WaterWorks

A Newsletter Highlighting Aquaculture and Pond Management Programs of the University of Florida

University of Florida Cooperative Extension Service / Institute of Food and Agricultural Sciences Volume 3 Number 2 1999

Calendar of Events

See page 7 for more in-depth information concerning these workshops, courses and seminars.

October 6
Clam Crop Insurance Workshop
High School Auditorium/Cedar Key, FL
Leslie Sturmer 352/543-5057

October 7
Clam Crop Insurance Workshop
Dixie County Courthouse/Cross City, FL
Leslie Sturmer 352/543-5057

October 19 — 20
Fish Health Management Short Course
Tropical Aquaculture Lab/Ruskin, FL
Roy Yanong 813/671-5230

November 8
Managing Ponds for Fishing Workshop
Hillsborough County Extension Office/Seffner, FL
John Brenneman 941/533-0765

February 21, 2000
Fish & Fisheries Management Seminar
Keystone Community Center/Odessa, FL
John Brenneman 941/533-0765

Developing Florida's Marine Food Fish Industry

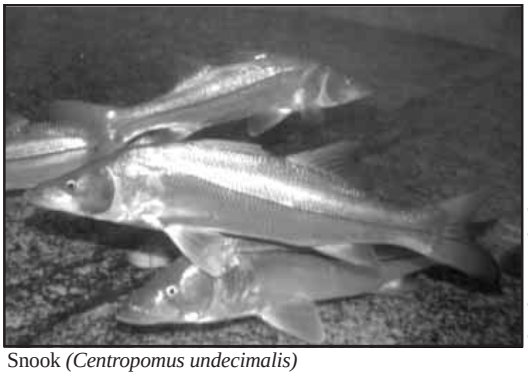

Photo by Joe Richard

Snook *(Centropomus undecimalis)*

Fish farmers will be pleased to know that they now have a new resource available. *Developing Florida's Marine Food Fish Industry* was recently published — a report based on two days of deliberations by experts in the finfish industry.

Three separate panels of experts representing production, marketing and regulation discussed the potential to successfully culture and market 35 species of marine finfish.

During these sessions it was agreed that Florida offers fish farmers several advantages including year-round warm temperatures; availability of high quality water; ready access to local, regional, national and global markets; and excellent technical and business support from public and private sources.

Fish identified by workshop participants as being the best candidates should have:

- minor knowledge gaps in production, marketing or regulation,
- high market value,
- wide salinity tolerance,
- fast growth rate,
- been a native species,
- the capability of being grown intensively.

Fish species that most nearly satisfied these criteria are red drum, flounder, mahi-mahi, grouper, pompano, mutton snapper, sturgeon and common snook.

The first four species (red drum, flounder, mahi-mahi and grouper) were highly ranked throughout the prioritization process. The next four (pompano, mutton snapper, sturgeon and common snook) are considered extremely high-value products that meet many of the critical considerations, but fell short because of low scores in certain areas.

Caution is advised when considering a new crop species; farmers are strongly encouraged to study the entire report

Continued on page 3.

UNIVERSITY OF FLORIDA
Institute of Food and Agricultural Sciences
Department of Fisheries and Aquatic Sciences

design team

The Cooperative Extension Service uses State Major Programs to provide guidance and direction to extension efforts in Florida. Each major program has a design team responsible for establishing priorities, implementing extension programs, and evaluating impacts. Aquaculture and Pond Management is a State Major Program, with the following design team members:

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DEPARTMENT OF AGRICULTURAL & BIOLOGICAL ENGINEERING

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MITCHELL AQUACULTURE FARM

(Blountstown))

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State Aquaculture Contact
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Debbie Britt Pouder
Aquaculture Biologist
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ufmaf2@mail.dms.state.fl.us

TROPICAL AQUACULTURE LABORATORY

(Ruskin)

Craig Watson
813/671-5230
caw@gnv.ifas.ufl.edu

Roy Yanong
813/671-5230
rpy@gnv.ifas.ufl.edu

There are many other faculty who assist with extension and research in aquaculture and pond management and we will be periodically focusing on their efforts. We encourage you to become familiar with the design team, its role in our programs, and how the faculty can collectively or individually assist you.

Student Involvement at UF

Undergradate and graduate students are an important part of the teaching, research, and extension programs at the University of Florida. Involvement of individual students in these programs is highlighted in each issue of **WaterWorks.**

Dan VanGenechten was born in Detroit, Michigan and as soon as he was old enough to hold a fishing rod, he developed a passion for the sport and the outdoors.

After graduating from Chippewa Valley High School in Mt. Clemens, Michigan (in 1991), he attended the University of Michigan (UM), Ann Arbor. It was at UM that he began to foster the idea of fisheries biology as a career. During those years, Dan served as a work-study student at the U.S. Geological Survey's Great Lakes Science Center. He also worked with the Idaho Fish and Game Department and the Michigan Department of Natural Resources during his summers.

In January, 1997, Dan decided to pursue a graduate degree in fisheries science, and enrolled in UF's Department of Fisheries and Aquatic Sciences, Gainesville. While at UF, Dan served as a teaching assistant for undergraduate and graduate courses.

Dan has been involved in a wide range of research in Florida, including:

- assessment of agricultural best management practices on water quality and invertebrates;
- invertebrate monitoring of the lower St. Johns River;
- relationships of juvenile and small fish populations to season and salinity in Alligator Pass at the Suwannee River;
- Gape limitation (mouth size restriction) on forage food for peacock bass in south Florida;
- Gear comparison studies examining decapod and small fish communities in three habitats of the Crystal River estuary.

Dan VanGenechten taught aquatic ecology and fishing basics to thousands of students (pre-K through college, exchange students, and professionals) as part of UF/IFAS' fisheries extension program.

Dan's timely masters thesis research entitled, ***Effects of Habitat and Season on Fish Communities of the Wekiva River System, Florida,*** deals with development- related disturbances of Florida's sensitive natural areas.

To summarize from his thesis:

"The outstanding quality of the Wekiva River has endured despite surrounding development associated with expansion of the Orlando metropolitan area. As urbanization within the watershed continues, groundwater withdrawal-related stream flow reductions could eventually adversely influence stream-dwelling fish communities and their habitats."

Throw traps and blocknets were used to document fish species present. Research revealed the types of habitat used by different species, in various life history stages, and in which season. The influence of low and high water levels on fish habitat selection was also monitored.

Rapid growth in Florida, with its attendant urbanization and watershed development, will likely adversely affect spring-fed aquatic environments such as the Wekiva River, unless it is controlled.

Measurements of long-term trends in abundance and biotic integrity of Florida's fish communities are needed for understanding the potential impacts of future water level reductions on fish and aquatic plant communities. It will also provide ideas for preventative management actions.

Under the guidance and direction of his major professor, Dr. Chuck Cichra, Dan will finish his thesis this semester, and receive his Master of Science degree in December.

After nearly three exemplary years, Dan begins working this month as a fisheries biologist for the Florida Fish and Wildlife Conservation Commission (FWC) in Melbourne.

Good luck with the new job at FWC, Dan!

Chuck Cichra
352/392-9617 ext 249

New Aquaculture Division Established

Sherman Wilhelm was recently appointed as director of the newly created Division of Aquaculture in the Florida Department of Agriculture and Consumer Services (FDACS).

Wilhelm joined FDACS in 1986 after graduating with a law degree from the University of Florida. He served as staff counsel for Commissioner Doyle Conner and continued in that role for Commissioner Crawford.

The new division was authorized this year by the State Legislature. It brings together regulatory activities from both marine and freshwater aquaculture — previously handled by DEP's Bureau of Marine Resource Regulation and Development, and FDACS Bureau of Seafood and Aquaculture, respectively. Florida now has the largest state agency based unit in the country, federal or otherwise, dedicated solely to aquaculture.

"The merging of these units creates a one-stop agency for those involved in aquaculture, whether saltwater or freshwater," Crawford said. "This will greatly aid in the further development of Florida aquaculture, which is already one of the fastest-growing sectors in agriculture."

The new Division of Aquaculture combines 41 employees from the DEP bureau involved in marine fisheries and nine FDACS employees who were primarily involved in compliance monitoring of freshwater aquaculture.

Promotion and marketing duties of all aquaculture products will remain with the Bureau of Seafood and Aquaculture.

The DEP Bureau of Marine Resource Regulation and Development was involved in testing water quality in shellfish harvesting areas, replenishing oyster beds, assessing sites for shellfish production, inspecting shellfish processing plants, and issuing aquaculture certificates of registration. These activities will continue within the new Division of Aquaculture.

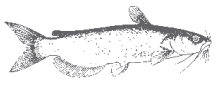
Compliance monitoring of freshwater aquaculture activities, including production of tropical fish, food fish (such as catfish), and aquatic plants has also been assumed by the new Division of Aquaculture.

Meanwhile, Best Management Practices (BMPs) are being developed by FDACS for all aquaculture producers, who will be exempted from obtaining environmental permits when they follow the recommended practices. FDACS previously has been involved in developing BMPs for forestry and other agricultural activities.

"The new Division of Aquaculture will help streamline the regulatory process for all those starting or currently involved in aquaculture activities, while ensuring compliance with Best Management Practices," Crawford said. "This will encourage more efficient development of the industry to provide an abundant and wholesome supply of aquaculture products for consumers."

For more information, contact:
Sherman Wilhelm 850/488-3022
E-mail: wilhels@doacs.state.fl.us






Continued from page 1

Developing Florida's Marine Food Fish Industry

before taking any action.

While fish farming advantages are numerous in the Sunshine State, they are not always sufficient in guaranteeing success. Research and development is crucial to the process. The industry has tripled farm gate sales over the last ten years and much of this success can be attributed to the adoption of new production techniques and the successful culture of new species learned from research and development projects.

The report stated that consistent state or federal funding for integrated demonstration projects is needed. Collaboration is needed to solve problems and improve or develop production systems, such as:

- ponds
- tanks
- raceways
- cages and hybrid systems,
- spawning and hatchery techniques,
- micro-encapsulated feeds,
- batch plankton culture procedures,
- preventative aquatic animal health practices and product value.


redfish fingerlings

The new report, ***Developing Florida's Marine Food Fish Industry*** is available by contacting the:

Bureau of Seafood and Aquaculture
2051 East Dirac Drive
Tallahassee Florida 32310-3760
Phone: 850/488-0163 Fax: 850/922-3671
E-mail: williab@doacs.state.fl.us

Editor's Note: In addition to this resource, UF's Dept. of Fisheries and Aquatic Sciences can provide assistance to farmers who are considering a finfish crop. For more information, contact any of the Design Team extension faculty listed on page 2.

UF/IFAS Aquaculture and Pond Management Update

Tropical Aquaculture Laboratory

Ruskin

Ground-breaking for Nutrition/ Water Quality Laboratory and Hatchery

As of this writing, Hillsborough County has selected a contractor with the apparent low bid for construction of the nutrition lab, water quality lab, and the experimental hatchery. This building will include 4,000 square feet of enclosed, climate-controlled space, and 1,200 square feet of covered slab area for equipment storage and a workshop. If everything goes as planned, construction should be completed in January of Y2K.

Much of the equipment (tanks, filters, etc.) has either been purchased or donated (see Hartz Mountain news item), and is ready to be installed as soon as the building is complete.

Research Update

The Florida Tropical Fish Farms Association (FTFFA) recently funded two research projects at the Tropical Aquaculture Laboratory on behalf of the ornamental fish industry.

The first, entitled "Epidemiology of Gourami Diseases: A Statistical Examination of Factors which Contribute to Low Productivity and Disease Outbreaks" began in July and is designed to provide information which will help farmers maximize production of gouramis.

The second, entitled "In-vitro Culture and Chemotherapeutics for Cryptobiosis in Cichlids" will investigate important aspects of a parasitic disease in cichlids.

Hartz Mountain Donates $106,000 in Equipment to TAL

The Hartz Mountain corporation, one of the largest companies in the pet industry, recently closed their facility in Gibsonton, Florida.

Part of this facility was a research and development operation started by The Wardley Corporation—now merged with Hartz.

In an effort to promote research and education for the industry, over $106,000 worth of equipment was donated to our facility including tanks, aquaria, filters, power tools, and a lot of "miscellaneous" items (electrical supplies, nuts, bolts, etc.).

This kind of industry support is key to the success of the TAL, and Hartz Mountain's gift is greatly appreciated.

Use of Dimilin in Ornamental Fish Production Ponds

Ornamental fish producers experiencing problems with predacious or competitive pests such as glassworms, water beetles and anchor worms may have a new way of controlling the situation. It's called Dimilin 25W, manufactured by Uniroyal.

Dimilin is a synthetic, insect growth regulator, which inhibits the successful formation of chiton, the material used in forming exoskeletons—the hard outer covering of these organisms. It was initially approved in May, 1998 to include control of free-swimming anchor worm (*Lernia*) parasites in ornamental fish production ponds.

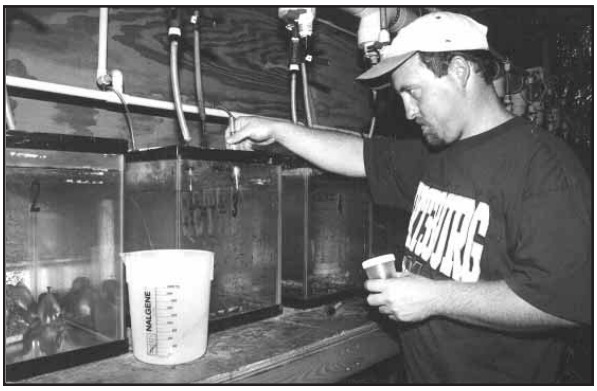
So, there was some interest in seeing if Dimilin would control various water pests with exoskeletons.

However, there was also concern that Dimilin would negatively impact zooplankton populations, which often serve as the food source for small ornamental fish.

While a thorough, highly-controlled experiment is still needed to prove results, observations from Uniroyal indicate that treated ponds had fewer or no pest species, and that zooplankton was only marginally impacted. Six treated ponds were compared with six untreated ponds, over a period of four weeks. Zooplankton and free-swimming invertebrates were compared for presence, size and overall quantity, on a visual observation basis (naked eye and with a stereo microscope).

Based on these observations, ornamental fish producers experiencing problems with predacious or competitive pests such as those mentioned above, may want to investigate Dimilin as a treatment. Dimilin is a restricted-use pesticide, and anyone using it is required to have a restricted-use pesticide applicator license to purchase or apply it.

Craig Watson
813/671-5230



Mitchell Aquaculture Demonstration Farm

Blountstown

Internship Program

The farm is proud to announce a new internship program, which will provide valuable staff support for programs while giving intern(s) an opportunity for technical and hands-on experience in a learning environment.

Pascale Nerette, a veterinarian from Montreal, Canada and Stephen Keltz, a recent Masters graduate from London, England, began in July and will work for six months assisting in all aspects of the farm. We're glad to have them aboard!

Sturgeon Nutrition Project

Andy Lazur and Debbie Britt Pouder recently received grant funding for a cooperative sturgeon nutrition project with Richard Miles of UF's Dairy and Poultry Sciences Dept. and Brian Hickson of the U.S. Fish and Wildlife Service's Warm Springs Regional Fisheries Center in Warm Springs, Georgia.

The project will generate information on practical feeding practices for fry and fingerlings, feeding maintenance requirements, and rate and effects of yeast-based protein on performance of native Florida sturgeon.

Grant funding was also received for support of Gainesville and Blountstown's captive, native sturgeon broodstock program. To evaluate lower cost and more locally available feeds, the farm recently concluded a Gulf of Mexico sturgeon feeding project comparing standard trout feed to hybrid striped bass and catfish feeds.

We evaluated not only growth of the fish on the three feeds of varying protein and fat content, but also feed cost per pound of fish grown. Another study evaluating production and economic feasibility of Gulf of Mexico sturgeon in two different tank systems will be completed in November. Growth performance will be evaluated, and an economic analysis will be performed in cooperation with Chuck Adams and David Zimet of UF's Dept of Food and Resource Economics.

Debbie Britt Pouder
850/674-3184

Shellfish Aquaculture

Cedar Key

Crop Insurance Available for Farmers

Clam farmers in Florida will be among the first aquaculturists in the United States to be eligible for federally subsidized insurance for their crops.

The Federal Crop Insurance Corporation recently approved a pilot program for clam growers in selected counties in Florida, South Carolina, Virginia, and Massachusetts for the 2000 through 2002 crop years. This culminates a year's work conducted by the United States Department of Agriculture (USDA) Risk Management Agency. It started with an exploratory session held at last year's Florida Aquaculture Association annual meeting in Cedar Key, and was followed by focus workshops and site visits during which industry members commented on draft policy provisions.

"These breakthrough programs can have a significant economic impact on our $138 million a year hard shell clam industry," said August Schumacher Jr., Under Secretary for USDA Farm and Foreign Agricultural Services. "This action will help ensure that clam producers are able to secure the credit they need to build and expand their operations."

The pilot program will provide financial protection from crop losses resulting from unavoidable damage. The new program is similar in concept to the USDA Farm Service Agency's Noninsured Crop Disaster Assistance Program (NAP), which is based on the inventory value of the crop. The key difference, however, is that the grower will select the amount of coverage, ranging from 50 to 75% of the crop inventory value, at 100% of the market value.

Premiums will be determined based on the amount of coverage selected. In addition to the buy-up program, catastrophic, or CAT coverage will be available providing protection for 50% of the crop inventory value at 55% of the market value.

Another plus for the growers is that the CAT program will not require a 35% area designation as the NAP program does.

Completely subsidized by the federal government, catastrophic coverage can be purchased by farmers at a fixed administrative fee. Clams in both the field nursery and grow-out phases, planted in either bottom bags or as bottom plants, will be eligible for coverage.

Clams in the land-based nursery phase will not be covered in the pilot program, but will still be eligible for protection under NAP. Causes of crop loss that will be insured include oxygen depletion, disease, freeze, hurricanes, increase or decrease of salinity, tidal wave, storm surge, or windstorm.

Counties in Florida where the pilot crop insurance program will be initiated include Brevard, Dixie, Levy, and Indian River. The sales closing date for the 2000 crop year is December 1, 1999.

Although administered by the USDA, crop insurance is sold and serviced by private insurance companies. Representatives from several reinsured companies met in Cedar Key last month with USDA Risk Management staff to review the final program policy and actuarial documents. Premium rates introduced at that meeting indicate that insurance protection will indeed be affordable.

To assist the industry in understanding this new program, several workshops are scheduled (see Calender of Events), during which USDA staff will be available to discuss the pilot program as well as give examples of coverage, indemnity payments, and costs.

Leslie Sturmer
352/543-5057

Miami-Dade County Cooperative Extension Service

Homestead

Christopher Brooks recently replaced Molly Sandfoss as UF/IFAS' aquaculture extension contact in Miami-Dade County.

A graduate of Colorado State University, Brooks first worked there for Aquatic Biosystems Inc., producing both freshwater and saltwater toxicology test organisms. When graduate school beckoned, he moved to Oregon State University, spending most of his time at their research station in Newport on the Pacific coast.

In graduate school, Brooks was involved in designing and constructing an oyster hatchery, a nursery and an outdoor algae-raising greenhouse complex. During that time, his professor launched the Molluscan Broodstock Project, which has become the largest of Pacific oyster breeding programs. Much of the work involved designing equipment and sharing results with the local oyster growers.

Brooks' master's thesis tested the feasibility of predicting adult oyster growth from spat growth in the nursery, using a tide-simulator to condition oysters in the lab. He also programmed a computer using EnvironMac to adjust the valves in a manner that would create diurnal tide cycles. The same system was later used for a sturgeon culture feasibility project.

Chris says he's looking forward to working in South Florida. For more information, contact:

Chris Brooks
305/248-3311 ext. 230

Associate of Science Degree in Aquaculture Now Available

Hillsborough Community College (HCC) recently graduated the first four students in Florida history with an Associate of Science degree in Aquaculture.

Darlene Haverkamp, the first aquaculture student to graduate with Honors, worked briefly this past summer for the University of Florida's Dr. Roy Yanong on the Cichlid Project. She also worked for HCC as a lab assistant and on a live rock project. She entered graduate school this fall at the University of South Florida in St. Petersburg, studying aquaculture under the direction of Dr. Jose Torres and Dr. Bill Falls.

Among the other HCC grads:

Tom Stephens is working at Segrest Farms with Dr. Denise Petty. Tom was selected as Outstanding Aquaculture student of 1998-'99. Paul Strazzulla is working at Hi-Tech Fisheries of Florida, Inc. in Lakeland, owned by Marty Tanner. Jennifer Alamed now works at 5-D Tropical Inc. rearing *Corydorus* catfish. For more information about HCC's AS Degree Program, contact:

Dr. Bill Falls at 813/253-7881.

Fishing For Success Update

This has been an outstanding year for **Fishing For Success,** with 2,553 youngsters participating so far in 1999. Some 39 different schools and youth organizations were involved.

Perhaps the highlight event was a fishing rodeo held at a small, neighborhood pond in Gainesville, which local kids had earlier prepared for fishing. This included removal of excessive aquatic weeds, a general cleanup of the pond shoreline and nearshore water, and the transporation and stocking of 800 fish, including many big catfish.

Local businesses including The Tackle Box, The Heritage Club, Albertsons and Wal-Mart, donated prizes and food for all 52 participants. Though the day was hot and fishing slow, the youngsters had a great time. Perhaps it was the pride and work involved in preparing the lake—and in doing so, studying the aquatic animals and plants that live there.

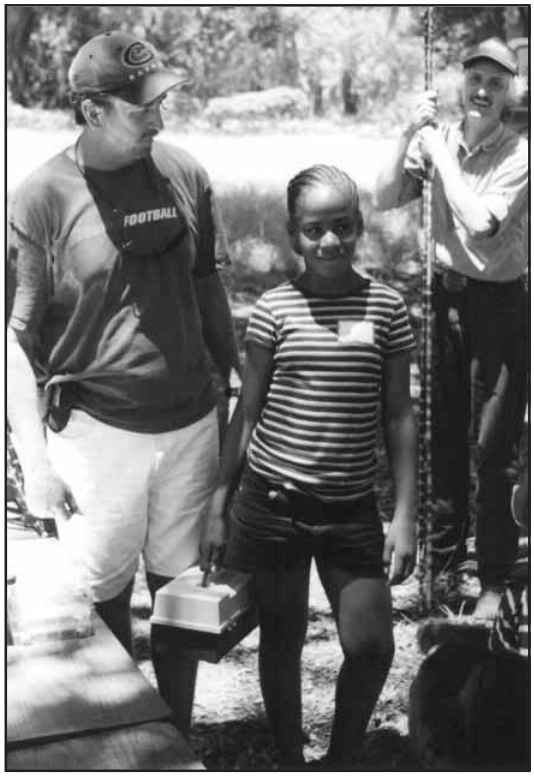
The program is a joint effort involving the University of Florida's IFAS Department of Fisheries and Aquatic Sciences, Florida Fish and Wildlife Conservation Commission, Alachua County Sheriff's Office, and Gainesville Police Department. Working together, they have created **Fishing For Success**—with the goal of providing aquatic sciences-related educational opportunities for youth. As a result, any youth group can now contact UF's Department of Fisheries and Aquatic Sciences and request to participate in a variety of activities including informal aquatic educational programs for elementary, middle, and high school students. Groups visit the Department to participate in one or two-day long, hands-on environmental learning activities such as pond ecology, aquaculture tours, demonstrations, and fishing.

Staff and graduate students from the Department of Fisheries and Aquatic Sciences introduce youngters to the world of fish, aquatic invertebrates and plants, and to various aquatic career opportunities through academic presentations and hands-on field experience.

All activities are hands-on and tailored to the age group. Activities are designed not only to stimulate the curiosity of the individuals, but to show them that what they are learning in school also applies to the real world.

Aquatic Invertebrates

Dipnets are provided to students, who collect aquatic invertebrates from ponds at the Department. After collecting for an allotted time, students gather around for a brief aquatic ecology lesson and discussion to identify what they have caught, the animal's biology and habits, and their importance in the food chain/web of a pond.



Photos by Amy Richard

Tom Glancy (left), a graduate student at UF's Dept. of Fisheries and Aquatic Sciences, was happy to award prizes to every young person that participated in this summer's fishing rodeo. Dr. Chuck Cichra (right), is faculty sponsor of the program.

Aquatic Plants

Students collect and learn how to identify aquatic plants.They also discuss plant biology and their role in aquatic ecosystems, and learn about methods used to control aquatic plants when they become weeds.

Introduction to Fish

Participants learn how to collect and safely handle fish, with some basics of fish identification and their anatomy. In addition, they are taught fish biology and ecology, along with an introduction to fish farming (aquaculture).

Water Quality

Students are introduced to water chemistry and its importance to fish survival. Using test kits and meters, they learn how to test the water for various physical and chemical properties such as temperature, dissolved oxygen, and pH. The parameters of good water quality are taught, that will help ensure survival of aquatic life. The youngsters also learn how to measure water clarity using a Secchi disc, and what factors affect water clarity.

Fishing

Students are given the opportunity to fish ponds stocked with largemouth bass, bluegill, and channel catfish, where chances of catching fish are very good. Those who have never fished are taught angler ethics and safety, and basic angling skills. All equipment is provided by the **Fishing For Success** Program.

To schedule a visit or request participation in any or all of these activities contact UF's Dept. of Fisheries and Aquatic Sciences:

Sharon Fitz-Coy
352/392-9617 ext. 241

Chuck Cichra
352/392-9617, ext. 249

UF/IFAS Dept. of Fisheries and Aquatic Sciences
7922 N.W. 71st Street
Gainesville, Florida 32653-3071
E-mail: fish@gnv.ifas.ufl.edu

Calendar of Events

October 6
Clam Crop Insurance Workshop
High School Auditorium/Cedar Key, FL
This workshop will focus on crop insurance for clam farmers, a pilot program for the year 2000 through 2002 crops. Coverage includes oxygen depletion, disease, freeze, hurricane, change in salinity, tidal wave, storm surge or windstorm. 7 PM
Leslie Sturmer 352/543-5057

October 7
Clam Crop Insurance Workshop
Dixie County Courthouse/Cross City, FL
This workshop will focus on crop insurance for clam farmers, a pilot program for the year 2000 through 2002 crops. Coverage includes oxygen depletion, disease, freeze, hurricane, change in salinity, tidal wave, storm surge or windstorm. 7 PM
Leslie Sturmer 352/543-5057

October 19 & 20
Fish Health Management Short Course
Tropical Aquaculture Lab / Ruskin, FL
A two-day workshop designed for fish farmers, biologists, and veterinarians. The curriculum includes an introduction to water quality as it pertains to fish health management, important infectious diseases and treatment / management options.
Roy Yanong 813/671-5230

November 8
Managing Ponds for Fishing Workshop
Hillsborough County Extension Office/ Seffner, FL
Basics on how to manage ponds for recreational fishing including stocking, feeding, fishing and aquatic weed control. 7 - 9 PM
John Brenneman 941/533-0765

February 21, 2000
Fish & Fisheries Management Seminar
Keystone Community Center/Odessa, FL
A basic presentation on fish identification, biology, habitat, water quality and aquatic plant management for fisheries. Information will educate participants on how they can become more involved in actively managing private lakes/ponds for fishing, as well as informing residents on public waterbodies of the methods involved in fisheries management. 7-9 PM
John Brenneman 941/533-0765

THE INVADERS

Have You Seen This Plant?

Giant Salvinia *(Salvinia molesta)* An Uninvited Guest

Yet another aggressive aquatic weed has appeared in the U.S. and is now covering significant areas of lakes and waterways in Texas and Louisiana.

Giant salvinia (*Salvinia molesta)*, which is extremely similar to common Salvinia (*Salvinia minima*), grows rapidly, spreading aggressively by buds that break off when disturbed. It forms floating mats that shade and crowd out important native plants. Thick mats of this weed, reportedly able to float a cinder block, reduce oxygen content and degrade water quality. The weed mats snag boats and clog water intakes for irrigation and electrical generation. Giant salvinia is most likely to be introduced with aquarium or water garden plants. Efforts are underway to eliminate these infestations.

Any suspected sightings of the giant salvinia should be reported immediately to your state wildlife agency and also please report it to the U.S. Geological Survey. Colette Jacono, a biologist with the USGS in Gainesville, is mapping new sightings in Florida, and is also acting as a clearing house of identification and control information. In addition, informative printed material with pictures are available for distribution.

Description: This plant has oblong floating leaves, 1/2 to 1 1/2 inches, often folded and compressed into upright chains. It's larger than common salvinia—which has nearly round leaves that lie flat on the water surface. Another way of distinguishing the two is that giant salvinia (the exotic) has white bristles on the leaf's surface. These bristles are joined at the tips and resemble tiny egg beaters. You'll have to view the leaves with a hand lens to see this detail. The bristles have a velvety appearance and repel water.

To report sightings in Florida or for more information, call (877) 786-7267 or Colette Jacono at 352/378-8181 ext 315. Or you can view the web site at: http://nas.er.usgs.gov/ferns

Aquaculture Permitting News

As reported in previous issues of **WaterWorks**, the aquaculture regulatory process has been undergoing changes. The merging of several state regulatory agencies into the new Division of Aquaculture, within Florida's Department of Agriculture and Consumer Services (FDACS) should certainly speed things up. In the news:

Four state-wide Technical Advisory Committee meetings were held before formally publishing the proposed new Interim Rule, which will govern the industry until more permanent Best Management Practices (BMP's) can be finalized.

The Interim Rule, which could be adopted as early as Oct. 1 in 1999, establishes and implements aquaculture interim measures, and continues to exempt minimal impact facilities—which only have to apply for an Aquaculture Certificate of Registration from the FDACS in accordance with the Interim Rule.

One item of particular importance is that existing General Permit holders of these operations are not required to renew their existing General Permit for Fish Farms, General Permit for Bivalve Facilities, or their Chapter 370.26 permits as long as: **(a)** no major modifications have been made to the facility; **(b)** the facility is in compliance with applicable water resource regulations; and, **(c)** the facility has submitted a complete application with Notice of Intent for Certification and all appropriate fees are sent to FDACS.

The new rule also provides for two new minimal impact aquaculture facilities: bivalve raceways with less than 800 square feet of raceways or down-wellers that do not add supplemental algae as a food source, and aquaculture production–recirculation systems that do not discharge to waters of the state.

The development of the Aquaculture BMP Manual is approximately 50 percent complete. Most of the six BMP industry specific subcommittees have met several times and have completed working drafts.

A Peer Review Coordinating Panel has also been formed by FDACS to ensure that BMP text is consistent, technically accurate, and that the final work product is properly formatted.

The full Aquaculture Technical Advisory Committee, comprised of industry and agency personnel, may meet again later this year to review all final draft BMPs prior to continued rulemaking.

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