

A journey through the ACSP certification process

Part 2



BY GREG PLOTNER
AND SHELLY FOY

In part two of the series on becoming a fully certified Audubon Cooperative Sanctuary, the Medalist Golf Club is applying for certification in Water Conservation and Water Quality Management.

But first, let's see how we did with the Resource Inventory and Environmental Planning category.

After completing the Resource Inventory for Medalist Golf Club, it was sent to Audubon International staff for their review. They in turn sent us an Audubon Conservation Report written specifically for Medalist Golf Club. This report contains an overview, as well as specific projects and programs they feel would be beneficial to the golf course.

The four-page Medalist Audubon Conservation Report commended us for the extensive amount of natural habitats that were preserved, including wetlands, pine scrub and sand pine flatwoods, and the careful use of resources to prevent pollution and depletion.

Recommended Projects within the Conservation Report are as follows:

Wildlife & Habitat Management:

- Create wildlife "corridors" between habitat areas
- Plant flowers for hummingbirds, butterflies and songbirds
- Mount and monitor nesting boxes
- Mount a bird feeder
- Begin a wildlife inventory
- Add shoreline vegetation to water features where possible

Public Involvement & Education:

- Display registration certificate and other ACSP information
- Host wildlife walks or habitat tours
- Mount educational signs in naturalized areas
- Use newsletter to promote conservation efforts and educate golfers
- Create a simple brochure to highlight your ACSP participation
- Encourage homeowners/neighborhood properties to get involved
- Invite local groups or school classes to help with projects such as nest boxes or wildlife inventories

Integrated Pest Management:

- Expand scouting and monitoring - designate one lead scout
- Reduce turf stress from carts, low cutting heights, and traffic
- Mount bat houses

Water Conservation and Water Quality Management:

- Mulch landscape plantings and garden areas
- Improve aquatic habitat and reduce nutrient inputs around water features by planting shoreline vegetation
- Discourage golfer activity and avoid heavy maintenance in and around wetlands
- Evaluate maintenance area for actual or potential water quality problems

When applying for certification in any category, Audubon staff will send you a Certification Status Report (which is new). This report lets you know exactly where you stand in the program; Categories Achieved, Categories Pending, and Categories Remaining. There is also a Certification Summary.

The Certification Summary for the Environmental Planning category let us know that additional development in IPM would be needed before certification could be granted, which includes:

- 1) Maintenance of written records including monitoring activities, control measures used, and results
- 2) Reduction of turf stress due to carts, traffic, or low mowing heights
- 3) Use of least toxic pest controls

Additional projects will also need to be developed in the Public/Member Involvement category. Suggestions were offered such as putting up a display in the clubhouse or pro shop using certificates, art prints and photographs of projects we are working on. It was also suggested that we pursue having local community experts on wildlife help with specific projects.

We found both the Audubon Conservation Report and the Certification Status Report to be well written and filled with good information and suggestions for project implementation. Our Resource Advisory Committee will be meeting soon to start working on some of the recommendations.

The following is information submitted for certification in Water Conservation and Water Quality Management. We're making progress here at the Medalist Club toward becoming a fully certified Audubon Cooperative Sanctuary, and we hope you are too!

Certification for Water Conservation

Water conservation efforts at Medalist Golf Club have been implemented that demonstrate the Club's commitment to wise water use and environmental stewardship. The Club understands the importance of water conservation and the perils of the overuse of water.



The following is an overview of the Water Conservation Program for Medalist Golf Club:

Irrigation System

Medalist Golf Club has a Rain Bird Maxi - System V Irrigation System in use at the present time. The Maxi System allows us to interact among the various field satellites (Rain Bird MSC 24) in order to maximize the overall efficiency of the entire irrigation system. The irrigation heads are predominately Rain Bird Eagle Rotors.

Connected to the Maxi System V is the Maxi Weather Station. The station monitors daily climatic conditions, such as rain, wind speed and direction, solar radiation, air temperature and humidity. This monitoring allows the weather station to calculate an ET value for the previous 24-hour period. This information is then communicated to the Maxi System.

The Maxi System will then provide for automatic daily adjustments to the irrigation schedules. Due to soil conditions that tend to be very sandy and have high infiltration rates, normal irrigation cycles tend to be set at 100% of the daily ET rate.

Also connected to the Maxi System V is the Freedom System for Maxi. This is a radio operated system that integrates with the Maxi to provide control of the irriga-

tion system from remote locations. The Freedom also provides voice communication to and from the field as well as remote locations.

These hand held units save us a lot of valuable time by being able to access the irrigation system from anywhere on the golf course. The Freedom System also allows for telephone calls to be received in the field, which is sometimes very convenient.

Water Source

Three sources of water are available for irrigation use at Medalist Golf Club. Our primary source is effluent water that is received from Hydrotech Utilities in Hobe Sound. The water is directly piped to our irrigation lake and quantities received are recorded daily.

If sufficient quantities of effluent water are not received for irrigation purposes, there are two 4-inch groundwater wells available for use. It is our intent to limit the withdrawals of groundwater for irrigation purposes to the maximum extent possible.

A third source of water is also available for irrigation purposes. All storm water and irrigation water is retained on the golf course, with excess water being captured and transferred back to the irrigation lake for future reuse.

It was Medalist Golf Club's desire to use this water as our primary source for irrigation purposes, but an upcoming modification in our water-use permit will prevent this water from being used. A more thorough explanation of why the storm water cannot be used for irrigation will be discussed when Medalist Golf Club applies for Certification in Water Quality Management.

Watered Areas and Frequency

Irrigation at Medalist Golf Club is minimized to the maximum extent possible at all times and watering is avoided as much as possible during peak evaporation periods. We recognize that the amount of water a plant requires to stay healthy can vary greatly from day to day.

Our Maxi System V, that is ET sensitized, when used properly, allows us to

save resources such as water, power and turf products while improving the quality of the playing surfaces. Irrigating when needed and in the proper quantities equates to better overall plant health.

Medalist Golf Club is unique in the fact that there is no cut of rough on the golf course. Fairway acreage is approximately 27 acres and is normally watered 2 to 3 times per week. Greens, tees and approaches are closely monitored and watered on an "as needed" basis. Hand syringing in these areas is often done to keep "hot spots" to a minimum.

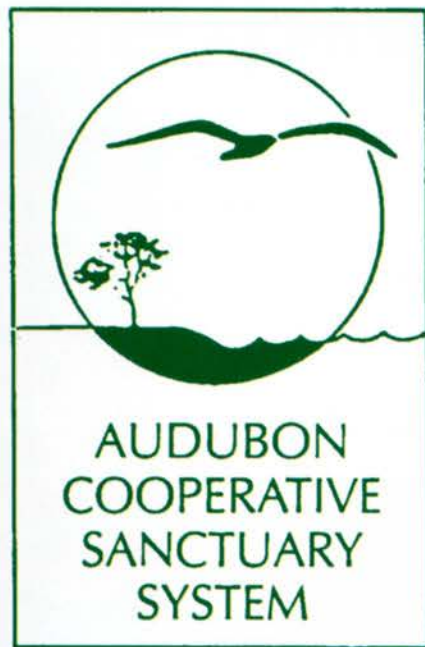
Water Recapture and Reuse

As mentioned previously, Medalist Golf Club captures all storm water and irrigation water received on the golf course through an extensive collection system and then transfers this captured water back to the irrigation lake with the use of a series of pumps. This water is then available for future reuse purposes. Absolutely no discharge of storm water or irrigation water is to occur at Medalist Golf Club at this time. A modification of our water use permit in the near future will change this.

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Turfgrasses

Medalist Golf Club has Tifdwarf bermudagrass greens, tees and approaches. Fairways are 419 hybrid bermudagrass with the exception of Fairways #17 and #18 which are GN-1, a new hybrid bermudagrass on the market. There are only 40 acres of turfgrass on the golf course and all is mowed to a height of 1/2" or less. There is no cut of rough on the course.



Water Distribution

Irrigation water is distributed to the golf course by a Flowtronex PSI VFD pumping station. This pump station has a delivery capacity of approximately 1800 gpm through the use of three 75 HP Newman motors.

With the assistance of a full-time irrigation technician, we are ensured that the irrigation system is operating as efficiently as possible at all times. Individual sprinkler heads are frequently checked and monitored to ensure proper and even water distribution.

With the aid of the Maxi System, a failure in the irrigation schedule is easily detected and corrected immediately. As one can see, there are many checks and balances to ensure that the system is operating as efficiently as possible.

Mulches

Medalist Golf Club recognizes the importance of mulches and makes it a practice to use these materials whenever and wherever possible. Pine straw is used extensively on and around the golf course. The straw helps to stabilize the native areas surrounding the course by preventing weed seed from germinating, minimizing the blowing of native sand into the playing areas and providing an area surrounding each hole that a golf ball can come to rest in, be found, and be played.

Wood chips have been used at Medalist Golf Club to build maintenance paths in the native areas of the course. Selective under brushing of non-desired plant species, that is then chipped, generates some of the material that we use to build these paths.

All landscaped areas on the golf course and its related amenities, such as the Halfway House and the comfort stations, are mulched. Choice of products used range from pine straw and wood chips to cypress mulch. The clubhouse is currently under construction and the landscape plan indicates that all beds will be mulched.

Water Reduction

Medalist Golf Club realizes that the supply of water in the world is finite. Water is neither created nor destroyed. We recognize that water is a commodity and we attempt to conserve it in every way possible.

From our elaborate collection system for storm water and irrigation water to our use of effluent water as our primary irrigation source, we are demonstrating to others our commitment to environmental excellence. Judicious water use is something everyone should practice and at Medalist Golf Club, we have made it a habit to use water wisely.

Water Quality Management

Water Quality Management Practices have been in place at Medalist Golf Club since construction began on the golf course in 1994. The Club's

Master Plan was designed to effectively integrate the course in a manner which enhances play, but all the while protecting the value of the surrounding wetlands and upland preserve areas.

The Martin County Growth Management Department consulted with Medalist Golf Club during construction to ensure environmental impacts in relation to the golf course design were kept to a minimum.

The wetland and upland preserves were incorporated into the golf course design in such a natural manner that minimal needs now exist for trimming or removal of vegetation from these areas.

The under brushing that is done is monitored on a full time basis by a qualified environmental professional. Any exotic vegetation (e.g. Brazilian pepper, malaleuca) that is found on site must be removed. This must be accomplished without the use of heavy equipment and any areas left void of vegetation due to the removal of exotics must be revegetated with appropriate native vegetation.

To further protect the wetland features on the golf course, all golf cart crossings are elevated boardwalks. Field inspections during construction by Martin County staff ensured the crossings were located in the least damaging areas.

These elevated cart crossings allow for wildlife corridors within the wetlands to remain open. Protecting our wetland areas is important to Medalist Golf Club, for we understand the significant role these wetlands play in supporting the various wading birds, birds of prey and small mammals that are present here and normally associated with these types of areas.

In conjunction with the Club's Site Development Plan, it is our commitment to see that all wetland and preserve areas are maintained and improved upon to reach a high utilization level in these areas by various types of wildlife common to our area.

Other Water Quality Management Practices include:

Water Quality Monitoring and Baseline Data

A Water Quality Monitoring Program is conducted on a quarterly basis by McGinnes & Associates Consulting Laboratories, Inc., at six different locations throughout Medalist Golf Club property. These surface water samples are collected by the "bucket grab" method and then iced for delivery to the laboratory.

Analyses include pH, dissolved oxygen, alkalinity, total nitrogen, total phosphate, orthophosphate, and conductance. This program was initiated in June of 1995 and will continue for a minimum of three years. Additional sampling locations are available and will only be used in the event that unusual or unexpected



results were to appear from the original six locations.

Four groundwater monitoring wells are also being sampled within the requirements of Medalist Golf Club DEP Land Application Permit. A few of the parameters that are being measured at these well sites include: nitrates, chlorides, pH, total phosphorous, total dissolved solids and total nitrogen.

In accordance with a mutual consent agreement between Medalist Golf Club and South Florida Water Management District, time zero and baseline monitoring reports are soon to be prepared. These reports will establish parameters that must be maintained within our Wetlands Mitigation Program. This reporting will continue on an annual basis for a period of five years. Tom Lucido and Associates, Inc. will be preparing these reports for Medalist Golf Club.

Wetlands

All wetlands within the property of Medalist Golf Club are protected and appear to be in a very viable and productive state. The Time Zero and Baseline Monitoring Reports being prepared by Lucido and Associates, Inc. will provide the club with valuable information that can be used to ensure these wetland areas remain pristine and productive.

Under the guidance of David Coogan,

the Club's environmental technician, and with the assistance of Environmental Waterways, our lake management consultant, the wetland areas are frequently monitored to ensure that exotic vegetation is removed upon its discovery. Also, other nuisance species such as torpedo grass, spike rush and duck weed are kept to a minimum, either by manual removal or spot chemical treatment.

Buffers and "No Spray" Zones

Medalist Golf Club has implemented a program, with the assistance and guidance of David Coogan, to plant vegetative buffers within the man-made water features on the golf course. These plants as they mature will filter excessive nutrients from our water bodies.

The surface water sampling program will assist us in monitoring nutrient levels, and hopefully these aquatic plants will help to ensure these levels are kept in check. It should be noted once again, that no runoff from the golf course is allowed to enter our water bodies.

All runoff from storm water and irrigation water is captured on the course and transferred back to the irrigation lake. This elaborate drainage system will aid in keeping our water bodies in a healthy state.

Our IPM (Integrated Pest Management) technician has been instructed not to spray directly into or near the water bodies on the golf course when applying turf products. This procedure will minimize potential contamination of our water features.

Also, our lake management applicator is instructed to check in with the Golf Maintenance Department prior to applying any products. This open communication line is important, as this procedure ensures us that only areas within our water bodies that need to be treated are being treated.

Drainage

As previously mentioned, all storm water and irrigation water that is received on the golf course is captured and then returned to our irrigation lake. This lake is lined with a 40 mil polyplastic

liner. Effluent water is also received and stored in this holding area. The resulting mix of water becomes what we use to irrigate the golf course.

No filtering mechanisms are currently being used within our irrigation lake. However, opportunities to improve the quality of the irrigation water are being explored. Random sampling of the water is done to ensure nothing harmful is being applied to the golf course.

Such tests include pH, total dissolved solids, chlorine levels and dissolved oxygen. Should any of these levels become a concern, corrective measures will be taken.

Chemical Additives

Other than occasional spot treatments for unwanted vegetation within our water bodies, no chemical additives are currently being used at Medalist Golf Club. These spot treatments are kept to a minimum and used only if manual removal is not economical or is not feasible.

Other Water Quality Management Strategies

Medalist Golf Club has installed an equipment wash down system which is very efficient at removing particulate matter from the water that is used to wash down the maintenance equipment. This system was installed by Chemical Containers, Inc.

All runoff from storm water and irrigation water is captured on the course and transferred back to the irrigation lake. This elaborate drainage system will aid in keeping our water bodies in a healthy state.

Management Programs at an Audubon Signature course

BY ADAM FELTMAN, AGCS

On December 12, 1994, The Champions Club at Summerfield, located in Stuart, became the first public golf course to be certified as an Audubon Signature Cooperative Sanctuary. The Tom Fazio-designed course is 6800 yards long and a definite challenge from the back tees.

Yet, from the middle and forward tees, it is a fair test for the average golfer. The golf course is routed through 300 acres of "point of no return" marshlands. With over 100 acres of maintained turf, including four acres of greens and 40 acres of fairways, the course has generous layout areas with strategically placed multi-tiered greens. Most of the holes are bordered by wetlands and are maintained so as not to disturb the sensitive wildlife habitat.

Being a public golf facility as well as an Audubon Signature member creates a challenge. Participation in the Signature Program does not end with Signature designation. There is an ongoing effort to upgrade the golf course and to implement new projects and technologies.

Enhancement of Wildlife Habitat

No mechanical devices of any type are used in the wetlands. We hand pull all unwanted plants such as dog fennel, primrose, Brazilian pepper, and melaleuca. They are replaced with natural and native vegetation such as cord grass and flame grass. This not only cleans up the wetlands, but aids in making homes for some of our host animals. This work also adds definition to all holes, and the golfers enjoy seeing just how true and peaceful a wetland can be.

In an effort to attract as many species of birds as possible, we have placed bird houses as far as 75 yards into the marsh. We estimate our present list of observed species at over 100. This includes bald eagle, king fisher, great blue heron, osprey, sandhill crane, quail, red-tailed hawk, great egret, and ibis.

In addition to birds, fox, deer, raccoons, hogs and even a horse or two may be seen on the course. All of the wildlife adds enjoyment and contentment to the golfing experience at Summerfield.

IPM Management

Golfers and wildlife can feel safe and secure knowing that an Integrated Pest Management program is practiced at Summerfield. Some weeds are allowed to grow in order to preserve natural features, especially near wetlands.

Rain days turn into hand-pulling weed days when the course is too wet to mow. This not only reduces the need for herbicides, but dwindles the weed population to eventually make a weed-free golf course.

Insect populations are monitored and scouted and only sprayed when damage is extensive. A short-lived, no-residual chemical such as Orthene is used to prevent leaching into ponds or wetlands.

Using a biological control for nematode hot spots has worked very well. A preemergent herbicide is applied once a year to help control most annual weeds.

Another practice used is the application of Primo growth retardant. Primo is



The golf is routed through 300 acres of "point of no return" wetlands. A wood stork (an endangered species) forages the wetlands.

used on tees, collars and fairways and helps reduce thatch and clippings. Buckets are not used when mowing tees, collars and fairways so that we have nothing to dispose of except clippings from greens. Using Primo allows us to skip mow on hot, wet summer days.

With a small crew of eight, this means a lot. Aeration, scalping of fairways and a good fertility program allow us to have tightly manicured fairways all year long.

Almost 75% to 80% of our fertilizer is slow-release. This is not only good for the environment, but helps us control growth without receiving too much growth at once. It also helps control leaching into wetlands and other areas.

Water Practices and Irrigation

The entire Summerfield development and The Champions Club are on a low energy- and water-usage program.

"We estimate our present list of observed species at over 100. . ." A flock of white ibis at Summerfield is pictured above.



Monitoring of piezometers on our course and the entire project takes a great deal of time. Monitoring wetlands depth and pump management tables is required. Our wetlands have gone up by 3 feet and down to bone dry during the last year.

Our Rain-Bird Maxi 5 irrigation system is a great asset to our course. This system allows us to put out the exact amount of water needed with as little waste as possible.

Irrigation heads are finely tuned to water only areas of turfgrass. Water is not spewed into wetlands or onto cart paths. Various nozzles are installed to lengthen or to shorten water sprays and insure turf quality without harming any natural vegetation.

Using wetting agents over the entire golf course helps conserve and limit the amount of water applied on our project. These wetting agents are applied through a liquid fertigation system so that mechanical spraying and golfer disruptions are not required.



This raccoon family adds enjoyment to the golfing experience at Summerfield.



From Bald Eagle to Quail (above), all wildlife benefits from Summerfield's Integrated Pest Management Program.

Public Awareness and Involvement

Understanding wildlife and how habitat enhancement helps populations increase will help the general public and our golfers to know why we do some of the things we do at Summerfield. We have adopted three local schools into our sanctuary program. Educating children as well as adults about wildlife through tours, educational workshops and enhancement projects can only benefit everyone.

The philosophy of the classroom in one generation will be the philosophy of the government in the next generation

-Abraham Lincoln

Educating the leaders of tomorrow



"Ask them questions and see what they know, and what they believe. Let them talk and participate." Darren Davis goes one-on-one with a visiting student.



Talk about turgrass and discuss the environmental and economic benefits.

BY DARREN DAVIS

Olde Florida Golf Club

If you think about it, this really holds true in today's world. In just 11 years, many of today's fifth graders will have graduated from college with four-year degrees and could have jobs dictating what we do. The kids we help educate today could be future EPA officials, legislators, or even members of your golf course.

So what role can golf course superintendents play in educating kids about the environment? The most important thing we can do is give them the correct information. So, how do we do this?

Go into the classroom.

Call and volunteer to be a speaker in your child's class or a school close to you. If you are uncomfortable with this, make it easier on yourself by showing slides or a video.

Either can act as your "crutch" or "prompt" to remind you of the things you want to talk about. If you have a camera, buy some slide film. It is very inexpensive to develop. If you already have great photos, they can be made into

slides for approximately \$1.

What slides do you show? Some examples would be:

- A slide depicting the "edge effect." Explain that the edge is abundant with wildlife and that smaller animals are hiding from larger ones and that they feed around the edges.
- Wildlife on the golf course. Tell them what species you have and the efforts you take to protect and enhance their habitat. Encourage them to keep a wildlife inventory at school and at home.
- Show a wetland and tell them about your efforts to enhance water quality.
- Slides of your crew working help tell about golf's effect on the economy. Example, "My club employs 30 people on a year round basis." Also let them know that golf courses in the U.S. contribute \$18 billion a year to the economy.

As for videos, the GCSAA (800-472-7878), the USGA (908-234-2300) and the ACSP (518-767-9051) all have videos on golf and the environment. Borrow

one, or better yet, purchase one and use it by showing it to golf course employees, and member/golfers.

Sign up a school

Sign up a school close to you in the ACSP for Schools. Volunteer to pay their registration fee and to help in any way you can.

Examples of things you can do would be to help them fill out their resource inventory or help with sanctuary projects such as installing nestboxes, nature trails, helping design wildlife gardens, or even providing resources they may need such as plant material or mulch.

Giving school tours

Bring the classroom to you by inviting a class out for a tour of your golf course.

Things to consider:

- What time is convenient for you? Is the golf course closed on a certain day? Is the winter or spring a busy time for you?
- How many kids do you want to invite? Consider their ages, attention span, etc.



- Consider providing drinks, and maybe stop halfway through the tour to let them rest and have time to enjoy nature.
- Ask them questions to see what they know, and what they believe. Let them talk and participate.
- Know how much time you have and take the time to plan your tour ahead of time. Where will you stop? What topics will you discuss at these places?

Suggested tour stops

Water - a lake, pond or wetland area
Tell them about things you do to conserve water (part circle heads, etc..) In wetlands, what plants and animals live there? Discuss what a wetland is and why it is important.

Turfgrass - Tell them what a good filter turfgrass is and that it helps recharge the groundwater. Discuss how it produces oxygen, and on 18 holes, enough oxygen is produced for 4 - 7,000 people to live on. Golf Courses are good green spaces and are 3 - 5 degrees cooler than a city and that they also reduce noise pollution.

Treesnags - Tell them that snags make good homes for cavity nesting birds - and that when you can, you leave them standing.

Lightning protection for trees - Why it is important to protect the trees on a golf course.

Weather station - What is it? How does it work? What information does it collect? Discuss how it converts information it receives into ET rates.

Wildlife - Explain that they need four things to survive: water, food, cover and space. Explain that they might not be seeing a lot of wildlife activity during the tour due to the fact that some animals are nocturnal, and that others may be scared away by the noise of the tour and will return later.

Giving school tours. How many kids do you want to invite? Consider their ages, attention spans, etc.

Maintenance Facility - This is a good place to discuss IPM and the programs you implement to enhance and protect the environment on and around the golf course.

Sometimes it is a challenge to hold kids' attention. I play a question-and-answer game, and the child who gives me the correct answer rides in my golf cart until the next stop.

Be totally honest with the kids.

Yes, we periodically use pesticides. When a question comes up, explain to them that pesticides are a part of daily life that includes golf courses, home lawns, or other turfgrass areas.

I have been asked several times, "if these things are so safe to be around, why do your employees wear moon suits or protective coverings?" It is easy to explain.

The best analogy I like to give is, yes, we do provide protective gear for our chemical technicians or IPM specialists, but think about it this way. When you go to the dentist, don't you wear a lead apron to protect yourself from radiation when they take x-rays?

The kids will shake their heads, yes. I ask what does the technician do before they take the x-ray? They leave the room. That's because they don't want to be exposed on a daily basis to radiation.

Radiation is considered safe in small, infrequent doses. But if you were exposed to radiation on a daily basis, it could be harmful. So, by having our IPM technicians wear protective clothing, we are protecting them from chronic exposure.

Before the kids leave the golf course, I give them a handout from the USGA titled, "Golf Courses Benefit People and Wildlife." It is written in easy-to-understand terms and everyone who reads it will know the benefits of golf courses to wildlife, people and the community.

My hope is that they take it home with

them and that their parents read it as well. You can receive copies of this brochure from the USGA.

Conclusion

Giving talks can be intimidating. However, you've got something going for you. Think back to those days of childhood when "field trips" meant you didn't have to be in school. It is definitely easier to talk to school children than to your peers.

When giving school tours, you're not only educating kids, but teachers and school administrators as well. If bringing kids out on the golf course is not an option for you, consider a tour for a local garden club, native plant society, or Audubon group.

So how do you know when you've been successful? This is one of the many thank-you letters we have received after a school tour:

When my class went to Olde Florida Golf Club we had a lot of fun. Mr. Davis took us around the course and told us many interesting facts about the golf course. He also gave us quizzes. I learned that golf courses are good places for animals because it provides homes for them. Chemicals are only used when necessary. That means that



"Show them a wetland and tell about your efforts to enhance water quality... what plants and animals live there?"

woodpeckers, alligators, deer and snakes can live there in safety. Something I will never forget is that golf courses are not harmful to people or animals.

As you know, government, and others, are making this job tougher every day and if we can't change the minds of today's government, maybe we can educate tomorrow's government!



Falconer Leslie Braun releases Sheela, a red-tailed hawk, back to the wild.

Free Again

Sheela, a one year old female Red-Tailed Hawk, was released on the #2 hole on Disney's Osprey Ridge Golf Course. When released she weighed almost three pounds and had a wing span of over four feet.

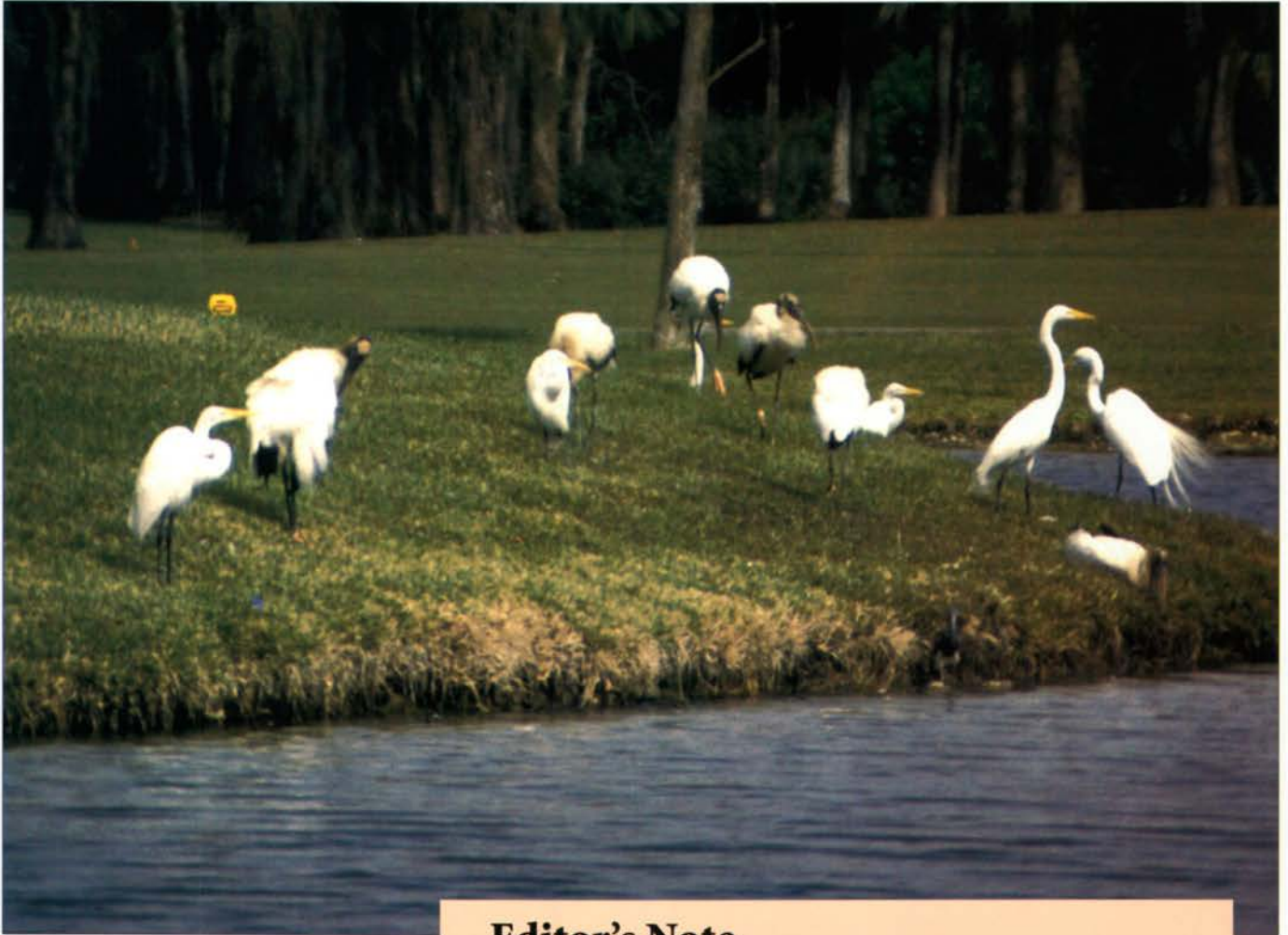
Sheela was captured after leaving the nest by a falconer, Leslie Braun. Sheela was cared for and taught to hunt for survival in the wild. Almost 80% of these birds die in their first year from accidents, starvation and

deliberate killing. Since hunting is not allowed on Disney property and Sheela has passed her first critical year, we hope to see many other generations in the future from this release.

Look for Sheela in a tall pine tree, while she sits and watches open areas near the woods for food. Her red and brown color will blend with the trees. If you want to see her you'll have to look close.

Leslie Braun

1995 Wading and Water Bird Survey on Florida Golf Courses



BY C. ELROY TIMMER

*Biologist for Environmental
Waterway Management, Inc.*

The golf course superintendents' position in the 90s is very complex and challenging. They are required to be expert in many fields. Not only are they "turf experts" but they require skills and knowledge in communication, construction and maintenance.

Editor's Note

In 1994, C. Elroy Timmer initiated the Wading & Water Bird Survey to do some fact finding about the true impact of golf courses on bird populations. This is the results of the second year of surveying and, since the response is growing annually, perhaps, as Mr. Timmer indicates, we need more in the future. If we can't conduct the surveys ourselves, maybe this would be a good opportunity to partner with some qualified bird watchers and Audubon members to inventory the multitude of bird species using golf courses for food and shelter. - Editor.

**Table 1
Participating Golf Courses**

Collier's Reserve CC • Heron's Glen GC • Lake City CC • Palm Beach CC • The Oaks • World Woods GC • Countryside Executive GC • Jonathan's Landing Old Trail • Bonita Springs CC • Plant City GC • Don Shula's GC • Serenoa GC • Inc. • Hibiscus GC • Wilderness CC • Oak Hill GC • Pine Island Ridge CC • Boca Delray G & CC • Delray Dunes G & CC • Boca Pointe CC • Presidential GC • The Greens GC • Highland Lakes • Orangebrook GC • Martin County G & CC • Banyan GC • Silver Dollar Golf • Oak Run CC • Continental CC • Burnt Store CC • Hunter's Green CC • LPGA International • Orchid Island G & BC • Frenchman's Creek CC • Oceanside G & CC • Spanish Wells G & CC • Indian River Colony Club • Winter Pines GC • River Hills • Water Oak CC • Cross Creek CC • Lemon Bay GC • A. C. Read GC • Lone Pines GC • Jacksonville G & CC • Boynton Beach Municipal CC • Fisher Island • Rolling Hills GC • Fiddlesticks CC • Del Tura CC • Countryside CC • Village Golf CC • Cocoa Beach CC • John's Island Club North Course • John's Island South Course • Cypress Knoll GC • Palma Sola GC • Palm Gardens GC • Seven Rivers G & CC • Woodlands CC • Sunny Breeze Palms GC • Lost Tree Club • Silver Lake CC • Olde Florida GC • The Links of Lake Bernadette • Tampa Palms G & CC • Naples Beach Hotel & GC • Sunrise GC • Bent Pine GC • Marcus Pointe GC • Seminole Lakes CC • Quail Ridge CC • Palm Beach National G & CC • The Meadows CC.

The golf course is a dynamic ecological system that is constantly changing and developing. Every facet of the superintendents' job is impacted by environmental issues and concerns. These many challenges need to be "handled" in 50-plus hours a week.

Even with busy schedules, their concern for the environment is most evident in their daily management practices. Even at superintendent association meetings, outings and seminars environmental issues are a major topic of conversation.

Environmental concerns are part of every day life on the golf course, as is solving the myriad "challenges" proposed by members and regulatory personnel. Yet superintendents still devote valuable time and effort to our water and wading bird surveys. (Table 1)

Predictable Results.

In managing golf course turf, it's what matters most. As specialists in turf care, we look long and hard for products that are truly superior before we present them to you. We insist manufacturers prove their claims in the lab *and* the field, because we're committed to your results - on your course and for your bottom line. Call. Let us demonstrate the terrific results you'll get with these technically superior products.

AXISTM

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BREAK-THRUTM

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Seventy six responses, 68 in February, (Table 2) throughout Florida add significantly to the credibility of the survey. The number of birds per acre in the 1994 study was so high, a follow-up survey to confirm the results and to see if trends are consistent was needed.

After a year of reflection, several issues should be addressed:

1. Are these birds an asset or liability to the golf course?
2. What are the superintendents' responsibilities?
3. Are the bird counts really accurate?
4. What can we do to enhance the environment; create habitat?
5. What other "assets" (birds, fish and wildlife) need to be counted?

Table 2
Comparison of February Counts in 1994 & 1995

	1994	1995
Golf Courses Participating	48	68
Total Acres of Golf Courses	7503	8659
Total Acres of Lakes	1258	1714
Total Number of Lakes	585	740
Total Acres of Lakes per Golf Course	12.2	10.9
Average Acre of Lake per Golf Course	26.0	25.2
Average Lake Size (Acre)	2.1	2.3
Birds per Acre (1994 Categories)	4.8	3.6
1995 Data		
Total Acres of Forested Acres	1651	
Acres of Forested Area per Golf Course	24.3	
Total Acres of Littoral Zone	157	
Acres of Littoral Zone per Golf Course	2.3	
Birds per Acre 1995 Categories	4.2	

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Assets or Liabilities

The environmental community agrees that the Everglades is very important to wildlife, not only on a local or state level but on an international level. They also agree that the Everglades is not functioning properly.

According to *Everglades: the Ecosystem and its Restoration*, inappropriate nutrients, impoundments, water levels, salinity, and hydroperiods are but a few of those struggles.

Perhaps because of the failures of the Everglades and wetlands, golf courses are “stuck with” or “blessed with” large numbers of birds trying to make a living. These birds are a critical resource. Several bird species on golf courses are “Endangered” and many are listed as species of “Special Concern.”

Our interference with nature has led us full circle: from destroying birds’ habitat, to the birds now being dependent on artificial habitats that man has produced.

It can be debated that this is an undesirable situation but the birds have been forced to take this “course.” What are we to do? The ball’s in our court. Let’s give it our best shot! We can all do more for birds; more for their environment.

Superintendent Responsibility

Part of responsibility is planning for the future. Some of the best ecologists have failed to give good advice... so what can we do? Best Management Practice must be recalculated with birds in mind. Wherever possible use:

- 1) insecticides with a short half life; and
- 2) keep insecticides - nematicides away from the water.

The lifeline for many wading birds is a food supply consisting primarily of fish. Golf courses evidently provide an available and adequate food

source because they attract the birds.

Perhaps we can enlist a fisheries biologist to evaluate the abundance, type and availability of fisheries on the golf courses.

Pesticide scans of fish probably also should be completed. It may be devastating to find an accumulation of pesticide in fish, but it would be more devastating to lose wading birds.

It would also be a great step forward to be able to stamp “A Clean Bill of Health” on golf course fisheries.

Survey Accuracy

Little blue herons and tricolored herons are sometimes misidentified; a few great egrets are counted as great white herons; or perhaps the most common mistake is cattle egrets being counted as snowy egrets.

This does not, however, affect an obvious and consistent picture: Large numbers of birds are utilizing golf courses. Even though the numbers are somewhat less than last year, they maintain a most obvious relationship year- to- year. (Table 3)

In both 1994 and 1995 surveys, the population density for water and wading birds differed extremely from one golf course to the next. Golf courses which have 10 acres or less contain a great deal more birds per acre than golf courses that have 40-plus acres of water.

This is consistent in both years. Table 3 indicates the extreme difference. The two-year average number of birds on golf courses with less than 10 acres is 15.25 per acre and for those golf courses with more than 40 water acres, the number is 2.74.

What is the difference? Some of the difference may be explained by white ibis, gulls and terns using the courses (but not necessarily feeding at the water).

However, most other species also reflect this trend. Perhaps smaller lakes receive more nutrients from a

The lifeline for many wading birds is a food supply consisting primarily of fish. Golf courses evidently provide an available and adequate food source because they attract the birds.

larger watershed and therefore are more productive. Perhaps this is a question we need to pose to our scientific community.

Lake design may be the critical factor in bird utilization. But what is that design?

If one examines the data of Hoyer & Canfield, which are larger lake systems (Table 3) and compares it with lake systems with more than 40 acres (Table 4), the discrepancy between golf course lakes and large natural lakes decreases... particularly, with the added category of ducks, geese, and coots.

The total number of wading birds per acre listed on the 1995 survey for

golf courses with more than 40 acres of water is 2.78. The per-acre calculation for Hoyer & Canfield is 0.928.

Enhancing Our Environment

Although many birds on the survey are fish eaters, ducks, geese and coots eat vegetation which must be present in sufficient quantities to attract them. Sandhill Cranes are often attracted by grubs, mole crickets, invertebrates and even some plants.

Limpkins are primarily focused on apple snails but clams, insects and crustaceans are often eaten. Moorhens eat vegetation, as well as insects and aquatic invertebrates.

The golf course is obviously a very productive ecosystem to be able to maintain such a large variety of foods needed to attract all these water and wading birds (not to mention all the other birds). Perhaps "enhancing our environment" means more...

- tolerance for Sandhill Cranes roughing up the turf;
- submerged weed growth in an obscure area;
- littoral zone in areas out of play;
- areas where a manicured look to the edge of the lake is not critical.

Diets from vegetation to insects to crustaceans to mollusks to small fish to large fish will require diversification to feed so many.

Many golf courses are able to "specialize"... to make their contribution. Other organizations have enhancement goals and offer more specific guidelines. Improving our bird environment depends on help from all quarters.

Table 4
Golf Course Survey
Birds Per Acre

	1994		1995	
	Lake Size		Lake Size	
	<10 Acres	> 40Acres	<10 Acres	>40 Acres
White Ibis	4.57	0.58	2.58	0.60
Gulls & terns	3.21	0.45	2.05	0.36
Double-crested Cormorant	1.16	0.13	0.19	0.20
Common Moorhen	2.58	0.23	1.73	0.26
Anhinga	1.96	0.43	1.55	0.19
Great Egret	0.48	0.34	0.19	0.09
Wood Ibis	0.44	0.14	0.07	0.08
Snowy Egret	0.74	0.12	0.80	0.09
Green-backed Heron	0.86	0.04	0.41	0.04
Little Blue Heron	0.92	0.07	0.28	0.21
Tricolored Heron	0.69	0.04	0.06	0.07
Great Blue Heron	0.41	0.06	0.32	0.07
Great White Heron	0.23	0.04	0.16	0.05
Limpkin	0.23	0.04	0.09	0.02
Ducks geese & coots—	—	1.05	0.38	
Sandhill Cranes—	—	0.49	0.07	
Total	18.48	2.71	12.02	2.78

Other Assets

We added two new categories for the survey in 1995: 1) Sandhill Crane, and 2) ducks, geese and coots. (Table 3) These two categories represent one bird in every two acres.

Surprisingly, 189 Sandhill Cranes were counted on the 68 golf course surveys completed in February and 16 additional Sandhills in the 8 surveys completed in March. Wading

Although many birds on the survey are fish eaters, ducks, geese and coots eat vegetation which must be present in sufficient quantities to attract them. Sandhill Cranes are often attracted by grubs, mole crickets, invertebrates and even some plants.

and water birds are but a tip of the iceberg.

If the superintendents still have any sympathy for yet another survey, a survey to compile a list of all birds on their course would be very important. Two participants — preferably Audubon members with counting expertise or professionals familiar with all species — should be involved.

Fewer responses are expected but it should be a survey that will identify more of the vast resources currently under management.

Specifically, it should be a good indication of various species richness on the golf course. It's a land use that's usually exempted by normal bird counts.

Species richness may be particularly important today as habitats are changing so rapidly in Florida. Some birds that are normally habitat-specific may be required to use an alternative site.

Identifying the various species utilizing our golf course should be critical knowledge for conservationists. Researchers are encouraged to contribute their knowledge and ideas to study this apparent abundant and fairly diverse resource.

Several unsolicited responses this year included such birds as: bald eagles, red-shouldered hawks, pileated and hairy woodpeckers, Carolina wrens, northern flickers, ruddy turnstones, American kestrels, roseate spoonbills, ospreys, glossy ibis, American bitterns, reddish egret, lesser yellowlegs, owls and many more, too numerous to include.

Other assets noted in the 1995 survey include 24.3 acres of forested area per golf course and 2.3 acres of littoral zone per golf course (Table 2). Forested and littoral areas may or

Identifying the various species utilizing our golf course should be critical knowledge for conservationists

**Table 3
Utilization By Species
Birds Per Acre of Water**

Species	Golf Course Study		Hoyer & Canfield
	1994	1995	
White Ibis	0.93	0.88	0.035
Gulls & terns	0.92	0.60	0.103
Double-crested Cormorant	0.69	0.33	0.038
Common Moorhen	0.47	0.40	0.106
Anhinga	0.47	0.32	0.044
Great Egret	0.36	0.15	0.024
Wood Ibis	0.21	0.08	0.007
Snowy Egret	0.19	0.15	0.012
Green-backed Heron	0.15	0.11	0.017
Little Blue Heron	0.14	0.18	0.010
Tricolored Heron	0.12	0.07	0.008
Great Blue Heron	0.10	0.11	0.023
Great White Heron	.05	0.06	0.000
Limpkin	0.04	0.04	0.003
Ducks geese & coots	—	0.54	0.494
Sandhill Cranes	—	0.11	0.004
Total	4.84	4.13	0.928

may not be important but the wildlife resources on golf courses are impressive, directly contradicting this quote - "Most native birds cannot survive in these highly-altered, asphalt and concrete environments" - from the otherwise excellent reference book, *Florida's Birds: A Handbook and Reference*.

Many golf courses seek "bragging rights" for the architect who designed their course; their "monster" 18th hole; the fast speed of their greens; or the size of clubhouse.

Why not make list of summer and winter feathered friends? A list of

habitats appropriate for them... future plans for enhancement? List all of the assets... and create more. Then we will be doing something important for the birds environment. Then we will really have something to brag about.

Thanks to all who contributed their time and effort. Our golf courses are very valuable assets they need to be cared for and managed.

To those skeptics who really believe a golf course is not an area to find native birds, try renting a golf cart and playing a round at your local golf course.

GCSAA Environmental Award Goes to the USGA

The United States Golf Association has been selected to receive the 1996 President's Award for Environmental Leadership from the Golf Course Superintendents Association of America.

The recipient is chosen by the GCSAA board of directors based on exceptional environmental contributions to the game of golf — contributions that further exemplify the golf course superintendent's image as steward of the land.

"With the serious challenges facing the game today, the entire industry is indebted to the United States Golf Association for its commitment to producing hard data regarding the environmental impact of golf and golf course manage-

ment practices," said GCSAA President Gary T. Grigg, CGCS, Royal Poinciana Golf Club, Naples.

"We're delighted the GCSAA has taken this opportunity to acknowledge the USGA's consistent efforts to promote sound environmental stewardship," said Thomas W. Chisholm, Chairman of the USGA Green Section Committee. "It's always gratifying to have the respect of your peers in any industry, and golf is no exception."

The award was be presented at the

Created in 1991, the President's Award for Environmental Leadership has been presented:

- in 1991 to Cape Cod Study Participants, Bass River Country Club, Eastward Ho! Country Club, Falmouth Country Club and Hyannisport Club
- in 1993 to Audubon Cooperative Sanctuary Program Partners, the Audubon Society of New York State and the United States Golf Association
- in 1995 to William Timothy Hiers, CGCS, Collier's Reserve in Naples.

Environmental General Session held at GCSAA's 67th International Golf Course Conference and Show in Orlando.

In addition to conducting 13 national championships each year, the USGA funds turfgrass and environmental research; provides course rating and handicap systems; tests golf equipment for conformity to the Rules; preserves the game's history; and, in cooperation with the Royal & Ancient Golf Club of St. Andrews, Scotland, writes and interprets the Rules of Golf.

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