESEARCH REVIEW AND AQUATIC PLANT MANAGERS WORKSHOP. March 11-12, 1997. Gainesville, Florida.**

Recently completed and current research being conducted on aquatic plant management throughout Florida will be presented, together with an assessment of the future of aquatic plant management.

Contact: Office of Conferences, University of Florida, IFAS, telephone: 352/392-5930; E-mail: [conf@gnv.ifas.ufl.edu](mailto:conf@gnv.ifas.ufl.edu)

**22ND ANNUAL CONFERENCE OF THE NATIONAL ASSOCIATION OF ENVIRONMENTAL PROFESSIONALS. May 19-23, 1997. Orlando, Florida.**

A combination technical conference and trade show, which addresses local, national and international environmental issues associated with government, industry, small business, sustainable development, stakeholder involvement, NEPA, and risk management. Held in conjunction with Environmental Resource EXPO '97, billed as the largest environmental industry trade show in the Southeast.

Contact: Helen Merkel, Horne Engineering and Environmental Services, 4501 Ford Ave., Suite 1100, Alexandria, VA 22302.

**SECOND INTERNATIONAL SYMPOSIUM ON ENVIRONMENTAL SOFTWARE SYSTEMS. April 26 - May 3, 1997, Whistler, British Columbia, Canada**

Organized by the International Federation for Information Processing and the German Computer Society. The symposium will include course lectures for students and faculty on *Tools for Environmental Informatics*, with advanced credit provided at several institutions. The theme of the course is environmental data management and environmental information systems to bridge gaps in time and space in data, information and knowledge. Participating universities are University of Waterloo, University of Guelph, Hochschule fuer Technik und Wirtschaft des Saarlandes, and Fachhochschule Nuertingen.

Contact: Dr. David Swayne, Department of Computing & Information Science, University of Guelph, Guelph, Ontario, Canada N1G 2W1; Fax: 519/837-0323; E-mail: dswayne@snowwhite.cis.uoguelph.ca

**ANNUAL CONFERENCE ON ECOSYSTEMS RESTORATION & CREATION. May 15-16, 1997. Tampa, Florida.**

Sponsored by the Hillsborough Community College Institute of Florida Studies. The conference will provide a forum for the nationwide exchange of scientific research in the restoration, creation and management of total ecosystems including freshwater and coastal wetlands and upland and transitional areas.

Contact: Frederick Webb, Hillsborough Community College, Institute of Florida Studies, Plant City Campus, 1206 N. Park Road, Plant City, FL 33566; telephone: 813/757-2104; E-mail: webb@mail.hcc.cc.fl.us

**AQUATIC WEED SHORT COURSE. May 12-15, 1997. Fort Lauderdale, Florida.**

Sponsored by the University of Florida, Institute of Food and Agricultural Sciences (IFAS). The course will offer continuing education units for Pesticide Applicator Certification in categories including Aquatic, Right-of-Way, Aerial, Ornamental and Turf, CORE, Demonstration & Research, and Regulatory.

Contact: University of Florida, IFAS, Office of Conferences, telephone: 352/392-5930

**18TH ANNUAL MEETING OF THE SOCIETY OF WETLAND SCIENTISTS. June 1-6, 1997. Bozeman, Montana.**

The technical program will focus on the wetland functions and management theme of the meeting, *Wetlands Heritage and Stewardship*. Several field trips are planned.

Contact: Montana State University, Conference Services, Room 280F, Strand Union, Bozeman, MT 59717-0402; fax: 406/994-3228. To submit abstracts: Paul Hook, Dept. Animal & Range Sciences, Montana State University, Bozeman, MT 59717-2900; telephone: 406/994-3724; E-mail: bozeman97@sws.org; WWW: <http://www.sws.org>

**COMMUNITIES WORKING FOR WETLANDS. May 7-9, 1997. Alexandria, Virginia.**

Billed as an *American Wetlands Month Celebration*, the meeting will be a gathering of people interested and sharing experiences in community-based wetlands conservation.

Contact: *Communities Working for Wetlands*, c/o Terrene Institute, 4 Herbert St., Alexandria, VA 22305; telephone: 800/726-4853; fax: 703/548-6299; E-mail: terrene@gnn.com

**EIGHTH ANNUAL MEETING OF THE FLORIDA LAKE MANAGEMENT SOCIETY. May 7-9, 1997. West Palm Beach, Florida.**

The conference theme is "*New Perspectives and Tools for Lake and Watershed Management*".

Contact: Chuck Hanlon, Conference Chairman, South Florida Water Management District, P.O. Box 24680, West Palm Beach, FL 33416-4680; telephone: 561/687-6748; E-mail: charles.hanlon@sfwmd.gov

## Books/Reports

### EUTROPHICATION OF LAKES IN CHINA- A Gift To The 4th International Conference on the Conservation and Management of Lakes, "Hangzhou '90", edited by J. Xiangcan, L. Hongliang, T. Qingying, Z. Zongshe and Z. Xuan. 1990. 652 pp. (In English.)

(Order from Prof. Jin Xiangcan, Water Environmental Institute of the Chinese Research Academy of Environmental Sciences, Beiyuan, Beijing, 100012, CHINA. US\$150.00.)

Ecologists and limnologists of the Chinese Academy of Science have compiled a very large amount of research, graphs and maps about the status of the highly diverse lakes (and reservoirs) of China in a well-produced, very well-written book. There are no other such resources about the lakes of China in the APIRS library.

In two parts, this tome is 1) "a comprehensive introduction to the lakes' environmental characteristics" and 2) a review and compilation of dozens of eutrophication studies by many Chinese scientists. Part One includes information on all conceivable characteristics from sediment granularity to the effects of tourists to the distributions of indicator species. Part Two (the remaining 500 pages) presents the trophic states of five regions of China, as well as separate reviews of urban lakes and reservoirs.

There are no indexes or appendixes.

### PONDWEEDS OF GREAT BRITAIN AND IRELAND - B.S.B.I. Handbook No. 8, by C.D. Preston. 1995. 352 pp.

(Order from the Botanical Society of the British Isles, Publications, Green Acre, Wood Lane, Oundle, Peterborough PE8 5TP, GREAT BRITAIN. (Tel. 01832 273388))

This book is "intended as an identification guide rather than a taxonomic monograph" for those who are "reasonably familiar" with botany. The first third is an introduction to the biology of *Potamogeton* species in the British Isles, and includes chapters on pre-history, nomenclature, classification, evolution, hybridisation, structure, life history, habitats, distribution, and collection and preservation.

The second part of the book presents two

keys to 50 species (including a couple of *Ruppia*s and *Groenlandia densa*). Each species is treated by descriptions, maps and excellent line drawings.

### RESERVOIR FISHERIES OF INDIA, by V.V. Sugunan. 1995. 423 pp. (In English.)

(Order from Food and Agriculture Organization (FAO) of the United Nations, Publications Division, Viale delle Terme di Caracalla, 00100 Rome, ITALY. FAO Fisheries Technical Paper No. 345.)

The per capita availability of fish in India is 3.2 kg while the world average is 12.1 kg. To increase inland fish production will require using Indian reservoirs, about which documentation is "grossly inadequate." This research literature review will provide "a baseline" to "assess the potential for culture-based fisheries enhancement of reservoirs in the region."

The book begins with a national perspective on inland fisheries in India, as well as maps and charts of reservoir distribution, soils, and climate. The remaining 13 chapters present the facts and figures from each state, including stocking methods and rates, yields, and water chemistry.

### DICTIONARY OF PLANT NAMES, In Latin, German, English and French, by H. Nikolov. 1996. 926 pp. ISBN 3-443-50019-6

(Order from J. Cramer, Gebruder Borntraeger, Johannesstr. 3A, D-70176 Stuttgart, GERMANY. (Tel. 0711/625001.) US\$128.00.)

This books lists 14,500 generic names and as many species and 1,600 synonyms, for about 600 families of plants, bacteria included.

### ECOLOGY AND MANAGEMENT OF TIDAL MARSHES - A Model from the Gulf of Mexico, edited by C.L. Coultas and Y.-P. Hsieh. 1997. 352 pp. ISBN 1-57444-026-8

(Order from St Lucie Press, 100 E Linton Blvd., Suite 403B, Delray Beach, FL 33483. (407/274-9906.) US\$59.95 plus S/H.)

This book introduces the reader to the highly productive intertidal salt marshes of Florida's Gulf of Mexico coast. Florida has

more intertidal wetlands than Georgia and the Carolinas combined. It is illustrated with charts, graphs and ok-quality black-and-white photographs.

Included are 12 review chapters on various aspects of intertidal marshes, such as functions, geology, soils, vegetation, primary productivity and animals. The chapter on legal protection was written by lawyers, and the one on management was written by specialists of the Florida Department of Environmental Protection.

This book also includes chapters on how "to value" wetlands and the things that live in them. Chapter 8, written by Professors H.T. Odum and D.A. Hornbeck, is a tutorial on how to use Odum's highly-complex "EMERGY measure" (named in 1983) to "estimate the contributions of marsh production and storage to real wealth"; that is to say, to calculate the monetary value of marshes. Using EMERGY, Odum and Hornbeck calculate that marshes around Cedar Key, Florida, contribute to the "potential for growth" of the town to the tune of \$55.3 million (1990 \$). Therefore, the "potential public value that depends on marshes is \$5,839/ha/year (1990 \$)."

Appendixes that list the terrestrial vertebrates and aquatic insects of Florida's Gulf coast tidal marshes complete this compendium.

### WILDLIFE COMMUNITY HABITAT EVALUATION: A MODEL FOR DECIDUOUS PALUSTRINE FORESTED WETLANDS IN MARYLAND - Final Report, by R.L. Schroeder. 1996. 42 pp.

(Order from National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. Technical Report WRP-DE-14. Final Report from the US National Biological Service to the US Army Corps of Engineers.)

This publication is a description of and tutorial for the use of the "Habitat Model", a mathematical procedure that "predicts [species] richness from an evaluation of habitat and spatial variables, with the highest levels of richness assumed to be found in mature, unfragmented forested wetland tracts."



## AQUATIC AND WETLAND PLANTS OF SOUTH CAROLINA

by C.A. Aulbach-Smith and S.J. de Kozlowski. Second Edition. 1996. 128 pp. (Order from K. Horan, SCDNR, Water Resources Division, 1201 Main Street, Suite 1100, Columbia, SC 29201, (803/737-0800.) \$15.00.)

This expanded version of the 1990 edition includes treatments for more than 120 species. It is a well-made book profusely illustrated with exceptional (though smallish) color photographs and line drawings. This manual does not include a key to the species, though the book is divided into sections: submersed; floating; shoreline and wetland; grasses, sedges and rushes; and algae.

## ATLAS OF GRACILARIA SPORE CULTURE

by E.P. Glenn, D.W. Moore, C.Y. Machado, K.M. Fitzsimmons and S.E. Menke. 1996. 33 pp. (Order from Environmental Research Laboratory, University of Arizona, 2601 E Airport DR, Tucson, AZ 85706 (520/741-1990.)

This publication resembles a ready-made "business plan" for starting the business of seaweed aquaculture. The spiral-bound manual explains how to prepare and operate a spore culture facility, in which *Gracilaria* (a red seaweed) is grown and harvested. *Gracilaria* is consumed around the world where it is the raw material for gel agar and other foodstuffs. Its increasing demand is not being met by the industry's depleting natural sources in the seas of Asia and South America; aquacultural sources must be expanded.

In many large, very good black-and-white photographs, the *Gracilaria* life cycle and its aquaculture are depicted. Chapters also explain how to collect data and keep records, and presents the "Moloka'i experience" in Hawaii, including listing installation and operating costs, with depreciation schedule and 5-year-cash-flow estimates.

## FLORIDA FRESHWATER PLANTS - A Handbook of Common Aquatic Plants in Florida Lakes

by M.V. Hoyer, D.E. Canfield, C.A. Horsburgh, and K.P. Brown. 1996. 264 pp.

(Order from University of Florida, IFAS Publications, PO Box 110011, Gainesville, FL 32611-0011. (352/392-1764.) US\$35.00 plus S/H.)

The objective of this uniquely informative handbook is to examine the relation of water chemistry to the presence and distribution of 103 common aquatic plants in 322 Florida lakes.

The book presents color photographs, descriptions, Florida distribution and biology of each plant. It also includes tables of data and succinct interpretations which describe the ranges of water chemistry variables for the individual species. These data were taken from 15 years of research conducted on Florida lakes. In addition, a list of scientific references selected from the Aquatic Plant Information Retrieval System (APIRS) database refers users to other sources of published information for each species.

Also included in this fact-filled volume are statistical tables showing plants sorted for water chemistry variables including pH, alkalinity, conductance, color, phosphorus, nitrogen, chlorophyll *a*, Secchi depth, calcium, magnesium, sodium, potassium, sulfate, chloride, iron and silicon.

## AQUATIC AND WETLAND PLANTS OF INDIA

by C.D.K. Cook. 1996. 385 pp. ISBN 0-19-854821-4 (Order from Oxford University Press, 198 Madison Avenue, New York, NY 10016. \$165.00 plus S/H.)

This "Flora", Prof. Cook's "last fling before going into retirement", is a much-needed record of the diversity of aquatic and wetland plants in the subcontinent, as well as a much-needed identification manual that was written to be used by students and others having little botanical training.

The identification key is based on easily seen vegetative characteristics, so that taxa may appear several times in the key. Thus, users may depend on different characteristics and follow different ("easier") paths in the key to identify a plant in question. Each species is described, its distribution in India is noted, and an "ecological diagnosis" is presented. Only Latin names are used in this Flora. The illustrations are line drawings, of which there are relatively few.

## WETLAND PLANTS OF OREGON AND WASHINGTON

by B.J. Guard. 1995. 239 pp. ISBN 1-55105-060-9 (Order from Lone Pine Publishing, 206, 10426-81 Avenue, Edmonton, Alberta, CANADA T6E 1X5, 800/661-9017. \$19.95 plus S/H.)

This highly illustrated and colorful wetland manual is meant for botanists, environmentalists, managers and "all who appreciate, enjoy, study, protect and manage the wetlands" of the Pacific Northwest. It details 155 (mainly flowering) plants, but treats about 330 species in various ways, such as being described as "look-alike" species. It includes native and exotic species. The author uses five identification keys: "pondweeds and others", grasses, rushes, sedges, and willows (*Salix* spp.). In addition to the keys, the plants are arranged in the book according to general habitats, including "submerged and floating, marshy shore, prairie wetland, shrub swamp and wooded wetland" communities.

The color photographs and line drawings of the plants are generally very good. Each plant is described as to growth habit, leaves, flowers, fruits, habitat, natural history, similar species and special notes of interest.

## WATER GARDENING -- WATER LILIES AND LOTUSES

by P.D. Slocum, and P. Robinson, with F. Perry. 1996. 434 pp. ISBN 0-88192-335-4

(Order from Timber Press, Inc., 133 SW Second Avenue, Suite 450, Portland, OR 97204-3527, (800/327-5680.) \$59.95 plus S/H.)

Written by two of the world's leading water-gardening experts, this very complete book includes two main parts. Part one includes all one needs to know to design, construct and use pools, bogs, waterfalls and streams in the garden landscape. Choosing, planting and maintaining floating, submersed, marginal, and bog plants as well as moisture-loving trees and shrubs, is explained. The roles of fish, frogs, insects and other animals are also described, including particular detail regarding the lives of dragonflies.

Part Two is the "Encyclopedia of Water Lilies and Lotuses", in which all species and major cultivars of water lilies and lotuses are described, including both day- and night-blooming tropicals. Here are found most of the 445 laser-sharp color photographs of flowers, leaves and roots.

Appendices include hardiness zone maps, a listing of commercial water lily sources, a glossary and a recommended reading list.

**[View, from Page 1]**

The fauna of paperbark forests is limited. Frogs are usually well-represented by about 8-12 species, and these are preyed upon by the keelback (*Tropidonophis mairii*), a harmless colubrid snake sometimes found in large numbers. Kangaroos and wallabies are largely confined to areas supporting blady grass (*Imperata cylindrica*), or other palatable species. Paperbarks do not develop hollow limbs so they do not provide shelter for possums, gliders, parrots, and other hole-nesting birds. These species will occur where emergent eucalypts are present, but a monotypic stand of paperbarks is very poor habitat for mammals and most birds.

Paperbarks flower prolifically and the blossoms attract large numbers of nectar-feeding birds and bats. The birds include several species of honey eater and lorikeet, and there are four species of temperate nectar-feeding bat, ranging in weight from 15 grams up to a kilogram. When a paperbark forest is in bloom, it becomes very noisy, with squawking birds by day, and squabbling bats by night. Feral and domesticated honeybees take much of the honey and nectar.

Most of the coastal paperbark forests were cleared in the past for pasture. The remaining stands are threatened by real estate development. In Brisbane, Australia's third largest city, the conservation of remaining paperbarks has become a conservation issue. The Brisbane City Council opposed development of one paperbark stand as a shopping centre, and the site has now become a bushland park called Deagon Wetlands.

In a recent book, *Wild Places of Greater Brisbane* (1996), Brisbane City Council Officer Stephen Poole had this to say about Deagon:

"Paperbark forest has the highest loss rate and is under the most threat of any vegetation type in South-East Queensland. This, and its relatively undisturbed nature, make the Deagon Wetlands one of the most important bushland sites within the metropolitan area. The wetlands are administered by Brisbane City Council as a Conservation Reserve, specifically established to protect this fast disappearing

habitat."

Paperbarks germinate prolifically and grow quickly, and when given the chance, they soon reclaim cleared swampy ground. The species remains very common on disturbed swampy land despite the broad-scale clearing of the past. It is the habitat type that is under threat, not the species.

Paperbark remnants are very prone to weed invasion. On one side of the Deagon Wetlands, adjacent to housing, a wide range of garden plants is invading the forest, by courtesy of garden dumping. The worst invader is probably groundsel bush (*Baccharis halimifolia*), a declared noxious weed originally introduced from North America as an ornamental. Another weed is broad-leaved pepper tree (*Schinus terebinthifolius*), which forms a tall shrub layer along swampy watercourses. This shrub or small tree is widely grown as an ornamental, and its spread as a weed appears to be relatively recent. I have seen lorikeets eating the fruits and birds are apparently spreading the seeds. Another invasive weed is morning glory (*Ipomoea indica*).

I am aware that Australian insects have been introduced to Florida in a bid to control the spread of melaleuca. I would question whether this is likely to succeed. Melaleucas in Australia are attacked by a very large number of insects yet they still grow naturally in vast monocultures, representing one of the most common trees in the region. In pre-European times it was almost certainly the most common tree along the coastal strip of southern Queensland and northern New South Wales. From the few pictures I have seen, the paperbark forests of Florida look much like the paperbark forests here. However, in Australia, the insect predators are heavily controlled by parasites, and perhaps by birds. For example, the larvae and eggs of the pergid sawfly (*Lophyrotoma zonalis*) which is being studied for possible introduction into Florida, are heavily parasitised in Australia. One can only hope that in Florida, free from their controlling agents in Australia, the insects will be dramatically successful in controlling *Melaleuca*.

## America's Least Wanted

### Alien Species Invasions of U.S. Ecosystems

This report and video about non-native plants and animals by The Nature Conservancy declares that "an invasion is underway that is undermining our nation's economy and endangering our most precious natural treasures." The organization claims that "just 79 of them have cost the U.S. economy \$97 billion in direct losses from 1906 to 1991."

The report profiles "the dirty dozen of the least wanted", exotic species that exemplify the range of problems caused by exotic species. Included is information about the species (including range maps), the problems caused by them, and things individuals can do to stop them. The dirty dozen are:

- 1) **Zebra mussel** - *Dreissena polymorpha*
- 2) **Purple loosestrife** - *Lythrum salicaria*
- 3) **Flathead catfish** - *Pylodictis olivaris*
- 4) **Tamarisk** - *Tamarix* species
- 5) **Rosy wolfsnail** - *Euglandina rosea*
- 6) **Leafy spurge** - *Euphorbia esula*
- 7) **Green crab** - *Carcinus maenas*
- 8) **Hydrilla** - *Hydrilla verticillata*
- 9) **Balsam woolly adelgid** - *Adelges piceae*

- 10) **Miconia** - *Miconia calvescens*
- 11) **Chinese tallow** - *Sapium sebiferum*
- 12) **Brown tree snake** - *Boiga irregularis*

**The report and video are available from:**

The Nature Conservancy  
Communications Department  
1815 North Lynn Street  
Arlington, VA 22209-2003  
(703/841-8745)

It is also available at <http://www.tnc.org/science/library>

## The Uncontrolled Growth of *Azolla* in the Guadiana River

by Francisco Carrapico\*, M.H. Costa, M.L. Costa, G. Teixeira, A.A. Frazao, M.C.R. Santos, M.V. Baioa

\*Departamento de Biologia Vegetal, Faculdade de Ciencias da Universidade de Lisboa, Centro de Biologia Ambiental, Lisboa, Portugal

E-mail: F.Carrapico@cc.fc.ul.pt Also, see **The *Azolla* Page** at [http://skull.cc.fc.ul.pt/~bfcarrap/Main\\_Azolla.html](http://skull.cc.fc.ul.pt/~bfcarrap/Main_Azolla.html)

The Guadiana River is an international one that has its spring in Spain (Campo Montiel) and its mouth between Ayamonte and Vila Real de Santo António (Algarve, Portugal). The basin area of the river is about 67,000 km<sup>2</sup>, of which 12,000 km<sup>2</sup> are in Portuguese territory. In 1990-1993, southern Portugal experienced low rainfall with long dry seasons. This factor, combined with several dams along the river, caused low water flow during 1993. In addition, farming and industrial activity in the upper area of the Guadiana, together with untreated domestic effluents from several towns and villages, contributed to organic contamination of the Guadiana River that year. Lower flows (3.64 - 1.13 m<sup>3</sup>/s) also promoted higher nutrient concentrations. Maximum *Azolla* growth requires a phosphorus level of over 0.4 mg/L. At different river sites during the first months of 1993, the phosphorous levels changed, with maximum concentration values in April between 5.36 and 0.63 mg/L P. In April 1993, a massive *Azolla* fern bloom occurred.

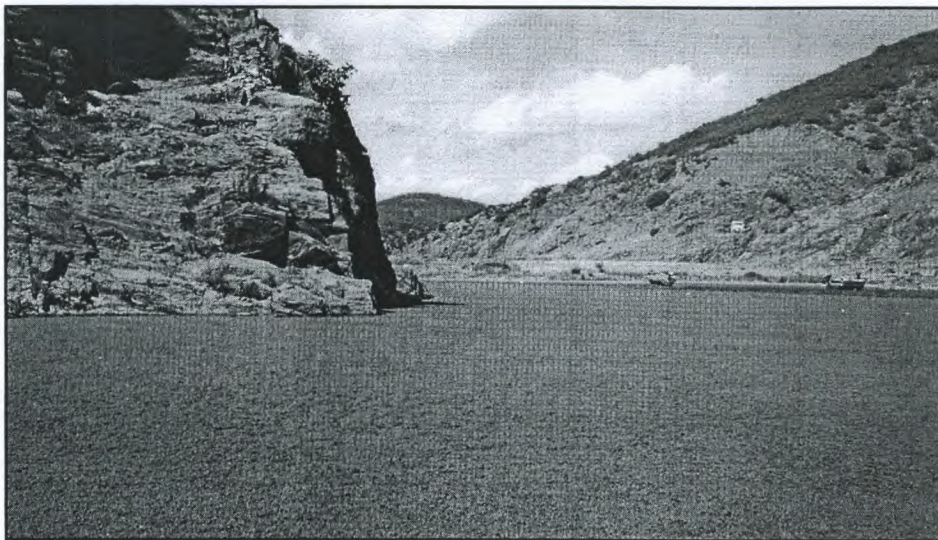
*Azolla caroliniana* normally exists in small channels or in restricted zones of the upper Guadiana River. In the lower Guadiana River, the bloom was composed of *Azolla filiculoides*. The number of sporulated plants in 1993 was  $\geq 75\%$ . This fact, associated with the high nutrient concentration in the river, allowed the fern to expand into new areas, ending with the explosive bloom observed in 1993. In some areas, *Azolla* covered the surface for several kilometres along the river. The situation was the worst near the village of Mértola and produced panic among the population, especially the fishing community. Fishing was difficult and the fish caught could not be sold due to local suspicion that it was poisoned.

The explosive growth of the *Azolla* represented the first occurrence in Portugal of such a large scale uncontrolled growth of this fern in a river. As a consequence, governmental authorities took a special interest. Aerial photographs of the river were taken to document the extent of the coverage and military forces were brought in to control and isolate the area. The situation grew into a national event with intense media coverage. Unfortunately, some of the news reported was incorrect or exaggerated, contributing to the panic of the population. Decisions by the government to remove the *Azolla* were rash and without scientific support. In the first removal efforts made by the local and military authorities, large amounts of the fern were harvested and placed on the river banks to dry. A large quantity of juvenile eels (*Anguilla anguilla*) were found in the harvested biomass, which was a cause of great concern. Apparently, the *Azolla* bloom had coincided with the migration of juvenile eels in the river. Due to concern that the fern biomass, which covered large areas of the river, could cause eutrophic conditions, a monitoring survey of the main water quality parameters was done and the *Azolla* biomass was removed in the most problematic areas.

The catastrophic event ended with the closing of the life cycle of *Azolla* and the disappearance of its vegetative structure. However, the incident left an important message for our environmental authorities who need to examine weed management in Portugal. The way a civil population can react to an unusual ecological situation and how the media can contribute to the amplification of the situation, perhaps leading to panic, are important points to be considered for management models developed in the future. All of these events reinforce our belief that only with monitoring and prevention, involving central and local authorities with an adequate environmental education, can we solve future problems like those experienced in April of 1993.



Map of the *Azolla* bloom on the Guadiana River in Portugal.



View of the *Azolla filiculoides* "carpet" covering the water surface near Mértola, Portugal.

## Getting to Know the Natives

## Spin-the-Wheel Bladderworts

by **Kathy Craddock Burks**, Botanist, Technical Services, Bureau of Aquatic Plant Management, Florida Department of Environmental Protection, 3917 Commonwealth Blvd., MS 710, Tallahassee, FL 32399, 904/487-2600.

**A**quatic bladderworts (*Utricularia* spp.) are submersed, rootless, carnivorous plants. Their stems, with leaflike branching, may grow to over a meter long, and most bear small "urnlike" bladders that trap and digest tiny animals. These plants also provide habitat for invertebrates and juvenile fish.

Among Florida's 14 species of bladderwort are two that are often confused because of their similar habit. They have distinctive swollen lateral branches ("floats") that radiate from a node of the flowering stalk like spokes of a wheel.

Both *Utricularia inflata* and *U. radiata* form these easily recognized floating "wheels." Both have yellow flowers, and both have submersed stems below the floats with highly dissected leaflike branching. Of course, both have bladders that are typical of the genus. However, upon closer inspection, one can use several other characteristics to distinguish the two species.

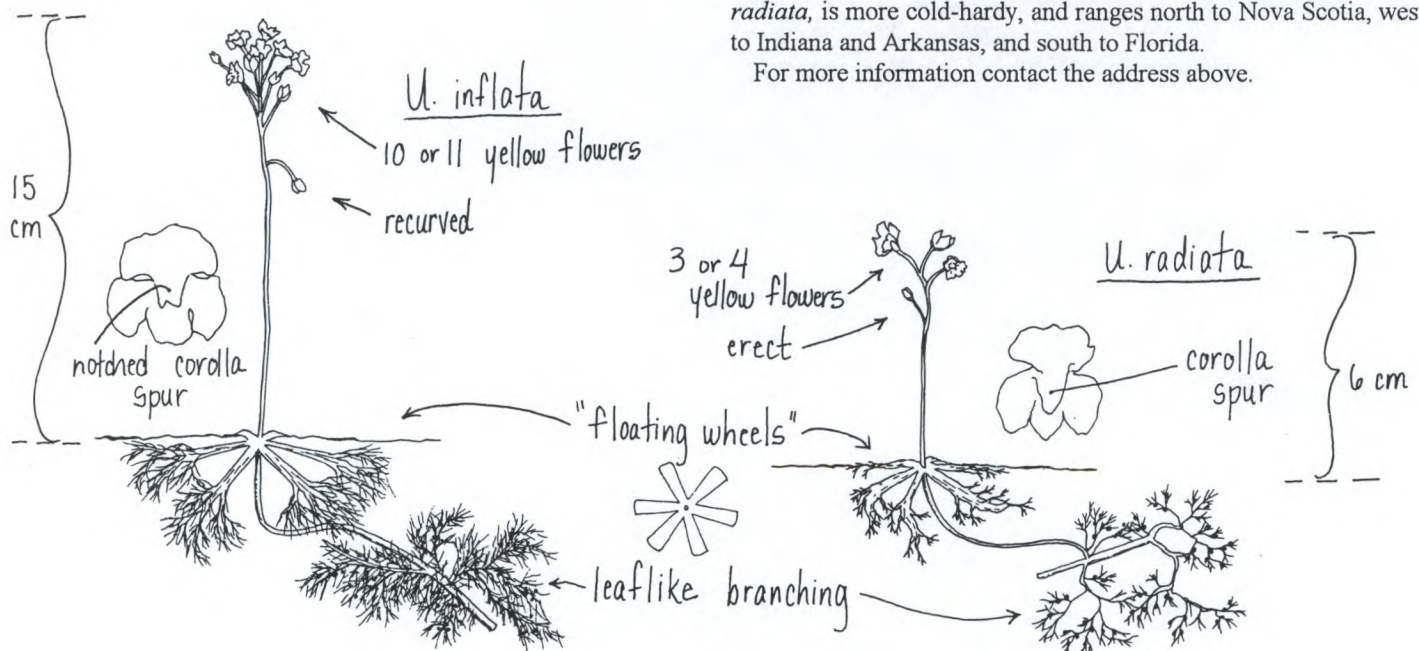
The larger of the two is *U. inflata*, with usually longer, wider floats and a flower scape rising as much as 15 cm above them (compared to a maximum scape length above the floats of 6 cm for *U. radiata*). Also, the floats in *U. inflata* gradually taper in width toward the center of the whorl, while those in *U. radiata* do not, except for a brief, more abrupt tapering near the axis. But admittedly, such morphological features can be difficult to discern when you have only one of the two species at hand.

Clearer distinctions can be found in the inflorescence. The scape of *U. inflata* may bear 4 to 18 flowers, with a usual number of 10 or 11, while *U. radiata* may bear 1 to 7 flowers but most often has 3 or 4. The individual mature fruiting stalks are usually recurved (bent downward) in *U. inflata*, and nearly always erect or ascending in *U. radiata*. The small leaflike bract at the base of individual flower stalks is definitely longer than broad in *U. inflata*, and unlobed; in *U. radiata*, the bract is lobed and broader than long. And not least of all, the protrusion of extra petal tissue seen on the "back" of each flower—i.e., the corolla spur—differs in the two plants: its tip is usually notched in *U. inflata*, and not so in *U. radiata*.

The two species also differ in their mode of vegetative reproduction. When plants of *U. inflata* are stranded on exposed muck or mud, they frequently produce long threadlike branches among the "leafy" stems, with each "thread" bearing a tiny tuber at its tip. *U. radiata* does not produce tubers, but under similar conditions will form tiny vegetative buds at the axils of smaller branches. (Either species may turn up in great numbers following a drought or drawdown event in a shallow waterbody, and then return to relative obscurity in the plant community at higher, stabilized water levels.)

Both of these bladderworts occur in all regions of the state, although *U. inflata* is the more commonly seen species. Its distribution extends on the Coastal Plain from New Jersey and Delaware to south Florida, and west to eastern Texas. The smaller species, *U. radiata*, is more cold-hardy, and ranges north to Nova Scotia, west to Indiana and Arkansas, and south to Florida.

For more information contact the address above.



## Aquatic Plant Drawings Package for Sale

The very popular APIRS aquatic plant drawings collection is now **for sale**. As of December 1996, there are 114 looseleaf pages of drawings in the collection, which grows monthly. Purchase of the set 1) allows the purchaser to use the drawings, and 2) qualifies the purchaser to receive updates of new drawings for one year from the time of purchase. For more information, contact Vic Ramey at E-mail: varamey@nervm.nerdc.ufl.edu or telephone: 352/392-1799.

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|---|---|
| 1 Freshwater Scenics  | 64 <i>Myriophyllum spicatum</i> - Eurasian water milfoil                                      |
| 2 Illustrated Glossary of plant parts                         | 65 <i>Najas guadalupensis</i> - Southern naiad  |
| 3 <i>Alternanthera philoxeroides</i> - Alligatorweed          | 66 <i>Nechamandra alternifolia</i>  |
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| 17 <i>Ceratophyllum demersum</i> - Coontail                   | 80 <i>Polygonum densiflorum</i> - Knotweed  |
| 18 <i>Chara</i> spp. - Muskgrass                              | 81 <i>Polygonum hydropiperoides</i> - Smartweed   |
| 19 <i>Cicuta mexicana</i> - Water hemlock                     | 82 <i>Pontederia cordata</i> - Pickerelweed   |
| 20 <i>Cladium jamaicense</i> - Saw-grass                      | 83 <i>Pontederia rotundifolia</i> - Tropical pickerelweed                                     |
| 21 <i>Colocasia esculenta</i> - Wild Taro                     | 84 <i>Potamogeton illinoensis</i> - Illinois pondweed   |
| 22 <i>Colubrina asiatica</i>                                  | 85 <i>Potamogeton pusillus</i>  |
| 23 <i>Crassula helmsii</i> - Swamp stonecrop                  | 86 <i>Rhynchospora cephalantha</i> - Beak rush  |
| 24 <i>Cyperus distinctus</i> - Flat sedge                     | 87 <i>Rhynchospora inundata</i> - Beak rush   |
| 25 <i>Cyperus odoratus</i> - Flat sedge                       | 88 <i>Ruellia brittoniana</i>   |
| 26 <i>Decodon verticillatus</i> - Swamp loosestrife           | 89 <i>Sagittaria lancifolia</i> - Duck potato   |
| 27 <i>Dichromena colorata</i> - White-top sedge, Star rush    | 90 <i>Sagittaria stagnorum</i>  |
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| 32 <i>Eriocaulon decangulare</i> - Pipewort                   | 95 <i>Scirpus californicus</i> - Giant bulrush  |
| 33 <i>Habenaria blephariglottis</i> - White fringed orchid    | 96 <i>Solanum tampicense</i> - Aquatic soda apple   |
| 34 <i>Helianthus angustifolius</i> - Narrow-leaf sunflower    | 97 <i>Sparganium americanum</i> - Bur-reed  |
| 35 <i>Hydrilla verticillata</i> - Hydrilla                    | 98 <i>Sparganium erectum</i> - Exotic bur-reed  |
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| 46 <i>Liatris spicata</i> - Blazing star                      | 109 <i>Viola</i> spp. - American violet   |
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| 50 <i>Limnophila sessiliflora</i> - Ambulia                   | 113 <i>Zizania aquatica</i> - Wild rice   |
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| 52 <i>Ludwigia alternifolia</i> - Seed-box, Rattle-box        |   |
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| 54 <i>Ludwigia repens</i> - Red ludwigia                      |   |
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| 57 <i>Lythrum salicaria</i> - Purple loosestrife              |   |
| 58 <i>Melaleuca quinquenervia</i> - Melaleuca                 |   |
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| 60 <i>Monochoria hastata</i>                                  |   |
| 61 <i>Monochoria vaginalis</i>                                |   |
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| 63 <i>Myriophyllum heterophyllum</i> - Variable-leaf milfoil  |   |

\**Lemna*, *Spirodela*, *Wolffia* on *Lemna* page

\**Oscillatoria*, *Spirogyra*, *Ulothrix* on *Spirogyra* page

### Artists:

Raphael Gottlieb  
Jean Putnam Hancock  
Laura Line  
Ann Murray  
Katrina Vitkus

## Database of Personnel in Aquatic Plant Research and Management

Please look at the form on page 15. The form has two purposes.

**First**, as you read from the article on page one, your name has been deleted from the **AQUAPHYTE** mail lists. If you wish to receive future issues of this newsletter, you **must re-subscribe in writing**, by mail or E-mail. This form will do. Rip it out, copy it or download it from the APIRS WWW site at: <http://aquat1.ifas.ufl.edu/apirsform.html>

**Second**, in conjunction with the Aquatic Plant Management Society, Inc., **APIRS is compiling a database** of people throughout the world who work with aquatic plants, particularly in research and management. This database will be available on-line from our WWW site to provide a referral service which can be searched by country, plant species, field of expertise, etc. This database will be especially useful for anyone seeking assistance with a particular plant or needing contacts in a specific country.

If you would like to be included in this database, please complete and return the form, omitting any information that you do not want included in the database. Return the form or its copy to APIRS, Center for Aquatic Plants, 7922 NW 71 ST, Gainesville, FL 32653, or E-mail its equivalent to: [varamey@nervm.nerdc.ufl.edu](mailto:varamey@nervm.nerdc.ufl.edu)

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### \*\*\*\* PRIZE TICKET! \*\*\*\*

Names of all respondents to this questionnaire will be entered into a drawing on 15 July 1997. The winner will receive a **complete set of the *Journal of Aquatic Plant Management*** from 1962 to 1996.

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## The Aquatic Plant Management Society, Inc.

The Aquatic Plant Management Society, Inc., (APMS) is an international, professional 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 and students from universities and colleges around the world; corporations; commercial plant managers; and others dedicated to promoting research and sharing information about aquatic plants and the technology of aquatic plant management.

Originally named The Hyacinth Control Society, Inc. when formed in 1961, APMS has evolved into a respected source of expertise in the aquatics field. The Society has grown to include several regional or state chapters within the US, and through these affiliates, annual meetings, newsletters, and the *Journal of Aquatic Plant Management*, members keep abreast of the latest developments in aquatic plant ecology, physiology, and biological, mechanical, chemical, and integrated methods of aquatic plant management.

APMS membership dues: Active = \$35.00; Student = \$5.00; Subscriptions available.

**If you would like further information** about how to join this international society, please check the space at the bottom of the form on page 15. (Please do NOT include payment with the form.)

The following is a dual purpose form. Please see the facing page and page one for more information.

Please check one or both:

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Return this form or copy to: APIRS, Center for Aquatic Plants, 7922 NW 71 ST, Gainesville, FL 32653-3071. Or the equivalent E-mail to: varamey@nervm.nerdc.ufl.edu

Title and Name:.....

Address:.....  
.....  
.....

Telephone:..... Fax:.....

E-mail:.....

WWW/Internet Site:.....

Your Languages:.....

Fields of Expertise: (please check as many as are appropriate) APM = Aquatic Plant Management.

- |                                     |                                       |   |
|-------------------------------------|---------------------------------------|---|
| .....Algae                          | .....Macrophytes                      | .....Invertebrates                      |
| .....Fisheries                      | .....Other fauna                      | .....Limnology                          |
| .....Large lakes (> 10 ha)          | .....Small lakes and ponds            | .....Rivers and streams                 |
| .....Canals                         | .....Wetlands                         | .....Estuaries                          |
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| .....Student                        | .....Information/library              | .....Aquatic ecology                    |
| .....Plant physiology               | .....Plant taxonomy                   | .....Ecosystem studies                  |
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| .....APM regulation/permitting      | .....APM equipment production/sales   | .....APM program administration         |
| .....APM field supervision          | .....APM field operations/Technician  | .....APM - Mechanical                   |
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Plant species with which you are most familiar: .....

Employer: (please check as many as are appropriate)

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If you would like further information about how to join the Aquatic Plant Management Society, please check here: \_\_\_\_\_

## The Electronic Media Page

### CD -- Zebra Mussel Information System--ZMIS

A single CD for Microsoft Windows, produced by the U.S. Army Corps of Engineers

This is truly an all-in-one information source about the new scourge of U.S. dams and other water control operations, recreational areas and ecological zones: zebra mussels and quagga mussels. In this CD, you'll find well-organized and easy-to-use interfaces to: larval and adult identification of zebra and quagga mussels, including many pictures; complete hot-linked text; impacts on industry, recreation and ecosystems; life history diagrams and text; comparisons to several other species of mussels; distribution maps over time; risk assessment software; detection and monitoring systems; management and control options; case studies; molluscicide issues; hundreds of references according to topic; a separate picture list... The creators of this CD knew what they were doing. It works.

The authors of this CD are working on two more: Aquatic Plant Information System (APIS), ID information on 60 aquatic plants, including biocontrol information on 18 of them; and the Noxious and Nuisance Plant Management Information System (PMIS), ID and control information on 34 terrestrial and aquatic weeds. Both are due for release in 1997.

**Order from** Dr. Michael Grodowitz, CEWES-ER-A, 3909 Halls Ferry Road, Vicksburg, MS 39180; (601/634-2972) (E-mail: GrodowM@exl.wes.army.mil)

### CD -- Aquatic Plants Field Identification Guide

A single CD or multiple diskettes for Microsoft Windows, produced by the Texas Agricultural Extension Service

Sixty-eight plants are indexed and depicted in this CD. Each plant treatment includes a photograph and a sometimes too-brief description, plus a line drawing. The plants are indexed by common name, or may be searched by category: floating, algae, emersed, shoreline/marginal or submersed.

**Order from** Prof. James Davis, Extension Specialist, 102 Nagle Hall, College Station, TX 77843-2258; (409/845-7473) (E-mail: jdavis21@tamu.edu)

### CD -- Weeds of the United States

A single CD for Microsoft Windows, produced for the Southern Weed Science Society by Information Design

"This CD contains almost 1600 color photographs, detailed descriptions and distribution maps of 300 weeds of the continental United States. The program also includes illustrated lessons and quizzes on the principles of plant identification and an illustrated glossary of botanical terms that is hot-linked to the lessons and weed descriptions." This CD does not feature an identification key; you simply must know the name of the plant you want information about. This product does feature a unique and thorough collection of photographs of seeds and seedlings of weeds, which farmers presumably would come across first in well-maintained fields, but there is a noticeable dearth of photos of mature weeds in their habitats, nor does the CD include drawings of these plants.

If this CD, with its good-looking interface to plant identification information and its intensive hyper-linking, could be combined with **Plant-ID**, the computerized "key" (described below) that enables users to sort 2,000 weed species by their characteristics but has no pictures or other information, then you'd *really* have a weed CD!

**Order from** Southern Weed Science Society, 1508 West University Avenue, Champaign, IL 61821-3133; (217/353-4212). \$90.00.

### Floppy -- Plant-ID: Weeds and Toxic Plants of U.S. and Canada

A single 3.5" floppy disk, that runs in DOS on a PC, produced by the University of Idaho

This computer program acts as a key to aid the user in identifying more than 2,000 species of weeds growing in fields, lawns and gardens of North America. By selecting a few of more than 50 possible characteristics for "non-grass-like" plants, or more than 40 characteristics for "grass-like" plants, the user automatically takes advantage of the computer's ability to combine and re-combine, thus making it more likely for a non-botanist to identify a plant. The program includes a good manual that depicts the possible characteristics. What the program does not include are plant descriptions, pictures, graphics and drawings --users are expected to refer to other media for these.

**Order from** Weed Diagnostic Lab, Department of PSES, University of Idaho, Moscow, ID 83844-2339; (208/885-7831). \$99.95.

### Video -- Restoring the Balance: Biological Control of Purple Loosestrife

A 28-minute video produced by Cornell University

This video is a primer about the exotic nuisance marsh plant, purple loosestrife (*Lythrum salicaria*), its impacts on North American wetlands, previous attempts since the 1970s to control its spread and infestations, and the new emphasis on identifying and introducing biological controls to help manage it. The video includes details on several weevils and other insects being studied as biocontrol agents, and includes footage showing how to augment and enhance field populations of the insects. This video is very instructive for viewers interested in biological control of any aquatic plants, whether loosestrife or hydrilla. The only problem is, there is no conclusion: it will be "several years" before the scientists and video makers will know whether the released insects have any effect on the target plant.

**Order from** Cornell University, Media Services Center, 7 Cornell Business & Technology Park, Ithaca, NY 14850; (607/255-2090). \$24.95 plus S/H.



## FROM THE DATABASE

Here is a sampling of the research articles, books and reports which have been entered into the aquatic plant database since April 1996.

The database has more than 43,000 citations. To receive free bibliographies on specific plants and/or subjects, contact APIRS or use the database online at <http://aquat1.ifas.ufl.edu/>

To obtain articles, contact your nearest state or university library.

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Population structure and morph-specific fitness differences in tristylous *Lythrum salicaria*.

EVOLUTION 50(1):126-139. 1996.

### Aldridge, F.J.; Philips, E.J.; Schelske, C.L.

The use of nutrient enrichment bioassays to test for spatial and temporal distribution of limiting factors affecting phytoplankton dynamics in Lake Okeechobee, Florida.

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Effect of Garlon 3A on waterhyacinth (*Eichhornia crassipes*) in a pond on the Los Banos Wildlife Refuge.

IN: AQUATIC WEED CONTROL INVESTIGATIONS, ANNUAL REPORT, L.W.J. ANDERSON, ED., USDA AGRIC. RES. SERV., UNIV. CALIFORNIA, DAVIS, 31 PP. 1994.

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Influence of flood timing on the recovery of macrophytes in a former river channel.

HYDROBIOLOGIA 316(2):91-101. 1995.

### Barreto, R.W.; Evans, H.C.

The mycobiota of the weed *Mikania micrantha* in southern Brazil with particular reference to fungal pathogens for biological control.

MYCOL. RES. 99(3):343-352. 1995.

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The influence of the introduced tropical alga *Caulerpa taxifolia* on the biodiversity of the Mediterranean marine biota.

J. MAR. BIOL. ASSOC. U.K. 76(1):235-237. 1996.

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PHYSIOL. ZOOL. 66(3):384-395. 1993.

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Performance of a small aquatic plant wastewater treatment system under Caribbean conditions.

J. ENVIRON. MANAGE. 43(3):213-220. 1995.

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Weed control in rice (*Oryza sativa*) with Quinclorac and bensulfuron coating of granular herbicides and fertilizer.

WEED TECHNOL. 9(3):494-498. 1995.

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Biological control of aquatic weeds.

IN: PEST MANAGEMENT IN THE SUBTROPICS: BIOLOGICAL CONTROL - A FLORIDA PERSPECTIVE, D. ROSEN, F.D. BENNETT, J.L. CAPINERA, EDS., LAVOISIER PUBL., SECAUCUS, NY, PP. 413-480. 1994.

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Riparian ecotones and spatial variation of fish assemblages in Portuguese lowland streams.

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Changes in plant communities relative to hydrologic conditions in the Florida Everglades.

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**EDITORS: Victor Ramey  
Karen Brown**

**AQUAPHYTE** is sent to more than 6,500 managers, researchers and agencies in 87 countries. Comments, announcements, news items and other information relevant to aquatic plant research are solicited.

Inclusion in **AQUAPHYTE** does not constitute endorsement, nor does exclusion represent criticism, of any item, organization, individual, or institution by the University of Florida.



Randy Miller, Videographer Extraordinaire

## HAVE CAMERA -WILL TRAVEL

please consider contacting the Information Office of the Center for Aquatic Plants of the University of Florida. We have a list of video ideas and treatments about the functioning and management of aquatic and wetland ecosystems, for audiences ranging from middle-school children to lakeside homeowners to environmental management personnel.

Call Vic Ramey, Information Office, Center for Aquatic Plants, 7922 NW 71 ST, Gainesville, FL 32653-3071. Phone: 352/392-1799; E-mail: varamey@nervm.nerdc.ufl.edu; WWW: <http://aquat1.ifas.ufl.edu/>

**T**he APIRS office has made some thirty video programs about aquatic plants and the management of aquatic and wetland ecosystems. If you have anything to do with the study and management of freshwater ecosystems, you likely have seen some of our videos: plant ID; aquatic plant management; lake eutrophication; environmental careers...

**We now stand ready to make more.**

If you have ideas for video programs that should be made about freshwater environments, **and have the necessary funding to act**, consider contacting the Information Office of the Center for Aquatic Plants of the University of Florida. If you have the necessary funding to act but have no ready ideas, again,