

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,
Bureau of Invasive Plant Management
The U.S. Army Corps of Engineers,
Waterways Experiment Station,
Aquatic Plant Control Research Program
The St. Johns River Water Management District



UNIVERSITY OF
FLORIDA

Institute of Food and Agricultural Sciences

Volume 23 Number 1 Summer 2003

Gainesville, Florida

ISSN 0893-7702

APIRS Database Update -

<http://plants.ifas.ufl.edu/search80/NetAns2/>

After 22 years of assiduous work, the APIRS database contains more than 60,000 annotated citations for scientific articles and reports about uncounted species of aquatic, wetland and invasive plants. Beginning as a mainframe, punch-card database with a few hundred references about water hyacinths, the APIRS database has grown to be the largest free database of its kind in the world. After a recent period in which the database was unavailable due to computer crashes, it is now up and running and better than ever. It has retained the quick searching speed which is now combined with an easy-to-use web interface. The database has been used many thousands of times by researchers, government agencies, companies, teachers, students and private groups and individuals.

The History of APIRS

APIRS originally was meant to be a source of information for "aquatic weed" workers in developing countries, and was funded by the U.S. Agency for International Development (USAID) for that purpose. It quickly became a source of information for workers in Florida as well, gaining the support of the then Bureau of Aquatic Plant Management of the Florida Department of Natural Resources (now the Bureau of Invasive Plant Management of the Florida Department of Environmental Protection (DEP)). USAID ceased sponsorship of the database in the early 1980s. The DEP Bureau continues to be a primary sponsor of the APIRS program. The U.S. Army Corps of Engineers Aquatic Plant Control Research Program supports national and international APIRS services. The program also is supported by the St. Johns River Water Management District, with occasional special-project support coming from other agencies and companies such as the U.S. Environmental Protection Agency and Cerexagri.

APIRS was developed by Mr. Victor Ramey, who continues to manage the overall program. Ms. Karen Brown now manages the database itself, while Ramey works to develop other informational and educational products about aquatic, wetland and invasive plants. Ms. Mary Langeland is the cataloger of all materials placed in the database.

The Value of APIRS - (It's FREE!)

Essentially, APIRS is a bibliographic database devoted to the research of aquatic, wetland and invasive plants. Databases abound, but none of them are entirely devoted to these specific plants, and few, if any, are free. A researcher or an institution can subscribe to journals, but these are very expensive, ranging in price from a few hundred to a few thousand dollars each per year. In addition, journals are focused on a specific subject, and this is clear by the journal titles: *Aquatic Botany*, *Plant Physiology*, *Journal of Ecology*, etc. But subjects in aquatic and invasive plant research often cross disciplinary boundaries. Invasive and aquatic plant

APIRS Supporters

In addition to basic support from the University of Florida, Institute of Food and Agricultural Sciences, the APIRS office of the Center for Aquatic and Invasive Plants is especially appreciative of the generous support of the Aquatic Plant Control Research Program of the Army Corps of Engineers, Mr. John W. Barko, Program Manager, (<http://www.wes.army.mil>).

In addition, significant support has been received from the Florida Department of Environmental Protection, Bureau of Invasive Plant Management, Ms. Kathy Burks, (<http://www.dep.state.fl.us/lands/inva spec/index.htm>). The DEP Bureau was the original sponsor of the database, and also currently supports web site development, public education and manager education projects (Mr. Jeff Schardt).

Other necessary and much appreciated support has come from the St. Johns River Water Management District and the U.S. Army Corps of Engineers - Jacksonville District.



Continued on Pages 2-3

APIRS Online Search Screen

Logout Please logout when you are done to release system resources to others.

To combine or refine a search, use this Search history button. (Ex: \$1 and hydrilla\$)	For search hints, click here:
<input type="button" value="Search History"/>	<input type="button" value="Search Hints"/>
<input type="checkbox"/> Hopefully Helpful Hints	

Please enter search criteria into one or more of the fields below. Use \$ for "wildcard" searches. (Ex: aqua\$)

Words Anywhere (In titles, pub info, categories, keywords...) Use single words or Boolean commands	<input type="text"/>		
Date	<input type="text"/>		
Words in Titles	hydrilla\$		
Author Names (Must Use \$ Ex: Smith\$)	<input type="text"/>	AND	<input type="checkbox"/>
Publication	<input type="text"/>	AND	<input type="checkbox"/>
Subject Categories	<input type="text"/>	AND	<input type="checkbox"/>
Keywords	<input type="text"/>	AND	<input type="checkbox"/>
Plants By scientific names	<input type="text"/>	AND	<input type="checkbox"/>

Please select sort criteria:

Sort by... in order..

Ascending

To submit the query, click here:

To enter new query, click here:

Logout Please logout when you are done to release system resources to others.

3 - Display of Record

APIRS Online
Aquatic, Wetland and Invasive Plants Database



Please logout when you are done to release system resources to others.

Record 7 out of 1191

Title
IMPACTS OF CARBOHYDRATE DEPLETION BY REPEATED CLIPPING ON THE PRODUCTION OF SUBTERRANEAN TUBERIONS BY DIOECIOUS HYDRILLA

Author(s)
FOX, A.M. ** HALLER, W.T. ** CUDA, J.P.

Date
2002

Citation
J. AQUATIC PLANT MANAGE. 40:99-104

Categories
DISTRIBUTION ** FLORIDA ** ECOLOGY ** ECOSYSTEM ** PRIMARY PRODUCTION ** MECHANICAL CONTROL ** CUTTING

Keywords
EFFECTS ** RESOURCE ALLOCATION ** CARBOHYDRATES ** BIOMASS ** TUBERS ** LEAF LOSS ** SHOOT LOSS

Plants
HYDRILLA VERTICILLATA

Update
03S-W

Document Number
00009206

1 - Search for Hydrilla (in title)

2 - List of Results

APIRS Online
Aquatic, Wetland and Invasive Plants Database

Your search terms:
hydrilla\$.titl.

1189 Record(s) found (This page: 1 ~ 16)



Logout Please logout when you are done to release system resources allocated for you.

Date	Author	Title
1 2003	PURI, A. ** MACDONALD, G.E. ** HALLER, W.T.	INVESTIGATIONS INTO FLURIDONE TOLERANCE IN SELECTED HYDRILLA (HYDRILLA VERTICILLATA (L.F.) ROYLE) POPULATIONS
2 2002	GATEWOOD, R.	HYDRILLA IN LONG POND, MASSACHUSETTS - AN UPDATE
3 2002	HALLER, W.	HYDRILLA IN GUATEMALA
4 2000	O'CONNELL, R.A.	CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE'S HYDRILLA ERADICATION PROGRAM
5 2000	COCKREHAM, S.D. ** NETHERLAND, M.D.	SONAR USE IN CALIFORNIA TO MANAGE EXOTIC PLANTS: HYDRILLA, EURASIAN WATERMILFOIL, AND EGERIA
6 2002	FOX, A.M. ** HALLER, W.T. ** CUDA, J.P.	IMPACTS OF CARBOHYDRATE DEPLETION BY REPEATED CLIPPING ON THE PRODUCTION OF SUBTERRANEAN TUBERIONS BY DIOECIOUS HYDRILLA
7 2002	RYBICKI, N.B. ** CARTER, V.	LIGHT AND TEMPERATURE EFFECTS ON THE GROWTH OF WILD CELERY AND HYDRILLA
8 2002	MACDONALD, G.E. ** QUERNS, R. ** SHILLING, D.G. ** MCDONALD, S.K. ** ET AL	ACTIVITY OF ENDOTHALL ON HYDRILLA
9 2002	LANGELAND, K.A. ** HILL, O.N. ** KOSCHNICK, T.J. ** HALLER, W.T.	EVALUATION OF A NEW FORMULATION OF REWARD LANDSCAPE AND AQUATIC HERBICIDE FOR CONTROL OF DUCKWEED, WATERHYACINTH, WATERLETTUCE, AND HYDRILLA
10 1989	HESTAND, R.S. ** THOMPSON, B.Z. ** CLAPP, D.	EXPERIMENTAL HYDRILLA CONTROL UTILIZING A LOW STOCKING RATE OF TRIPLOID GRASS CARP IN A LARGE NATURAL SYSTEM
11 1978	VICTOR, D.M.	EFFECT OF MODEL AND NATURAL CHELATING AGENTS ON THE GROWTH OF HYDRILLA
12 1979	SHIREMAN, J.V. ** MACEINA, M.J.	TECHNIQUES UTILIZING A RECORDING FATHOMETER IN DETERMINING DISTRIBUTION AND BIOMASS OF HYDRILLA VERTICILLATA ROYLE
13 2002	LEAVITT, J.R. ** O'CONNELL, R. ** ZARATE, F.	LAKE/CHOWCHILL RIVER COMPLEX IN CALIFORNIA: 2002 UPDATE
14 2002	NETHERLAND, M.D. ** DAYAN, F. ** SCHEFFLER, B. ** COCKREHAM, S.	THREE AND A HALF-YEARS OF LABORATORY AND FIELD MONITORING OF FLURIDONE-TOLERANT HYDRILLA: WHAT HAVE WE LEARNED?
15 2002	MACEINA, M.J. ** SLIPKE, J.W.	THE USE OF HERBICIDES TO REPLACE HYDRILLA WITH NATIVE SUBMERSED PLANTS AND IMPACT ON JUVENILE LARGEMOUTH BASS IN LAKE SEMINOLE
16 1982	HABECK, D.H.	PANAMANIAN PARAPOYNX SPP. FOR BIOLOGICAL CONTROL OF HYDRILLA

Sort by In order

Ascending

Re-Sort the List Above

Continued from Page 1

information can be published in ecology journals, weed science journals, or journals covering crop science, natural areas, wildlife management, ecological restoration, biogeography, and more. In the book, *Life Out of Bounds - Bioinvasion in a Borderless World*, Chris Bright comments that "Information on exotics is badly fragmented - it is scattered about in hundreds of technical newsletters and publications. . . ." Peter Pysek, in a chapter titled "Recent trends in studies on plant invasions" from *Plant Invasions - General Aspects and Special Problems*, states that "the available information on plant invasions is scattered . . . in at least 189 journals," and that journal literature comprises 80% of the total published information. Pysek names the top 13 journals and goes on to explain that in his sample, which covered the literature on any aspect of the ecology of non-native species, nine journals covered 28% of the published studies, and 20 journals covered almost 50% of the published studies. That is a lot of expensive journals to subscribe to. Pysek went on to say that approximately 15% of the literature on invasive plants was published in books or proceedings, and 4% was published in internal reports or theses. These types of items have been cataloged and entered into the **APIRS** database since its inception.

Many of the scientific journals are indexed, and sometimes abstracted, in the commercial databases such as *Biological Abstracts*, *Cambridge Scientific Abstracts*, *Current Contents* and others. However, unless you subscribe to these databases, or belong to an institution that does, you do not have access to them. These databases often are even more expensive than individual journals.

APIRS collects and catalogs journal articles, books, book chapters, theses, conference proceedings, agency reports and other published scientific literature. To build the **APIRS** collection, we write to authors for reprints, reports and books to be cataloged and entered into the database. Authors usually are happy to contribute their published research to the database, thus making it widely known to others in their field. Many regional research centers around the world also contribute relevant publications. We rely on these contributions to maintain a comprehensive collection. In exchange, researchers have access to a *free bibliographic database* of references specific to their field. To contribute publications to **APIRS**, please send reprints, photocopies or PDF's.

Searching APIRS

To search **APIRS**, go to <http://plants.ifas.ufl.edu> and click on **APIRS Online Database**. From this page, you can select **Helpful Hints and Specific Examples** for better searching of the database; **Some Keywords in the Database** for a simple list of keywords commonly used in the database; **Category and Keyword Use** for a list of definitions of the categories and keywords that we use when cataloging references; or **Search** to search for references in the database. Actually the database is straightforward enough even for first-time users to search without any instructions being necessary. However, to obtain the best results, it is best to consult the help pages. If difficulty or confusion is encountered when using the database, please contact Karen Brown at kpb@mail.ifas.ufl.edu. She will assist you with any problems or help you create a search strategy that will optimize your search results.

Finding Full Text

The **APIRS** database contains fully annotated citations for each reference, but *not full text*. We would like to be able to provide copies of publications to users of the database, but we are not permitted to do so under copyright law.

For those with access to an academic library, many books and journals may be available there. Also, most academic libraries participate in "interlibrary loan" (ILL) agreements, enabling them to borrow items from other libraries for their patrons. ILL requests can cost approximately \$10 per item for non-members of the university and can be free for members, but this will vary between libraries.

Some articles may be downloaded directly from a journal's web site, but many require a fee.

To purchase the full text of cited articles, visit the document delivery services listed below. These services comply with copyright law. They can provide documents for fees ranging from \$15 to \$45 per article, with payment via online transaction or invoicing. These sources are not guaranteed to have references cited in **APIRS**, but they are the most likely document delivery services for science related journal articles. Although most of these sources have databases in their own right, none of them has the comprehensive coverage of the literature on aquatic, wetland and invasive plants found in **APIRS**.

ISI Document Solution - Institute for Scientific Information, <http://www.isinet.com/isi/products/ids/ids/> or 800/523-1850. Scanned articles are provided and various methods of delivery are available, including fax, Federal Express and standard mail delivery.

Ingenta (formerly CARL UnCover) - <http://www.ingenta.com/> or 800/787-7979. Full text articles are available by fax, Ariel (a digitized format used between libraries), or 24 hour electronic display/download. Payment by credit card.

ScienceDirect, <http://www.info.sciencedirect.com/> - a pay-per-view ordering process which allows 24 hour access to full text articles in PDF format, payable by credit card.

CAB International (UK) - <http://www.cabi-publishing.org/Products/Library/Document/Index.asp> Mail or fax delivery available.

British Library Document Supply Centre - <http://www.bl.uk/services/document.html> ". . . a rapid and comprehensive document supply and interlibrary loan service from our extensive collections to researchers and scholars in all kinds of libraries and organisations." Self-described as the leading document provider in the world.

Canada Institute for Scientific and Technical Information (CISTI) - http://cisti-icist.nrc-cnrc.gc.ca/lib_docdel_e.shtml. One of the largest scientific and technical libraries in North America. Copyright-cleared document delivery services provided.

National Library of Australia - <http://www.nla.gov.au/dss/>. Australia's largest document supply center.

DocDel.net - <http://www.docdel.net/index.html>. A directory for document delivery services and users - hundreds of resources and providers.

For items that cannot be found using these document delivery services, contact Karen Brown for assistance at 352.392.1799 or kpb@mail.ifas.ufl.edu

Books/Reports

13TH AUSTRALIAN WEEDS CONFERENCE, Papers and Proceedings, edited by H. Spafford Jacob, J. Dodd and J.H. Moore. 2002. 764 pp.

(Published by the Plant Protection Society of Western Australia. Order from Rob Richardson, POB 42, Meredith, Victoria 3333, Australia. Email: richardson@weedinfo.com.au)

Many papers are contained in sections about weed management and ecology of six Australian ecosystems; modelling; invasions and eradications; herbicide use; herbicide resistance; biological controls; education and training; weed biology and genetics; mapping; economics; and integrated weed management.

This book contains a very interesting essay by Tim Low that pertains worldwide, titled, *Why are there so few weeds?*

WETLANDS AND REMEDIATION II, Proceedings of the Second International Conference on Wetlands and Remediation, Burlington, VT, September 5-6, 2001, edited by K.W. Nehring and S.E. Brauning. 2002. 386 pp.

(Published by Battelle Press, 505 King Ave., Columbus, Ohio 43201; 614-424-6393. WWW: <http://www.battelle.org/bookstore>. ISBN 1-57477-122-1)

This proceedings contains 45 papers organized into four sections: Remediation of Wetlands Contamination; Wetlands for Wastewater Treatment; Wetlands Design, Construction and Operation; and Wetlands Ecology and Restoration. Discussed are the attenuation processes of certain pollutants in wetlands, including chlorinated solvents, chlorobenzenes, trichloroethene, hydrophobic organic compounds, nonionic organics, hydrocarbons, mercury, cesium, selenium and perchlorate. Also presented are designs for systems to treat a variety of wastewaters, from cheese processors to slaughterhouses.

NATURAL WETLANDS FOR WASTEWATER TREATMENT IN COLD CLIMATES, edited by U. Mander and P. Jenssen. 2002. 248 pp.

(Published by WIT Press, c/o Computational Mechanics Inc., 25 Bridge ST, Billerica, MA 01821. 978-667-5841. WWW: <http://www.compmech.com> ISBN1-85312-859-7; \$139.00.)

This book includes 13 papers about the potential and use of "natural wetland ecosystems" for wastewater treatment in cold climate areas. Examples include 1) Minot, North Dakota's successful wastewater treatment facility for 46,000 residents that uses wetland cells planted with *Scirpus validus*, *Lemna*, *Potamogeton pectinatus*, *Vallisneria americana*, *Sagittaria latifolia* and *Typha latifolia*; 2) a nitrogen-removal wetland in Sweden, planted with *Carex* species, *Phragmites*, *Typha* species and *Scirpus lacustris*; 3) peat-mining water treatment in Finland; 4) heavy metal accumulation wetlands in Lithuania; and constructed wetlands in Germany; Estonia, Ukraine, and northern China.

NONNATIVE INVASIVE PLANTS OF SOUTHERN FORESTS - A Field Guide for Identification and Control, by J.H. Miller. 2003. 93 pp.

(Published by USDA Forest Service, Southern Research Station, POB 2680, Asheville, NC 28802. (No ISBN Number) (No ordering info.))

This medium-format book is perhaps the best, and certainly the most professionally produced, of the current crop of the genre, "ID books about invasive plants." Each of the 33 plants included are treated with multiple large format color photographs taken during various seasons of the life of the plant, including foliage, bark, flowers, and fruit. The photographs are excellent in themselves but they also have been properly scanned, *Photoshopped* and prepared for publication, resulting in very high quality reproduction; the many steps required for acceptable photo-reproduction are something that other government and academic publishers should learn to do.

Information about each plant includes detailed descriptions of all plant parts, the

ecology of the plant, and a list of similar-looking plants that it might be confused with. Also included are range maps for each invasive plant in southern forests. The last 25 pages of the book are a primer on how to control invasive plants in the wild, the various treatment methods carefully described and thoughtfully illustrated. Finally, detailed "prescriptions" for controlling each of the plants are presented.

Like so many government and academic issues, this one does not have an ISBN number or barcode, nor does it have a price or include ordering information.

This and other guides would do well to include this kind of "trade-required" information so that these informative publications may be distributed to and sold by real book stores, thus making the guides available to a much wider audience, including the interested general public, than is possible without the required information.

NATURE MANAGEMENT OF COASTAL SALT MARSHES, Interactions Between Anthropogenic Influences and Natural Dynamics, by P. Esselink. 2000. 253 pp.

(Published by Koeman en Bijkerk bv, Postbus 14, 9750 AA Haren, The Netherlands. ISBN 9036712947. Hardcover: 18 Euro plus S/H. Email: koeman.en.bijkerk@biol.rug.nl)

This published Ph.D. thesis focuses on the more-or-less man-made salt-marshes of the mainland coast of the Wadden Sea. The marshes were originally used for coastal protection, livestock and agriculture, but as they have become less profitable, they have been taken over to be used as nature reserves or parts of national parks. This study identifies management practices that will "conserve and enhance the conservation value of these salt marshes," taking into consideration that they have become major grazing grounds for geese and other herbivorous waterfowl. Special emphasis is placed on the relationships between plant development and succession and sediment accretion and marsh topography. A couple of case studies explore the dependency of the greylag goose, *Anser anser*, on a preferred native food, *Scirpus maritimus* and on the non-native salt marsh plant, *Spartina anglica*.

WEED ECOLOGY IN NATURAL AND AGRICULTURAL SYSTEMS, by B.D. Booth, S.D. Murphy and C.J. Swanton. 2003. 303 pp.

(Published by Oxford University Press, 198 Madison Avenue, New York, NY 10016. 1-800-451-7556. ISBN 0-85199-528-4. \$60.00 + S/H. WWW: <http://www.oup.com>)

Why do weeds occur where they do? is the question answered in this book. (No management or control stuff here.) "Ecology is central to our understanding of how and why weeds invade... This text presents ecological principles as they relate to weeds."

The book was "designed as a teaching text for a middleyear undergraduate course." In fact, it was designed to be a teaching tool as well: For the student: choose a weed of your choice; at the end of each chapter is a list of questions; summarize information about your weed that relates to each chapter; apply the ecological principles you learn; "by the end of the book, you will have created a case history of your chosen weed." For the instructor: the material in the book is to be covered one chapter per week and can be covered in a single-term course.

Subjects include, introduction to weed ecology; population ecology, structure and dynamics, reproduction and life history; interactions between populations, competition, allelopathy, herbivory, parasitism, mutualism; community ecology, diversity, structure, dynamics, succession, assembly, and plant invasions. Enjoy.

INVASIVE EXOTIC SPECIES IN THE SONORAN REGION, edited by B. Tellman. 2002. 460 pp.

(Published by the University of Arizona Press, 355 Euclid, Ste. 103, Tucson, AZ 85719; 520-621-1441. WWW: <http://www.uapress.arizona.edu> ISBN 0-8165-2178-6. Cloth, \$75.00 plus S/H.)

This book is a "synthesis of the information" presented at a 1998 symposium on the invasive species of the Sonoran Region, which includes the Gulf of California and its islands; the low and high deserts and grasslands of Arizona, Sonora and Baja; southeastern California and the lower

Colorado River through the Grand Canyon. Rainfall: from 3 to 15 inches a year. Temperature: from 15 to 120 degrees F. The book includes reviews of the history of human introduction of exotic species in the region, and case histories of various exotic plants and animals there. It concludes with several chapters on exotic species management and an overview of biological control.

One particularly noteworthy chapter is about what it takes to predict which introduced species are likely to become naturalized and invasive. This chapter, by R.N. Mack, is specifically about the Sonoran Region but its insights might well apply to any place where managers are faced with invasive plant management.

Among other things, the editor notes that "the lag time from introduction to naturalization to invasion can be more than one hundred years... African sumac (*Rhus lancea*), once considered a relatively harmless landscape exotic shrub, has recently begun spreading at an alarming rate, most often along washes." Also that *Eucalyptus microtheca*, first introduced in the 1880s, has waited until now to start spreading on its own.

INVASIVE AQUATIC SPECIES OF EUROPE. Distribution, Impacts and Management, edited by E. Leppakoski, S. Gollasch and S. Olenin. 2002. 583 pp.

(Published by Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061. ISBN 1-4020-0837-6. \$139.00 plus S/H.)

This book represents the "first attempt to provide an overall picture of aquatic species invasions in Europe." The species lists, tables and references are searchable at <http://www.ku.lt.nemo/EuroAquaInvaders.htm>

Sections of the book include 1) Who is Who Among Nonindigenous Species, a selection of reviews about aquatic invaders of all types; 2) Vectors, or how exotics get around; 3) Regional Overviews, of various seas, coasts and rivers of Europe; 4) Impacts, ecological in nature; 5) Risk Assessment, methodology; 6) Treatment Measures, of ballast water; and 7) Databases, on aquatic alien species of Europe.

THE WILD ORCHIDS OF NORTH AMERICA, North of Mexico, by P.M. Brown, with illustrations by S. Folsom. 2003. 256 pp.

(Published by the University Press of Florida, 15 NW 15 ST, Gainesville, FL 32611-2079; 1-800-226-3822. WWW: <http://www.upf.com> ISBN 0-8130-2572-9. Cloth, \$49.95; Flexibind, \$27.95.) Review by Colette Jacono.

This handy softbound book effectively provides an alphabetical list of the 233 species of orchids, their many variants, forms and hybrids, in the United States and Canada. Lacking species descriptions or detailed accounts, this sophisticated reference might better have been titled "An Illustrated Checklist of the Wild Orchids..." The illustrations are fine drawings (though much reduced) and, regrettably, mediocre photographs. Geographical ranges and sundry comments provide interest. Enormous effort has been put into providing concise synonymy and taxonomic references, suggesting that this handbook may be of more interest to the orchid specialist than to the general naturalist. Nevertheless, tucked away in the back of the book is a comfortable and easy to use field key that should be pleasantly rewarding for even the most non-specialized of orchid enthusiasts.

HERBICIDE HANDBOOK - Eighth Edition 2002, edited by W.K. Vencill. 2002. 493 pp.

(Published by Weed Science Society of America, 810 E. 10th ST, Lawrence, KS 66044-8897. ISBN 1-891276-33-6. \$65.00.)

Published periodically since 1967, this large format, easy-to-use reference is still THE BOOK on the subject of technical information about herbicides in production. This edition contains information on 140 chemicals, and is meant especially for research, teaching and extension personnel, as well as for industry and government. The listings are in alphabetical order by chemical name.

Information for each chemical includes common names; manufacturers; chemical structure; molecular formula and weight; physical description; density, solubility and other characteristics; general use; use precautions; behavior in plants; behavior in soil; detailed information on toxicological properties; and references.

TREE ISLANDS OF THE EVERGLADES, edited by F.H. Sklar and A. van der Valk. 2003. 541 pp.

(Published by Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061. ISBN 1-4020-1050-8. \$176.00 plus S/H.)

Anyone who has visited a tree island in the Everglades knows the meaning of *enchantment*. Being in one of these isolated sanctuaries - drive 50 miles that way, then wade 5 miles this way - is being in Shangri La, a hothouse paradise of rare and wonderful flowers and trees, birds, butterflies, bats and other animals, surrounded by a vastness of sawgrass and swamp lilies.

How do they come to be? Are tree islands safe from the human predilection to alter and "improve", the kind of predilection that is so evident in south Florida and the Everglades?

This book is not a travel-book, it's a scientific book full of graphs, charts and appendices. Turns out that very little study has been done in tree islands in the Everglades or in tree islands of other large wetlands of the world. This book presents the proceedings of the first symposium on the subject, Tree Islands of the Everglades, which was held in July, 1998 at Boca Raton, Florida. The purpose of the meeting was to begin to understand tree islands by laying out what is known about their geology, ecology and archaeology, and then to create a conceptual model of tree islands to "help identify threats to them and how they have or will impact tree island abundance, distribution and condition." The book presents 17 chapters.

LET'S GO AND LOOK AFTER OUR NATURE, OUR HERITAGE, by S.M. Haslam and J. Borg. 2002. 52 pp.

(Published by Ministry of Agriculture and Fisheries, Valletta, Malta. ISBN 99932-0-204-5.)

Talk about thinking globally and acting locally! This booklet is about why and how to declare a "Heritage Place" in the isles of Malta. It's a field guide for environmentalists, nature lovers, students, farmers and others, which informs them how to look at the landscape before their eyes - to value ruderal plant species; to respect ancient

stone walls and cart-ruts; to leave what's there rather than instantly give in to the impulse to develop or "create something different."

Here's food for thought, to help "spark off ideas." So what if the authors, at least one of whom is a world-famous scientist, are acting as proselytizers here? The goal of this booklet is to help the Maltese people to understand: "Keep Our Heritage Ours, Not A Copy Of Another Country's, Or Lost Altogether." Who says scientists shouldn't speak out simply, and unscientifically, in favor of natural and cultural heritage?

INSECTS AND OTHER ARTHROPODS THAT FEED ON AQUATIC AND WETLAND PLANTS, by T.D. Center, F.A. Dray, Jr., G.P. Jubinsky, and M.J. Grodowitz. 1999. 200 pp.

(Published by USDA Agricultural Research Service, Fort Lauderdale, FL. Technical Bulletin No. 1870. (No ISBN Number) For single free copies while they last, contact USDA-ARS, Invasive Plant Research Laboratory, 3205 College Avenue, Fort Lauderdale, FL 33314. To purchase, contact National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161; 703-605-6000.)

"The purpose of this manual is mainly to assist in the recognition of these plant-feeding insects and the damage that they cause." The manual includes not only the most common native insects of aquatic and wetland weeds, but also naturalized biological control insects.

Information and excellent large color photographs of native and biocontrol insects that feed on 17 native and non-native plants are presented. Information includes insect ID and history, biology and ecology, effects on host, and literature references. Examples of pictures you'll find include an egg of the duckweed fly and the fly resting on *Lemna* and *Wolffia*; alligator flag (*Thalia polygonum*) damage caused by the *Disonychine* flea beetle; an adult banded sphinx moth eating pollen from the flower of water primrose (*Ludwigia octovalvis*); and the usual shots of insects and damage on alligatorweed, cattail, hydrilla, water hyacinth, and several other plants.

Get your copy while you can.

THE INDUS RIVER - Biodiversity - Resources - Human-kind, edited by A. Meadows and P. Meadows. 1999. 441 pp.

(Published by Oxford University Press, 2001 Evans Road, Cary, NC 27513. ISBN 0195 779053. \$50.00 plus S/H. 1-800-451-7556. WWW: <http://www.oup-usa.org>)

This is the proceedings of a symposium held at the Linnean Society, London, July 13-15, 1994. It presents papers on all aspects of the mighty Indus River, which rises in the Himalayas near where China meets Afghanistan, and flows through the entirety of Pakistan, entering the Arabian Sea near Karachi. Section 1 concerns the biodiversity and management of plants and animals of the Indus (the Indus dolphin (*Platanista minor*) was a marine species that adapted into an entirely freshwater species. It used to freely swim the length of the river, but now, due to seven dams on the river, is confined to two relatively short sections); prospects and management of the mangrove, *Avicennia marina*, the predominant mangrove of the Indus delta; effects of pollution; "sustainable management"; and fisheries on the river. Section 2 discusses the Indus's geology and geological evolution, resources, hydropower development, and flooding management. Section 3 presents evidence of thousands of years of human habitation and use of the Indus, and perspectives for the future. One chapter presents a short review of thousands of years of poetry and song about the Indus.

BIOLOGICAL INVASIONS - Economic and Environmental Costs of Alien Plant, Animal and Microbe Species, edited by D. Pimentel. 2002. 369 pp.

(Published by CRC Press, POB 409267, Atlanta, GA 30384-9267. ISBN 0-8493-0836-4. \$129.95 plus S/H. 1-800-272-7737. WWW: <http://www.crcpress.com>)

Chapters are literature reviews about the economic impacts of non-native species. There is information about all sorts of pests, ranging from the papaya fruit fly to the European carp, from Reeves' muntjac to coffee rust, from the Argentine ant to *Melia azederach*. A final chapter deals with the impacts of the world's exotic diseases.

TIDAL MARSHES OF LONG ISLAND SOUND: Ecology, History and Restoration, edited by G.D. Dreyer and W.A. Niering. 1995. 73 pp.

(Published by the Connecticut College Arboretum, 270 Mohegan Ave, Box 5201, New London, CT 06320-4196. Bulletin #34. WWW: <http://arboretum.conncoll.edu> Email: arbo@conncoll.edu)

In 1994, tidal wetlands in parts of the lower Connecticut River were declared "Wetlands of International Importance" by the Ramsar Convention. However, it was the 1961 Connecticut College Arboretum Bulletin No. 12 that sounded the first loud alarm that the state was losing an acre a day of tidal marshes to coastal development, and, subsequently, Connecticut's 1969 Tidal Marsh Act which stopped the destruction of that state's tidal marshes, and which began serious research and preservation efforts. This bulletin represents the culmination of several decades of work to protect and restore tidal marshes. Included are chapters on the geologic history of Long Island Sound; the evolution and development of tidal marshes; tidal wetland ecology; human impacts; tidal wetland restoration; and speculations about the future.

COMMON GRASSES OF FLORIDA AND THE SOUTHEAST, by L.L. Yarlett. 1996. 168 pp.

(Published by the Florida Native Plant Society, POB 6116, Spring Hill, FL 34606. WWW: <http://www.fnps.org> . ISBN 1-885258-05-6)

This book provides pretty good information on the identification, distribution and environmental significance of more than 100 grasses, native and non-native. Each plant also is treated with a southeast U.S. distribution map. Some line drawings accompany the plant descriptions, and color photographs are provided in the center pages of the book (small photos, in the old style of economy books). The book includes a good schematic showing the differences between grasses, sedges and rushes. It also provides good comparison photos of the inflorescences of nine tribes of grasses.

THE NAMES OF PLANTS, by D. Gledhill. 2002. (3rd ed.) 326 pp.

(Published by Cambridge University Press, 40 West 20th St., New York, NY 10011-4211. ISBN 0-521-52340-0. \$25.00 (paperback) plus S/H. WWW: <http://www.cambridge.org>)

Eleocharis comes from Greek, *heleo*, meaning "marsh," and *charis*, meaning "beauty." *Precatorius* of *Abrus precatorius* (rosary pea), means "pertaining to prayer." *Nephrolepis* means "kidney scale," the shape of the indusia of the sori of certain ferns, such as *Nephrolepis cordifolia*.

This interesting book shows that botanical names have come from former common names, and that English plant names derive from about a dozen other languages. The author describes the rules of nomenclature and botanical terminology, but the most fun part is the alphabetized 300-page glossary for looking up names and name parts.

Paederia means "bad smell." *Nuphar* comes from the ancient Latin, *nenuphar*, which was taken by the Persians to mean "water-lily." *Bidens* refers to "two teeth," which are the scales found at the fruit apex...

FLOOD PULSING IN WETLANDS - Restoring the Natural Hydrological Balance, edited by B. Middleton. 2002. 308 pp.

(Published by John Wiley & Sons, WWW: <http://www.wiley.com> ISBN 0-471-41807-2.)

The flood pulse concept has to do with seasonal changes in water levels in rivers, salt marshes and mangrove swamps, and the relationships of flood pulsing to production, decomposition and consumption. This book is a compilation of research in the field of wetlands restoration involving the use of flood pulsing. Included are descriptions of reduced pulsing due to projects in the American southwest; vegetation and fish declines caused by the absence of pulsing in the middle Rio Grande; the effects of dams and levees on plants in the Illinois River; and "the most famous case concerning the use of flood pulsing in the restoration of an entire landscape": the Kissimmee River floodplain ecosystem in Florida.

AQUATIC AND WETLAND PLANTS OF THE WESTERN GULF COAST, by C. D. Stutzenbaker. 1999. 466 pp.

(Published by Texas Parks and Wildlife Press. WWW:<http://www.tpwd.state.tx.us/news/press/> ISBN 1-885696-31-0)

The western Gulf Coast extends from the Pearl River south and west to the Rio Grande, more or less from New Orleans to Brownsville, TX. In this large-format book, the native and non-native aquatic and wetland plants are arranged according to growth characteristics: free-floating; rooted and rootless submerged, rooted with floating leaves, emergents with blue flowers, etc. Very good photos are in B/W, accompanied by line drawings. Each plant is described by habitat, wildlife values, propagation, management and similar species.

ADVANCES IN MEXICAN LIMNOLOGY: Basic and Applied Aspects, edited by J. Alcocer and S.S.S. Sarma. 2002. 228 pp.

(Published by Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061. ISBN 1-4020-0621-7)

Included in this Proceedings from Mexico's first National Limnological Conference (1999) are 14 papers (reprinted from *Hydrobiologia* v 467, 2002) on basic and applied limnology of Mexico. Included is information about two new species of freshwater crustaceans; a new fairy shrimp from the desert; the microstructure of a cave troglodyte; phytoplankton of caves; phytoplankton of lakes; zooplankton; oligochaetes; fish of Lake Patzcuaro; birds of a central plateau reservoir; remote sensing; and data about the water quality of Lake Chapala, Mexico's largest lake.

AQUATIC AND WETLAND PLANTS OF SOUTHWESTERN UNITED STATES (Returned to Print), by D.S. and H.B. Correll. 2002. 2 Volumes, 1,777 pp.

(Published by Blackburn Press, POB 287, Caldwell, NJ 07006, 973-228-7077, Fax 973-228-7276, \$124.95. ISBN 1-930665-52-0 <http://www.blackburnpress.com/aqandwetplan.html>)

Books - Cont'd.

Originally published in 1972, and reissued in 1975, this standard in the field has been returned to print unchanged. The authors identify ferns and flowering plants in aquatic and wetland habitats of Arizona, New Mexico, Oklahoma, and Texas. However, many of the plants described extend far beyond this range. The volumes include taxonomic treatments of approximately 2,100 species and almost 800 pages of excellent line drawings. Common names are given for each species.

by P.H. Nienhuis and R.D. Gulati. 2002. 233 pp.

(Published by Kluwer Academic Publishers, POB 17, 3300 AA Dordrecht, The Netherlands, +31 (0)78-6576266. US\$91., GBP 61, Euro 95.)

Contributions to this book are from invited Dutch experts in ecological restoration of aquatic and semi-aquatic ecosystems. The volume contains 10 case studies, roughly covering all such ecosystems in the Netherlands, and includes coastal areas, salt marshes, rivers, lakes, fens, streams, wetlands, and dune slacks.

Invasives, edited by C.R. Veitch and M.N. Clout. 2002. 414 pp. (Occasional Paper of the IUCN Species Survival Commission No. 27)

(Available from IUCN Publications Services Unit, 219c Huntingdon Rd, Cambridge CB3 0DL, UK, +44 1223 277894, E-mail: books@iucn.org, WWW: www.iucn.org/bookstore, US\$36.75 GBP 24.50)

Papers and abstracts from the International Conference on Eradication of Island Invasives held at the University of Auckland, 19-23 February 2001. The conference focused on the eradication of invasive species from islands: methods used and results achieved. Papers discuss the eradication of cats, rats, rabbits, goats, possums and other mammals, insects, amphibians, and grasses and other invasive plants.

ECOLOGICAL RESTORATION OF AQUATIC AND SEMI-AQUATIC ECOSYSTEMS IN THE NETHERLANDS (NW EUROPE), edited

TURNING THE TIDE: THE ERADICATION OF INVASIVE SPECIES - Proceedings of the International Conference on Eradication of Island

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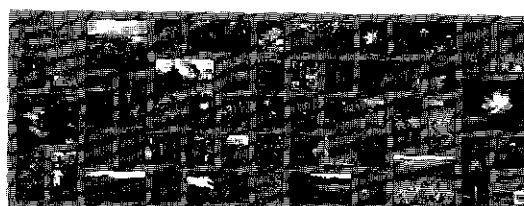


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Closest relatives of *Pistia stratiotes* resolved with combined chloroplast and mitochondrial DNA sequences

by Dr. Susanne Renner, Menzinger Strasse 67, D-80638 Munich, Germany, renner@lrz.uni-muenchen.de, and Dr. Libing Zhang, Department of Biology, Colorado State University, Fort Collins, CO 80523, Libing.Zhang@ColoState.edu

Dr. Susanne Renner and Li-Bing Zhang, systematists at the Missouri Botanical Garden and the University of Missouri-St. Louis, have identified the closest relatives of *Pistia stratiotes*. They used sequences from three sections of chloroplast DNA, called 'introns' and 'spacers' because they are inserted between and inside genes, and one intron in a mitochondrial gene. (A manuscript on their discovery has been submitted and the sequences have been made public in the genetic sequence database GenBank, an annotated collection of all publicly available DNA sequences which also contains the human sequence.)

Previous hypotheses about the relationships of *Pistia* had to be based on morphology, which in the case of *Pistia* is difficult to interpret because of the much-condensed reproductive structures. The great morphological distinctness of *Pistia* is reflected in classifications of Araceae, which place this single species in a subfamily or tribe by itself.

The figure below is a phylogenetic 'tree' (drawn as a circle) based on all combined sequences. The tree represents the most likely relationships between *Pistia* and its closest relatives in the Araceae family, given the data and a model of sequence evolution based on the specific sequences in the analysis. The numbers on the branches represent statistical confidence (100 is the highest possible level).

Pistia stratiotes appears in the lower right, and it is the sister group to the entire circle of genera 'above it' in the tree. In other words, *Pistia* is not closely related to any single living species. Rather, its ancestor diverged from the ancestor of all the genera in the tree before those other genera had diversified.

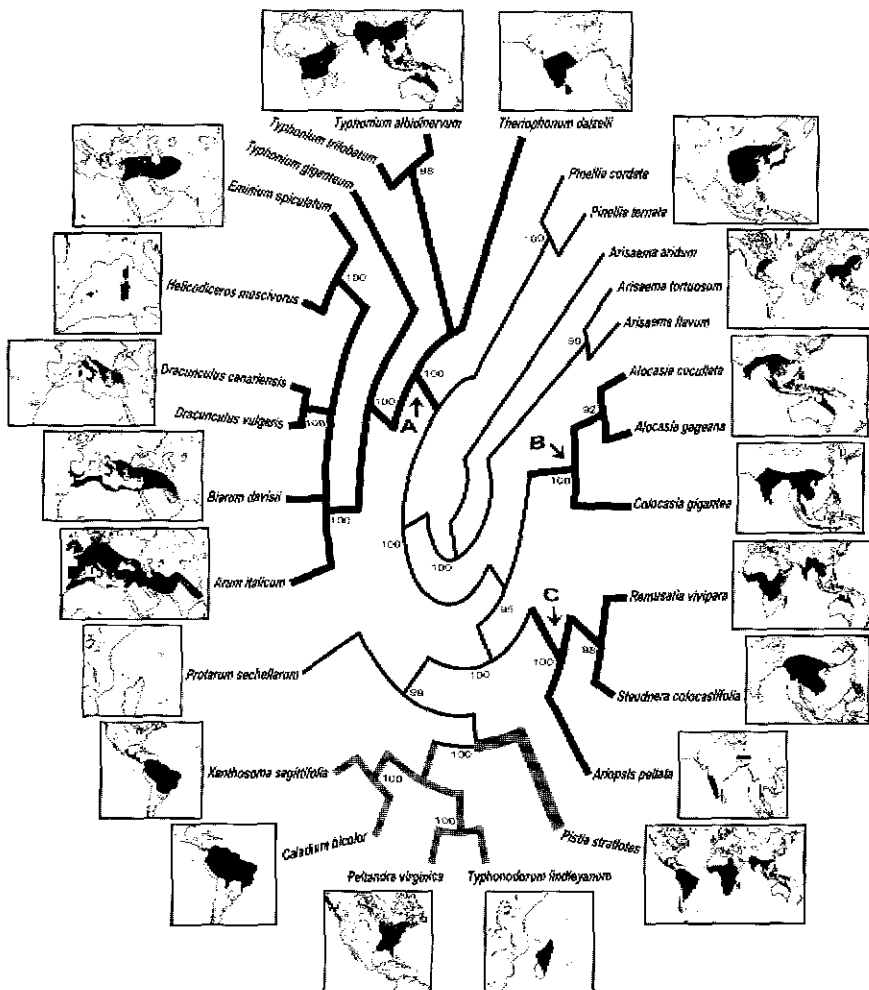
Most of the genera in the 'tree' have but a few species, but a few, such as jack-in-the-pulpit (*Arisaema*, with 150 species), are species rich. The distribution maps next to the genera show that the species related to *Pistia* all occur in the Old World tropics. The only

exceptions are three species of jack-in-the-pulpit that entered North America across the Bering land bridge, sometime in the Miocene as indicated by 16-18 million year old fossils from Spokane. The oldest fossils of *Pistia* are seeds from the Late Oligocene/Early Miocene (24 million years) of Europe and Russia. These fossils, however, 'underestimate' the true age of *Pistia* because some of the genera in the *Pistia* sister group have 45 million year old fossils. Also, the group at the very bottom of the tree, *Peltandra* (in Florida) and *Typhonodorum*, are known from 60 million year old leaves from the Late Paleocene/Eocene of eastern Europe, Kazakhstan, North Dakota, and Tennessee (Wilde et al., in press).

The combined molecular and fossil evidence led the researchers to infer that the early evolution of *Pistia* took place between 60 and 45 million years ago somewhere around the Tethys sea, that is the proto-Mediterranean sea which opened into the Indian Ocean, and that *Pistia* in geologic terms may be a relative newcomer to the New World tropics. More detailed comparisons of gene sequences from different populations of *Pistia* are needed to test whether New World *Pistia* populations on average are younger than Old World *Pistia* populations. It is tricky, however, because *Pistia* is so mobile, and there is likely to have been much local extinction, followed by re-invasion.

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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 Winter 2003.

The database contains more than 60,000 citations. To use the free APIRS database online, go to <http://plants.ifas.ufl.edu/> and click on APIRS Online Database.

To obtain articles, contact your nearest state or university library, or a document delivery service (see page 3).

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MEETINGS

INVASIVE PLANTS CONFERENCE.

August 6-7, 2003. University of Pennsylvania.

"This conference brings together experts from the front lines of research, the green industry, policy, funding, education, and on-the-ground management who are working together to solve this problem." Presented by the Mid-Atlantic Exotic Pest Plant Council, Morris Arboretum of the University of Pennsylvania, The Nature Conservancy, Penn State Cooperative Extension, and others.

Contact: The Morris Arboretum, 215-247-5777 x159 or www.upenn.edu/paflora or mabxeduc@pobox.upenn.edu

8th CONFERENCE OF THE INTERNATIONAL SOCIETY FOR PLANT ANAEROBIOSIS (ISPA).

September 20-24, 2004. Perth, Western Australia.

The ISPA is composed of scientists interested in the mechanisms of acclimation and adaptation of plants to poorly aerated environments. Plants studied include those inhabiting marine, aquatic, salt marsh, and wetland environments; and terrestrial ecosystems subjected to seasonal episodes of waterlogging or submergence (including crop species and agricultural systems). See <http://www.ibba.cnr.it/ispa/>

Contact: Tim Colmer, University of Western Australia, School of Plant Biology, 35 Stirling Highway, Crawley 6009 WA, Australia, tdcolmer@cyllene.uwa.edu.au

30th ANNUAL NATURAL AREAS CONFERENCE.

September 24-27, 2003. Monona Terrace Convention Center, Madison, WI.

"Defining a Natural Areas Land Ethic" is the theme of the conference hosted by the Natural Areas Association and the Wisconsin Department of Natural Resources' Endangered Resources Program. Presentations on natural area identification, protection and management, restoring natural communities, rare species conservation, developing a land ethic, and forums on landscape ecology, large river systems, fire ecology, and private lands protection. On September 27th, an **Invasive Plants Symposium** will be co-hosted by the Invasive Plants Association of Wisconsin to focus on identification, management and control techniques for invasive plants of the upper Midwest.

Contact: www.naturalarea.org or Thomas Meyer, thomas.meyer@dnr.state.wi.us or 608-266-0394.

27th ANNUAL FLORIDA AQUATIC PLANT MANAGEMENT SOCIETY TRAINING CONFERENCE.

October 14-16, 2003. Adam's Mark Hotel, Daytona Beach, FL.

This year's FAPMS conference will include a Resource Demonstration with potential programs on plant identification, venomous insects, GIS technology, and snake identification. An Aquatic Plant Manager of the Year is selected and awarded, and papers are solicited from "field applicators" as well as the traditional researchers.

Contact: David Farr, FAPMS Treasurer, dfarr@co.volusia.fl.us or 386/424-2920.

30th ANNUAL CONFERENCE ON ECOSYSTEMS RESTORATION AND CREATION.

October 30-31, 2003 (conferences previously held in May). Hillsborough Community College, Tampa, FL.

The annual conference provides a forum for the nationwide exchange of results of the latest scientific research on restoration, creation, and management of not only freshwater and coastal wetland systems but also total ecosystems including upland and transitional areas. Topics include freshwater and marine wetland systems; upland systems, marsh, mangrove, and seagrass restoration; upland and mixed ecosystem restoration; mitigation, permitting and regulatory policies; mine reclamation, and management techniques.

Contact: Frederick Webb, fwebb@hccfl.edu or pcannizzaro@hccfl.edu or www.hccfl.edu/depts/detp/eco-conf.html or 813-757-2148.

INVASIVE PLANTS IN NATURAL AND MANAGED SYSTEMS: LINKING SCIENCE AND MANAGEMENT.

November 3-7, 2003. Wyndham Bonaventure Resort, Ft. Lauderdale, FL.

A joint conference and workshop, co-hosted by the Ecological Society of America and the Weed Science Society of America in conjunction with the 7th International Conference on Ecology and Management of Alien Plant Invasions.

Contact: <http://www.esa.org/ipinams-emapi7/>

23rd INTERNATIONAL SYMPOSIUM OF THE NORTH AMERICAN LAKE MANAGEMENT SOCIETY.

November 4-8, 2003. Foxwoods Resort, Mashantucket, Connecticut.

Protecting Our Lakes' Legacy is the theme for the NALMS 2003 symposium. Learn together and share cases of real world projects with citizens, scientists, lawmakers and lake managers.

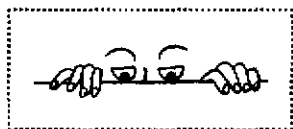
Contact: www.nalms.org

WASTEWATER HYGIENISATION IN CONSTRUCTED WETLANDS, PONDS AND RELATED SYSTEMS.

November 6-7, 2003. UFZ Centre for Environmental Research, Leipzig-Halle, Germany.

"Providing unpolluted water turns out to be an increasing problem for many countries throughout the world. Since natural resources are restricted, the main policy to tackle this problem is to improve water management and to reuse adequately treated wastewater. . . The purpose of our meeting is to summarize the present knowledge and to discuss solutions optimizing the processes."

Contact: www.ufz.de/spb/phyto or hygienisation@rz.ufz.de or +49 341/235-2413. Conference will be in English.



APIRS Picks:

The population of *Myriophyllum quitense* (Haloragaceae) at Laguna Toro in the high Andes of Bolivia was noteworthy for possessing some unusual characteristics. Numerous individuals (ca. 5-10% of the population) were noted with leaves arrayed in 5-merous whorls. By contrast, *M. quitense* typically possesses leaves in 4-merous (occasionally 3-merous) whorls (Orchard 1981). Leaves in 5-merous whorls have only been reported for the species from a single herbarium specimen from North America (Orchard 1981), and, more recently, from Cochabamba's Laguna Alalay (Ritter and Crow 1998).

Ritter, N.P. 2000. *Biodiversity and Phytogeography of Bolivia's Wetland Flora*. Ph.D. Thesis, University of New Hampshire, 399 pp.

Where the species [*Nelumbo lutea*] occurs in pure stand the rhizomes form a complex underground network which totals a length of 45 miles per acre. The rate of colonization is phenomenal since a small patch was observed to extend itself radially an average of 45 feet in one growing season. This represents a growth rate of 0.23 feet per day for the entire summer. On this basis six properly spaced patches of lotus (10 feet across) would produce an acre of lotus during one growing period.

Hall, T.F., and Penfound, W.T. 1944. *The Biology of the American Lotus, Nelumbo lutea (Wild.) Pers.* American Midland Naturalist 31(3):744-758.

Management of nonindigenous species is a crucial aspect of maintaining native biodiversity and normal ecosystem functions. We attempt to guide researchers in developing projects that will be of use to conservation practitioners, tangibly improving applied conservation measures. We advocate a directed approach for conservation research to aid in prioritizing nonindigenous species for intervention by resource managers. This approach includes outlining what needs to be known to make

such relative judgments about the impacts of nonindigenous species and the most promising methods by which to obtain such information. We also address active measures that should be taken once priorities have been set, highlighting the roles of risk assessment and research in improving control efforts. Ultimately, a better match between research and practical conservation needs should result in more effective reduction of the effects of nonindigenous species on native species.

Byers, J.E., Reichard, S., Randall, J.M., et al. 2002. *Directing Research to Reduce the Impacts of Nonindigenous Species*. Conservation Biology 16(3):630-640.

We present the results of a 14-year common garden experiment with the Chinese Tallow Tree (*Sapium sebiferum*) from its native range (Asia), place of introduction to North America (Georgia) and areas colonized a century later (Louisiana and Texas). Invasive genotypes, especially those from recently colonized areas, were larger than native genotypes and more likely to produce seeds but had lower quality, poorly defended leaves. Our results demonstrate significant post-invasion genetic differences in an invasive plant species. Post-introduction adaptation by introduced plants may contribute to their invasive success and make it difficult to predict problem species.

Siemann, E., Rogers, W.E. 2001. *Genetic Differences in Growth of an Invasive Tree Species*. Ecology Letters 4:514-518.

In an effort to help modernize neotropical plant studies and to make GIS more accessible to botanists, The New York Botanical Garden has developed a digital base map of the Americas with multiple registered map layers that can be superimposed in any combination and may be used to create digital distribution maps from collection lists for dissemination and analysis. The Americas Base Map may be utilized by any botanist affiliated with a nonprofit institution and with access to ArcView®, and it is available on CD or in electronic form by request.

http://www.nybg.org/bsci/digital_maps/

Bletter, N., Janovec, J., Brosi, B., et al. 2003. *A Digital Basemap for Studying the Neotropical Flora*, The New York Botanical Garden.

We report that an eelgrass bed *Zostera marina* L. at the Aland Islands, northern Baltic Sea, is dominated by a single genotype which extends over an area of approximately 160x40 m. . . To our knowledge, it represents the largest marine plant identified thus far. Based on estimates of horizontal rhizome growth rates, this clone may be more than 1000 years old. The remarkable phenotypic plasticity of a single genotype which dominates this site illustrates that there is no simple one-to-one relationship between genetic diversity and population persistence in changing and stressful environments.

Reusch, T.B.H., Bostrom, C., et al. 1999. *An Ancient Eelgrass Clone in the Baltic*. Marine Ecology Progress Ser. 183:301-304.

Journals for Sale

The Aquatic Plant Management Society, Inc. (APMS) has complete sets of back issues of the *Journal of Aquatic Plant Management* for sale (four issues are available as photocopies only.) The set of journals represents forty years of research into the management of aquatic plants. The semi-annual *Journal* was first published in August 1962, with the most recent issue being Volume 41, January 2003.

Sets are priced at \$250.00, plus postage. The average cost of shipping to a U.S. address is \$25.00 (parcel post rate), and to an international address \$35-\$40 (economy rate). The APMS treasurer can accept credit cards or checks as payment.

Contact Dr. Linda Nelson, USAERDC-WES, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, 601.634.2656. E-mail: Linda.S.Nelson@erdc.usace.army.mil

New Journal

Conservation in Practice, a magazine of conservation science, policy, and practice and their on-the-ground implications, from the Society for Conservation Biology in partnership with Conservation International, The Nature Conservancy, the U.S. Fish & Wildlife Service, the National Park Service, World Wildlife Fund, and NOAA.

Society for Conservation Biology, 4245 N. Fairfax Dr., #400, Arlington, VA 22203, 703-276-2384, www.conservationbiology.org

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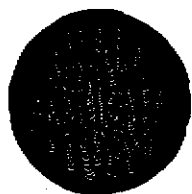
This is the newsletter of the Center for Aquatic and Invasive Plants and the Aquatic, Wetland and Invasive Plant Information Retrieval System (APIRS) of the University of Florida Institute of Food and Agricultural Sciences (IFAS). Support for the information system is provided by the Florida Department of Environmental Protection, Bureau of Invasive Plant Management, 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

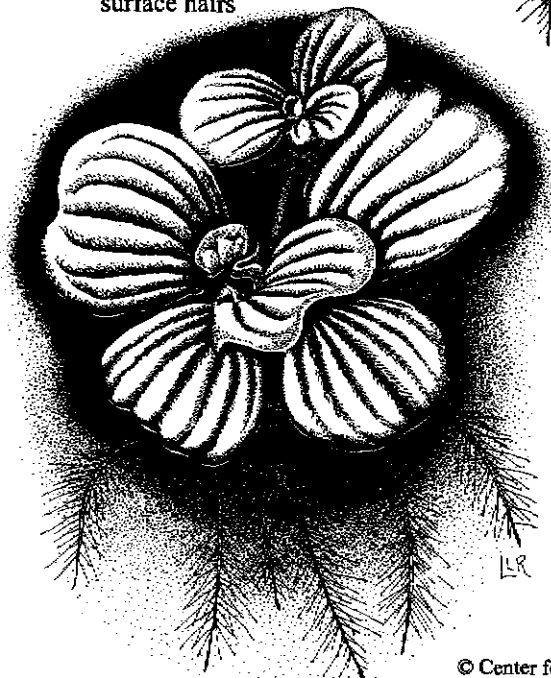
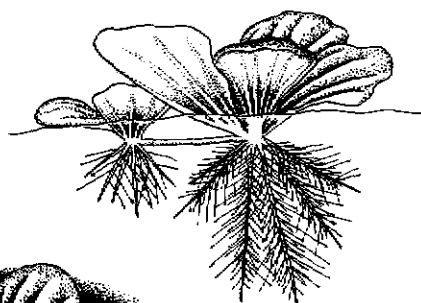
AQUAPHYTE is sent to managers, researchers and agencies in 71 countries around the world. Comments, announcements, news items and other information relevant to aquatic and invasive plant research are solicited.

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

Pistia stratiotes
Water lettuce



surface hairs



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Learn about *Pistia stratiotes* and its closest relatives in a phylogenetic 'tree' on page 9.