A Q U A P H Y T E

A NEWSLETTER ABOUT AQUATIC, WETLAND AND INVASIVE PLANTS

Center for Aquatic and Invasive Plants
with support from
The Florida Department of Environmental Protection,
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Are Aquatic Herbicide Permitting Changes on the Horizon?

[**Editor's note:** During the summer of 2001, few, if any, herbicide applications to manage aquatic plants, took place in Washington state. As a result of that state's interpretation of a federal circuit court ruling, aquatic plant management operations using aquatic herbicides, as well as mosquito and burrowing shrimp control activities, now require a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits were originally created by the U.S. Clean Water Act. Though the circuit court ruling may be interpreted and implemented in different ways by the nine states of the circuit, nonetheless, aquatic pesticides, even when registered and labeled under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), now are considered in one circuit district to be a form of pollution requiring additional permitting under the Clean Water Act. The ruling also effectively federalizes what used to be a state permitting power in the 9th Circuit.

As of now, no entity in the nine states has appealed the Talent decision to the U.S. Supreme Court. The ruling suggests implications for all herbicide-based management operations on public waters and lands of the U.S. Here, Ms. Hamel presents a brief review of the decision and her department's implementation of its findings. *VR*]

The Impact of the Talent Irrigation District Court Decision on Aquatic Pesticide Regulation in Washington State

by Kathy S. Hamel, Washington State Department of Ecology, P.O. Box 47600, Olympia, WA 98504-7600, kham461@ecy.wa.gov

Background

Many irrigation districts in the western United States for many years have routinely applied acrolein (Magnacide H) to their ditches and canals to control the growth of submersed aquatic vegetation. Removing vegetation is essential to maintain water delivery to crops and to prevent flood damage to the canals. Acrolein is highly toxic to fish, wildlife, and humans and must be carefully applied. The districts use acrolein, instead of the less toxic aquatic herbicides used for aquatic plant control in lakes and rivers, because acrolein treated water can be used for crop irrigation much sooner than other aquatic herbicides.

In May 1996, the Talent Irrigation District in southwestern Oregon applied acrolein to the Talent Canal. The next day dead fish were discovered in Bear Creek around and downstream from a leaking canal waste gate. Over 92,000 juvenile steelhead were killed. Release of treated waters into a fish-bearing stream clearly violated the Magnacide H label and the District was heavily fined by Oregon agencies for the fish kill. Environmental groups (Headwaters, Inc. et al.) also sued Talent for violating the Clean Water Act (CWA) by treating its canals without a National Pollutant Discharge Elimination System (NPDES) permit. **Continued on Page 10**

Federal Regulations Reviewed:

The **Clean Water Act (CWA)**, as originated in the Federal Water Pollution Control Act Amendments of 1972, generally prohibits the discharge of polluants into "navigable waters" or "waters of the United States." The CWA's objective "is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." It requires a **National Pollutant Discharge Elimination System (NPDES)** permit before any pollutant can be discharged into navigable waters from a point source. Point sources are defined as discrete conveyances such as discharge pipes or man-made ditches. Permits typically are obtained for discharges of industrial wastewater, sewage treatment plant effluent, etc.

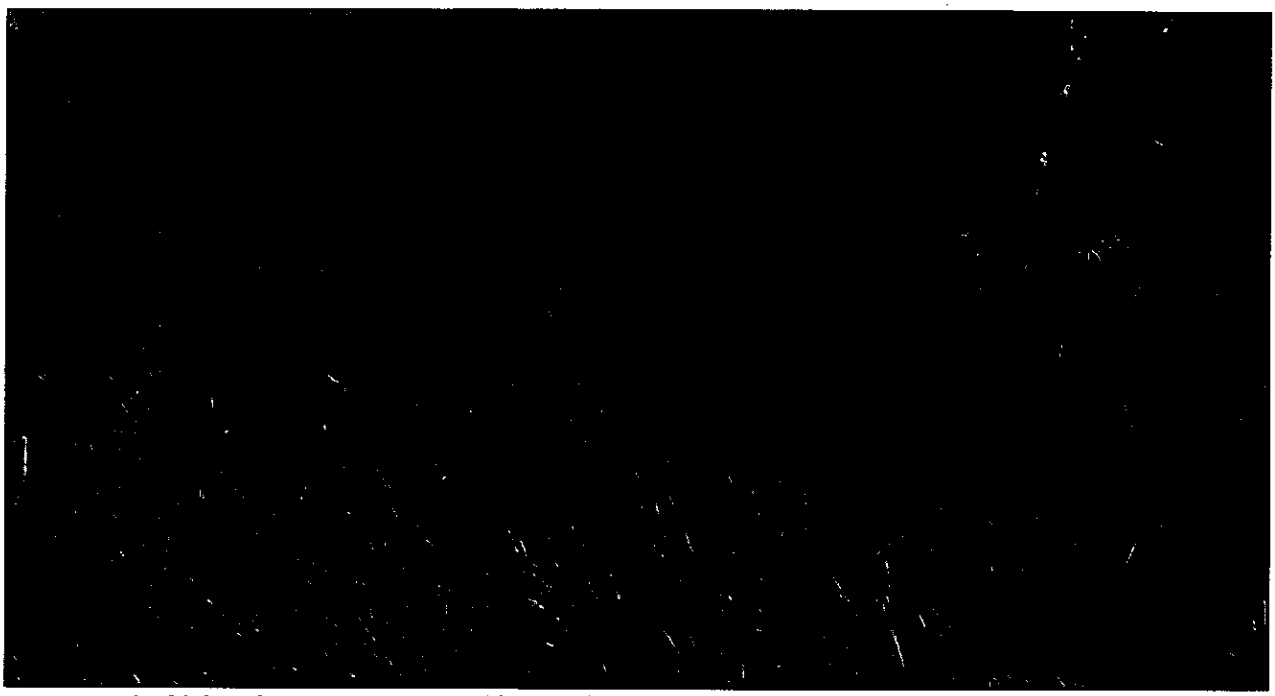
The **Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)** is a comprehensive federal statute which regulates pesticide use, sales, registration and labeling, and grants enforcement authority to the **Environmental Protection Agency (EPA)**. FIFRA's objective is to protect human health and the environment from harm from pesticides.

FIFRA establishes a national uniform labeling system to regulate pesticide use, but does not establish a system for granting permits for individual herbicide applications. The CWA establishes national effluent standards to regulate the discharge of all pollutants into the waters of the United States, but also establishes a permit program that allows, under certain circumstances, individual discharges. FIFRA's labels are the same nationwide, and so the statute does not and cannot consider local environmental conditions. By contrast, the NPDES program under the CWA does just that.

From the U.S. Court of Appeals, Ninth Circuit, Opinions

Rare and Unusual Aquatic Sedge is Invasive in Florida

by Colette Jacono, US Geological Survey



Heavy growth of *Scleria lacustris* covers several hectares in water 40 cm deep. Many additional colonies are scattered in the distance. *Phota by Vic Ramey.*

What could be unusual about another invasive plant in Florida? Our most southern and species-rich state has surely received an overly generous share of "out-of-place" plants. In fact, *Scleria lacustris* C. Wright, more simply called Wright's Nut-rush, is strikingly unusual in many respects.

As a sedge (family Cyperaceae) it is atypical in existing as an annual species, truly aquatic in nature. The juvenile plants are well adapted to water influx during the summer growing season, developing thick, spongy stems and rooting at the nodes when submersed. The fibrous, floating roots help support the upright growth of plants until maturity and later the lodging that ensues across standing water in late season.

Scleria lacustris is extraordinary for its large size and robust stature. Where late season water levels reach 30 cm, single stemmed plants can grow to over two meters long while the stems expand to a hefty thickness of 2.5 cm. Plants develop multiple culms and a smaller stature; yet mature equally well where water has withdrawn in autumn.

Scleria lacustris is exceptional not only for its singular beauty but for its beastly touch. Silica impregnated prickles along the stem and leaves impart a deep slicing wound when handled. And finally, *Scleria lacustris* is rarely found in its native range, which extends across the tropics of Africa and America.

What may not be unusual about *Scleria lacustris* is the time lag, in this case twelve years, that has elapsed between early collections and the first troubling populations in Florida. Researchers acquainted with the task of reviewing herbarium specimens to analyze invasion processes typically find similar initial lag patterns in distribution.

In conservation marshes of central Florida, *Scleria lacustris* has demonstrated the ability to disperse rapidly and to develop into dense colonies. Open marshes subjected to hydroperiod fluctuations appear especially vulnerable. It is suspected that ducks and airboats may disperse the shining white nutlets. Nutlets may also float through drainage systems, leaving vast open water marshes, including the Everglades, at risk.

Recognize *Scleria lacustris* by its wide (~2 cm) pleated leaves, thick, three-angled stem streaked in red, and upright branching inflorescences full of large (to 4 x 2.5 mm), whitish shining nutlets.

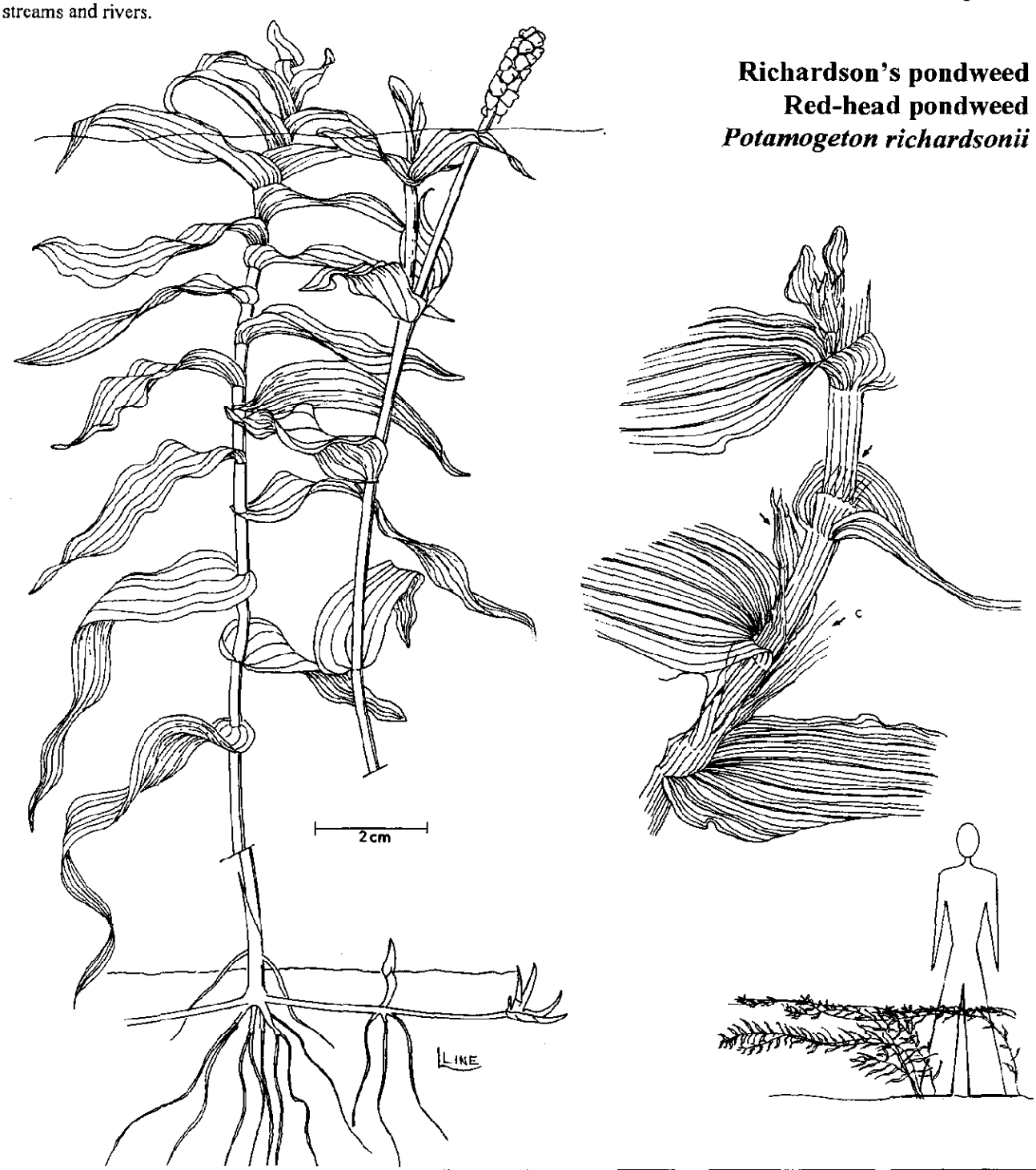
Full results of findings are in press: Jacono, C.C. 2001. *Scleria lacustris* (Cyperaceae), an aquatic and wetland sedge introduced to Florida. Sida, Contributions to Botany 19(4). If you know of this plant, either in or out of its native place, please contact:

Colette Jacono, U.S. Geological Survey, 7920 NW 71st St., Gainesville, Fl 32653; (352) 378-8181 X 315; Colette_Jacono@usgs.gov

Download a color flyer of *Scleria lacustris* from this site: ftp://ftp.fcsc.usgs.gov/pub/nas/plants/Scleria_flyer.jpg
Save the .jpg file to your computer; open with Photoshop and size, if necessary; print.

Richardson's pondweed (*Potamogeton richardsonii*) is another pondweed native in North America. It occurs throughout Canada and much of the U.S., except that it has not been reported in the south central and southeast U.S. In some places it becomes weedy. This submersed plant grows in shallower waters of lakes, ponds, marshes, reservoirs and slow-moving streams and rivers.

Richardson's pondweed
Red-head pondweed
Potamogeton richardsonii



These line drawings are by Laura Line, Center for Aquatic and Invasive Plants, University of Florida. With proper attribution and in not-for-sale items only, please feel free to use these line drawings for manuals, brochures, reports, proposals, web sites ....

Preliminary Note on the Floating Islands of Zacatón Sinkhole, Mexico

by **Chet Van Duzer**, 12177 Winton Way, Los Altos Hills, California 94024; E-mail: ChetV@aol.com

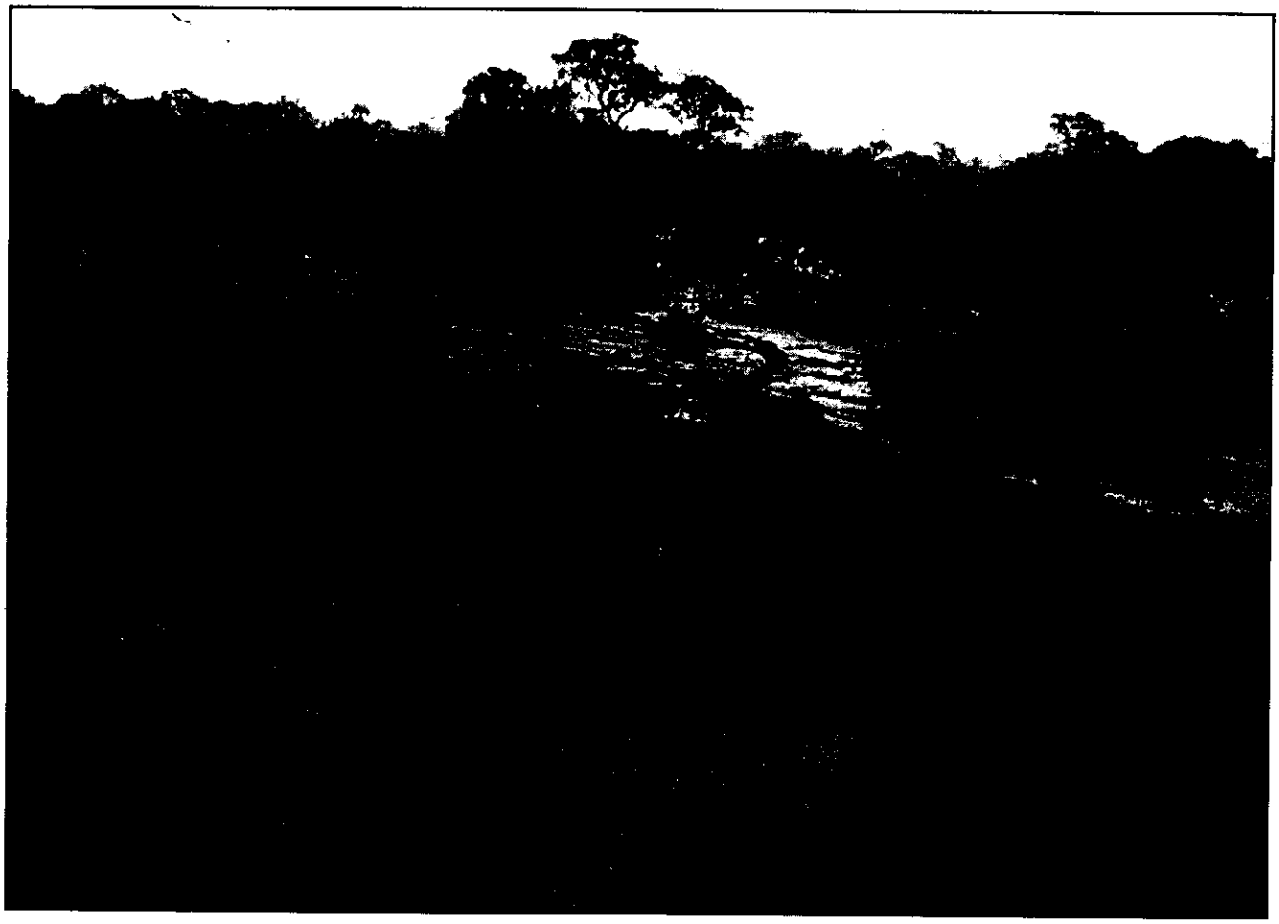


Photo by Marcus Gary, USGS

On El Rancho Azufrosa near the small town of Aldama (22° 55'N, 98°04'W) in the state of Tamaulipas in northeastern Mexico, there is a remarkable group of five cenotes or sinkholes, vertical caves filled with fresh water. The water in the sinkholes is highly mineralized, smelling strongly of sulfur, and is also quite warm, with average temperatures ranging from 28.3°C to 33.8°C. One of these cenotes, called Zacatón, is the world's deepest known water-filled pit, more than 305 meters deep, and is the site of the world's deepest scuba dive, which was made by Jim Bowden, leader of El Proyecto de Buceo Espeleologico México y América Central, a group of divers which has been exploring the sinkholes since 1989.

While the depths of Zacatón are of speleological interest, its surface is of botanical interest for the lush floating islands that move across it. The cenote's surface is circular, about 100 m in diameter, and is surrounded by 21 m high rocky cliffs. On the water are fifteen floating islands, ranging in diameter from 3 to 10 m, and 1 to 1.5 m thick. Beneath the water, the edges of the islands are essentially vertical, a result of the islands' collisions with each other and with the vertical rock "shores." The islands are moved only by the wind; there are no currents in Zacatón.

The flora of the floating islands is dominated by a grass known as "zacate," and in fact it was the distinctive islands of zacate that gave the cenote its name "Zacatón." This grass has not yet been collected and identified. The names "zacate" and "zacatón" are applied to several different species, including *Muhlenbergia robusta*, *Festuca amplissima*, and *Sporobolus wrightii*, as well as other species in these genera. A *Sporobolus* grass seems the most likely candidate, as *Muhlenbergia* spp. and *Festuca* spp. are typically found in dry environments, while *Sporobolus* spp. are known to grow in desert marshes, playa lakes, and floodplains. A small number of shrubs and cacti also grow on the islands, and the islands are inhabited by turtles and snakes. I have heard a report of floating islands of zacate grass which are called "zacatones" in Laguna Verde near Coapilla (93°9'59"W, 17° 7'59"N), Chiapas, Mexico. These islands might prove interesting to compare with those of Zacatón, but information about the islands in Laguna Verde has not been forthcoming.

Perhaps the most interesting question raised by the floating islands of Zacatón is how they formed. There are no shelves near the water's surface on which a colony of grass might grow, become dislodged, and float, and indeed there are no stands of this species of grass in the immediate vicinity of the sinkhole. Further, there are no shallow underwater shelves upon which humus might have accumulated, become buoyant due to decompositional gasses, and then been colonized by the grass. Marcus Gary, a hydrologist with the U.S. Geological Survey who is studying the Rancho Azufrosa sinkholes, has suggested to me that the islands may have formed on buoyant "skins" of travertine, a precipitate of calcium carbonate. There are other sinkholes in the area that are now filled with travertine deposits. It seems that the chemistry of Zacatón's waters has changed so that travertine is no longer forming, and may in fact he dissolving, but the islands remain. Over time, dust would have accumulated on these travertine rafts, and the grass seeds might have been carried to Zacatón by birds -- this area is well known among birdwatchers, and many different species of birds live in and around the cenotes.

Other floating islands have formed on travertine rafts. A lake now called Lago della Regina, and formerly known as Lacus Albuleus, La Solfatra, or Lago delle Isole Natanti, near Tivoli, Italy, once had vegetated floating islands formed on floating masses of travertine. These were famously described by Athanasius Kircher and Francesco Lana in the 17th century, and in more detail by Sir Humphry Davy in the 19th century, not long before they ceased to exist, probably because water was diverted from the lake to supply thermal baths. Lana describes these floating islands as follows: "I myself saw several of these islands in a small lake of sulfurous water not far from the Tiber; they were mostly circular or oval, and rose four or six inches above the water. Their surface is flat and grassy, and at the edges of some of them a few larger plants grow, which act as sails, so that even the slightest breeze pushes the islands from one part of the lake to another. The largest of them are a few yards in diameter, yet nonetheless can sustain several men standing upon them."

Hopefully an opportunity for a thorough investigation of the floating islands of Zacatón, including a survey of their flora and fauna, will present itself soon.

References:

Brand, Charles J., and Merrill, Jason L., "Zacaton as a Paper -making Material," *United States Department of Agriculture Bulletin* No. 309 (November 4, 1915) (28 pp.).

Brown, David E., "Chihuahuan Desertscrub," p. 169-79 in David E. Brown, ed., *Biotic Communities of the American Southwest -- United States and Mexico* (Tucson, 1982) (p. 175 on the occurrence of *Sporobolus wrightii* and *Sporobolus airoides* in wetland communities).

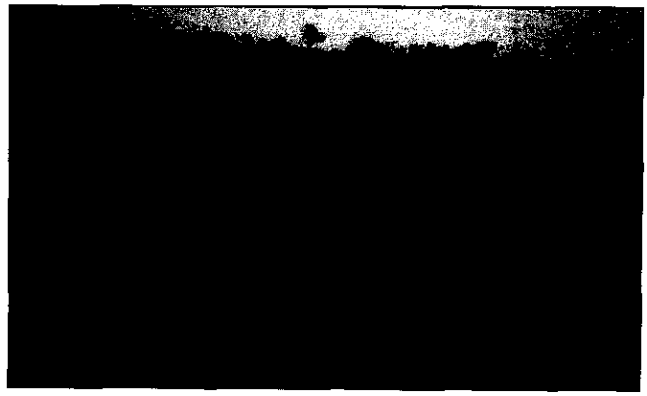
Davy, Humphry, Sir, *Consolations in Travel, or, The Last Days of a Philosopher* (London, 1830) (p. 122-9 gives an account of the floating islands in La Solfatara or Lago della Regina).

Gary, Marcus, "Speleogenesis of Zacatón and Cenotes of Rancho La Azufrosa," Poster Presentation, American Academy of Underwater Sciences 20th Annual Symposium, "Diving for Science in the 21st Century," 11 to 15 October 2000, Sirata Beach Resort, St. Petersburg Beach, Florida.

Kircher, Athanasius, *Latium; id est, Nova & parallela Latii tum veteris tum novi descriptio* (Amsterdam, 1671) (Book 4, Part 3, chapter 4 on the floating islands in the Lago della Regina).

Kristovich, Ann, "Zacaton. A History," *Nitrox Diver Magazine* 94.4 (Nov. 1994 - Jan. 1995) (on scuba diving in Zacatón; online at http://www.iantd.com/articles/94-4kristovich.html).

Lana Terzi, Francesco, *Magisterium naturae, et artis* (Brescia, 1684-92) (Vol. 3, Book 25, chapter 1, number 54 on the floating islands in the Lago della Regina).



Mr. Van Duzer is currently compiling a global bibliography on floating islands. Here follow some additional citations from this bibliography relating to the floating islands near Tivoli:

Bacci, Andrea, *Discorso delle acque Albule, bagni di Cesare Augusto a' Tivoli, delle acque acetose presso a Roma, & delle acque d'Anticoli* (Rome, 1564) (32 p.; esp. p. 3-4 on the qualities of the water and on the floating islands in Lago della Regina).

Cappello, Agostino, *De' bagni minerali presso Tivoli* (Rome: *Tipofrafia delle belle arti*, 1839) (29 p., offprint from *Giornale Arcadico*, vol. 80; p. 15-7 on the floating islands).

Kircher, Athanasius, *Latium; id est, Nova & parallela Latii tum veteris tum novi descriptio* (Amsterdam, 1671) (describes the floating islands near Tivoli in Book 4, part 3. chapt. 4.; the islands were known as *le sedici barchette*, "the sixteen little boats," and are mistakenly depicted as boats on the map of the lake and surrounding regions in Book 3, part 2, chapt. 1).

Gigli, Girolamo, *Il Gorgoleo ovvero il governatore dell'isole natanti* (Sienna, 1753) (a comedy; in Act 1, Scene 2, p. 14-5 the characters discuss the floating islands of Acque Albule near Tivoli, mentioning some of the names of the individual islands, and that local shepherds ride on the islands).

Viale, Benedetto, and Latini, Vincenzo, *Sulle Acque Albule presso Tivoli: Analisi chimica* (Rome: Tipografia di Gaetano Menicanti, 1857) (76 p.; p. 12-4, 49, 69, and 74 on the floating islands).

Zezi, Pietro, "The Travertine and the Acque Albule in the Neighbourhood of Tivoli," p. 83-8 in Henry James Johnston-Lavis, ed., *The South Italian Volcanoes, Being the Account of an Excursion to Them Made by English and Other Geologists in 1889 Under the Auspices of the Geologists' Association of London* (Naples, 1891) (p. 85-6 on the Lago della Regina, with brief reference to its floating islands).

Books/Reports

ALIEN WEEDS AND INVASIVE PLANTS: A Complete Guide to Declared Weeds and Invaders in South Africa, by L. Henderson. ARC-PPRI Handbook No 12. 2001. 300 pp.

(Order from Weeds Division, Plant Protection Research Institute, Private Bag X 134, Pretoria, 0001, South Africa. E-mail: riethdb@plant2.agric.za US$25 includes postage by surface mail.)

Compact yet full of understandable text and symbols, here's another especially nicely-designed handbook for the identification of invasive plants. It includes descriptions, distributions, line drawings and photographs of 234 species of non-native plants in South Africa. It includes all of their "declared weeds", contained in Category 1 (prohibited and must be controlled); Category 2 (commercially used, may be grown in permitted areas); and Category 3 (ornamentally used, existing plantings okay but may no longer be planted), divided into six sections: Grasses and Reeds (10 spp.); Aquatics (10 spp.); Terrestrial Herbs (38 spp.); Climbers (25 spp.); and Trees and Shrubs (155 spp.). An inside-cover "quick guide" makes this handbook even easier to use.

PLANT INVADERS -- The Threat to Natural Ecosystems, by Q.C.B. Cronk and J.L. Fuller. 2001. 241 pp.

(Order from Earthscan Publications Ltd, 120 Pentonville Road, London N1 9JN, UK. £24.95. WWW: http://www.earthscan.co.uk E-mail: earthinfo@earthscan.co.uk)

The first three chapters of this small book provide cogent and succinct definitions and descriptions of plant invasions, how they occur, and what is done about them. Among other things, this "conservation manual" is intended to "provide information which will assist botanists and others to undertake practical conservation work." It also contains reviews of 17 invasive species around the world, including their description, distribution, invasiveness, and control and management.

SUBMERGED AQUATIC VEGETATION: Data Development and Applied Uses - A CD-ROM, by the Coastal Services Center, U.S. National Oceanic and Atmospheric Administration. 2001. CD-ROM.

(Order this free publication from NOAA Coastal Services Center, WWW: http://www.csc.noaa.gov/clearinghouse)

This well-conceived (and free of charge!) CD "was designed to provide information, mapping methodologies, and data applications for both the coastal resource manager and the submerged aquatic vegetation (SAV) data developer." The CD presents examples of uses of SAV data, methodology for creating seagrass data, technical support from the Benthic Habitat Mapping project, and general information about legislation and funding opportunities for SAV mapping projects.

The CD also includes two books (in PDF format), and approximately 100 additional photographs of habitat, etc. One book is a "Seagrasses Overview"; the other is an ID manual--Field Guide to the Seagrasses of the United States, including the Caribbean.

The well-done Overview is 20 pages, and contains chapters about the values (contributions to the ecosystem) of seagrasses, threats against seagrasses, and protection of seagrasses. The Field Guide includes nicely laid-out pages and ID information for 15 seagrass species (including six Halophila species), including line drawings, photographs and distribution maps. (One must be patient while using this CD -- the PDF files were able to be downloaded by only 1 of 3 PCs tested in this office. Also, the photographs printed out on the PDF pages, while large, are of inadequate resolution to be of much use in identification.)

WETLAND PLANTS: Biology and Ecology, by J.K. Cronk and M.S. Fennessy. 2001. 462 pp.

(Order from CRC Press, 2000 Corporate Blvd. NW, Boca Raton, FL 33431-9868, 800-272-7737. WWW:http://www.crcpress.com $89.95 + S/H.)

This reference on the ecology of aquatic and wetlands plants is intended for wetland professionals, teachers and students. It might also serve as a text for upper-level college courses. Its various parts comprise a synthesis of the current knowledge on wetland plants and their communities. Part I includes an introduction to wetland plants; definitions and functions of the types of wetland plant communities including saline, brackish and freshwater systems; and an overview of physical aspects of wetland environments including hydrology and sediment conditions. Part II is about plant adaptations to wetland growth conditions including hypoxia, anoxia, salt concentrations, nutrient limitations, submergence and herbivory; reproduction mechanisms and seedling adaptations; and special structures for asexual reproduction. Part III explains primary productivity; discusses community dynamics elements such as succession, competition, allelopathy and disturbance; and presents case studies of several major invasive plants. Part IV describes wetland restoration and creation of artificial wetlands, with case studies; and explains how wetland plants may be used as indicators of wetland boundaries and ecological integrity.

COASTAL PLANTS FROM CAPE COD TO CAPE CANAVERAL, by I.H. Stuckey and L.L. Gould. 2001. 305 pp.

(Order from University of North Carolina Press. $29.95 (hard); $14.95 (soft). WWW: http://uncpress.unc.edu Phone: 800-848-6224.)

This is a nice book about 125 most-frequently-encountered plants of coastal habitats from Massachusetts to northern Florida, "focusing on vascular plants that grow in saline situations". Included for each plant is a single photograph (but no drawings) and a plant description which includes growth habit and life history, pollination biology and seed dispersal, blooming dates (!), synonymy, uses of the plant by people and wildlife, and other interesting facts. There is a glossary, but no key. The book is arranged by family.

Because there is no kind of key to the plants, the book is not particularly user-friendly for first-timers in coastal habitats: there'll be much page-flipping. But the text is very friendly and interesting.

HANDBOOK FOR RESTORING TIDAL WETLANDS,

edited by J.B. Zedler. 2001. 439 pp.

(Order from CRC Press, POB 31225, Tampa, FL 33631-3225, 1-800-272-7737. WWW: http://www.crcpress.com $89.95 + S/H.)

This book "provides a broad-based compilation of case studies [from southern California] and principles to guide" the planning, implementation and assessment of coastal mitigation and restoration projects. In the book, various respected scientists redefine the theory of restoration ecology, considering the special concerns of coastal wetland restoration and salt marshes; discuss "the critical phase" of setting restoration goals and identifying reference ecosystems; focus on wetland topography, hydrology, and soil characteristics; describe in detail methods for selecting, salvaging, holding, propagating and transplanting salt marsh plants; make recommendations on how to improve salt marsh restoration in terms of fishes and invertebrates; present new information on methods for surveying, monitoring and assessing; and planning and budgeting for maintenance and long-term management of restored sites.

The authors cover a lot of ground in 439 pages.

MINNESOTA NON-NATIVE TERRESTRIAL PLANTS -- An Identification Guide for Resource Managers,

by the Trails and Waterways Natural Communities Management Program, Minnesota Department of Natural Resources. 2001. 75 pp.

(Order from DNR Information Center. WWW: http://www.dnr.state.mn.us Phone: 651-296-6157.)

This nicely-designed, small-format, laminated, spiral-bound and colorful field guide is designed to guide natural resource managers in the identification of the most invasive non-native terrestrial plants in Minnesota. Thirty-five plants are treated with excellent color photos, clean descriptions of their appearance and parts, and the ecological threats they pose. Mechanical and chemical control methods are suggested for each.

NATURAL AREA WEED MANAGEMENT -- A Training Manual for Restricted Use Pesticide Applicators,

by K.A. Langeland. 2001. 46 pp.

(Order from IFAS Publications, 1-800-226-1764. $12.00 plus S/H.)

This manual contains information on herbicide application and safety in natural areas; it was developed as a study guide for persons seeking to be certified and licensed by the Florida Department of Agriculture and Consumer Services to apply pesticides in the Natural Area Weed Management category. Included are sections on herbicide characteristics; methods of herbicide application; a review of the herbicides used in natural areas; herbicide mixing, loading and application; and transportation, storage and spill management.

PHOTOSYNTHESIS - A COMPREHENSIVE TREATISE,

edited by A.S. Raghavendra. Paperback edition, with corrections, 2000. 376 pp.

(Order from Cambridge University Press, 40 West 20th Street, New York, NY 10011-4211. WWW: http://www.cup.org)

"Written by an international team of experts, this is the first advanced-level treatment which spans the broad range of the topic within a single volume..." Part I includes seven chapters on the cell and molecular biology of chloroplasts -- structure; light-harvesting complexes; photosystems I and II; pigments; chloroplast proteins; plastid genes; and electron transport. Part II includes eight chapters on physiology and biochemistry -- carbon reduction; C4 pathway; crassulacean acid metabolism; intermediate photosynthesis; starch-sucrose metabolism; photorespiration; non-carbohydrate compounds; and respiration and nitrogen metabolism. Part III is about agronomy and environmental factors -- canopy photosynthesis and crop productivity; water and salt stress; photosynthesis at low temperatures; acclimation to sun and shade; photoinhibition; effects of global climate change. Part IV includes special topics -- evolution; modelling; chlorophyll fluorescence; action of modern herbicides; and biotechnology.

LET'S GO TO WIED IL-LUNZIATA AND RIVER XLENDI, A Field Study Guide,

by S.M. Haslam and J. Borg. 2001. 46 pp.

(Order from International Tree Foundation, POB 278, Valletta, MALTA.)

This hypnotizing booklet by Sylvia Haslam and J. Borg is about the delights of studying Maltese disappeared rivers. Described are the Short Tour and the Grand Tour, day trips one might make depending on how much one might want to know about the emptied River Xlendi. Using nary a photograph (you're supposed to be there in person!), the authors describe many places of interest, pointing out the confluence, the terrace wall, the weak trickle. Asking the user of the guide to make sketches of the Grixti valley and the Gifna stream. Name the plants here. Describe the rocks of the Munxar. What color is the dirt? Imagine qabru, the freshwater crab. Did you visit the caves? Find north. The authors want us to see something important and to remember something to be done: "To protect and preserve R. Xlendi and Wied il-Lunziata."

PLANTAS AQUATICA INFESTANTES DE VALAS E CANAIS,

by L. Catarino, I. Moreira, T. Ferreira and M.C. Duarte. 2001. 161 pp. (In Portuguese)

(Order this book from ISA Press, Instituto Superior de Agronomia, Tapada da Ajuda, 1349-018 Lisboa, PORTUGAL.)

This novice's handbook is about aquatic weeds in canals of Portugal; it is a well-designed tool for new managers. In several parts, the book generally describes aquatic plant classification; presents a brief history and analysis of aquatic weed infestations and problems; describes the water transport system of Portugal, including good pictures of canals, concrete channels and high-rise aquaducts and how they become infested with aquatic weeds; and pictures a number of aquatic weeds in chapters on algae, bryophytes, aquatic ferns, and about 30 higher plants. The plants are well-described, with some good color photos and a number of good line-drawings. The final chapter describes how to maintain artificial water courses,

and presents a summary of methods of aquatic weed management, from insects and fish to Portugal-approved herbicides.

THE WATERLILIES: A MONOGRAPH OF THE GENUS NYMPHAEA, by H. Conard. 1991 facsimile printing of the 1905 edition, Carnegie Institution of Washington Publication No. 4. 279 pp.

(Order from the International Water Lily & Water Gardening Society. Non-members: hardback $99, softcover $38. Members: hardback $75, softcover $30. Special limited offer for members only includes one of each for $85. All prices postage paid within US. Additional charges for shipping elsewhere. Payment via check or credit card. Contact Betsy Sakata, 1593 Ulupuni St, Kailua, Hawaii 96734, (808) 262-4072. E-mail: bsakata@hawaii.rr.com)

Even today, this important work by the 'Father of Waterlilies' is considered the foundation for serious students of Nymphaea. It brings together an enormous wealth of botanical knowledge, including the history, structure, development, and taxonomy of the genus. It also provides the most detailed waterlily descriptions found in print. This large-format book (8.5 X 11.4 in.) features a number of page-size B/W photographs and colored line drawings of leaves, flowers and seedlings. The hardbound edition comes in a box.

SEDGES: CYPERUS TO SCLERIA: The Illustrated Flora of Illinois, by R.H. Mohlenbrock. 2nd Ed. 2001. 223 pp.

(Order from Southern Illinois University Press, POB 3697, Carbondale, IL 62902-3697 E-mail: danseit@siu.edu)

This is the "second edition" of the 1976 book, with new keys. Funny thing is, the original keys are left in their first edition pages, along with the original plant descriptions and distribution maps; rather than integrate new information into the first edition, the new keys, new discoveries, nomenclatural changes and distribution additions are tacked on at the end of the book. The unsuspecting user may therefore spend a fair amount of time using the old key and old text before realizing that the "second edition" key and updated information is located in the back of the book. This book is not easy to use.

CHECKLIST OF THE VASCULAR PLANTS OF WISCONSIN, Technical Bulletin Number 192, by M.A. Wetter, T.S. Cochrane, M.R. Black, H.H. Iltis and P.E. Berry. 2001. 258 pp.

(This free publication may be ordered from Dreux Watermolen, Science Information Services, Wisconsin Department of Natural Resources, 101 S. Webster St., Box 7921, Madison, Wisconsin 53707-7921. 608-266-2621)

There are 2,366 native plant species in Wisconsin, including: 65 endangered; 57 threatened; and 171 species of special concern. Four species are believed to have been extirpated.

There are 877 introduced plant species in Wisconsin, including: 283 adventive; 185 escaped; 66 locally established; 262 naturalized; 25 persisting and spreading; and 56 rarely escaped.

This book lists all of them: Ferns and Fern Allies, Gymnosperms, Dicotyledons, Monocotyledons and Excluded Taxa. There is also an index to common names and one to scientific names. Staff of the Wisconsin State Herbarium, University of Wisconsin-Madison produced this checklist. Revised versions will be posted on the herbarium web page: http://www.wisc.edu/botany/herbarium/

MARINE PLANTS OF AUSTRALIA, by J.M. Huisman. University of Western Australia Press. 2000. 300 pp.

(Order from International Specialized Book Services, Inc., 5824 NE Hassalo St., Portland, Oregon 97213-3644. (503) 287-3093. US$75.00)

"Marine plants are more than just the drift on the beach...When living, they include some of the most beautiful and unusual plants, displaying a diversity of colours and forms at least equal to any group of land plants." Presented as a naturalist's field guide, this very well-produced, full-size, hardcover book features a couple of hundred excellent color photographs and line drawings of red, brown, green, and blue-green algae and the seagrasses. Of more than 3,000 species that occur in Australian waters, these are just the species most likely to be encountered, one or two species of each genus. Color is the only key used in the book, so users should expect to do a lot of page-flipping. Also included are sections on the history of marine botany in Australia, on uses of marine plants, and on collecting and displaying them.

AN AQUATIC PLANT IDENTIFICATION MANUAL FOR WASHINGTON'S FRESHWATER PLANTS, by K. Hamel and J. Parsons, Washington State Department of Ecology. 2001. 195 pp.

(Order from Washington Dept. of Printing, POB 798, Olympia, WA 98507, (360)753-6820. WWW: http://waprt.bizland.com/store/index.html Pub. No. 01-10-032. $27.50 plus S/H.)

Though invasive and native plant issues have become pressing for most if not all U.S. states, only a few states produce, and distribute in quantity(!), high-quality plant identification and plant management educational materials for their management agencies and their general public. Among the best are Florida, Hawaii, Minnesota, South Carolina, and, in this case, Washington.

Here is a carefully produced, glossy field manual that is all-there and easy-to-use: a very good example for other state eco-agencies to consider. 'Tis no slap-dash

effort done for the sake of saying "we have one". Of course, it helps immeasurably that the state of Washington, well-known for its Department of Ecology, actually allocates public monies for the purpose of producing and distributing relevant, needs-based, eco-education materials, monies used to pay subject-specific science writers and publication specialists.

This manual uses larger line drawings and smaller color photos, along with complete but not-so-botanical text, to treat 110 plants found in Washington lakes. Plants are grouped into categories based on similar growth forms and habitat types. Groups include shoreline plants, floating leaved rooted plants, floating mat-rooted plants, free floating plants, submersed plants, plant-like algae, aquatic moss, and "other" (sponges and bryozoans). The manual includes an illustrated glossary and instructions on how to collect and preserve aquatic plant specimens.

PLANT INVASIONS -- Species Ecology and Ecosystem Management, edited by G. Brundu, J. Brock, I. Camarda, L. Child and M. Wade. 2001. 338 pp.

(Order from Backhuys Publishers, Leiden, The Netherlands. US$ 89.00 plus S/H. WWW: http://www.backhuys.com E-mail: backhuys@backhuys.com)

This book contains papers from the 5th International Conference on the Ecology of Invasive Alien Plants, 13-16 October 1999, held in Sardinia, Italy. While the book addresses general questions on invasive plants, the book's main value is its presentation of case studies on the ecology of individual species (which is made easy by the use of a unique "index of main taxa" at the beginning of the book). Four categories of case studies include I: Species; II: Invasive plants in protected areas; III: Habitats, biotopes, regions; and IV: Invasive plant management.

More than 30 terrestrial and aquatic species are treated, including North American species which are invading South America, Central American species invading Europe, eastern Asian species invading western Asia, European species invading North America...

A GUIDE TO DESIGNING LEGAL AND INSTITUTIONAL FRAMEWORKS ON ALIEN INVASIVE SPECIES -- A Contribution to the Global Invasive Species Programme, by C. Shine, N. Williams and L. Gundling. 2000. 138 pp.

(Order from IUCN, The World Conservation Union, Publications Services Unit, 219c Huntingdoo Road, Cambridge CB3 0DL, United Kingdom. WWW: http://www.iucn.org E-mail: info@books.iucn.org Environmental Policy and Law Paper No. 40. In English; available in Spanish and French.)

Although "our lives have become enriched through access to and introduction of different varieties of plant and animal species, including non-indigenous or alien species", their introduction to new ecosystems carries a heavy price--as a result, "the introduction of alien species has been recognised as one of the most serious threats to our [the world's] health, and to our ecological, social and economic well-being."

This book, two years in the making by IUCN lawyers, intends to "provide national law and policy-makers with practical information and guidance for developing or strengthening legal and institutional frameworks on alien invasive species, consistent with Article 8(h) of the Convention on Biological Diversity."

It includes "scientific considerations for legislation"; economic, social, health, ecological and genetic impacts; discussion of current international law and trade agreements, with alien species examples; relationship between international and national frameworks; measures to prevent or minimise unwanted introductions; developing legal tools for non-native species control and support of native biodiversity; and measures to promote accountability. The book also contains a table of legal instruments and provisions.

TRANSFORMATIONS OF NUTRIENTS IN NATURAL AND CONSTRUCTED WETLANDS, edited by J. Vymazal. 2001. 519 pp.

(Order from Backhuys Publishers, POB 321, 2300 AH Leiden, The Netherlands. E-mail: backhuys@backhuys.com WWW: http://www.backhuys.com US$ 148.00 plus S/H)

These are 25 refereed papers presented at the workshop, Nutrient Cycling and Retention in Natural and Constructed Wetlands III, Trebon, Czech Republic, September 14-19, 1999. Topics include nutrient cycling; carbon transformations; retention mechanisms and capacity; use for wastewater; nutrient retention by macrophytes; physiological responses of macrophytes; water cycles; budgets; evapotranspiration; and functional assessment of wetlands.

LES PRINCIPAUX VÉGÉTAUX AQUATIQUES DU SUD-OUEST DE LA FRANCE, by A. Fare, A. Dutartre, and J.-P. Rebillard. Agence de l'Eau Adour Garonne. 2001. 190 pp. (In French)

(Order this free publication from the French Water Agency of Adour Garonne: Marie Martine Galaup, Agence de l'Eau Adour Garonne, 90 Rue de Férétra, 31078 Toulouse Cedex 4, FRANCE. E-mail: marie-martine.galaup@eau-adour-garonne.fr)

This handy-size spiral-bound ID book, in French, describes 134, and pictures nearly 100, of the aquatic and wetland plants of southwest France. It is in alphabetical order according to species, in 3 parts: les hydrophytes, les amphibies, et les hélo-phytes. Each plant is generally described, and then very briefly treated in terms of habitat, inflorescence, and fruit, as well as special identifying characteristics. The book includes a glossaire. The full-page, color, pretty-good photos are a welcome relief from so many other ID books having too-many too-small photos.

Publishers, authors, agency managers ...

To submit items for review in the **Books/Reports** section of **AQUAPHYTE**, please send a review copy to the editors' attention. Accepted items will be reviewed in the newsletter and on our website at http://plants.ifas.ufl.edu/books.html Also, annotated citations will be added to the **APIRS** database of scientific literature on aquatic, wetland and invasive plants.

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After a lower federal district court concluded that it was not necessary to obtain an NPDES permit for treatment with acrolein, Headwaters, Inc. et al. appealed the case to the 9th Circuit Court of Appeals. The 9th Circuit Court has jurisdiction over Alaska, Washington, Oregon, Idaho, Montana, Nevada, Arizona, California, Hawaii, and Guam. These nine states and Guam are bound by any decisions made by the 9th Circuit Court. On March 12, 2001, this court reversed the lower court's ruling and found that "the registration and labeling of Magnacide H under the Federal Insecticide, Fungicide, Rodenticide Act (FIFRA) does not preclude the need for a permit under the CWA." The Talent decision was not appealed to the Supreme Court.
[See http://www.owrc.org/litigation/tidopinion.htm]

Washington's Response to the Talent Irrigation District Decision

The state of Washington's Assistant Attorney General to the Department of Ecology (Ecology) interpreted the Talent court decision to mean that the application of *any* aquatic pesticide to Washington waterbodies requires coverage under an NPDES permit. This interpretation was partially in response to the threat of lawsuits from environmental groups if an NPDES permit program was not put in place. Pesticides are applied to waters of the state for the control of mosquitoes, burrowing shrimp, some fish species, noxious submersed weeds (Eurasian watermilfoil, hydrilla), noxious emergent weeds (purple loosestrife, spartina), nuisance native aquatic plants, and algae.

Washington, Oregon, California, Montana, Nevada, and Hawaii have been delegated authority from the Environmental Protection Agency (EPA) to develop and administer NPDES permit programs. Idaho, Alaska, and Arizona obtain their NPDES permit coverage from EPA. Ecology administers Washington's NPDES programs for industrial waste discharges, sewage treatment, municipal and industrial stormwater, and dairy waste. However, aquatic pesticide application does not fit neatly into state and federal laws that regulate point source pollutant discharge to water. To date EPA has provided little guidance or direction to the affected states on how to interpret the court decision or how to develop an aquatic pesticide NPDES permitting program.

The March court decision did not allow Washington enough time to develop an aquatic pesticide NPDES program for the 2001-treatment season. Although Ecology's existing aquatic pesticide permitting program was not an NPDES program, Ecology continued to issue orders (permits) under this program for 2001. Applicants were informed that these permits were not NPDES permits and that they could be subject to third party lawsuits as a result of the Talent court decision. Willapa Bay oyster growers (who treat oyster beds for burrowing shrimp) were threatened with a third party lawsuit because they didn't have NPDES permit coverage. They subsequently chose not to treat in 2001, permanently losing some oyster beds by this action. All state-funded and most locally funded herbicide applications to control noxious aquatic weeds did not take place. Many irrigation districts asked for coverage under Ecology's existing program, something they had not done before.

For most NPDES permits, people are trying to dispose of unwanted wastes into a waterbody. In the case of aquatic pesticides, people are deliberately introducing a toxic compound into a waterbody to improve beneficial uses. Ecology is currently developing seven general NPDES permits for aquatic pesticide application to Washington waters in 2002 and beyond. Permit holders will include: irrigation districts; mosquito districts; Departments of Fish and Wildlife; Agriculture; and Transportation; oyster growers; and aquatic herbicide applicators. Advisory committees have been formed to provide oversight to each general permit and informational meetings have been held. Each advisory committee is expected to meet twice to provide input into the draft permit before it is made available for public review. Because of public and internal review processes, Ecology doesn't anticipate having final permits in place until late spring or early summer of 2002.

While most aquatic pesticide applicators are accustomed to being regulated by Ecology, there will be some changes under the new program. Because of state law, fees will be charged to cover the administration of the NPDES permits. Although the amounts are as yet unknown, in some cases, permit fees could be substantial. Some type of limited monitoring of the receiving waters, most likely for pesticide concentrations, will also be required. Requirements already in place under the superceded permit program, such as public notification and Endangered Species Act protections, will be incorporated into the NPDES permits where appropriate. The NPDES permits will be at least as, or more, protective of the aquatic environment than the superseded aquatic pesticide permitting program.

There has been great interest in Washington's aquatic pesticide NPDES program from affected parties and environmental groups. Washington interpreted the Talent decision to mean that all aquatic pesticide applications must be regulated under an NPDES program. Other western states may have made different interpretations, although California has developed a general NPDES permit for aquatic pesticide use. Several environmental groups indicated to Ecology that had Washington continued to allow aquatic pesticide applications under the existing program we would have been challenged in court with the Talent Irrigation District decision forming the basis for that legal challenge. Moving forward with the development of an NPDES program for aquatic pesticides is a necessary action for Washington.

Editor's note: The industry response to the Ninth Circuit Court's Ruling has included the formation and funding of the Aquatic Pesticide Coalition (APC) by a group of agricultural producers, irrigation district managers, aquatic pesticide manufacturers, mosquito control interests and companies in the lake management industry. The APC hopes to help develop a solution to the problem. They have hired attorneys experienced with the Clean Water Act and have presented a Position and Background paper to the EPA. An industry newsletter, *AquaTechnex e-news*, makes the following observations: "Western irrigated agriculture depends on approximately 16,000 miles of irrigation canals and 37,000 miles of laterals. In 1997, irrigated Western cropland produced $22

Continued from Page 10

billion in sales (as compared to national crop sales in 1997 of approximately $100 billion). . . .This ruling has paralyzed necessary aquatic plant management operations in the western United States. . . . . U.S. EPA has had long-standing policy and guidance in place that specifies under what circumstances an NPDES permit is needed to discharge pesticides into the waters of the U.S. from an industrial facility. NPDES permits have not been required for the application of aquatic pesticides to water in accordance with product labels under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Further, EPA has never instituted an enforcement action against any such person for failing to have an NPDES permit under these circumstances. . . . The imposition of NPDES permits on the use of aquatic herbicides . . . could have the perverse effect of impairing water quality through the negative consequences of aquatic invasive plant infestations."

To contact the Aquatic Pesticide Coalition, write to 1156 15th Street NW, Suite 400, Washington, DC 20005. *KB*

New Regional Scientific Journal - *SOUTHEASTERN NATURALIST*

Southeastern Naturalist announces a new interdisciplinary regional scientific journal with its first call for papers and subscribers. The quarterly journal is intended to serve as a standard scientific reference resource for the southeastern United States. Manuscripts are solicited in the general categories of original research articles; research summaries and general interest articles; and field observations and notes. Manuscripts may focus on terrestrial, freshwater, and marine organisms, and their habitats. Subject areas include but are not limited to field ecology, biology, behavior, biogeography, wildlife and fisheries management, taxonomy, evolution, anatomy, physiology, geology, and related fields. Manuscripts on genetics, molecular biology, archaeology, and anthropology, etc., are welcome if they provide natural history insights that are of strategic interest to field scientists. Manuscripts may be submitted by anyone who has a serious interest in natural history, including university and college faculty members and their students, researchers, field biologists, professional and amateur naturalists, and writers.

The *Southeastern Naturalist* has no page charges, but does encourage contributions towards printing costs, especially when allowed by grants, contracts, or reprint budgets of the authors. The Humboldt Field Research Institute is a nonprofit corporation of the State of Maine.

Subscription rate per year for individuals at US addresses, $40 (students, $30.); institutions at US addresses, $60; Canadian addresses, add $4; other addresses outside the US, add $8. Subscription exchanges are considered. Contact the Humboldt Field Research Institute, PO Box 9, Steuben, ME 04680-0009; Telephone 207-546-2821; FAX 207-546-3042; E-mail: humboldt@loa.com WWW: http://maine.maine.edu/~eaglhill

http://plants.ifas.ufl.edu

The **Center for Aquatic and Invasive Plants** web site now has more than 6,000 pages (including photographs) about aquatic plants and invasive plants. Thousands more pages are in process.

Here are some of our web places of interest:

http://plants.ifas.ufl.edu/photos.html -- original photos and basic information about 237 plant species

http://plants.ifas.ufl.edu/seagrant/aqulnv.html -- very detailed information taken from the recent scientific literature about 24 aquatic/wetland invasive plants, including photos and line drawings. This part of the web site was developed as part of a grant from the National Sea Grant, Invasive Aquatic Species program.

http://plants.ifas.ufl.edu/terinv.html -- very detailed information about 12 terrestrial invasive plants. This part of the web site was developed as part of a grant from the St. Johns River Water Management District which manages thousands of acres of Florida's public lands.

http://plants.ifas.ufl.edu/drawllst.html -- 154 original line drawings of plants in the U.S., native and non-native.

http://plants.ifas.ufl.edu/seagrant/invllsts.html -- a national map that links to every state's lists of prohibited aquatic, terrestrial and agricultural weeds, and plants of special concern.

http://plants.ifas.ufl.edu/identif.html -- a PDF version of the book Identification & Biology of Non-Native Plants in Florida's Natural Areas, edited by K.A. Langeland and K. Craddock Burks. Individual pages of this book may be downloaded from relevant plants listed at http://plants.ifas.ufl.edu/photos.html

http://plants.ifas.ufl.edu/manuals.html -- here are names of a couple of hundred plant identification manuals and textbooks, arranged alphabetically and according to geography.

http://plants.ifas.ufl.edu/glossary.html -- this searchable glossary of every botanical term known to Dr. David Sutton is linked to by a number of encyclopedic web sites.

http://plants.ifas.ufl.edu/gallery2.html -- here are photographs and descriptions of a number of Florida sites, public and private, that feature the state's greatest feature: water. See invasive plants at Kennedy Space Center and Merritt Island National Wildlife Refuge.

FROM THE DATABASE

Here is a sampling of the research articles, books and reports which have been entered into the aquatic, wetland and invasive plant database since Summer 2001.

The database contains more than 55,000 citations. To receive free bibliographies on specific plants and/or subjects, contact APIRS using the information on the back page or use the database online at http://plants.ifas.ufl.edu/

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

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MEETINGS

AQUATIC WEED CONTROL, AQUATIC PLANT CULTURE AND REVEGETATION SHORT COURSE.
May 19-24, 2002. Fort Lauderdale, Florida.

This is THE annual short course as devised by Drs. Vernon Vandiver and David Sutton of the Ft. Lauderdale branch of the University of Florida. This year's short course will feature a training session on the Natural Area Pest Control Pestieide Applicator Category, a new pest management category in Florida. Otherwise, attendees may earn CEUs while learning (or re-tearning) how to control weeds in aquatic situations and along rights-of-way; how to operate and calibrate pesticide application equipment; how to identify aquatic and wetland plants; how to culture aquatic plants; and how to establish and maintain wetland mitigation areas.

Contact: Beth Miller-Tipton, University of Florida, Institute of Food and Agricultural Sciences, PO Box 110750, Gainesville, FL 32611-0750, PHONE: (352) 392-5930 / FAX: (352) 392-9734; E-mail: bmiller-tipton@mail.ifas.ufl.edu WWW: http://conference.ifas.ufl.edu/aw/

11TH ANNUAL SOUTHEASTERN LAKES MANAGEMENT CONFERENCE.
March 18-20, 2002. Winston-Salem, North Carolina.

The theme: "Lakes, Rivers and Streams--Waters for All". The objectives of this meeting are to explore ways to restore, enhance and preserve; to exchange ideas; to promote local actions; and to facilitate communication among managers, planners, developers, homeowners' groups, agency staff, scientists, industry reps and students and teachers.

Contact: Barbara Wiggins, Conference Chair, 550 Elk Mountain Scenic Hwy, Asheville, NC 28804-1710, (828) 254-5644; E-mail: bswiggins@worldnet.att.net; WWW: http://www.don-anderson.com/senalms2002

8TH CONFERENCE OF THE CONTRACTING PARTIES TO THE RAMSAR CONVENTION.
November 18-26, 2002. Valencia, SPAIN.

The theme: "Wetlands: water, life, and culture". Ramsar member countries meet once every three years to assess the progress of the Conventioa and wetland conservation, share knowledge and experience, and plan their work of the next three years. The meeting will be held in the world-famous Science Museum Principe Felipe (designed by Santiago Calatrava). The technical sessions are: 1: Wetlands - major challenges and emerging opportuaities in the new century; 2: Wetland inventory and assessment; 3: Practical steps for applying the vision for the Ramsar list of Wetlands of International Importance; 4: Managing wetlands for sustainable use: lessons learned and aew perspectives; and 5: Cultural aspects of wetlands as a tool for their conservation and sustainable use.

Contact: Ramsar Convention Bureau, Rue Mauverney 28, CH-1196 Gland, Switzerland; Telephone: +41 22 999 0170; FAX: +41 22 999 0169; E-mail: ramsar@ramsar.org WWW: http://www.ramsar.org/index_cop8.htm

11TH INTERNATIONAL CONFERENCE ON AQUATIC INVASIVE SPECIES.
Rescheduled to February 25-March 1, 2002. Hilton Alexandria Mark Center, Alexandria, Virginia.

Hosted by the US Army Engineer Research and Development Center, this confereace deals with aquatic animal and aquatic plant invaders, and will feature talks on prevention, rapid response, and management; global and regional environmental impacts; habitat/ecosystem changes; monitoring and information exchange; education and outreach initiatives; ballast water and shipping; and control technologies.

Contact: Conference Administrator, 1027 Pembroke Street East, Suite 200, Pembroke, ON K8A 3M4 Canada; Telephone: 800-868-8776 (North America) or 613-732-7068 FAX: 613-732-3386; E-mail: profedge@renc.igs.net WWW: http://www.aquatic-invasive-species-conference.org

4TH ANNUAL SOUTHEAST EXOTIC PEST PLANT COUNCIL SYMPOSIUM.
April 3-5, 2002. Renaissance Hotel, Nashville, Tennessee.

Staie chapters of the SE-EPPC include Florida, Georgia, Tennessee, North and South Carolina, Mississippi, and Kentucky. This year's meeting witl be hosted by the Tennessee Exotic Pest Plant Council.

Cantact: Southeast Exotic Pest Plant Council, 4824 Torbay Dr., Nasbville, TX 37211; WWW: http://www.exoticpestplantcouncil.org/ E-mail: bugwood@arches.uga.edu

EUROPEAN WEED RESEARCH SOCIETY 11TH INTERNATIONAL SYMPOSIUM ON AQUATIC WEEDS.
September 2-6, 2002. Moliets et Maâ (Landes), France.

Papers are invited for the following sessions: biology and ecology of aquatic plants; relations with other abiotic and biotic components of aquatic ecosystems; invasive aquatic plants; bio-indication methods involving aquatic vegetation; management and conservation of aquatic plants; integrated management; uses of water plants. Contributions on other aspects of the biology, ecology and management of aquatic plants will also be considered. English-French simultaneous translation will be made.

Contact: Cemagref, Unité de Recherche Qualité des Eaux, 50 Avenue de Verdun, 33612 CESTAS CEDEX, France. E-mail: ewrs.2002@bordeaux.cemagref.fr

FIRST LATIN-AMERICAN SHORT COURSE ON BIOLOGICAL CONTROL OF WEEDS.
June 24-28, 2002. Montelimar, Nicaragua.

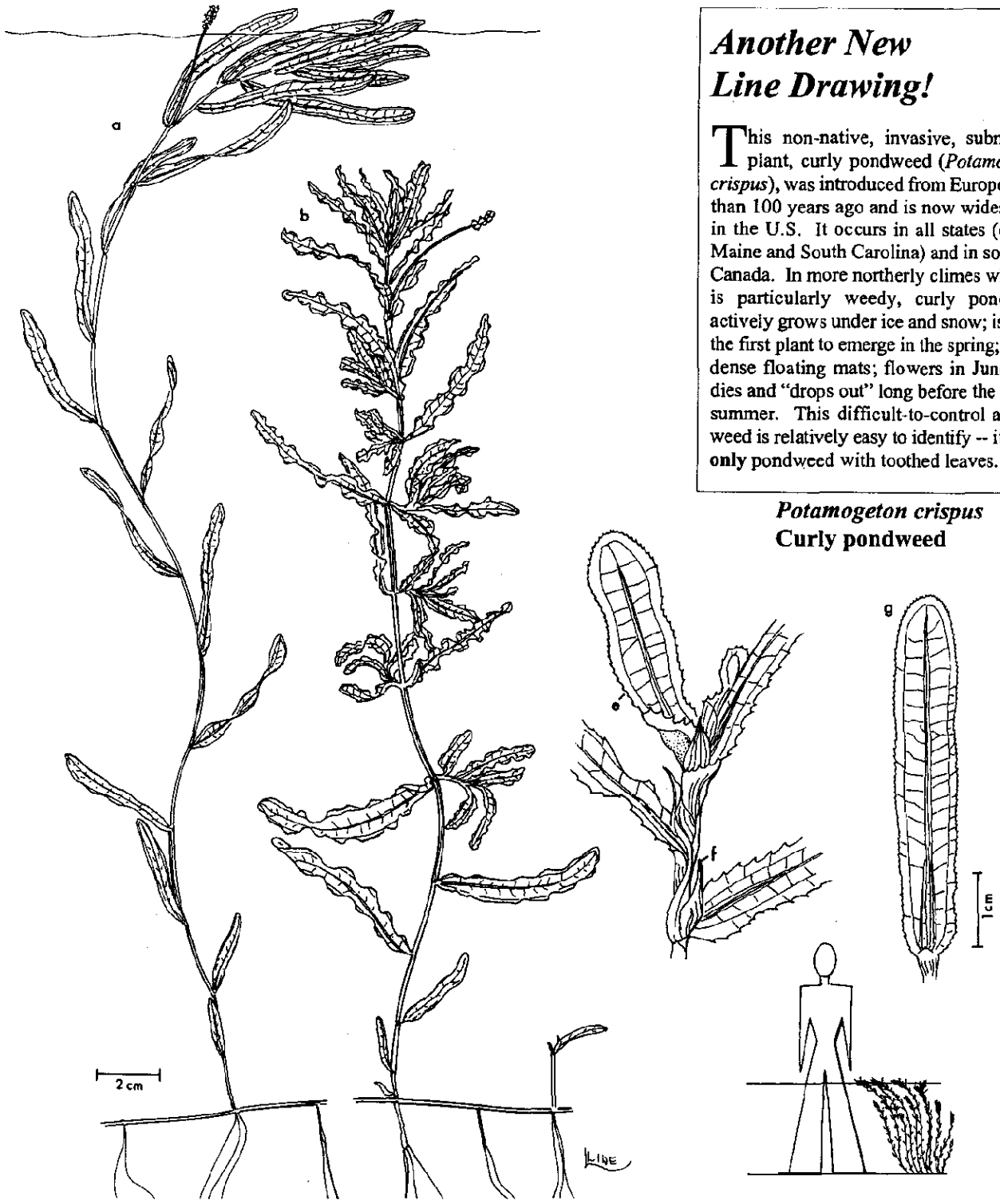
Organized by the University of Florida and the Universidad Nacional Agraria. The objective of this course is to provide participants with a basic understanding of the principles and concepts of biological control of weeds using insects and pathogens. Participants also will receive training in implementing a weed biocontrol program. No previous experience in biological control of weeds is required. Most talks will be in Spanish.

Cantact: Dr. Julio Medal, University of Florida, Entomology Dept., PO Box 110620, Gainesville, FL 32611; E-mail: medal@gnv.ifas.ufl.edu

Another New Line Drawing!

This non-native, invasive, submersed plant, curly pondweed (*Potamogeton crispus*), was introduced from Europe more than 100 years ago and is now widespread in the U.S. It occurs in all states (except Maine and South Carolina) and in southern Canada. In more northerly climes where it is particularly weedy, curly pondweed actively grows under ice and snow; is often the first plant to emerge in the spring; forms dense floating mats; flowers in June; and dies and "drops out" long before the end of summer. This difficult-to-control aquatic weed is relatively easy to identify -- it is the **only** pondweed with toothed leaves.

Potamogeton crispus
Curly pondweed



Traditional medicinal knowledge about an obnoxious weed Jal Kumbhi (*Eichhornia crassipes*) in Chhattisgarh (India)

by P. Oudhia, Department of Agronomy, Indira Gandhi Agricultural University, Raipur 492001, India, E-mail: pankaj.oudhia@usa.net

Water hyacinth is the most predominant, persistent and troublesome aquatic weed in India. It was first introduced as an ornamental plant in India in 1896 from Brazil (Rao, 1988). In Chhattisgarh, water hyacinth grows as a pond weed and also as a rice weed in lowland fields. In ancient Indian literature, it is clearly mentioned that every plant on this earth is useful for human beings, animals and also for other plants (Oudhia, 1999a). Many medicinal, industrial and allelopathic uses of common weeds have been reported (Oudhia, 1999b; 1999c). The natives of Chhattisgarh use many common weeds to treat their health problems (Oudhia, 1999c; 1999d).

In order to list the existing medicinal uses of the obnoxious weed *Eichhornia crassipes*, a survey was conducted during the year 2000. The survey was conducted in six selected districts of Chhattisgarh state. From each selected district, two blocks were selected and from each block, a random sample of four villages was taken to make a sample of 100 respondents. Information regarding existing uses was collected through personal interviews.

The survey revealed that many natives are using the water hyacinth as a medicinal plant. It is mainly used as a remedy to treat the goitre disease. Two basic formulations were identified as the most frequently used:

1) Fresh water hyacinth, table salt and Pippali (*Piper longum*), a common herb, are mixed in equal quantity. 12 grams of this mixture are prescribed for a patient daily until relief is gained.

2) Dried water hyacinth is burnt and taken with fresh cow urine.

In Chhattisgarh, water hyacinth also is used as a styptic. Natives apply fresh juice of the weed in fresh wounds. It is believed to stop the spread of infection. For rice farmers, it is one of the best first aid remedies for minor injuries. In septic wounds, it is applied with vinegar.

The above mentioned uses of water hyacinth have not been reported in available literature. This survey suggests there is a strong need to identify the potential medicinal uses of this obnoxious weed so that it can be used for the welfare of human beings.

Line drawing by Ann Murray

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INFORMATION RETRIEVAL SYSTEM (APIRS)
Center for Aquatic and Invasive Plants
7922 N.W. 71st Street
Gainesville, Florida 32653-3071 USA
(352) 392-1799 FAX: (352) 392-3462
varamey@nersp.nerdc.ufl.edu
kpb@gnv.ifas.ufl.edu
http://plants.ifas.ufl.edu

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AQUAPHYTE

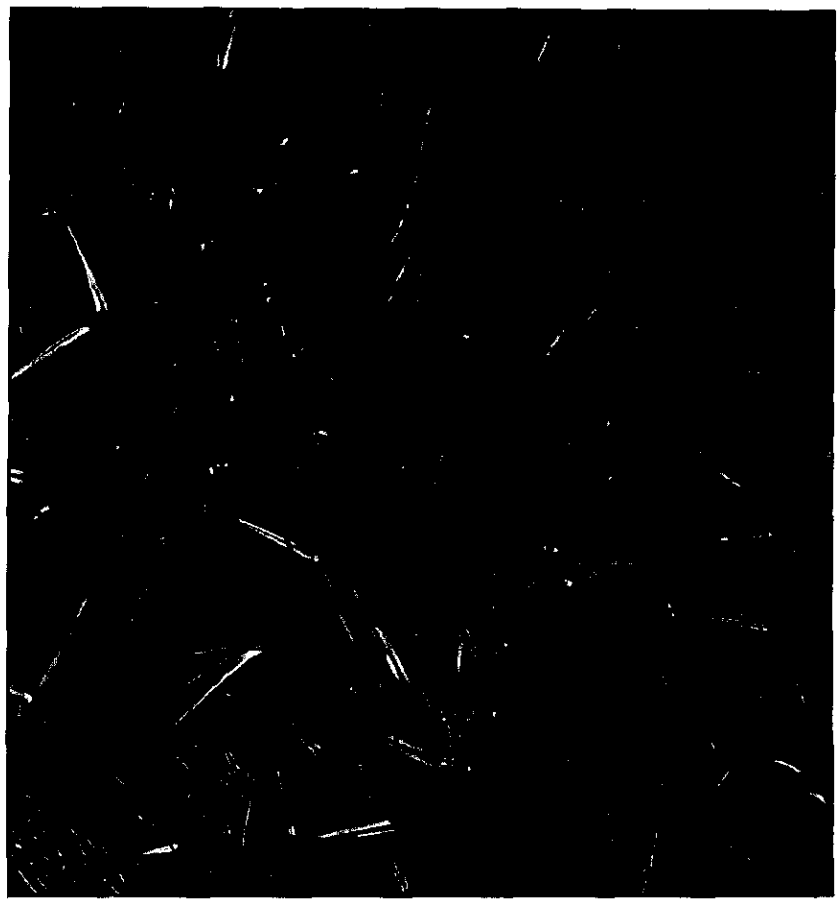
This is the newsletter of the Center for Aquatic and Invasive Plants and the Aquatic, Wetland and Invasive Plant Information Retrieval System (**APIRS**) of the University of Florida Institute of Food and Agricultural Sciences (IFAS). Support for the information system is provided by the Florida Department of Environmental Protection, the U.S. Army Corps of Engineers Waterways Experiment Station Aquatic Plant Control Research Program (APCRP), the St. Johns River Water Management District and UF/IFAS.

EDITORS: Victor Ramey
Karen Brown

AQUAPHYTE is sent to managers, researchers and agencies in 71 countries around the world. Comments, announcements, news items and other information relevant to aquatic and invasive 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.

Scleria lacustris in Florida



Emergent with maidencane (*Panicum hemitomon*) and *Eleocharis* spp. in 30 cm of water, *Scleria lacustris* exceeds a height of 1.5 m. *Photo by Vic Ramey.*

See article and line drawing on pages 2-3