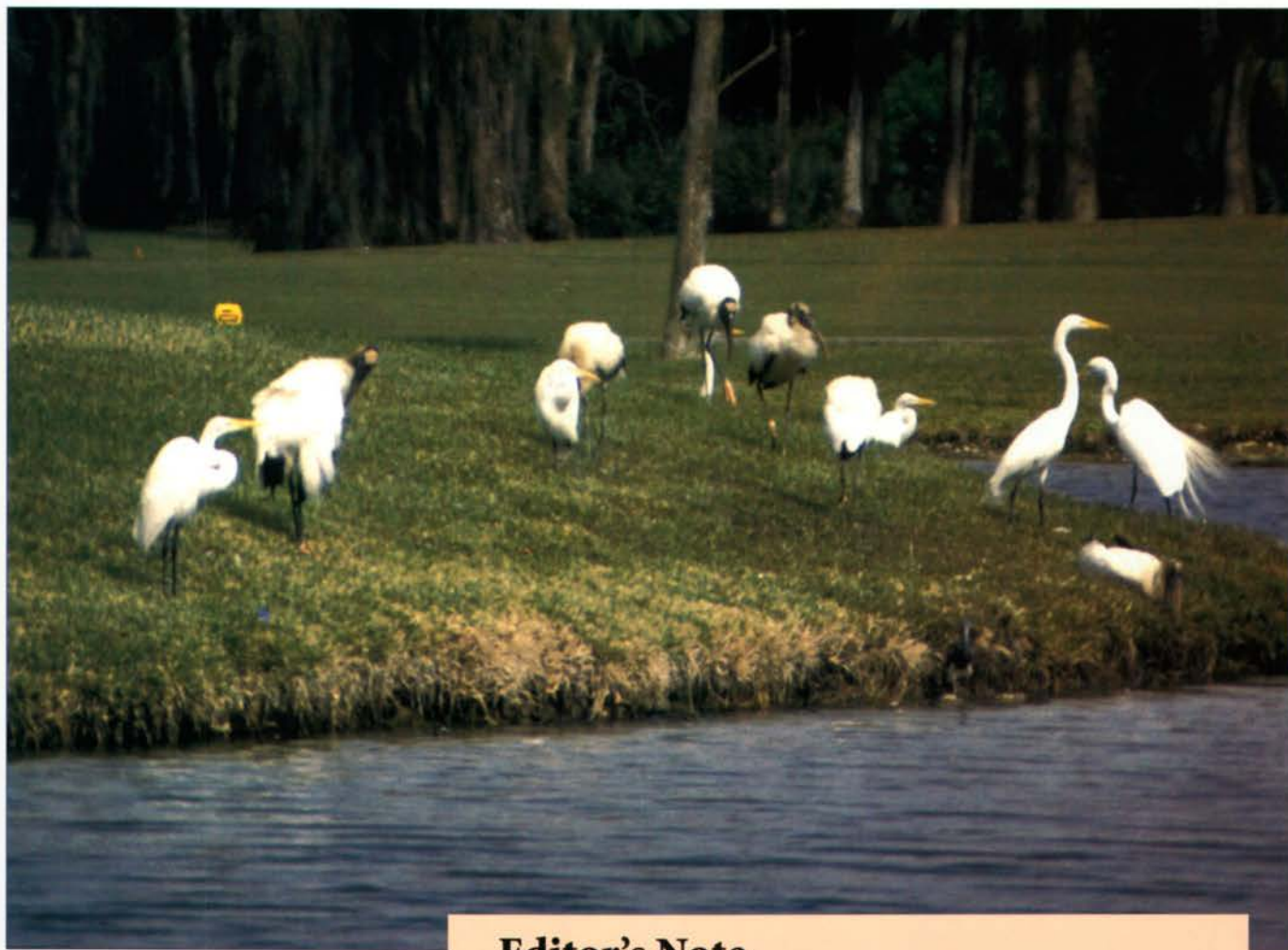


1995 Wading and Water Bird Survey on Florida Golf Courses



BY C. ELROY TIMMER

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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)

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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 lead 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

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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	> 40 Acres	<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

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**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.