

## Audubon Cooperative Sanctuary Program

by Dean Graves

Bethesda Country Club has recently become the 134th in the world, the first private club, and the third Maryland golf course recognized by Audubon International as a Certified Audubon Cooperative Sanctuary. Four years have passed since BCC entered the Cooperative Sanctuary program, and finally achieving full certification has given those of us who have been involved from the beginning a strong sense of accomplishment. I have been pleased to find that increasing our environmental consciousness has not meant sacrificing quality playing conditions. Indeed, the course has become more beautiful and more interesting with the addition of naturalized areas containing unmowed native grasses and wildflowers. These areas have earned us many compliments from our members, and our ever expanding nest box program has generated many questions about the new bird species inhabiting the golf course.

If you have considered joining the Audubon Cooperative Sanctuary System, you may know that full certification entails satisfying requirements in five categories: Water Quality Management, Wildlife and Habitat Management, Integrated Pest Management, Water Conservation and Outreach and Education. Considering the time and effort required simply to keep a golf course green and playable, the above list looks imposing. Some of the categories represent additional learning and different management techniques that can cut into our time, take away more of our already overextended budgets. But, taken in pieces and spread out over several years, satisfying Audubon's expectations becomes an attainable goal. The reward is not just a more beautiful and environmentally sensitive place for golf and work, but our efforts within this program add to the growing body of evidence that golf courses can be maintained without polluting the environment. Data collected from required water testing will help superintendents argue that water quality can benefit from the filtering effects of turfgrass, and, particu-

larly in urban areas, we can claim that we are restoring wildlife habitat previously lost to development. These arguments will become more persuasive as more clubs collect the water quality data that is a fundamental part of the Sanctuary Program.

Obviously, dealing with such wide ranging environmental categories requires the participation of many people. I was encouraged to become a part of the Cooperative Sanctuary System by part-time crew member Brian Cusik. Brian collected the initial information from Audubon International, helped formulate our overall environmental plan and developed and wrote up the Outreach and Education category. Another crew member, John Gleason, has been instrumental in establishing and maintaining our nest box program, and has handled most of the paperwork necessary for certifica-

tion. Mike Augustin, a past assistant and current superintendent at Belle Haven Country Club, played an important role in establishing our naturalized areas, programming our irrigation system for maximum efficiency and fine tuning our IPM program. Mike's enthusiasm for Audubon's goals has been gratifyingly continued by my current assistants, Mark Kingora and Brian Pardoe. And certainly, the regular support and interested involvement of Greens Committee Chairman, Mr. Jim Jennings and Club President, Mr. Richard Nolan has made the whole process easier.

We tackled the Water Conservation category first, and the task was simplified by our recently installed Maxi-V irrigation system. Audubon's concerns center on minimal water usage, and on reducing water loss. Since many clubs already conserve water as a hedge

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against summertime drought, and since a drier course can play better than an over watered one, most courses are probably in good shape here. We couple judicious water use with aeration, spiking and wetting agents for better penetration, and we use individually controlled sprinkler heads, part circle heads and lots of hand watering for precise water placement.

Integrated Pest Management came next, and this is another area where many clubs are already active. For several years, those of us working at BCC have been trying to reduce total pesticide output along with reducing overall levels of pesticide toxicity. Pyrethrin based insecticides such as Merit, Tempo, and Tolstar offer a safer approach to insect control, and we have had some success applying bacteria with the Bioject system to help control brown patch, pythium and dollar spot. Using organic and slow release fertilizers, and applying soluble nutrient sources at low rates has helped us closely regulate turf growth and control fertilizer runoff. Reliance on drought, disease and insect resistant grasses helps, as does pruning and thinning of tree stands for better air movement across greens and fairways. The turf on our fifteenth green was thin because of the surrounding trees, but there was noticeable improvement several weeks after installing two fans to improve air circulation. None of these practices are new or radical, and I believe many clubs would find that they would already be well positioned for certification in this category.

Although public concern over pesticide use is what attracts legislative attention, golfers will be most aware of any efforts regarding Wildlife and Habitat Management. Members may not know the fine points of our irrigation or pesticide programs, but they certainly notice naturalized areas of native grasses and wildflowers and the various birds populating the nest boxes. Establishing Bethesda's naturalized areas took some experimenting, but the additional colors and textures beautifully set off the rest of

the course and regularly draw compliments from our members. Our nest boxes have increased the Bluebird population, and have attracted Purple Martins and Tree Swallows, two species that we didn't see before erecting the boxes. The high grasses and Blue Flag Irises near our pond have brought in Red-winged Blackbirds, and the seeds available in our scattered stands of wildflowers are popular with American Goldfinches. Recently installed thistle seed feeders were serving a steady stream of Goldfinches and House Finches within a day of going up. The last two years we have been fortunate to have Great Horned Owls nesting in Eastern White Pines alongside our third and eleventh holes, and this year we were pleasantly surprised when a snapping turtle chose to lay her eggs within ten feet of our seventeenth green. The turtle's nest cavity is under a thick protective layer of

turf that has been posted as ground under repair, and we are hoping to witness the emergence of the young turtles by the end of June. Wildlife and Habitat Management will take some planning, but most courses have out of play areas suitable for experimentation with native grasses and wildflowers, and the changes can be implemented over several years. For information on nest boxes, I would recommend Mike Donovan's article that appeared in the Spring '98 Turfgrass Matters.

The Water Quality Management category goes hand-in-hand with the careful application of fertilizers and pesticides. Audubon's concerns center on regular water testing, vegetative buffers for streams and ponds, and on controlling rinse water from equipment wash pads.

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## Water Test Results

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The sodium hazard is determined by the sodium absorption ratio (SAR). This represents the proportion of sodium to calcium and magnesium. When the SAR increases so does the sodium hazard and the soil begins to tighten. The third factor in evaluating your water analysis is residual sodium carbonate (RSC). This figure you will have to determine on your own using values provided in your test results. The RSC compares the amount of carbonates and bicarbonates in your water to the amount of calcium and magnesium in the water. When the carbs and bicarbs are higher, they will pull Ca++ and Mg++ from the soil creating space for Na+ to attach itself. The formula for RSC is (carbonates + bicarbonates) - (Ca++ + Mg++) = RSC. All values are measured in milliequivalents per liter (meq l-1). For example, one of my test results read calcium 0.81, magnesium 0.73, carbonates 0, bicarbonates 2.64. The result is 2.64 - (0.81 + 0.73) = 1.1 meq l-1.

So what does all this mean? By taking the three values for salt concentration, SAR and RSC we can determine the suitability of a water source for irrigation. The charts below can be used as guidelines to interpret your water analysis.

### Electrical Conductivity as mmhos cm-1

0 - 0.25	low hazard
0.25 - 0.75	medium hazard
0.75 - 2.25	high hazard
> 2.25	very high hazard

### Sodium Hazard as SAR

0 - 10	low
10 - 18	medium
18-26	high
> 26	very high

### Residual Sodium Carbonate as meq l-1

0 - 1.25	low
1.25 - 2.5	medium
> 2.5	high

Other factors that may affect your water quality include suspended solids (silt and clay) which can impede infiltration and pesticide contamination which is rare and quite expensive to test for. Salt, sodium, and carbs/bicarbs are the backbones of your water testing. With these factors understood, it is easier to understand what you are dealing with and how to address any problems with your water supply.

Management practices for salt affected water include using salt tolerant grasses, improving drainage, leaching excess salts, and blending a poor quality water with a better quality water. Dealing with sodium also includes water blending as well as the use of soil amendments like sulfur and calcium compounds to remove sodium for the soil particle and allow Ca++ and Mg++ to take its place. Strategies for water with a high RSC value are the same as high sodium water but also includes acid injection to the irrigation system.

Hopefully, this will shed a little light on the complexities of a water analysis report. I would strongly recommend taking the Water Quality Seminar. In retrospect, I think it would be extremely beneficial to take one of your own lab reports to the seminar. Numbers seem to mean more when they are your own.

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The water testing can be done in house, or through an outside company. The testing offers the golf industry an opportunity to amass data from many clubs that can be used to demonstrate the public and local legislative bodies that golf courses don't contaminate ground or surface waters.

The last category, Outreach and Education, focuses on disseminating information to members and the general public on the golf industry's responsible reaction to environmental concerns. At Bethesda we have put together bulletin board displays, issued an informational brochure and sponsored Travilah Elementary School in Audubon International's Cooperative Sanctuary Program for schools. We would like to eventually have guided tours or nature walks for members and school children, and we are hoping for some positive publicity in the local press. Publicizing this type of program would reflect well on golf in general.

Helping Bethesda Country Club receive certification as an Audubon Cooperative Sanctuary has been very satisfying, but the real reward comes when I ride around the course. I feel good knowing we are working hard to avoid contaminating our water supplies, and I am happy we are supplying a good home for wildlife, but I am also pleased with how much better the course looks. The wildflowers are beautiful, and to watch a dozen Goldfinches suddenly fly up from feeding and quickly scatter always makes me smile. They weren't even here several years ago.

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