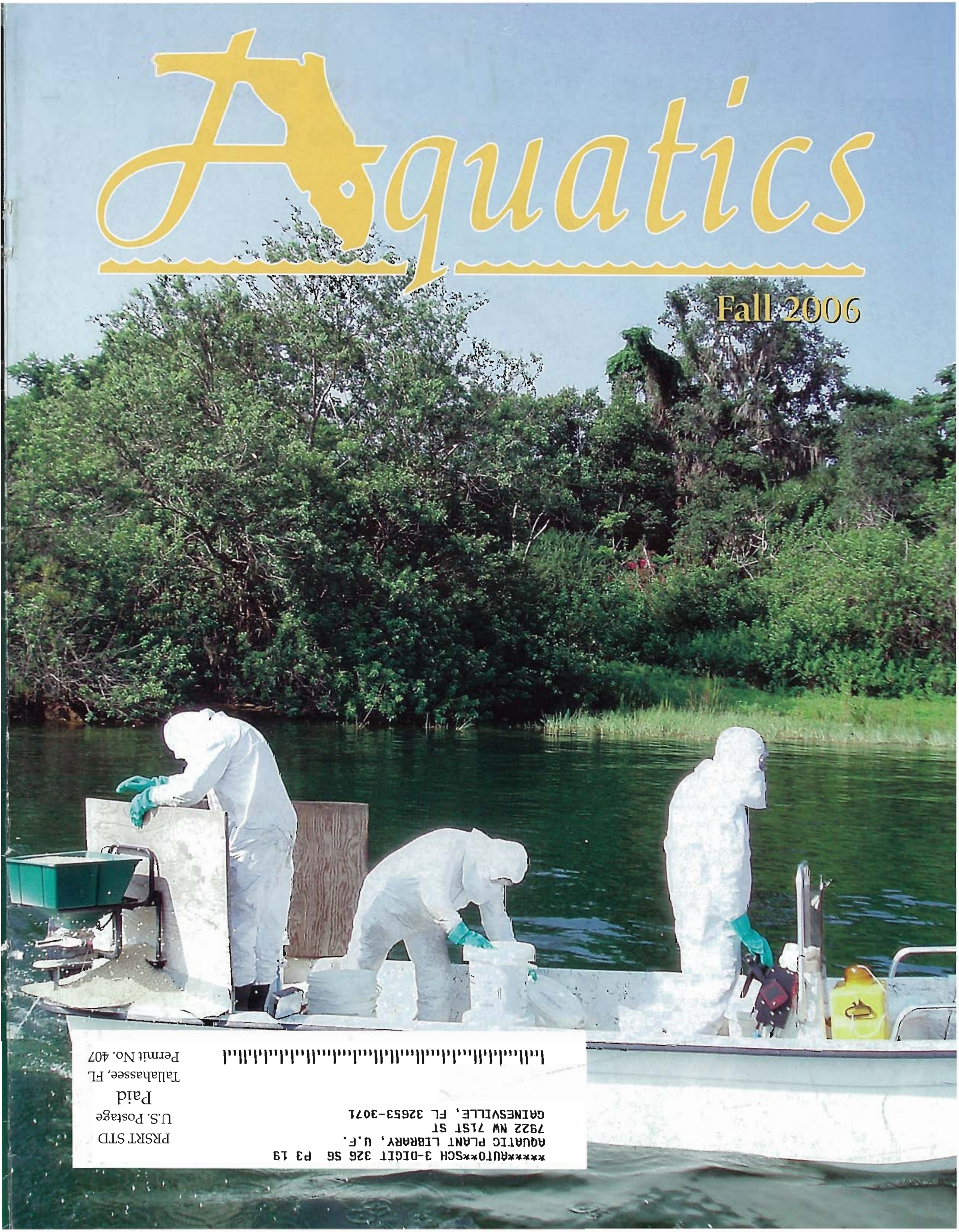
Aquatics

Fall 2006



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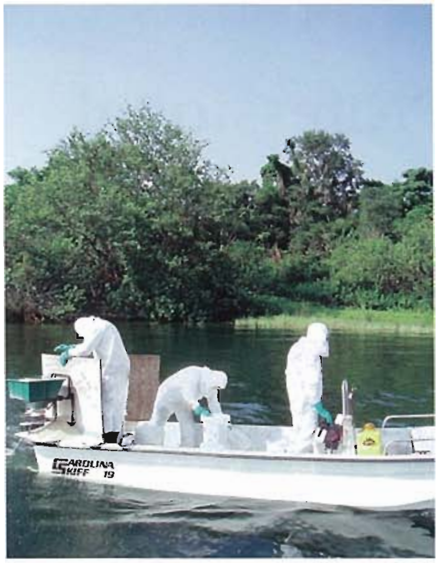

Aquatic applicators applying a granular contact herbicide to hydrilla on a Central Florida Lake, June 2006

Aquatics

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Contents

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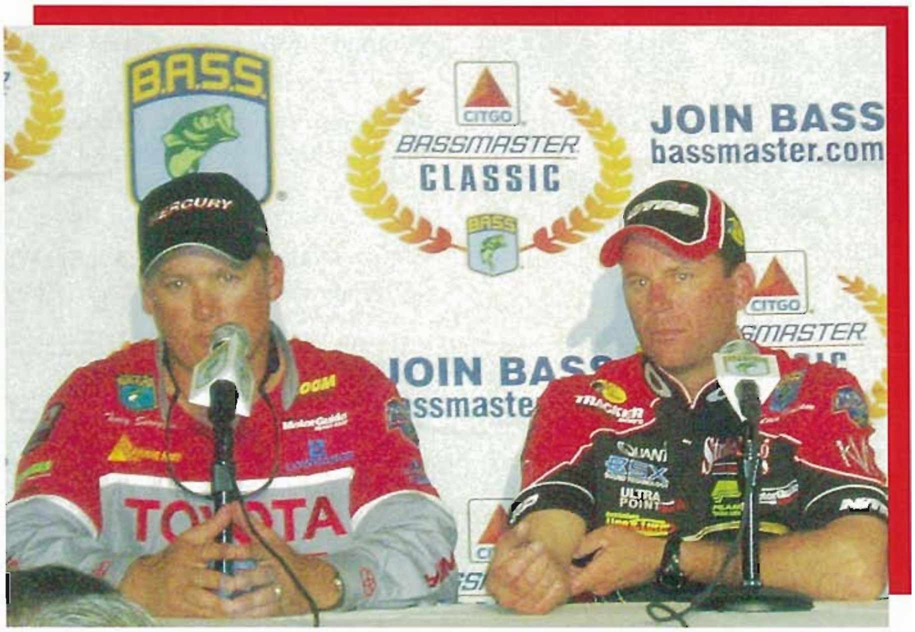
EDITORIAL: Address all correspondence regarding editorial matter to Jeff Holland, *Aquatics Magazine*.

EDITORIAL

Summary of Interviews with Professional Bass Anglers About Aquatic Plant Management

Every year professional bass anglers travel across the country in pursuit of an exciting yet challenging career of catching bass. Much of their success is dictated by their ability to adapt to changes in plant communities brought on by aquatic plant control programs. As career professionals these anglers work all year long to qualifying for the Bass Master Classic championship, a prestigious event comparable to the Masters Golf Tournament. These anglers are passionate about how lakes are managed and often voice their opinions to the media, which in turn can affect future plant management control practices. This editorial summarizes interviews with ten of the top bass anglers in the world: Larry Nixon (AR), Rick Morris (VA), Aaron Martens (AL), Stacy King (MO), Kevin Van Dam (MI), Terry Scroggins (FL), Tim Horton (AL), Edwin Evers (OK), Gary Klein (TX), and Rick Clunn (MO). This mix of anglers consists of seasoned veterans as well as newcomers to the sport of professional bass fishing.

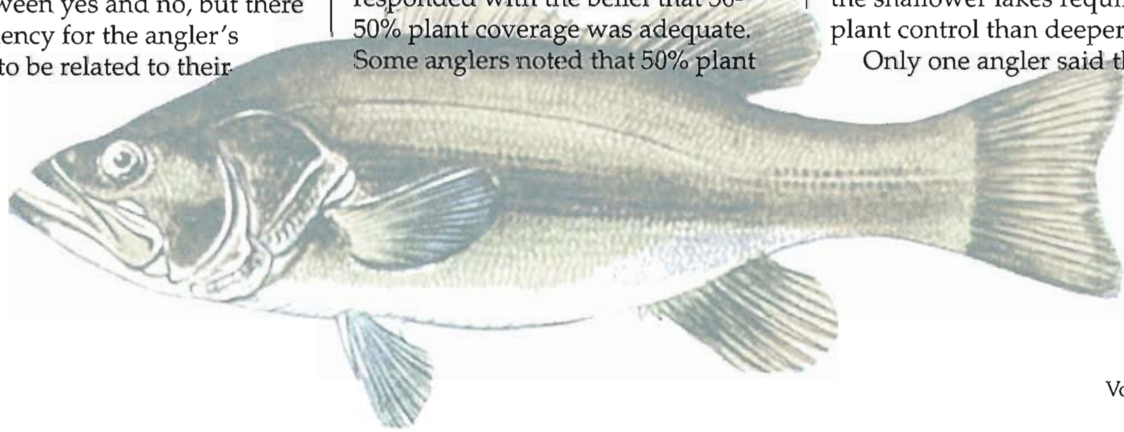
During the interview anglers were asked whether aquatic plant management practices across the country had provide improved lake access and better fishing conditions. The responses were evenly mixed between yes and no, but there was a tendency for the angler's responses to be related to their individual styles of fishing. Anglers that preferred to flip heavy weed mats responded that plant control programs hurt their fishing capabilities. Those that did well fishing open water situations responded that plant control programs helped reduce plant densities and allowed them to catch more fish.



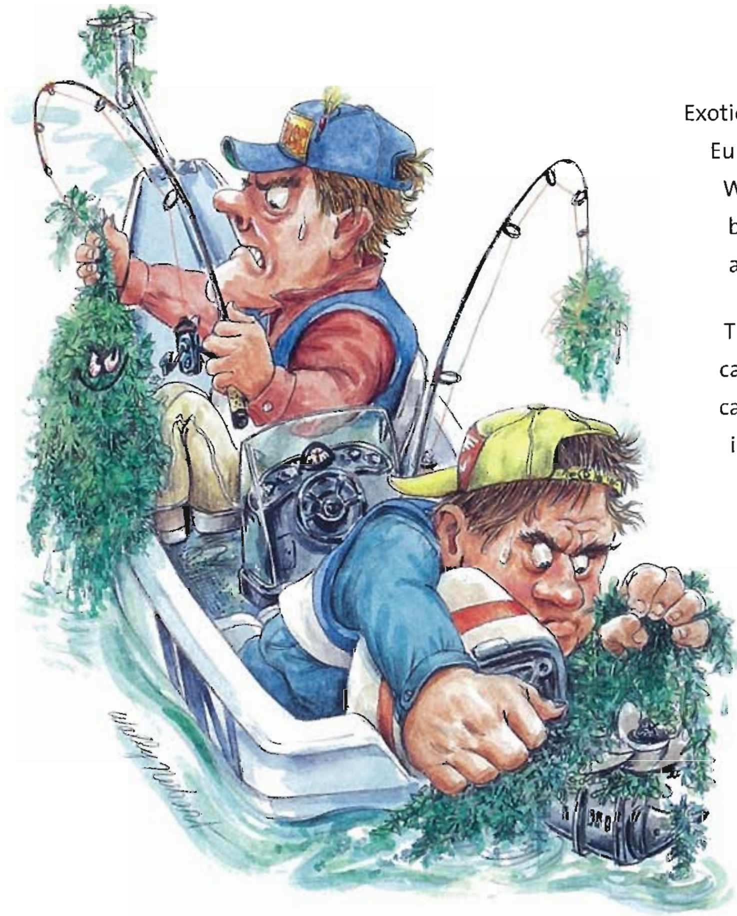
Top professional bass anglers like Terry Scroggins (left) and Kevin Van Dam (right) were interviewed on their opinions of aquatic plant management.

Anglers were asked to give their opinions on how much plant growth should be allowed in a lake. Most responded with the belief that 30-50% plant coverage was adequate. Some anglers noted that 50% plant coverage would be best as long as it wasn't hydrilla, as they knew the potential for hydrilla to get out of hand. Almost all the anglers felt that plant control levels should be decided on an individual lake-by-lake basis. The majority of anglers saw deeper lakes as self-regulating and didn't believe that aquatic plant growth would become very problematic if left to the control of Mother Nature. They did agree that the shallower lakes required more plant control than deeper lakes.

Only one angler said that they



Too Many Weeds Spoil the Fishing



Exotic invasive aquatic plants such as Hydrilla, Eurasian Watermilfoil, Curlyleaf Pondweed, Water Chestnut and Water Hyacinth can be detrimental to a healthy fishery in lakes across the country.

These invasive plants when left unmanaged can alter the ecosystem of lakes and reservoirs, causing a decline in the fishery, as well as interfering with other valued uses of waterbodies.

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would occasionally fish areas where plants were brown and dying following obvious chemical weed control. The others expressed concern over the amount of chemicals used, the safety of the chemicals, and the muck buildup from decaying plant biomass. The majority of anglers stated that fishing tournaments brought a lot of money to a local economy and many were bewildered by "over zealous weed control programs" that were killing what was supporting the local economy and the fisheries. Generally, the anglers expressed the feeling that plant mangers continued to spray too much and none of the anglers fully understood why. Rumors of "use-it-or-lose-it" budgets, political and financial kickbacks, and industry profit margins were fairly common during the interviews.

The majority of anglers provided a long-list of ideas about information that they would like to see distributed among the lake user groups.

While the professional anglers understood the difficulty of designing a plant management program to make all user groups happy, they felt that anglers spent more time on the water and had more respect for the lakes than the occasional recreational user. For this reason the anglers conveyed a feeling that angler-related concerns should get greater consideration in the designs of future plant management programs.

Fishing events like the Bassmaster Classic rely on adequate plant control and contribute substantially to local economies.

Not everyone will agree with the opinions and concerns of these anglers. However, aquatic plant managers should be challenged by these opinions to help update educational materials and provide improved distribution to anglers. The Professional Anglers Association (PAA) is a good contact group for providing educational material to professional bass anglers like those interviewed.

The health of fish populations and associated economic benefits are directly affected by aquatic plant control techniques. Can plant management programs be modified to improve fisheries? Should they be? Do the economic benefits provided by anglers out way the cost of reduced plant control? Will the long-term health of a lake suffer from reduced plant management? As your editor I hope the opinions of these professional angler motivate plant mangers to improve distribution of educational material and consider the impact of the weed treatments on fishery populations and local economies.

Editor

Professional angles expressed the need for an educational booklet written in laymen's terms for all lake user-groups: fisherman, lakefront homeowners, developers, water skiers, and pleasure boaters. Suggested topics for the booklet were:

- Educate recreational boaters on how to navigate in lakes that contain 30- 50% aquatic plant coverage. Inform boaters on what to watch out for when navigating through plants, how to avoid weedy areas, and how to clear clogged boat propellers.
- Educate lake users about the science of how plant chemicals work (in laymen's terms), safety information for lake users in the vicinity of herbicide applications, fish consumption safety, and EPA testing of chemicals on fish eggs, people, etc.
- Provide educational information about what it takes to grow a healthy fish population. Many anglers felt that if aquatic plant managers knew how weed control programs affected fish populations, then "caring" managers would alter their techniques to help maintain both fish populations and the economic benefits of a healthy fishery.
- Educate plant managers on techniques to limit plant management programs to navigational waterways only and allow 30-50% plant coverage in all areas except marinas, along boat docks, and at access areas. Educate user groups on the cost of this type of limited plant management (i.e. lake health, reducing lake use, long-term plant build-up, etc).

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Preliminary Population Responses of Sportfish Species to a

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K.I. Bonvechio[2],
T. P. Coughlin[1],
C. K. McDaniel[1],
A.S. Landrum[1],
C. S. Michael[1], and
D. C. Arwood[1].
Florida Fish and Wildlife Conservation Commission

Picture 1. Mucky shoreline located in Cypress Cove on Lake Tohopekaliga prior to habitat project work, Fall 2003.

Abstract

A habitat enhancement project was conducted at Lake Tohopekaliga, Florida, during 2003-2004 to improve aquatic habitat. This study aims to assess the preliminary effects of this habitat project on populations of bluegill *Lepomis macrochirus*, largemouth bass *Micropterus salmoides*, and redear sunfish *L. microlophus*. Population growth, recruitment, mortality, size structure and roving creel estimates will be compared between pre- and post-habitat project periods for all three species. Preliminary results indicate that for most size-structure indices, peak values were generally observed in 2004. Immediately following the habitat project, most of the indices were at or below pre-habitat project levels; however additional data are needed to determine long-term trends. Total annual mortality (*A*) for largemouth bass from 2001-06 was similar over time, averaging 36% and ranging from 28 to 42%. Total (*A*) for bluegill has fluctuated considerably and has ranged from 20% to 69% and averaged 45%. Total (*A*) for redear was similar over time, averaging 42% and ranging from 39% to 51%. Although angler catch rate of sunfish remained unchanged, effort declined in recent years. Fluctuations in angler effort and catch rate for largemouth bass may be related to hydrilla coverage; thus, other factors aside from the project may influence the population dynamics of these species. Additional data (2007-2011) are needed to further evaluate the effect of the habitat enhancement project on these sportfish populations, including an assessment of recruitment and growth.

Introduction

Prior to the early 1960's, Lake Tohopekaliga fluctuated as much as 3 m but due to flood control practices shifts in the hydrologic regime have reduced annual water level fluctuations to l meter. The resulting effect has led to the proliferation of problematic plant species and the subsequent accumulation of flocculent organic sediment in littoral areas.

In an effort to restore desirable aquatic plant communities, the Florida Fish and Wildlife Conservation Commission (FWC) has utilized extreme drawdowns and, more recently, the mechanical removal of accumulated organic sediment and plant material (collectively termed "muck"), see picture 1. The effect of these habitat projects on sportfish populations remains an issue of considerable concern for managers.

Sportfish responses to large-scale habitat projects have been variable (Moyer et al. 1995, Allen et al 2003). Furthermore, most evaluations have been short in duration and/or focused on a single species. Heman et al. (1969) found increased growth and prey consumption for largemouth bass *Micropterus salmoides*, one year following a drawdown at Little Dixie Lake, Missouri. However, other studies have found that, depending on such factors as the degree and timing of the drawdown, fish responses can vary (Lantz et al. 1967; McAfee 1980). Paller (1997) observed that sportfish species, such as largemouth bass and bluegill *Lepomis macrochirus*, differed in their response to drawdowns, presumably due to differences in life history characteristics (e.g., growth and rate of reproduction). Similar discrepancies in sportfish species' responses to drawdowns were also observed at Lake Tohopekaliga following an extreme drawdown in 1971 (Wegener and Williams 1975). These authors reported that although most sport-fish species exhibited an immediate positive response, black crappie *Pomoxis nigromaculatis*, appeared to be negatively impacted

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Habitat Enhancement Project on Lake Tohopekaliga, Florida.

(in terms of average weight and density). Thus, evaluations of drawdown effects on fish populations have shown short-term benefits for some sportfish species, but while long-term effects remain unknown.

Studies on the effects of habitat projects that have included vegetation and organic sediment removal have yielded similar results. Sampling conducted in scraped and unscraped areas after the 1987 habitat enhancement at Lake Tohopekaliga indicated that sportfish responses differed among species through time (Moyer et al. 1995). Although an immediate positive response was detected for most species, this response was short-lived as scraped sites returned to pre-enhancement conditions within three years (Moyer et al. 1995). Furthermore, an extreme drawdown and muck removal conducted on Lake Kissimmee in 1996 yielded two strong year-classes (1997, 1998) of largemouth bass; yet, electrofishing and angler catch rates of adult fish did not differ from the pre-habitat project period, indicating that the enhancement activities did not significantly affect the overall largemouth bass population (Allen et al. 2003).

In 2004, a large-scale habitat enhancement project was conducted at Lake Tohopekaliga, Florida, a 9,187-ha, eutrophic natural lake (Moyer et al. 1995) located in Central Florida, to improve aquatic habitat. Beginning in November 2003, the lake was drawn down and roughly 6.4 million m^3 of organic material were removed from 87% of the shoreline at a cost of $7.6 million. This interim report aims to assess the effects of this project on populations of bluegill, largemouth bass, and redear sunfish, *L. microlophus*. Size structure, growth, mortality, recruitment and angler catch statistics will be compared between pre- and post-habitat project periods for these species. Preliminary results described here from 2001-2006, while long-term results will be evaluated after 2011. Information gained from this study will be used to better understand the impacts of large scale, multi-million dollar enhancements on important sportfish species in Florida.

Methods

Spring (Feb-April) electrofishing (see picture 2) targeting bluegill, largemouth bass and redear sunfish

Picture 2. Author holding an 11 pound (5.0kg) largemouth bass obtained during routine spring electrofishing on Lake Tohopekaliga. Photo Courtesy of Thad Penfield (FWC), taken Spring 2004.

have been collected from 2001 to 2003 (pre-project), in 2004 (during project) and in 2005-2006 (post project). Data collection is scheduled to continue through 2011. Length and age data was used to evaluate the changes in size structure, recruitment, mortality and growth of these species before and after enhancement.

Population size structure will be compared through time by tracking temporal trends in several size structure indices, including proportional stock density (PSD). PSD was calculated according to Anderson (1976). Length frequency distributions will also be compared using a Kolmogorov-Smirnov test corrected for experimentwise error. These analyses will determine if shifts in the population size structure (i.e., a larger proportion of the population consisting of smaller or larger individuals) occurred as a result of the enhancement.

Recruitment, as indexed by catch per-effort of age-1 fish, will also be tracked through time for all three species of sportfish. These data will be coupled with relative recruitment data obtained from an aged subsample for each species. An age-length key will be used to estimate the number of fish of each age in the total sample, and a catch-curve will be constructed for each species (Ricker 1975). Residuals from these catch curves will then be used to index relative recruitment strength (i.e., strong versus weak year-classes) (Maceina 1997, Bonvechio and Allen 2005).

In addition to recruitment, age data can be used to assess total annual mortality (*A*) and growth. From the catch curve, (*A*) will be calculated as ($A=1-e^{slope}$) for each species and year. The aged subsample and age-length key will also be used to estimate mean-length-at-age. Means will be compared among years to determine if fish growth differed through time. In addition, growth curves will be compared using a variance ratio test or an analysis of covariance, depending on the characteristics of the age-length relationship.

Annual roving creels have been conducted in the fall (August to November) from 2001 to 2005 and will continue through 2011. Effort, total catch, and catch and harvest rate data will be collected for sunfish species (bluegill/redear collectively) and largemouth bass. For largemouth bass, estimates will be computed for all bass as well as for different size classes of bass. Effort, total catch, catch and harvest rate will be compared before and after project efforts using a specialized analysis of variance designed for summary statistics.

Results and Conclusions

Lake Tohopekaliga's sportfish populations have been subjected to multiple environmental stressors over the past four years. In 2002-03, the lake was partially drawn down in preparation for the habitat enhancement effort, but the project was later postponed. In 2003-04, the lake was drawn down and roughly 6.4 million m^3 of organic material were removed from 87% of the shoreline at a cost of $7.6 million. At the conclusion of the project, the lake received high amounts of rainfall from numerous hurricanes in 2004; thus high water and wind events prevented native grasses such as maidencane *Panicum hemitomon* and Egyptian paspalidium *Paspalidium geminatum* from germinating. As a result, large scraped areas in the littoral zone were devoid of beneficial vegetation during 2004 and 2005. As a result, a large re-vegetation project was completed in the spring of 2006, where 250,000 giant bullrush *Scirpus californicus* stems, 50,000 maidencane stems and 50,000 Egyptian paspalidium stems were transplanted from East Lake Tohopekaliga into Lake Tohopekaliga. Hurricanes also uprooted and removed out virtually all of the offshore hydrilla *Hydrilla verticillata* mats. Studies have shown that intermediate levels of submersed vegetation (20-40%) (i.e. hydrilla) may be beneficial to the angling community as well as maximize the economic potential of the lake by balancing the needs of the angling and non-angling communities (Bonvechio and Bonvechio 2006). Thus, Lake Tohopekaliga has experienced large fluctuations in habitat, both natural and man-induced that may have influenced the population dynamics of its important sportfishes.

Since data have only been collected for two post-enhancement years, we will address general trends in size structure, total annual mortality and creel estimates; however, no statistical analyses have yet been performed. For most size-structure indices, the highest values were generally observed in 2004, at which time the lake was drawn down and enhancement activities were in progress. Most of these values were similar between 2005-2006 and pre-habitat project years; thus it is unclear whether the habitat project itself resulted in this observed patterns in size structure or if it is an artifact of sampling at a low-pool stage. Low water in 2004 may have concentrated the fish to limited habitat. As a result, became more susceptible to electrofishing.

The proportional stock density (PSD) for largemouth bass (figure 1) appears to have increased from 2001 (54%) to 2004 (91%), followed by a slight decline in 2004 (73%) and 2005 (72%).

Similarly, bluegill PSD (figure 2) increased from 27% in 2001 to 68% in 2004 but declined in 2005 (34%) and 2006 (31%). Redear sunfish (figure 3) also increased from 37% in 2001 to 60% in 2004, but decreased in 2005 (42%) and 2006 (31%). This may indicate a larger proportion of smaller individuals composed the population immediately following enhancement; however, additional data are needed to determine if this trend continues. Furthermore, these size structure indices do not take into account abundance estimates from year to year and the

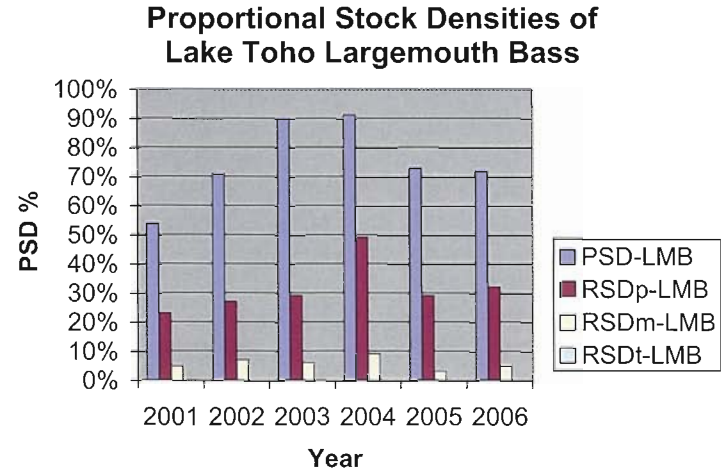


Figure 1. Proportional stock densities (PSD) and relative stock densities of preferred (RSDp), memorable (RSDm) and trophy (RSDt) largemouth bass on Lake Toho.

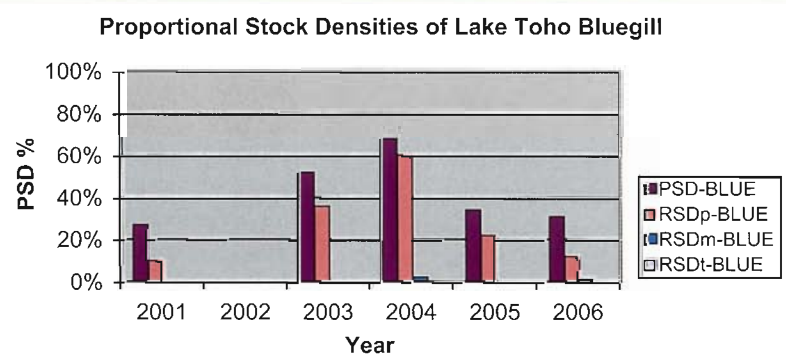


Figure 2. Proportional stock densities (PSD) and relative stock densities of preferred (RSDp), memorable (RSDm) and trophy (RSDt) bluegill sunfish on Lake Toho. Bluegill (BLUE) and redear sunfish (RESU) were not sampled in 2002.

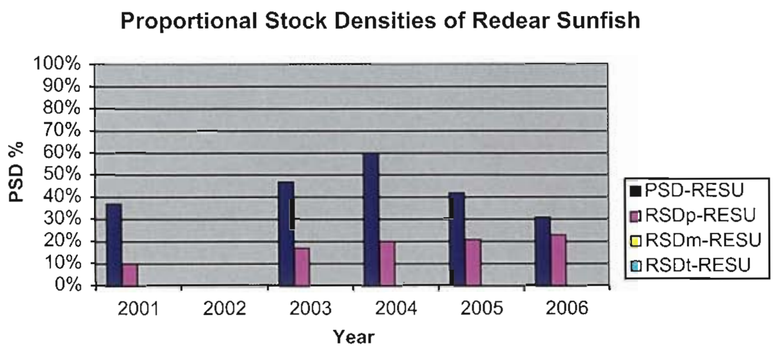
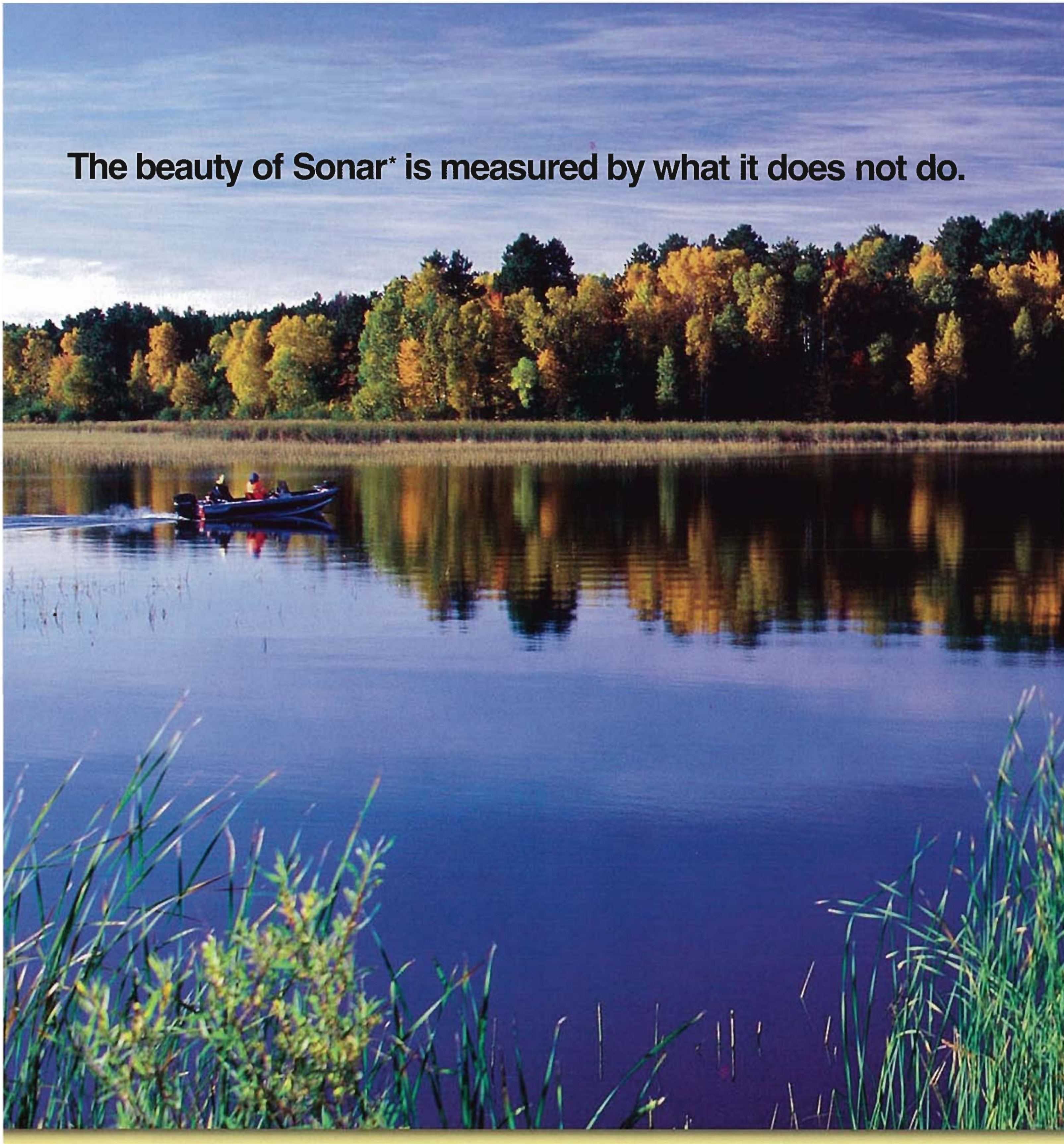


Figure 3. Proportional stock densities (PSD) and relative stock densities of preferred (RSDp), memorable (RSDm) and trophy (RSDt) redear sunfish on Lake Toho. Bluegill (BLUE) and redear sunfish (RESU) were not sampled in 2002.

length frequency could be strongly biased based on the number of fish obtained in each sample. PSD target ranges for largemouth bass of 40-70% (Gabelhouse 1984a) and bluegill of 20-60% (Anderson 1985) are currently being met for these three species. It is assumed that due to similar characteristics as a sunfish, redear sunfish PSD's are similar to that of the bluegill.

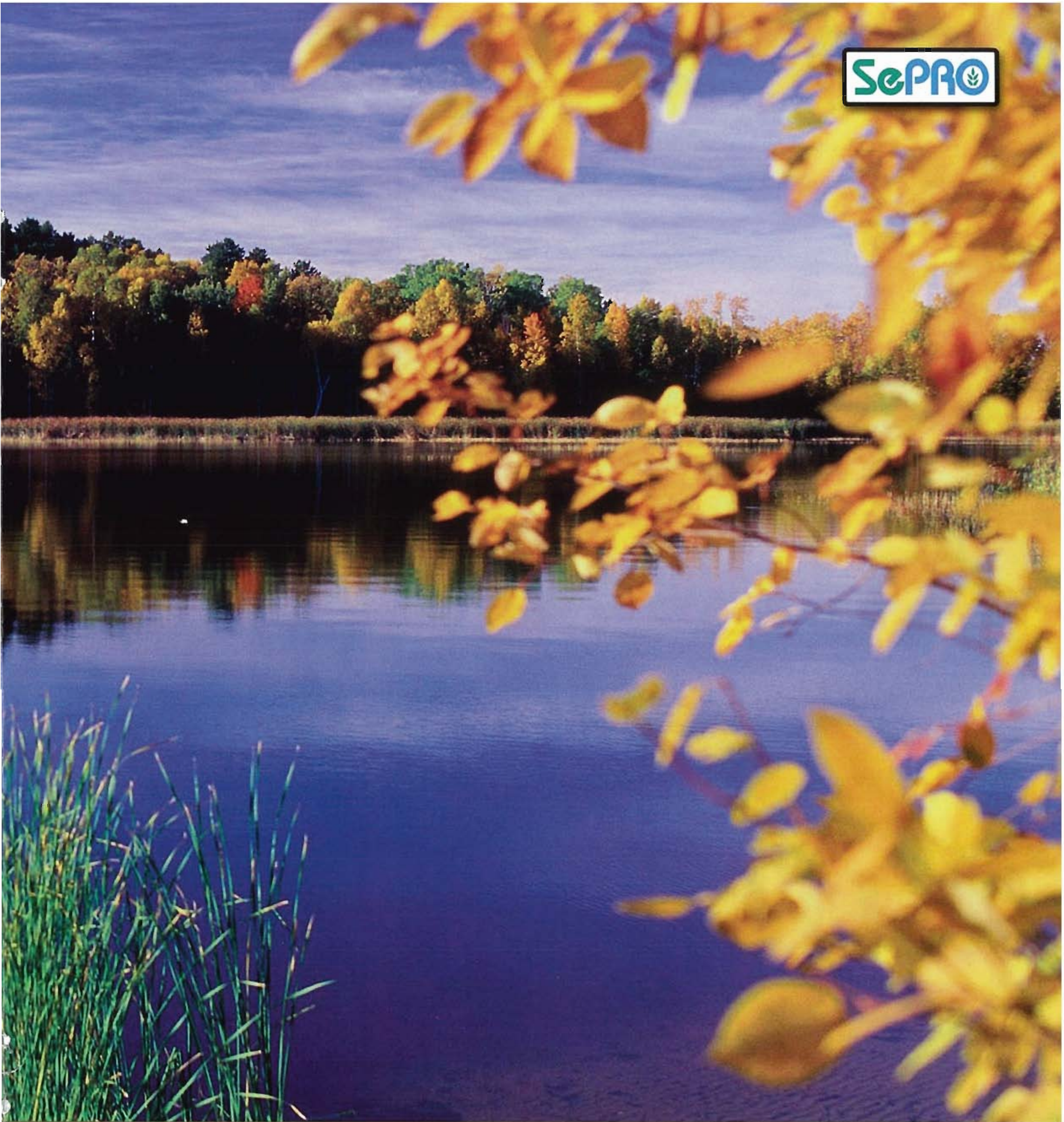
Age and catch data were used to calculate total annual mortality (*A*) for largemouth bass from 2001-06 remains similar over time, averaging 36% and ranging from 28 to 42% (figure 4). Total (*A*) for bluegill has fluctuated considerably and has ranged from 20% to 69% and averaged 45% for 2001 and 2003-06 (figure 4). Total (*A*) for redear in 2001 and 2003-06 remains similar over time averaging 42% and ranging from 39% to 51% (figure 4). Additional post-enhancement age data are needed to further assess temporal trends in total annual mortality. Furthermore, using age and length data, future analyses will be performed to determine changes in recruitment and growth before and after enhancement.

Shortly after Dean Rojas's record 45 pound, 2 ounce stringer in 2001 during a B.A.S.S. event, effort (57,000 hours) and angler catch rate (1.11 fish/hr) for largemouth bass, as well as percent area coverage of hydrilla (83%) spiked to some of the highest numbers recorded (figure 5). Thus, observed declines in angler effort and catch-rate for this species may be related to hydrilla coverage, but authors do caution that spurious correlations may not indicate a causal relationship (Jackson and Somers 1991). Although a trend in angler catch rate of sunfish was not evident, angling effort may have declined in the fall roving creel



A beautiful lake can turn ugly once invasive aquatic weeds like hydrilla or Eurasian watermilfoil take over. But before you introduce non-selective grass carp or launch a mechanical harvesting program, consider what Sonar Aquatic Herbicide does not do.

Sonar does not eliminate desirable vegetation. SePRO has the technology to manage application rates and monitor the treatment progress to ensure that invasive species are removed with minimal effect on native plants and the lake's ecosystem. After treatment, desirable native species are allowed to thrive and often become more abundant, creating a more diverse habitat.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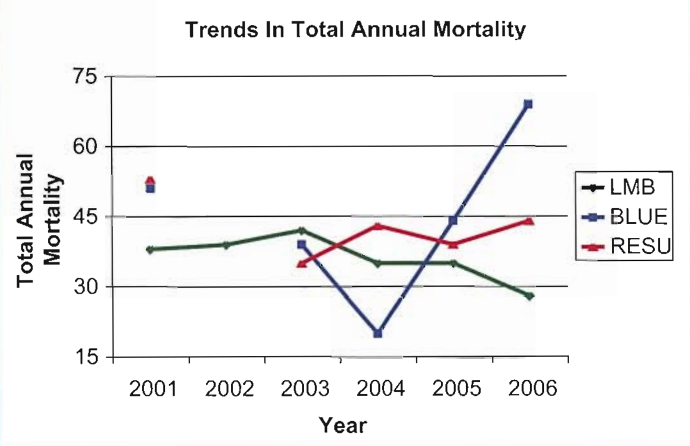

Figure 4. Total annual mortality (A) of largemouth bass (LMB), bluegill (BLUE), and redear sunfish (RESU) from 2001 through 2005 at Lake Toho. No samples were obtained for BLUE and RESU in 2002.

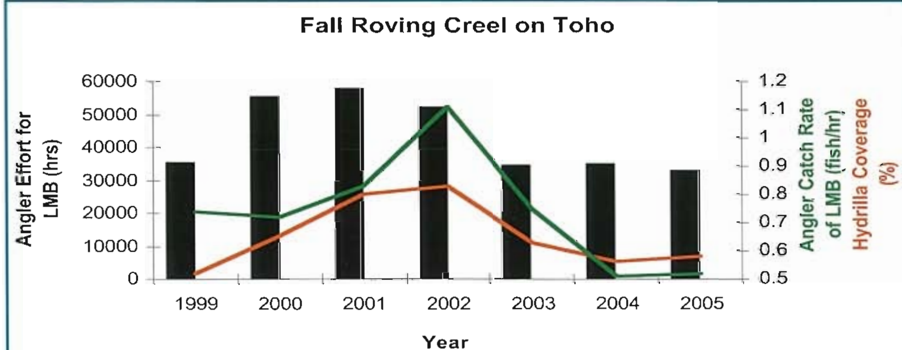

Figure. 5. Fall roving creel estimates at Lake Toho for largemouth bass from 1999 through 2005. Angler effort (black bars) in hours, and angler catch rate (green line) measured in LMB caught per hour. Annual coverage of hydrilla (orange line) is also provided.

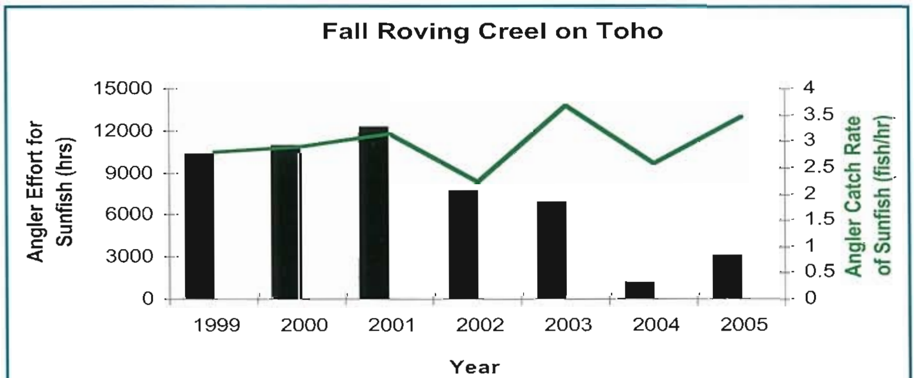

Figure 6 . Fall roving creel estimates on Lake Toho for bluegill and redear sunfish combined from 1999 through 2005. Angler effort (bars) is in hours, and angler harvest rate (line) is measured in sunfish caught per hour.

estimate (figure 6). Authors examine these results with caution, because sunfish effort is believed to be higher in the spring and summer but is not measured during this time on Lake Tohopekaliga.

The long-term effect of large-scale enhancement projects, such as the one conducted on Lake Tohopekaliga in which nearly 90% of the shoreline was affected, on important sportfishes remains unknown. The results of this study will provide lake managers with a better understanding of how large fluctuations in habitat can influence sport fish populations, information that can be used during the decision-making process with future enhancement efforts (picture 3).

Although only preliminary results were presented here, this ten-year data set, once complete, will be analyzed extensively and final conclusions will be made available to researchers and managers.

Acknowledgements

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Picture 3. Work site (post-scrape) located at Lanier Point on Lake Tohopekaliga, Florida, prior to lake refill. Photo Courtesy of Chris Michael (FWC), April 2004.

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EXTENSION AGENT - AQUATICS

Pay Grade:16

Major Function: To implement educational outreach components of U.S. EPA grant X7-96433105-1 in coordination with UF/IFAS Center for Aquatic and Invasive Species. To develop and implement educational programs that are based upon the needs of the local citizenry and contribute to maximizing the potential of clientele to enhance their opportunities to contribute to the solution of social, economic, environmental, and cultural problems.

Minimum Qualifications: Bachelor's Degree in Aquatic Plant Management, Limnology, Biology, Plant Science, Natural Resources or a related field, from an accredited college or university. Prefer experience in aquatic plant management, limnology, biology, public speaking, communications, and/or public relations. Possession of a minimum of a valid Class E Driver's License and restricted use pesticide applicators license. Must be proficient in Microsoft Office suite of software.

Waterhyacinth Plant Size Study: Waterhyacinth Rate Study

By Vernon V. Vandiver, Jr.[1] and C. Elroy Timmer [2]

Waterhyacinth Plant Size Study

In this trial, the objective was to evaluate the effectiveness of Stingray™ in controlling various sizes of Waterhyacinth plants when applied alone. Earlier work has shown that Stingray™ was effective in controlling "small" Waterhyacinth plants with one application of Stingray™ at 0.2 lb ai per acre, while larger plants were not completely controlled with one application at that treatment rate.

The Waterhyacinth plants were established in 20-gal containers. Three size classes of plants were used in the study. Plants which averaged 22 inches in height were termed "Large-sized Plant;" the "Medium-sized Plant" averaged 11 inches in height; and the "Small-sized Plant" averaged 6 inches in height.

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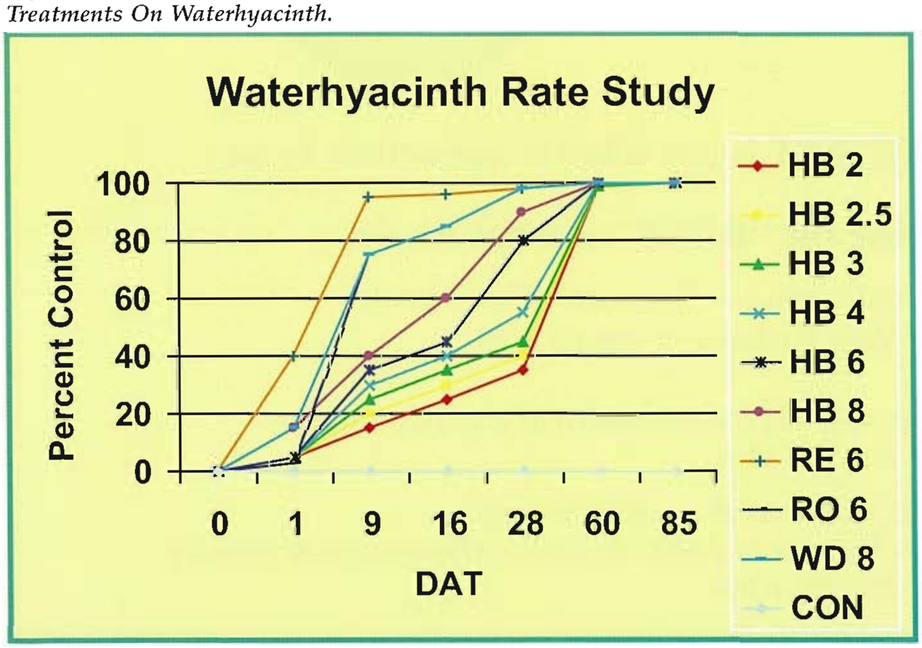
[2] C. Elroy Timmer, Biologist, Aquatic Vegetation Control, Inc, P.O. Box 10845, Riviera Beach, FL 33419

Figure 1. Treatments in the Hardball® – Waterhyacinth Rate Study.

Herbicide	Amount Herbicide, Product per acre	Herbicide Application Rate
Hardball®	2.0 Pt	0.435 lb ae per acre
Hardball®	2.5 Pt.	0.544 lb ae per acre
Hardball®	3.0 Pt.	0.653 lb ae per acre
Hardball®	4.0 Pt.	0.870 lb ae per acre
Hardball®	6.0 Pt.	1.31 lb ae per acre
Hardball®	8.0 Pt.	1.74 lb ae per acre
Reward®	6.0 Pt.	1.50 lb ae per acre
Rodeo®	6.0 Pt.	3.00 lb ae per acre
Weedar 64®	8.0 Pt.	3.80 lb ae per acre
Control	N/A	N/A

To summarize the results of this study, the "Small-sized Plant" Waterhyacinths were controlled 76 DAT at the 100% level with one treatment of Stingray™ at 0.2 lb ai per acre. The "Medium-sized Plant" Waterhyacinths were essentially controlled with one treatment of Stingray™ at 0.2 lb ai per acre. Only one bud regrew on each of two plants in 8 treated 20-gal containers at the 88 DAT rating period. At the 107 DAT point (of the first application), the two remaining "Medium-sized Plant" Waterhyacinths were retreated with a second application of Stingray™ at 0.2 lb ai per acre. At the 18 DAT point (after the second application), the retreated "Medium-sized Plant" Waterhyacinths were rated at 100% control. The "Large-sized Plant" Waterhyacinth plants were also treated with one treatment of Stingray™ at 0.2 lb ai per acre. After 131 days, though the stand of plants was substantially reduced and injured, a cover of living, plants remained. At this time the "Large-sized" Waterhyacinth plants were retreated with a second application of Stingray™ at 0.2 lb ai per acre. At 94 DAT of the second treatment, the "Large-sized" Waterhyacinth plants were rated at 100 per cent control. The plants "appeared dead" long before that time, but it is necessary when rating a study to wait for almost complete decomposition of the treated plants to ensure no bud will regrow.

Figure 2. Chart Showing the Percent Control Over Time with the Various Herbicide Treatments On Waterhyacinth.



Other work has shown that Stingray™ can control Waterlettuce at rates that are selective and thus not cause significant injury to non-target aquatic plants. The above data shows that at the maxi-

Figure 3. Table Showing Per Cent Control of Waterhyacinth for Each Herbicide Treatment from 0 to 85 Days after Treatment.

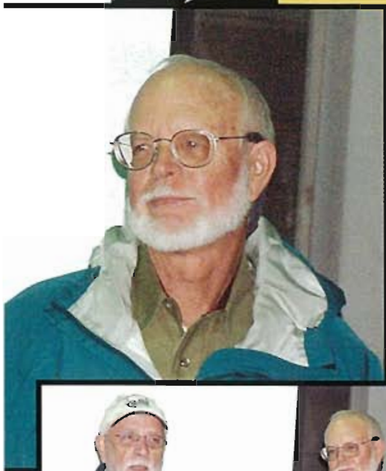
		Days	After	Treatment			
Herbicide, Pts/A	0	1	9	16	28	60	85
Hardball® 2	0	5	15	25	35	99	100
Hardball® 2.5	0	5	20	30	40	99	100
Hardball® 3	0	5	25	35	45	99	100
Hardball® 4	0	5	30	40	55	100	100
Hardball® 6	0	5	35	45	80	100	100
Hardball® 8	0	15	40	60	90	100	100
Reward® 6	0	40	95	96	98	100	100
Rodeo® 6	0	3	75	85	98	100	100
Weedar 64® 8	0	15	75	85	98	100	100
Control		0	0	0	0	0	0

mum application rate, Stingray™ can control the size Waterhyacinth evaluated in this study. Likely the most efficient split-treatment interval would be approximately 60 to 90 days. This, of course, is a long time to achieve Waterhyacinth control. Other work has shown that by dropping the Stingray™ application rate to 0.1 lb ai per acre and tank mixing with reduced rates of herbicides such as Diquat or 2,4-D, the mature Waterhyacinth plants can be managed while at the same time reducing the negative impact on desirable native plants.

Waterhyacinth Rate Study

Hardball® is a relatively new aquatic herbicide from Helena Chemical Company; its active ingredient is an uncombined form of 2,4-D formulated with a proprietary non-ionic adjuvant system as a 1.74 lb ae per gal product. As it is a new 2,4-D formulation, we wanted to look at the response of mature Waterhyacinth plants to treatment with a range of rates of Hardball®. Also included in the study for comparison were three other aquatic herbicides used by the industry in Waterhyacinth management programs. The treatments in this study are shown in Figure 1. A chart of the results is shown in Figure 2, while these data are shown in Figure 3.

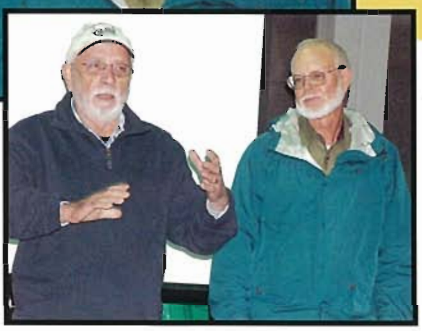
If one is treating a monoculture of an exotic weed such as Waterhyacinth, there is more flexibility in choosing the herbicide or herbicides for your management program. However, if one is treating invasive weed mixed with native, desirable plants, the choices for the most effective and selective herbicides seem more limited. Lower rates of selective herbicides and tank mixes of selective herbicides have been shown by this and other studies to remove unwanted weeds and have little lasting impact on desirable aquatic vegetation.



Rue Hestand

Retirement dinner at Hickory Point Recreation Facility on the shore of Lake Harris, December 4, 2004.

Rue *(below on right)* **is a charter member of FAPMS.** *He had 35 years of service with Florida Fish and Wildlife Conservation Commission.*



Wayne Corbin

Retirement lunch at Cracker Boys Restaurant in Lockloosa, March 2, 2005.

Wayne had 34 years of service with the State of Florida. The last 24 were with St. Johns River Water Management District.

FAPMS Retirement Celebrations

Like Vince Lombardi once said, "The harder you work, the harder it is to surrender." The succession to retirement takes many forms, and the results are to be enjoyed. But remember the words of Jonathan Clements, "Retirement is like a long vacation to Las Vegas. The goal is to enjoy it to the fullest, but not so fully that you run out of money." The following FAPMS members enjoyed retirements over the past four years.

Jim Kelly *(purple shirt) at retirement dinner at Tillis Hill Recreation Area in Withlacoochee State Forest, January 12, 2005.*

Jim had 35 years of credited service with the State of Florida. The last 24 were with Florida Department of Environmental Protection.

David Sutton

Retirement lunch at Fort Lauderdale Research & Education Center, and Retirement Party at Falcon Pub in Davie, March 29, 2005.

David is a charter member of FAPMS. *David had 35 years of service with University of Florida.*

Gordon Baker

Gordon is a charter member of FAPMS. *He had 35 years of service with South Florida Water Management District.*

Retirement dinner and party at Dan Thayer's house in Jupiter Farms, August 27, 2005.

Terry Warson

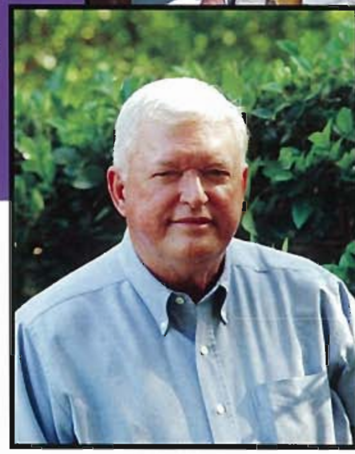
Retirement celebration at Citrus County Aquatic Services, November 28, 2005.

Terry was Lead Aquatic Plant Technician, and had 20 years of service with Citrus County.

Vernon V. Vandiver

Retirement celebration at University of Florida, Fort Lauderdale Research and Education Center, May 31, 2002.

Vernon is a charter member of FAPMS. *Vernon had 28 years of service with University of Florida.*



Bill Moore

His retirement dinner was held at the Cerexagri national meeting, Key Largo on November, 15, 2005.

Bill is a charter member FAPMS. *Bill had 27 years of service with Cerexagri and 8 years of service as distributor representative for aquatic herbicides in Florida.*

Lowell Trent

Retirement dinner at Eustis Community Center on the shore of Lake Eustis, June 13, 2003

Lowell is a charter member of FAPMS. *He had 30 years of service with FL. Fish and Wildlife Conservation Commission.*

Job Vacancy Summary: Osceola County.

The position will be during the term of U.S. EPA grant X7-96433105-1t, through Sept 2010. Applications should be made online through http://Osceola.org starting September 18. Hiring after October 1, 2006.

SENIOR BIOLOGIST Pay Grade: 16

Major Function

To implement biological demonstration components of U.S. EPA grant X7-96433105-1 in coordination with UF/IFAS Center for Aquatic and Invasive Species. To conduct studies and demonstrations to optimize control of two aquatic plants, hydrilla and hygrophila, in the Upper Kissimmee Chain of Lakes by evaluating emerging methods of aquatic weed control.

Minimum Qualifications

Bachelor's Degree in Biology, or Aquatic Plant Management, Limnology or a related field, from an accredited college or university. Must be proficient in use of Microsoft Office suite of software, internet and e-mail. Prefer experience in aquatic plant research and use of GIS. Possession of a minimum of a valid Class E Driver's License and restricted use pesticide applicators license.

AQUAVINE

Searching for the name of an aquatic plant or how to control it?

Send an email to mail@fapms.org and your question will be routed to a panel of experts who will help answer your question. Visit the "Information Center" on the society's web page www.fapms.org to see links to plant ID charts and other useful aquatic plant information.

FAPMS Aquatic Plant Manager of the Year, 2006 Applications Being Accepted

This award is designed to provide a means to recognize outstanding achievements in aquatic plant management field activities and to enhance professionalism in aquatic plant management activities in Florida. Award nominees must be active members in FAPMS and directly involved in aquatic plant management field activities. Those involved exclusively in an administrative capacity or employed in the chemical or equipment manufacturing and distribution industries are NOT eligible for this award. The winner of this award will receive an engraved plaque and $100.00 check. Nomination forms can be obtained from the "Manager of the Year" link on the FAPMS website www.fapms.org. All nominations must be submitted to Mitch Morgan by October 15, 2006. Fax: 352-334-3110 or email morganmm@ci.gainesville.fl.us.

Yearly 2,4-D Report, ITF Press Release 4/25/06.

Expert scientific reviews by the European Commission (2001), United States Environmental Protection Agency (1988, 1997, 2004 & 2005) and the World Health Organization (1996, 1997, 1998 & 2003), and Health Canada's Pest Management Regulatory Agency (2005) reinforce the large body of scientific assessments that conclude the herbicide 2,4-D does not present a health risk to homeowners, farmers, and pesticide applicators when product directions are followed.

In its registration eligibility decision (RED) released in June 2005 the U.S. EPA concluded that acute and short-term margins of exposure for homeowner applications of 2,4-D to lawns were "not of concern." EPA's most recent assessment included a review of animal and human data, the latter in the form of epidemiology studies (the study of the incidence of disease in populations). The EPA concluded: "The Agency has twice recently reviewed epidemiological studies linking cancer to 2,4-D. In the first review, completed January 14, 2004, EPA concluded there is no additional evidence that would implicate 2,4-D as a cause of cancer (EPA, 2004). The second review of available epidemiological studies occurred in response to comments received during the Phase 3 Public Comment Period for the 2,4-D RED. EPA's report, dated December 8, 2004 and authored by EPA Scientist Jerry Blondell, Ph.D., found that none of the more recent epidemiological studies definitively linked human cancer cases to 2,4-D."

"The EPA's assessment of the human and environmental scientific data reinforces a growing number of regulatory decisions and expert reviews that conclude the use of 2,4-D according to product instructions does not present an unacceptable risk to human health or the environment", stated Jack Dutra, executive director of the Industry Task Force II on 2,4-D Research Data. "When expert panels and regulatory authorities around the world examine all the relevant scientific evidence, they consistently reach the same conclusion that 2,4-D does not present health risks of concern."

Historically, the original patent on 2,4-D was issued in 1945 to Dr. Franklin D. Jones, a plant physiologist. Dr. Jones was working with the naturally occurring plant auxin, indole acetic acid (IAA). IAA is present in all plant matter and humans consume it daily whenever fruit, vegetables and cereals are consumed. In an effort to work with a more chemically stable, auxin-like compound, Dr. Jones included 2,4-D, an analog of IAA, in his experiments. In 2004, The Henry Ford organization in Dearborn, Michigan identified 2,4-D as one of the 75 most important innovations in the previous 75 years. Few scientific innovations have done as much to increase food production throughout the world.

Calendar

September 11 - 13, 2006. Texas APMS Annual Conference, Jasper, TX. www.tapms.org/

October 24-26, 2006. Mid-South APMS 25th Annual Meeting, Orange Beach, Alabama. www.msapms.org

October 30 - November 2, 2006. Florida Aquatic Plant Management Society Annual Training Conference, St. Petersburg, FL. www.fapms.org/meeting.html

November 2 – 3, 2006. 33rd Annual Conference on Ecosystems Restoration and Creation, Plant City, FL. www.hccfl.edu/depts/detp/ecoconf.html

November 5 - 8, 2006. 60th Annual Southeastern Association of Fish and Wildlife Agencies Norfolk, VA. http://seafwa2006.org/

November 6-9, 2006 American Water Resources Association 2006 Annual Conference, Baltimore, MD www.awra.org/meetings/Baltimore2006/index2.html

Three-Day Fishing Restriction Removed from Aquathol and Hydrothol Labels

King of Prussia, PA, August 16, 2006 – Cerexagri-Nisso LLC has announced the removal of the 3-day fishing restriction from all endothall labels by the EPA. Effective immediately, Aquathol K, Aquathol Super K, Hydrothol 191 and Hydrothol Granular herbicides for Aquatic Habitat Management do not carry a 3-day restriction on fish consumption in the United States. Submissions are pending in New York and California. A Supplemental Label must be in possession of the applicators at the time of use. For labels or more information call 1-800-438-6071 or log onto www.cerexagri.com.

FAPMS is currently accepting articles and photographs for *Aquatics* magazine. There is a large demand for operational photos and short articles from applicators and members working in the field. Please consider submitting your photos or articles to the editor, Jeff Holland jholland@rcid.dst.fl.us or visit the FAPMS web page www.fapms.org for additional contact information.

There was an error published in the article, "***Casuarina*** In Florida By David W. Hall and Vernon V. Vandiver, Jr." Summer 2006 *Aquatics*. The caption of the third photograph showed male flowers, not female flowers as printed. We apologize for the error.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