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Are We Guilty?

Is Water Pollution Happening at the Golf Course, Or - Do Our BMPs Really Work?

Charles H. Peacock

Good scientific writing usually demands that the third person be used. So, as a scientist, I rarely get a chance to use the first person. However, this



seems to be one of those times when it is more appropriate. Over the last 10 years, I have been involved in more than 50 golf course projects from New York to California to Arizona to Florida to North and South Carolina involving water quality issues.

The theme, whether it comes from concerned citizens, environmental watchdog groups, or regulatory agencies at the federal, state, or local level always is the same - how are you going to stop all the pollution coming from the golf course? Whenever these questions arise, I first become a little defensive.

Often my response is - why do you believe that there are water quality problems associated with golf courses? The reply is always the same - but, they douse the golf course with all those toxic pesticides and fertilizers and other chemicals and they are constantly out there spraying!

Now, there are several issues here:

First, are pesticides toxic? Of course they are - if they were not they would not be labeled as pesticides. Government regulations require that materials which are applied for the use of controlling plants or animals be regulated because they injure or kill specific organisms. The general public, whose level of scientific understanding may be limited or simply non-existent, just doesn't seem to be able to differentiate between how a material can control say an insect, and not be a health concern to them.

A prime example is use of the materials fipronil (Chipco Choice for mole cricket control) and imidacloprid (Merit for grub control). These materials are also sold for flea and tick control (Frontline and Advantage respectively) in the little plastic tubes you apply directly to your pet and it provides extended control of these serious pest problems. Fido and Fluffy don't go belly up with a direct application, yet, the public is fearful of exposure with an application to turf where there is no direct contact with the concentrated form.

The second issue is - why does someone assume that just because we spray pesticides or apply fertilizers they end up in the water? Or, even if small quantities of materials do end up in the water, why do people assume it creates an environmental problem?

Part of the answer to this question is that

the questioner obviously may have a poor understanding of biology, chemistry and ecology. However, even those people who are more scientifically oriented erroneously make unfair assumptions. Here is an example - golf courses spray pesticides; there are ponds, lakes and streams on golf courses; the pesticides must be getting into the ponds, lakes and streams. Simple logic seems to follow here. Or, what about the fertilizers you apply - all that nitrogen is probably polluting the Neuse River because they have nitrogen problems in the Neuse and there are golf courses in the river basin.

Yet, what has been ignored are basic questions that everyone should ask:

- What do we know about what happens to the materials applied to golf courses?
- Have any scientific studies been conducted which have documented the fate of nutrients and pesticides applied to golf courses?
- What about golf courses that are monitoring the quality of surface water and groundwater? What are they finding in their sampling?

The Press - Often Another Problem!

Over the last 15 years, water quality issues on golf courses have been a hot topic in the press. Often assertions are made that if a new golf course is

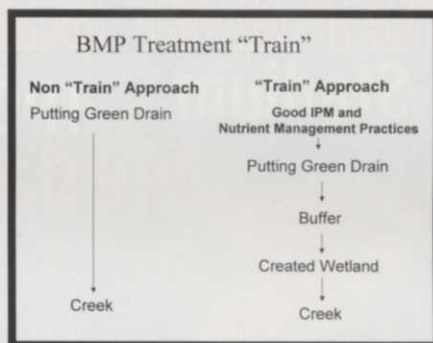


Figure 1. A Generalized Concept of the Best Management Practices "Train" Approach to Managing Resources.

being considered for construction, it will contaminate the streams and lakes and everyone's drinking-water wells in the vicinity. Even on existing courses which have operated for years, the press often insists that water quality, and, in some cases, quantity are seriously jeopardized by the golf course at the center of their focus.

Probably the most notorious example was the article in the *Wall Street Journal* which headlined, "Golf Courses Are Denounced As Health Hazards" and featured a cartoon of golfers dressed in protective gear while playing the course. The focus of the article was that golf courses, in the reporter's opinion, used too many chemicals which are of course toxic. (By the way, what is "too many" and how would he know?)

Once, when such an article on water quality concerning the Neuse River appeared in the

Raleigh *News and Observer*, it stated that "City sewage, industrial wastewater, farm fertilizers, livestock manure and lawn and golf course chemicals are changing the Neuse (River), choking it with nitrogen and phosphorus." I called the reporter and told her that I had worked with the Division of Water Quality on water quality issues and was somewhat up to date on the concerns. I asked her where she got her information, where the studies had been conducted which had determined that golf courses were causing water quality problems because I had kept up with the literature fairly closely and I wanted to obtain a copy. The reply I received was typical

"Well, I don't know that there have been any studies, I was just making a generalization!"

Wow, what a generalization. Let's see if I understand it correctly - golf courses apply fertilizers so the nutrients must be ending up in the Neuse River. How about I make a generalization - people die in automobile accidents, so your car must have killed someone! Is that close?

I became a little agitated in my discussion with her and ultimately she cut me off with - "I'm sorry you are so upset, maybe you could write a letter to the editor." Well, she entirely missed my point. Responsible journalism demands that you investigate the facts, not form generalities. However, more and more we see in the press stories which are one-sided. Why? Because they are easier to write! Why ruin a good story with facts?

The Beginning

Interest in the environmental impact of golf courses on water quality is not new. For the past 30 years, various research studies have looked at the movement of specific chemicals under differing golf course conditions, especially on sand-based root-zone-mix putting greens and for nitrogen-source losses under a variety soil conditions. All of these studies were efforts to first document what was actually happening and then second to develop Best Management Practices to eliminate or minimize problems. With the onset in the early 1980s of scientists and regulators more intensively studying pesticides and nitrates in groundwater because of health concerns, it was inevitable that golf courses would ultimately come under scrutiny.

Now, I'm not opposed to that. In fact, I believe that all golf courses should be monitoring water quality at their sites for several reasons:

First - it documents what the facts are; this gives a sound basis to refute claims which may arise as to how your management is affecting the environment.

Second - it documents how effectively the BMPs are working, regardless of whether they are the Land Use (those physical factors which are put in place through good course design and engineering such as retention/detention ponds, vegetative filter strips, buffers, etc.) or Source Prevention - how good a job you are doing in your management, what I like to call Intelligent Management. Of course, this assumes that first, you care about how good a job you are doing (let's make this a basic assumption) and that second, you understand what you are trying to accomplish as to not overloading the ecosystem's capacity to function (this is the subject of another article at a later time.)



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The Facts

While there are numerous scientific studies which have been conducted at universities around the US and beyond to look at pesticide and nitrogen fate, many are often criticized because they are not conducted at golf facilities where day-to-day conditions dictate the management practices the superintendent faces to keep the course playable.

While these "academic" type of studies are critical to developing an understanding of the many complex factors which affect how pesticides and nitrogen behave, the ultimate concern is what are the water quality conditions at actual golf course facilities. The following summarizes the major studies which have been published, either in peer reviewed scientific journals or under scientifically rigorous conditions specifically for environmental regulatory or health agencies.

Massachusetts

One of the first studies which documented water-quality conditions on golf courses was published in 1990 in the journal *Ground Water Monitoring Research* (Cohen et al., 1990). This study was undertaken under the auspices of the Environmental Protection Agency.

Groundwater quality was monitored at 19 wells on four golf courses on Cape Cod in Massachusetts. This location was chosen because of fragile ecological conditions - sandy soil profile, high rainfall totals, shallow groundwater. The golf courses chosen were all more than 30 years old so they had a long history of fertilizer and pesticide use. Sampling sites were clustered around areas where the highest amounts of materials were used, greens and tees, and then under the fairways.

Summary of findings:

The wells were monitored for 17 pesticides. Of these, seven of the 17 chemicals were never detected in water samples. Of the 10 materials which were detected, only chlordane (which is no longer used on golf courses) exceeded Health Guidance Levels (HGL).

Of the 12 materials which were legally registered for use at the time the study was conducted, none were found in concentrations greater than one-fifth of the HGL. Nitrate-N concentrations were generally below the 10 ppm federal (and World Health Organization) Maximum Contaminant Level (MCL). Based on the spatial and temporal data collected, nitrate-N concentrations decreased in response to lower application rates and use of slow-release fertilizer formulations.

This pioneering study answered a lot of questions. It also opened up a lot of discussion based on the authors' conclusions that: "this was one study with one set of pesticides in one hydrogeological setting." This was what drove the initiative to start more closely documenting both surface water and groundwater conditions at other golf course locations.

What was highly significant in this study was the observation that "turf management practices are closely related to nitrate concentrations in groundwater. Rate and frequency of fertilizer application as well as type of fertilizer used appeared to be significant factors in ground water nitrate-nitrogen concentrations

beneath managed areas". While everyone in turf management has preached this for years and intuitively it certainly makes sense, having scientific proof lends much more credibility to what can be accomplished.

Florida

In 1996, the US Geological Survey released a report which was prepared in cooperation with the Florida Department of Environmental Protection and Hillsborough County in Florida (Swancar, 1996). This report was based on a four-and-a-half-year study of pesticide occurrence in groundwater, surface water and irrigation water on golf courses in Florida.

This study was much more exhaustive in scope than the Cape Cod Study. Three pairs of golf courses were selected to determine the effect of irrigation with reclaimed water on pesticide leaching. Each pair consisted of one golf course using ground water for irrigation and one using reclaimed water.

Pairs were located in the same area and had similar pesticide use. Three additional golf courses were added in the second year of the study to obtain data on pesticides in other areas of the state. On these nine golf courses, water samples from a total of 39 shallow wells, three irrigation systems, six golf course ponds, two reclaimed water-storage ponds and three wastewater-treatments plants were analyzed.

This study found that pesticides were detected in ground water samples on seven of the nine golf courses. However, 45 percent of all occurrences were at barely detectable (trace) levels and 92 percent of the occurrences were under the MCL or HGL.

Surface water samples showed similar results with 60 percent of the occurrences at trace levels and 95 percent of the occurrences were below the MCL or HGL. In fact, only three surface water samples out of 61 samples which had detections of materials had levels above the MCL, and all three were on the same golf course pond. Samples taken directly from deeper irrigation wells on two golf courses contained no pesticides above detection limits.

Criticisms of water-quality data comparisons often come from ecologists. They assert that water-quality samples are only compared with human health comparisons, and not with ecological standards.

Based on the pesticide detections found in this study, two of my colleagues: Dr. Miles M. (Bud) Smart, director of environmental planning for Audubon International, and Dr. William Warren-Hicks, an environmental toxicologist with the Cadmus Group in Durham, N.C., and I evaluated water-quality sample data using an aquatic community ecological risk model. What we found was most interesting. When we looked at the range of pesticide concentrations in surface water and compared it to the concentration of that pesticide which would put 5 percent of the genera of aquatic organisms at risk, none of the pesticide detections were even close (Table 1). The one of most concern, chlorpyrifos (Dursban) was still nine times lower in concentration than would put the ecological integrity of the aquatic system at risk. Thus, even though detections are occasionally noted, their environmental impact is rare.

New Jersey

A study was conducted in 1999 at Ocean

County Golf Course at Atlantis in Little Egg Harbor (Meyer, 2000). Samples were obtained from surface water in and around the Atlantis Golf Course on a weekly basis from April through October. Students from Georgian Court College in Lakewood, N.J. collected the samples and the Pesticide Residue Laboratory of the Pesticide Control Program at the New Jersey Department of Environmental Protection analyzed all of the water samples.

The results from this study point out quite a few interesting facts:

First - the majority of the pesticide residues detected were not associated with the routine insect and disease control measures employed on the golf course - they were residues from previous use of DDT for control of soil-dwelling insects which moved into the ponds bound to particulate matter and malathion used by the county for mosquito control.

Second - when the New Jersey scientists made a comparison of the levels detected with environmental levels of concern (Table 2) just like in the Florida study, the maximum levels detected compared to the lowest aquatic reference level there was no risk to the aquatic ecosystem in the ponds sampled.

New York

Long Island has for many years now been concerned with its groundwater because it is a source of drinking water for so many people and the island has a long history of farming and pesticide use. In October, 1997 the Suffolk County Department of Health Services teamed with the New York State Department of Environmental Conservation to conduct a comprehensive examination of pesticide impacts on groundwater. Like the Florida study, this was much more extensive than the Cape Cod project. This project was not limited to golf courses, but they were included. Groundwater impacts resulting from pesticide and fertilizer use were examined by testing 31 wells located at 18 Long Island golf courses.

Only the dachthal metabolite TCPA was found above the MCL in the golf course monitoring, in one well in each county. Dachthal is no longer used in NY, one of the reasons being it was applied at a very high rate and was known to be very persistent in the environment unlike the currently labeled chemicals. As for fertilizer concerns, nitrate concentrations for the wells averaged 4.3 ppm and the median nitrate concentration was 2.6 ppm, well below the health standard for drinking water of 10 ppm. The authors of the study concluded:

"The monitoring results indicate that turf management practices can effectively control impacts to groundwater at golf courses."

While this is not surprising to those of us in the turf business, it is something we like to hear someone else conclude!

The Nation

In 1999, an article entitled "Water Quality Impacts by Golf Courses" appeared in the *Journal of Environmental Quality* (Cohen, 1999). The authors examined water quality data from seventeen studies (on 36 golf courses). A total of 16,587 data points from pesticide, pesticide metabolite, pesticide solvent and nitrate analyses of surface water and groundwater were reviewed. What they found was remarkable:

Pesticide	Concentration to affect 5% of aquatic genera(ppb)	Concentrations Found in Florida study(ppb)
acephate (Orthene)	1,352	1.5 to 20.1
bensulide (Betasan)	377	not detected
chlorothalonil (Daconil)	5	not detected
chlorpyrifos (Dursban)	0.9	0.1
simazine	2,730	0.08 to 38

- None of the authors of the individual studies concluded that toxicologically significant impacts were observed, although Health Advisory Levels (HALs), Maximum Contaminant Levels (MCLs) or Maximum Allowable Concentrations (MACs) were occasionally exceeded.
- The individual pesticide database entries that exceeded HALs/MCLs for groundwater were 0.07% of the total.
- The individual pesticide database entries that exceeded HALs/MCLs for surface water were 0.29% of the total.
- The MCL for nitrates in surface water was never exceeded.
- The MCL for nitrates in groundwater was exceeded in 3.6% of the samples; however most of the samples where the nitrate MCL was exceeded were apparently due to prior agricultural land use.

They concluded, as did the New York and

New Jersey investigators, that "widespread and/or repeated water quality impacts by golf courses are not happening at the sites studied."

North Carolina

In 1994, a graduate student at North Carolina State University evaluated surface water quality at three golf courses in coastal North Carolina (Ryals, et al., 1998). He sampled surface water at these sites every two weeks from January to December. Each course has a sandy loam soil and adjoining wetlands, saline marshes, or elevated water tables. They concluded from this study: "The data indicate that impact to the surface waters from the courses was minimal. Of the four pesticides (atrazine, chlorothalonil, chlorpyrifos and 2, 4-D) and two nutrients (nitrogen and phosphorus) surveyed, only 16 samples exceeded the US EPA HALs. (And these were from locations on the golf course). All analyses of the

samples collected from the outflows of the courses were below their detectable limits."

Now, sixteen may sound like a large number of samples which exceeded a threshold which is considered a problem, except they evaluated 1,578 samples so excessive samples represent around 1% of the samples. Furthermore, these were all nutrient problems, not pesticides, something which can be easily controlled with changing the BMPs used at the course.

Additionally, all of the detectable pesticide levels were below environmental hazard levels (based on the LC50 value), and none of the samples collected from the natural areas surrounding the three courses or from the outflows from the courses showed detectable pesticide residue levels.

The Center for Marine Science at the University of North Carolina at Wilmington has also been investigating water quality as impacted by five golf courses in coastal North Carolina (Mallin and Wheeler, 2000). These studies occurred over a period from 1993 to 1998. The authors of this study drew some conclusions based on their interpretation of the data:

- "In general, nitrate levels were greater in streams leaving the courses compared with streams entering the courses, but concentrations varied considerably"

My comments on the interpretation of their data:

Outflow site nitrate+nitrite concentration averaged over 1993-1997 from the five golf courses was 0.055, 0.107, 0.315, 0.321, and 1.462 ppm. Now,

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Comparison of Detections of Pesticides Currently in Use with Environmental Levels of Concern

Pesticide	Maximum Level Detected (ppb)	Environmental Level (ppm)	Ratio (1/1 would pose a risk)
Chlorothalonil	0.46 _{g/l}	250 _{g/l/96 hr LC50} - rainbow trout	1/543
dichlorvos	0.34 _{g/l}	900 _{g/l/96 hr LC50} - bluegill	1/2647
malathion	1.02 _{g/l}	64 _{g/l/96 hr LC50} - walleye	1/63
metaxyl	0.6 _{g/l}	>100,000 _{g/l/96 hr LC50} - rainbow trout, carp, bluegill	1/166,667
methoxychlor	0.37 _{g/l}	17 _{g/l/96 hr LC50} - Atlantic salmon	1/46
metolachlor	0.005	2000 _{g/l/96 hr LC50} - rainbow trout	1/400,000

ecologists suggest that eutrophication does not occur until surface water has total N concentrations is greater than 0.75 ppm and moderately enriched water only when it is greater than 1.25 ppm. Thus, only one golf course has a moderately enriched nitrogen condition from nitrates and none of them came close to the health level of 10 ppm. The authors of this study point out that there are some recent studies that indicate that in controlled conditions, nitrate levels this low have caused serious phytoplankton bloom formation in Neuse River estuary waters and that these levels may be associated with declines of seagrass thereby creating problems with coastal fish habitat. However, they sampled directly at the golf course, not in areas where dilution would appreciably lower the nitrate concentrations.

Other conclusions they drew:

- "Orthophosphate concentrations were elevated on mid-course sites on two courses (out of five), but were low in the outflow water except at one course."
- "The golf courses studied were not significant sources of fecal coliform bacteria to nearby waters; in fact, passage through some courses served to reduce coliform loads entering from upstream suburbs."

My comment on their conclusion:

Imagine that, water entering the golf course from an urbanized area is actually *filtered* by the land-use practices on the golf course!

- "Landscape management practices appeared to play a critical role in determining nutrient concentrations in the outfall and at mid-course sites."

My comment on their conclusion:

Does this sound like intelligent management plays a role, in such as using good BMPs?

Here is their overall conclusion:

"Vegetated buffer zones, wet detention ponds, and wooded wetland areas led to considerably lower nutrient output than sites lacking such management practices and should be used whenever possible to protect nutrient-sensitive receiving waters."

In 1992, the US Golf Association published a book entitled "Golf Course Construction and Management - Environmental Issues" edited by James C. Balogh and William J. Walker. In this book, they pointed out that BMPs are used in an attempt to reduce the adverse water quality and environmental effects of agricultural and forestry management systems. They included a number of goals of BMPs including the following:

- to reduce the offsite transport of sediment, nutri-

ents and pesticides

- to control the rate, method and type of chemical being applied
- to reduce the total chemical loads by use of IPM, economic thresholds, alternate pest control options and fertility testing
- to use both biological and mechanical soil and water conservation practices

About this time, Livingston and McCarron (1991) started promoting what they termed the idea that a stormwater management system might be considered as a "Best Management Practices (BMPs) Train" in which the individual BMPs are considered the cars (*Figure 1*). This concept promoted that water taken through a combination of treatment processes such as vegetated filter strips, retention ponds, created wetlands, etc. which would each reduce the pollutant load in each treatment process ("car in a train") by some percentage. Therefore, prior to discharge into the natural environment pollutant concentrations would be so low there would be no impact and that the natural bio-geo-chemical cycling of the ecosystem would not be disturbed. As part of this, an intelligently managed golf course management program which starts with good design and engineering and then incorporates a good IPM program into the BMPs Train concept could be protective of water quality.

Thus the UNC-Wilmington data strongly support this whole concept!!

The Message

Best Management Practices do work! Is there really any need to expound on this further? However, as long as you and I are in the turf industry, we will continue to be the target of special-interest groups and an uninformed (and many times unwilling to be informed) press as well as individuals. You have a choice - continue to manage the way you have been and ignore the opportunity to prove how effective your management really is - or, review and revise your management practices to attain the BMP goals Balogh and Walker mention. Monitor your surface water and groundwater so you can look anyone in the eye and tell them that your golf course doesn't have any water-quality problems, you have the data to prove it, and you are backed by numerous scientific studies which have been conducted over the past 18 years, and you will be happy to provide them the scientific literature citations!

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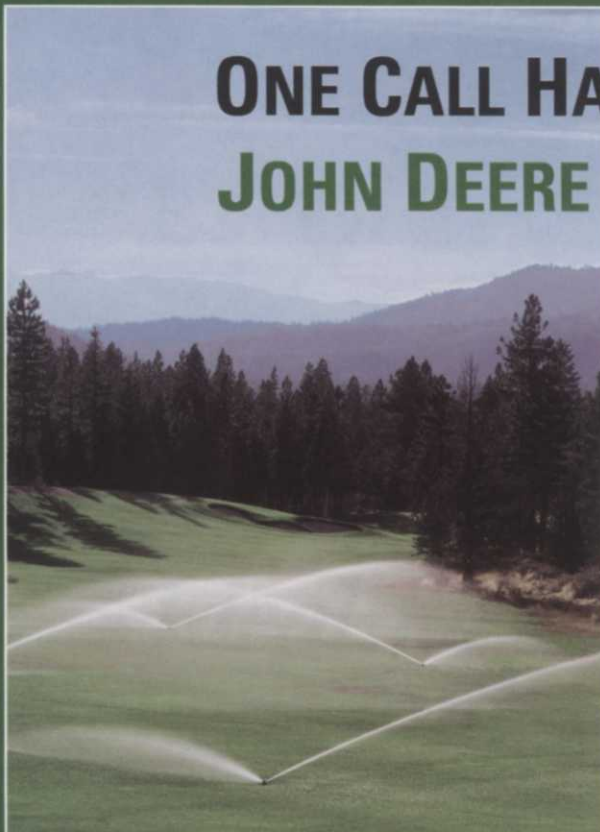
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Birds, Not Birdies, Count on North America's Golf Courses

By Jean Mackay

Volunteer birdwatchers recently turned up 295 different species of birds on golf courses participating in Audubon International's 2002 North American Birdwatching Open. During the 24-hour event, 48 golf courses that are participating in the Audubon Cooperative Sanctuary and Audubon Signature Programs recorded as many different bird species as they could to provide a snapshot of bird activity on golf courses at the height of bird migration in May. Audubon International encourages courses to play an active role in conserving habitat for birds and protecting overall environmental quality.

Eagles Landing Golf Course in Berlin, Md. sighted 92 different bird species during the day to record the highest number of species for the third year running. Birders at Lake Quivira Golf Course in Kansas sighted 78 species and Turning Stone Casino Resort in New York came away with 76 species, to place second and third respectively. Among this year's leading courses were prior top performers The Club at Seabrook Island in South Carolina (75 species) and Michigan's Gull Lake View Golf Club (71 species). Joining them for the first time this year was Oak

Meadow Country Club in Missouri with 74 species.

"The results of the North American Birdwatching Open show that it's not just the size of the property that counts, but the variety of habitats present and the way natural areas are managed that make a difference," said Jean Mackay, director of educational services for Audubon International. The diversity of species overall and the number of birds recorded per site reflect both the geographical spread of golf courses across North America and the wide range of habitats found on and around these sites. Fifty-six percent of participants identified 50 or more species, while 14 percent counted fewer than 30.

Data from this year's event proved to be highly consistent with data gathered since the event was first held in 1998. The top twenty-five birds sighted remained nearly unchanged. Mourning doves, blue jays, and red-winged blackbirds topped the list of birds sighted. From there, the inventory of birds gets more interesting, with sightings of great blue heron and red-bellied woodpecker on nearly 75 percent of partici-

pating courses and eastern bluebird and green heron on 52 percent.

In addition, seven federally threatened and endangered species were sighted. Fifteen courses spotted loggerhead shrikes, eight courses recorded sandhill cranes, and six courses identified American bald eagles. Other endangered/threatened species included least tern, brown pelican, grasshopper sparrow, and clapper rail.

"In the end, the greatest challenge of the North American Birdwatching Open is not in counting the most birds, but in calling all golf courses to take account of wildlife and other environmental aspects of management," said Mackay. "When properly managed, golf courses can make a valuable contribution to the rich diversity of avian species across North America."

Audubon International is a not-for-profit 501 (c)(3) environmental organization dedicated to improving the quality of the environment, with an emphasis on helping people become actively involved in good environmental stewardship and sustainable resource management.

The organization was established in 1987 to find ways to address environmental problems by working cooperatively, and in partnership with, a diverse array of organizations and individuals to improve environmental quality on the lands they manage.

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STEWARDSHIP NOTES

It's Time to Walk the Talk

By Shelly Foy

I already miss summer. Not the hot, humid days where you feel that you can hardly breathe when you step outside; but the slower pace of it. No fighting teenagers to get them off to school, no volunteering at schools for a couple of months, and the "slower" season in our office when most of the members are up North somewhere and superintendents are busy with summer projects and renovations. We actually have time to catch up a little and even take some time to head to



A flock of cedar waxwings finds sanctuary at the Willoughby G&CC over the winter. Photo by Bob Smith.





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Sealsle 1, a new salt-tolerant (halophytic), drought-resistant, warm-season turfgrass, is now available as "certified" sod or sprigs. After seven years of extensive research at the University of Georgia's Griffin Experiment Station, combined with careful evaluation of 35 small-plot golf course locations, Sealsle 1 was released in 1999 by plant geneticist Dr. R.R. Duncan. Unlike Adalayd, Futurf and other earlier medium and coarse-bladed paspalum cultivars, Sealsle 1 is similar in texture and wear tolerance to the hybrid bermuds. And Sealsle 1 has a number of other advantages, especially under difficult environmental scenarios. First and foremost, it can handle multiple stresses: prolonged drought, high salt levels, low light intensity, waterlogging and extremely high or low soil pH levels. Secondly, Sealsle 1 can tolerate most types of alternate water sources, including wastewater, effluent, ocean water, gray water and brackish water. It also requires less irrigating, less fertilizer and only minimal pesticide applications when compared to other warm-season cultivars. As water quality and water conservation become even more critical in the days ahead, Sealsle 1 may be the best choice for fairways, tees, roughs and transition areas. Sealsle 1 not only thrives in difficult environments, it also gets very high marks for turf quality, cold-hardiness, turf density and turf strength, disease and pest resistance, and rapid recovery from normal wear and injury. On top of that, Sealsle 1 has the most attractive, rich dark green color of any of the warm season grasses. See for yourself. Schedule a trip to see Sealsle 1 at one of these quality-conscious producers licensed to grow and sell certified Sealsle 1 seashore paspalum.

- Most Salt Tolerant Turfgrass - Can Be Irrigated with Ocean-Level Salt Water with Proper Management
- Tolerates Gray Water & Effluent Regardless of Contaminant Levels
- Helps Clean Up Contaminated Soils & Water
- Handles Wide Range of Soil pH Levels: 4.0-9.8
- High Tolerance to Salt Spray, Water Logging and Periodic Inundations
- Low Fertilization Requirements
- Minimal Pesticide Requirements
- Good Rooting in Sandy, Clay or Muck-Type Soils
- Darker Green Color Than Bermudagrass
- Can Be Overseeded with Bentgrass-Ryegrass-Alkaligrass Blends
- Excellent Low Light Intensity Tolerance
- Root Growth & Functionality Still Maintained in 40-55°F Soil Temperature Range
- Low Tree-Shade Tolerance (Similar to Bermuda)

Sealsle¹

Certified Seashore Paspalum

To Order Your Certified Sealsle 1 Seashore Paspalum Contact One of These Licensed Sealsle1 Growers

Southern Turf Nurseries, Inc. Punta Gorda FL 800 841-6413 Turfgrass America Tampa FL 800 881-0779
 Tifton Turf, Inc. Ashburn GA 800 841-6645 SMR Turf & Trees Bradenton FL 941 746-8873
 South Florida Grassing Hobe Sound FL 561 546-4191 The Turfgrass Group Marshallville GA 678-642-0915
 Rapid Turf, Inc. Rincon GA 912 826-2454 Phillip Jennings Turf Farms, LLC Norristown GA 478 668-3729
 Emerald Island Turf, Inc. Punta Gorda FL 941 637-4770

our favorite mountain in North Carolina.

But alas, those days are over, and my to-do list is so, so long. Just in this one week of late August, I have to finish this article for the *Florida Green* (hopefully on time for a change), plan a program for two regional conferences, work on trying to schedule four Audubon workshops in the same week, in season, work on the budget for our office, plan the first Audubon committee meeting for the elementary school, start working on an Audubon talk for the SFGCSA and wonder why in the world I agreed to help raise money for my daughter's high-school sailing team. This on top of mom duties of carpooling, grocery shopping, cooking, cleaning and dragging teenagers out of bed at 6 a.m. Sound familiar to anyone?

What's my point? We all have busy lives. I don't know anyone who has a 9-to-5 job anymore. We are all spread too thin, but somehow all these to-do things seem important. Well, I am going to ask each of you to add one more important thing to your to-do lists: Attend an Audubon Workshop closest to you the first week in December.

This series of Audubon Workshops will be sponsored by the FGCSA and the USGA, and will be at various locations in Florida. David Court, president of the FGCSA, thinks the ACSP is important enough to make this one of the things he promotes during his presidency. Joel Jackson's recent government-relations experiences makes him think it's critical so he spends lot of time e-mailing all of the chapters to promote the workshops. I think it is important enough to tackle organizing it.

So, David, Joel and I are hoping that you will all make an effort to attend the ACSP workshop closest to you. The plan is to have Audubon staff take everyone through the first certification steps, the Site Assessment and the Environmental Plan. We will provide everyone with a list beforehand of the important information to bring with you. When you leave this workshop, you will have completed the first certification step.

ASCP Florida Survey Results

I have been curious for a long time about what makes golf courses become so committed to the ACSP. I decided to send a survey to all 59 certified ACSP golf courses in Florida and ask a few questions about how they feel about the ACSP. I was encouraged by the responses and thought that maybe you might heed some advice from your peers. If you are not a member, join; and if you are one of those who just keep sending in your registration fee and never do anything, maybe some of the following responses will get you fired up. We don't have the space to list every answer to the following questions, so author's choice is the name of the game.

How has going through the ACSP certification process been beneficial to you personally?

"It has provided me a tool to use for public relations and education of others unfamiliar with the benefits golf courses provide to the environment, community and to each of us as individuals. It has allowed me to look beyond what I currently know and expand my knowledge of the diverse environment that I manage."

Darren Davis, Olde Florida Golf Club

"Answering the certification questionnaire forced me to pay more attention to the many different species that inhabit a golf course, from animals, birds and fish to plant life. The water-quality issues were especially enlightening. I had not really understood the science involved or the complexity of the ecosystem until I started trying to answer the questions."

Nancy Miller, Maple Leaf Golf & Country Club
(Although Nancy is new to Maple Leaf, she has worked on Audubon certification at three locations previously.)

"The educational process of learning how golf courses and maintenance can affect the environment has been beneficial to me. It has also allowed me the opportunity to teach others, and to be able to clarify in better detail the public relations dilemma of why golf courses are not hazardous to the environment."

Scott MacEwen, TPC of Tampa Bay

"I have never looked at it as a personal achievement. However, I did find it rewarding to see the changes in the views of the members and guests, resulting in a greater respect for the environment."

Mark Metzger, Arrowhead Golf Course

How has going through the ACSP certification process been beneficial to your golf course?

"We now use a lot of natural fertilizers and pesticides. It is a good feeling when members notice the results we are achieving."

Jeff Klontz, Country Club of Florida

"The process has helped to remove areas from cultural practices, i.e., mowing, and helped to decrease labor and chemical expense in those areas."

Walter Wells, Habitat at Valkaria

"We have seen major reductions in the amount of fertilizers, pesticides and water use."

Bob Volpe, Pelican's Nest Golf Course

"The certification process brings together many different people on the course. The superintendent, manager and members all work together for a common goal and get to know and understand each other better. Being involved in the process brings a sense of pride to all the participants. The certification is also a good marketing and public relations tool."

Nancy Miller, Maple Leaf Golf & Country Club
"We were able to naturalize some areas, which saved some labor. We in turn utilize this labor to keep up with our native plantings and butterfly gardens. Many of the native plantings have made many areas more aesthetically pleasing to our guests."

Scott Welder, Walt Disney World - Lake Buena Vista Course

What is the difference in just being a member of the ACSP and being certified in the program?

"I feel the biggest difference is the level of involvement. The certification process unites the entire community, and the lasting effects of this union will continue for the life of the club."

Mark Metzger, Arrowhead Golf Course

"Being certified has increased the awareness of our membership on the importance of maintaining our natural habitats."

Cindy and Danny Claude, Lemon Bay Golf Club

"Fully certified signifies more than just an interest in

doing the right thing. It shows a willingness to commit to a completed task and walking the walk, not just talking the talk."

Darren Davis, Olde Florida Golf Club

"The difference is total commitment to environmental stewardship. Being just a member of the program ensures that you are aware and involved in the environmental process. Having attained full certification means that you have gone through the entire process, established policies and procedures to attain certification, and allowed the process to be totally implemented - in a way, a move to organizational commitment."

Garth Boline, Chi Chi Rodriguez Golf Course

Was there a specific problem or concern that participation in the ACSP helped solve? (For example, using the education information to promote increased naturalization for habitat) <-

"I think it adds a platform to be able to get things accomplished. Most members are not aware that the program exists. Being involved in the program has also helped get items in the budget."

Matt Taylor, Royal Poinciana Golf Club

"Yes, it helps our members understand why the way we manage the course has a direct impact on how well we co-exist with wildlife. They also now understand that lush, green grass is not always healthy for the environment."

Pete Metcalf, Wyndemere Country club

"Our homeowners around the course use the same irrigation source as we do and there has been a constant debate over water quality. The documentation that comes with certification has calmed these concerns."

Mark Metzger, Arrowhead Golf Course

"Re-emphasis on no-spray zones around the lakes of the course."

Bob Haley, Hammock Dunes

"The naturalization of lake-bank areas was far easier to put to the golfing public through the literature provided and helped get resources for the project."

Walter Wells, Habitat at Valkaria

"Our golf course is in an urban area and loss of habitat has been a great concern for our golf course. By using the educational guidelines to provide additional natural habitat, plant-food sources, replace aquatic plantings and provide a nesting box and feeding station program, we have greatly increased the wildlife population on our golf course."

Garth Boline, Chi Chi Rodriguez Golf Course

"There are many concerns or problems that come up on a regular basis that are usually abated by the fact that we are a participant of the ACSP. For instance, if I receive feedback from a member concerning our handling of pesticides or other chemicals, it is so much easier to convince them that things are OK by explaining that the ACSP teaches and requires proper BMPs and IPM techniques."

Russ Geiger, Hole-in-the-Wall Golf Club

What tips can you give others going through the certification process?

"Get as many people involved as possible so that not only does this lighten the amount of paperwork, but it also gets the rest of your staff to marry into the program from the beginning."

Matt Taylor, Royal Poinciana Golf Club