



# Stewardship News

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## Green Design: Moving from Blip to Tip

BY KEVIN A. FLETCHER, PH.D.

The United States is buzzing with excitement around all things environmental. From General Electric's "eco-imagination" to Al Gore's award-winning performances about climate change, it would seem we've come to the "tipping point" that Malcolm Gladwell refers to in his book by the same name—that point where environmentalism and sustainability have seemingly moved from fad to craze to commonplace.

But is that really true? Are we really experiencing a sea-change, specifically with respect to land development, green building, and the development of more sustainable communities?

The messages and feedback we're receiving from the development community would seem to support that this "tip" is occurring. Certainly, the overall tenor of the development community would lead one to believe that the entire industry has gone green. The emphasis on profitable development that works to sustain our fragile planet is a good thing to witness. Developers are learning, growing, and taking notice of their role in protecting natural resources and thinking about sustainable development.

Yet, much of this focus on sustainability by the broader development community remains largely style without much substance at this point. Once you remove the colorful noise and clutter of a "greening" conference and coverage in the trade and professional press, one simple truth is revealed—eco-design and development is barely a blip on the radar of everyday

planning and practice in land use, design, development, and building.

In recent surveys of the top building owners in the United States, for instance, 38 percent stated green design to be "increasingly important," with 15 percent stating it to be "very important." So, at best, one could conclude from these survey results that still half of all top building owners do not consider eco-development and design important. In another survey, 25 percent of members of the Construction Management Association of America stated an interest in taking building projects through the U.S. Green Building Council's LEED program. It's safe to assume that a smaller segment of that 25 percent might actually end up spending the time and money to go through the process. Surveys like this, as marketing professionals know, often hold a significant margin for error—a gap between word and deed.

The results of these surveys should not be shocking as they mirror other information gleaned from the broader population. For decades, Roper-Starch, for instance, has conducted consumer behavior surveys that have clearly and constantly demonstrated that 10-15 percent of the population is "green-hearted," meaning they are willing to pay more for a green product, go out of their way to make the eco-responsible choice, etc. Likewise, the same small percentage of green leadership is seen with participation rates in leading voluntary environmental programs across

industry sectors. So, it would seem that the participation in the eco-design and development movement by developers and builders, while small, is on par with the rest of the world, professions, and business sectors across the board.

The fact is, the bulk of the development and design profession, like so many other business sectors, is riding the well-publicized, but small-in-number coattails of the leaders and models in the game—the 10-15 percent of "green-hearted" eco-champions. For example, the current estimated value of new buildings participating U.S. Green Building Council's LEED programs for green buildings—the poster child for the eco-building movement—is over \$7 billion. Yet, this represents a mere 1 percent of total construction in the United States. It is a blip on the radar screen—a green blip, but a blip nonetheless.

Audubon International's own Audubon Signature Program, launched fifteen years ago, serves as another example. This voluntary education and certification program was created to facilitate green siting, design, construction, and management of new developments with an emphasis on both the landscape and the promotion of existing green building efforts. While participation by the development community has increased over the years and especially in the last two to three years, the actual number of members in this eco-certification program is a pale comparison to the number of new developments built

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## Dear Members and Supporters,

**Green.** For so long, green has conjured an array of images from envy to money, to illness and inexperience. Green signifies the go-ahead while also being the object of toil to ensure the perfect putt. It recalls the grass of home, the eggs and ham of Dr. Seuss, and frogs that have difficulties with their hue. It designates a comic-book superhero called Lantern, a cheerful giant who sells vegetables, and a knight who presents a challenge to Sir Gawain in a 14th-century English Romance. Now, several centuries later, green has gone mainstream. Hitting the headlines to bolster awareness of climate change and the Earth's limited resources, green is now used to describe almost everything.

In a year when presidential candidates are discussing support for a cap-and-trade system to reduce carbon emissions, differing on fuel-economy standards for automobiles and debating the need to support the production of biofuels in the United States, it seems appropriate to turn the "green" lens on ourselves.

Take a moment and ask yourself: *How green are you?* Once you answer that question give us a call or visit our website to see how we can help you.

Best,

**Joshua Conway**  
Education and Communications Manager

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Have we made any progress towards saving the environment?

## Introducing New Staff at Audubon International

### Sustainable Communities Manager Named

We are proud to welcome Suzanne Zakowski as the new Manager of the *Sustainable Communities Program*. Suzanne received her masters in Environmental Policy from Bard College, where the focus of her thesis was “*How Rural Communities Can Invest in Sustainability*.” She spent the last year working with community groups in Lyons, Colorado, and a local cement plant to cultivate a communication and pollution reduction strategy that benefits everyone. Prior to that, she worked primarily with mining communities in Appalachia and Colorado fostering community based projects that incorporate historical preservation, environmental sustainability, economic development, and local art culture.

### Signature Program Senior Ecologist Named



We are pleased to announce that we have hired a new Senior Ecologist for the Audubon Signature Program. Russell “Rusty” Retherford lives in the Henderson, Kentucky area with his wife and family. He has experience as an environmental regulator through the Indiana Department of Natural Resources for ten years and Army Corps of Engineers for seven years after that. More recently, he worked as an environmental consultant through his own firm. He has expertise in wetlands and stream-based

regulations, permitting, delineation, and mitigation, as well as ecological restoration, with a broad interest and knowledge of environmental management and sustainability issues in general. Welcome to the team!

### Assistance with Operations and Communications



Julie Rigg has also joined the Audubon International team on a part-time basis to assist with operations and communication projects. Julie holds a masters degree in Landscape Architecture, and previously worked at Blasland Bouck and Lee as a drafter. Before that, she worked as a junior landscape architect at QPK Architects in Syracuse. In her spare time Julie is also a freelance author.



## Take the Treasuring Home Pledge!

Valuing and caring for the natural resources and unique landscapes in the places we call home is critical to creating a healthier and more sustainable environment for the future...and it all starts in our own backyard. Audubon International's guide to environmental stewardship for homeowners, *Treasuring Home*, includes simple indoor and outdoor actions, as well as steps for extending environmental stewardship efforts from households to neighborhoods and communities. Make a commitment to get involved where you live by taking the *Treasuring Home Pledge* included in the guide. If you would like to obtain a copy of the guide, or purchase multiple copies for distribution, contact Audubon International at (518) 767-9051, extension 13, or email [jconway@auduboninternational.org](mailto:jconway@auduboninternational.org). The guide is complimentary to donors to Audubon International's Earth Fund. Homeowners are also welcome to view the guide and take the pledge online at [www.audubon-international.org/homepledge](http://www.audubon-international.org/homepledge).

## Green Design: Moving from Blip to Tip Continued from page 1

each year. Again, a blip.

Clearly, land development, and decisions related to where and how to build, has significant impacts on the nature of our communities. As population and our human footprint continues to grow, so too will our need to develop the land with nature in mind. Yet, with all the forward progress, we seem to be stuck in “blip” mode. What we need is a way to make environmental stewardship, sustainable resource management, and ultimately, the fostering of more sustainability communities, the norm, rather than the exception. Developers



in communities around the country and across the globe have an important role to play in this journey.

Unfortunately, if one focuses on the science and seriousness of climate change, we do not have time to waste. According to the latest reports from the International Pollution Prevention Council, we have mere decades remaining before greenhouse gases (a product of unsustainable policies, practices, and purchasing behavior during the last one hundred years) launch a domino effect that would destroy our coastal cities and decimate our economy.

One way Audubon International has been working towards meeting this goal is through our *Eco-Design & Development Initiative*—launched to leverage innovation and best management practices to create models for the

proper siting, design, construction, and management of new developments. From experience and research to date, central to moving the dial of eco-design and development, are three relatively simple goals:

- **Facilitating Best Practices**—Assist in creating model developments that protect the environment, and also meet desired economic and social outcomes, by emphasizing eco-design, construction, and sustainable resource management.
- **Driving Change**—Document and publicize the environmental, economic, and social outcomes of model sustainable developments to inspire change in others.
- **Offering New Solutions**—Identify existing policy barriers (e.g., governmental, economic) that hinder the establishment of more sustainable new developments, as well as alternatives to overcome these barriers.

To help chart this new path, it will take a collective voice from universities, associations, environmental groups, professional associations, and the private sector. In our case, we are developing an Advisory Council to provide advice, feedback, and opportunities for partnerships to avoid duplicating existing efforts. With a collective voice, many of the current policy and market-based barriers could be identified and overcome and a whole new set of incentives—ones that reward and create demand for the right type of sustainable development—could be created.

The biggest chasm of change occurs between plan and action. While the words and intent of developers, builders, and all those involved in development are providing the hope for change, in the end, action is needed. Pure, uncompromising, and collective action is needed to make eco-design and development commonplace. That will mean changing people’s attitudes, examin-

ing common policies that create unintended barriers, facilitating the mass uptake of best planning and management practices by professionals, and finding ways for the market to reward those developers and developments that take the lead. There is cause for celebration for the progress made to date. Yet, there is much left to do before we move from blip to tip. ●

The following is a partial list of awards received by Signature Members:

- Florida’s Water Best Practices Award, South Florida Water Management District (2004);
- The first LEED certification in the world for a maintenance facility (2007);
- Award of Excellence, Florida Safety & Health Institute & the Florida Department of Labor & Employment Security’s Division of Safety;
- Industry Leadership Award, Keep Austin Beautiful;
- ENVY Award, Florida Association of Realtors (1996) recognizing a single community throughout the state for environmental planning as well as appeal and marketability of the community;
- Recognition by the Florida Native Plant Recovery and Replanting Effort (RARE): Manatee Habitat Project Benefactor Award (2001);
- Mined Land Reclamation Award from NY State Department of Environmental Conservation (2002);
- Marina and Retail Facility, FL DEP Clean Marina Act (2000).

# Looking Back

BY NANCY E. RICHARDSON, AUDUBON INTERNATIONAL

Where have the years gone? That's something that my mother or grandmother would ask when talking about how fast time seems to fly. Well, I am asking the same question now about the Signature Program. Where have the last fifteen years gone? It hardly seems possible that the Audubon Signature Program is celebrating its fifteenth year of promoting sustainable development. Today, with 161 active members working on 70,000 acres in 37 U.S. states, as well as in eleven countries, the program has successfully made a place and name for itself in the world of environmentally-sensitive design and development.

Begun in 1993, the Signature Program was designed to chart a new path to the siting, design, construction, and management of new developments with an emphasis on both the landscape as well as the built structures. Sites that achieve designation as Certified Audubon Signature Sanctuaries demonstrate that enhancing and protecting the environment has economic, aesthetic, and community benefits.

The Signature Program also strives to employ new ways to promote sustainability, such as site preservation, green building techniques, and incentive programs for contractors, trades, and construction teams involved in residential community projects. The Signature Program is rooted in the concept of more sustainable use of natural resources, the lack of which has contributed to our current climate change challenge. Thus, although we have not delivered the program as a greenhouse gas reduction tool specifically, the use of natural resources in an unsustainable manner is related to the symptoms of climate change.

The most important component of the program is a focus on ecological soundness in the design, development, and management of a project. Members are required to submit a comprehensive and detailed Natural Resource Management Plan (NRMP). The plan requires detailed strategies to protect, conserve, and enhance wildlife habitat and natural resources; minimize and appropriately manage waste; utilize innovative technologies whenever possible; and provide documentation of short- and long-term environmental monitoring

## Challenges Faced

When Audubon International first created The Signature Program, we faced seemingly insurmountable challenges. We encountered substantial resistance from developers, and not a small amount of backlash from other environmental organizations. The developers' distrust of environmental organizations was based on a long history of adversarial experiences with developers on one side and environmentalists on the other. This was especially true with golf course development. The general consensus was that golf courses could not make any positive contributions to the environment, and, that, in general, all development is bad. Therefore, the first and most critical hurdle to overcome was to establish a positive relationship and a level of trust between "us"—an environmental organization—and "them"—the developers.

Fundamental to this relationship is that a developer is committed to go beyond regulatory requirements. We are committed to educate and assist the developer through a dynamic process, and the developer is subsequently recognized for making environmentally and socially responsible decisions. Convincing developers that this concept could work was as challenging as convincing other environmentalists that it was critical to do so.



A Natural Resources Management Plan (NRMP) is utilized by members to create detailed strategies to responsibly manage habitat, waste, and water. The NRMP for Lake Malaren Golf Club in China included a system of water treatment facilities like the one pictured here.

## Lessons Learned

A major component of the Signature Program is education. We have found that our educational efforts through the Signature Program involve a diverse group of people who work on a variety of stages of each project. Along this path, we have learned many lessons as well, some of which are presented below:

1. Through the Signature Program, we create cooperative partnerships with developers and landowners and those with whom they work. Audubon International has learned a great deal about how environmental organizations can best interface with the development industry. We cannot emphasize enough to others the value of establishing a pro-active, problem-solving approach to land use issues. The success of development (sustainable or otherwise) is measured by an economic bottom line. What we have learned, and what we have tried to teach, is that economy and environmentalism are not mutually exclusive. We have learned how to address the financial challenges faced by developers within the context of doing good things for the environment, and that it's less effective, if not impossible, to accomplish sustainable goals from an adversarial posture. We have also learned that commitment to sustainable development must be on an organizational or business-wide scale. Environmental leadership must be demonstrated, not merely dictated. We believe we have achieved significant progress by advancing the concept that merging an environmental agenda with an economic bottom line works well for both the developer and the environment. We also believe that our programmatic approach of

creating a dialogue, educating, guiding, and positive reinforcement is more effective than attempting to shape the actions of developers and land managers by appearing before regulatory agencies and imposing restrictions in the form of demands that certain actions should or should not be taken as permit conditions or regulatory compliances.

**2.** Teaching environmental stewardship and fostering an environmental ethic is best accomplished by involving a diverse group of stakeholders, and works best when a municipality firmly supports that effort. Fundamental to Audubon International's relationship with towns is their commitment to go beyond regulatory requirements. Audubon International was committed to educate and assist towns through a dynamic development process and the towns, such as North Hempstead, New York, and Steamboat Springs, Colorado, were subsequently recognized for making environmentally responsible decisions. We learned that municipalities such as the Town of Arlington, Texas, and Westminster, Colorado, are open to third party verification and are willing to educate their departments, such as public works, about new concepts.

**3.** The long term goal of the Signature Program is to foster an environmental ethic. Based on that ethic, landowners, consultants and the community-at-large will make future land management decisions based on both the environmental, as well as the economic, value of the land. Community residents know what they want in their own community and what they do not want. We are all interested in more open and green space, and people will approve projects that meet that requirement. And when residents like the look and feel of an open space, they will also spend their time there.



Economy and environmentalism are not mutually exclusive. In order to find a balance between the two, diverse groups of people, often with competing interests, are brought together with open dialogue.

**4.** The Signature Program was developed under the premise that “good environmental sense makes good economic sense.” This continues to play out with member after member. Just as wildlife inventories and water quality data help to determine environmental outcomes, data about operational costs and return-on-investment are critical in evaluating the financial value of environmentally sensitive development and management. Taken together, these benchmarks are beginning to demonstrate clearly that embracing sustainable development benefits the quality of life and the environment and the economic bottom line.

**5.** The opportunity to share our best management practices philosophy with professionals who understand the vital connection between land use change and its effect on natural resources is very important. We work not only with agencies such as Natural Resource Conservation Service, U.S. Fish and Wildlife, and the U.S. EPA, but with individual consulting firms such as Greenshield Ecology, Greenman-Pedersen, Inc., Breedlove, Dennis and Associates, Wilson-Miller, and many others. Ideas and strategies were shared with their engineers, hydro-geologists, landscape architects, wildlife biologists, native plant and restoration specialist, and planners. Working with these professionals provides the opportunity to voice opinions and provide input,

as well as provided an opportunity to educate companies involved in the actual implementation of land use changes.

**6.** And finally, in order to foster an environmental ethic, communities and residents in those communities must be involved in the decision-making process to understand that it is not just one site or one project that is important. If residents don't care, don't buy into, or don't see the value in what is being done on one piece of property in their community, environmentally-friendly projects will not be replicated. When residents figure out what is good for their community, they will make a commitment to the future of their community and benefit from that decision.

## Where Do We Go From Here?

The biggest chasm of change occurs between plan and action. While the words and intent of developers, builders, and all those involved in development are providing the hope for change, in the end, it is action that is needed. Pure, uncompromising, and collective action is needed to make eco-design and development commonplace. That will mean changing people's attitudes, examining common policies that create unintended barriers, facilitating the mass use of best management practices by professionals, and finding ways for the market to reward those developers and developments that take the lead.

For more information about Audubon International's Signature Program, contact Nancy Richardson at (270) 869-9419 or email at [nrichardson@auduboninternational.org](mailto:nrichardson@auduboninternational.org).

# Celebrating 10 Years at Sand Ridge Golf Club

BY NANCY E. RICHARDSON, AUDUBON INTERNATIONAL

On June 11, 2008 Sand Ridge Golf Club has, for the fifth time, been re-certified as a Signature Sanctuary. This article is a tribute to the commitment and success of the ownership and staff for maintaining this facility for the past ten years.

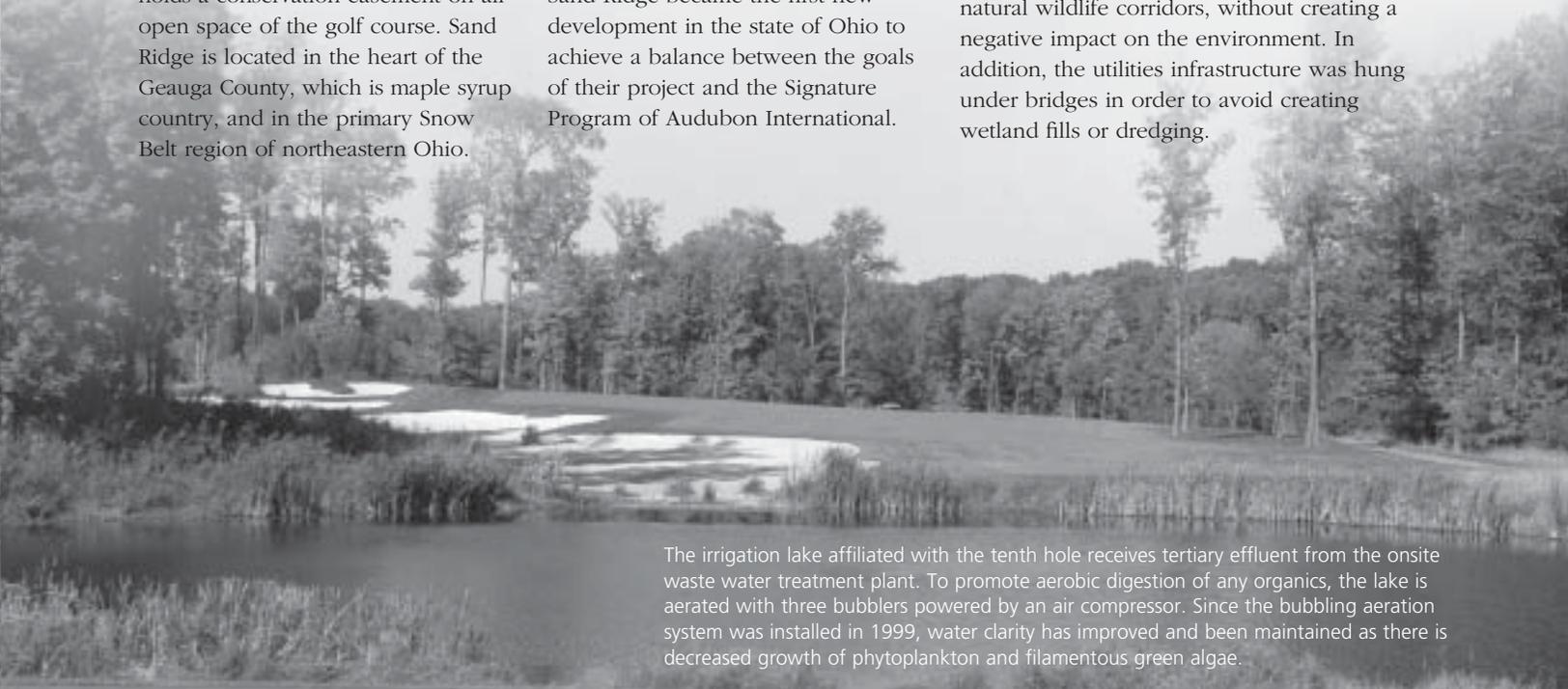
The idea of Sand Ridge Golf Club was conceived by William Conway in 1993, the same year that the Signature Program was created by Audubon International. For his exceptional piece of property, he envisioned some type of land use that would incorporate a “green” plan that included the natural beauty of the rolling hills, its local geology, mature forests, open fields, and the wetlands. Set on 359 acres, the 125-acre golf course is located four miles south of Chardon, OH, and is in the headwater area for the Chagrin and Cuyahogo Rivers, both of which are state designated scenic rivers. The Chagrin River Land Conservancy holds a conservation easement on all open space of the golf course. Sand Ridge is located in the heart of the Geauga County, which is maple syrup country, and in the primary Snow Belt region of northeastern Ohio.

In 1994, the firm of Fazio Golf Course Designers, Inc. was hired to design Sand Ridge Golf Club. Under the direction of Tom Fazio, golf course architect, and Tom Marzolf, landscape architect, eight site visits were made to interpret all the unique ecological and landscape features that could be used as focal points for laying out individual holes with minimum environmental impacts. Landscape Unlimited LLC was chosen as the construction company to implement this plan. Dr. Edward J.P. Hauser, well-known regional ecologist, living in Asheville, NC, was hired to conduct a delineation study of the 102 acres of project area wetlands, as well as develop an ecological inventory. Over nine acres of sand, creating 108 sand bunkers, was incorporated into the design to provide buffers for the wetlands and challenges for golfers. Then, on November 6, 1995, Sand Ridge became the first new development in the state of Ohio to achieve a balance between the goals of their project and the Signature Program of Audubon International.

## Project Design

In May 1996, four *ecofilter* and irrigation ponds were created in the upland areas—the largest one is twenty-two feet deep and is located adjacent to the sixteenth hole. Following the environmentally prudent recommendations of permitting agencies and Munson Township zoning restrictions, no wells were drilled, nor were wetlands or water bodies used to provide irrigation water. There has been no evidence of sedimentation, sheet erosion, or turbidity impacts because, at minimum, a 100-foot vegetated buffer zone occurs along all wetlands, streams, and water bodies, including irrigation lakes. Inside that 100-foot buffer, a special no-spray management zone was established within which no pesticides are sprayed. All of these endeavors are to protect water quality and wildlife.

A major component of the design was to create a system of eleven wooden bridges built on wood pilings over wetlands and waterways. Such a design allows for normal water flow and movement of animals along natural wildlife corridors, without creating a negative impact on the environment. In addition, the utilities infrastructure was hung under bridges in order to avoid creating wetland fills or dredging.



The irrigation lake affiliated with the tenth hole receives tertiary effluent from the onsite waste water treatment plant. To promote aerobic digestion of any organics, the lake is aerated with three bubblers powered by an air compressor. Since the bubbling aeration system was installed in 1999, water clarity has improved and been maintained as there is decreased growth of phytoplankton and filamentous green algae.

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## Water Quality Monitoring

In October 2002, the Ohio Department of Natural Resources—Division of Natural Areas and Preserves extended scenic river designation of the Chagrin River and Cuyahoga Rivers to all headwater tributary streams, which includes all streams affiliated with lands managed by Sand Ridge. Thus, the use of eco-filter wetlands, buffer zones, and tertiary waste water treatment represent environmentally prudent and ecologically significant practices with regard to maintaining water quality.

Seven permanent monitoring stations were established and are sampled during the growing season. Water samples are tested by the environmental Analysis Group, an Ohio EPA certified lab. According to Dr. Hauser, “It is significant to note that three of four samples tested for dissolved oxygen (D.O.) yielded readings that were greater than 8.2 ppm. These readings are indicative of high water quality with low amounts of organics.”

The sample stations are located strategically near the Chagrin and Cuyahoga headwaters, the waste water treatment plant, and several other water bodies. Certainly, eco-filtering of nutrients and any organics in the vegetated buffer zones contribute to the high water quality and support of high D.O. levels. This monitoring is ongoing and is ecologically prudent because of the golf course’s location at the headwater area for the Chagrin and Cuyahoga Rivers. Furthermore, approximately ½ mile downstream from the Sand Ridge site, two state endangered species, the Northern Brook Lamprey and Northern Brook Trout, occur in the East Branch of the Chagrin River. Responsible land use at Sand Ridge is imperative to the health of the fish habitat and the overall high water quality of this watershed.

## New Projects

One of the goals of the Signature Program is to have members review their facility year after year to look for opportunities to reduce areas being managed and therefore to reduce the cost of management over time. From 2000 to 2005, grounds staff at Sand Ridge converted 27 acres of mowed and maintained rough into open meadow roughs, which were seeded with native fescue grasses. In 2001, an additional 10 acres were converted to native plants. To maintain such areas in an herbaceous stage of ecological succession, they continued to be mowed once during late fall, after the bird breeding season is over. Such zones provide additional buffer between the course and protected woodland and wetland habitats.

From an economic viewpoint, ground crew labor costs from 2000 to 2005 were reduced by an estimated 20 percent, or about \$6,500 per year. In addition, with higher energy costs and related equipment maintenance costs in 2007, it is now estimated that an additional \$500 per acre of cost reduction was achieved.

In 2007, maintenance staff increased the Bio-Diesel blend from B-2 to a B-5 for all diesel fueled engines. B-5 is a 5 percent blend of Bio-diesel and 95 percent petroleum diesel. Bio-diesel is a renewable resource (soybeans and vegetable oils), which are agricultural products grown and manufactured in the U.S. Making this switch not only reduces the impact on air quality but also reduces the wear and tear on equipment.

An outdoor wood burner was installed during the winter of 2006, replacing the primary electrical heating system in the maintenance and office buildings. A comparison of electric bills from 2005 and 2006 indicated a reduction in electrical energy consumption of 77,920 kilowatt hours, which equates to \$3,293 in savings as compared to 2005. For 2007, comparison of electric bills

between 2005 and 2007 showed a reduction of over 80,000 kilowatt hours for both buildings.

## Plant and Wildlife Inventories

Removal and eradication invasive plants are necessary to prevent their encroachment and impact on native species. Buckthorn (*Rhamnus frangula*) was prevalent particularly in #16 wetland so a manual eradication program was begun in 2001. Invasive species removal continues as a part of the management regime.

The annual bird and ecology walk is not only a pleasurable and educational event, it is a means to update the bird and other wildlife inventories annually. Sand Ridge held its 2007 walk for the North American Bird Watching Open on May 12 and was rewarded with two bird species observed for the first time at Sand Ridge. Those

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The grounds staff planted over 125 tubers of the sunflower known as Jerusalem Artichoke (*Helianthus tuberosus*) and over 100 rhizomes of the Common Milkweed (*Asclepias syriaca*) under the direction of Dr. Hauser and Brent Palich, golf course superintendent. These are excellent plants that attract open field birds and butterflies and will add aesthetically to this area in mid- to-late summer. In addition, milkweeds provide feeding stops for Monarch Butterflies that migrate through the northeastern Ohio region in September as they fly from Canada to Mexico.

# Fact Sheet

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ECO-DESIGN AND DEVELOPMENT

## Collier's Reserve's First Annual BioBlitz

BY ERIC CZARNECKI, GOLF COURSE SUPERINTENDENT AND PETER THAYER, BIOBLITZ CHAIRMAN

In 1993, Collier's Reserve joined Audubon International's newly created Signature Program and was the first project in the world to become a Certified Audubon International Signature Sanctuary. Located near Naples, FL, Collier's Reserve is 450 acres and includes 225 homes and an 18-hole golf course. In January 2009, Collier's will celebrate their 15th year of Signature certification. Homeowners, staff, and management have continued their dedication and commitment to the Signature Program and have actively looked for new ways to continue their environmental efforts. This year, Collier's Reserve sponsored their First Annual BioBlitz (Biodiversity Blitz)

While we all are fascinated by exotic places and wildlife, we often miss the amazing variety and diversity of our own communities. Designed to be an engaging scientific and educational event, BioBlitz helps to raise awareness of the incredible biodiversity that exists in our own communities and backyards and the importance of conserving and protecting that unique diversity. The BioBlitz brings together various scientists (e.g., botanists, entomologists, ornithologists, herpetologists, etc.) with citizen-scientists to identify and document as many species of plants, insects, wildlife, and even bacteria as possible in a discrete area within a 24-hour period.



The "base camp" should be accessible by the public and by the scientists themselves and should be large enough to accommodate the number of people that you anticipate. The area should be near a parking lot or an area with ample parking.

More than 50 Collier's Reserve members and their guests participated, as well as biologists, researchers, arborists, and others, and included organizations such as the Conservancy of Southwest Florida, Southwest Florida Department of Agriculture, University of Florida Cooperative Extension, and Thayer Birding Software. As new species were identified, staff volunteers updated checklists at the BioBlitz headquarters. A few of the plants and insects found were so unusual that participating scientists took them to their labs for further examination.

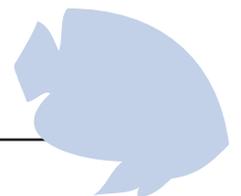
### What is a BioBlitz?

Designed as part contest, part festival, part education event, part scientific endeavor, the public is invited to observe scientists' activities, to interact with them, and to participate

in educational opportunities. It is designed to increase the public's awareness of the variety of life in their immediate neighborhood and the benefits that these various species provide to improve the quality of our lives. The purpose of a BioBlitz is to count as many species from as many taxonomic groups as possible in a 24-hour time period. The details of when, where, and how are developed to fit the local situation. *The name and concept of BioBlitz is not registered, copyrighted, nor trademarked, and not a government program. It's just an idea that can be used, adapted, and modified by any group for their own purposes.*

### Why have a BioBlitz?

- It's fun.
- It brings out the specialists.
- It's an opportunity to identify rare and unique species or identify special habitats for protection and management.
- It's a way to document species occurrence.
- It brings media attention and outreach to the community.
- It increases opportunities for scientists to interact with each other in the field.
- It helps to promote a relationship between the golf course and local scientists.
- It provides an estimate of species richness.





## What Does a BioBlitz Involve?

As part of organizing a BioBlitz, there are several key elements to keep in mind:

### Recruiting Scientists

A key component of conducting a successful BioBlitz is to recruit as many scientists as possible. In addition, the greater diversity of expertise, the more species will be found. The more disciplines that are represented among the experts, the larger the tally. At the event, surveyors should check-in at base camp before heading out to survey. At that time they should sign-in, receive a map of the area with a tally sheet, be given any special instructions about food, sleeping arrangements, and access to property, etc.

### Site Requirements

As you begin organizing your BioBlitz, keep in mind the following site logistics.

- There should be an area that can serve as “base camp,” preferably a building or pavilion, from which to work. If additional space is necessary, a large area where a tent can be erected for scientific and educational activities is useful.
- The “base camp” should be accessible to the public and by the scientists themselves and should be large enough to accommodate the number of people that you anticipate. The area should be near a parking lot or an area with ample parking.
- The base camp should have access to an electrical supply for microscopes, lights, a microphone, laptops, and most importantly, the coffeepot.

### Educational Activities

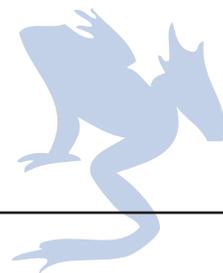
The most effective educational activity that occurs at the BioBlitz is the interaction between visitors and scientists. In addition, it is helpful to:

- Provide activities that help to explain what the scientists are doing, why they are doing it, and what biodiversity is and why it is relevant; and,
- Invite other organizations, nature centers, and societies to help you provide activities. A separate tent or tents should be erected near the base camp for these activities.



At Collier's Reserve, the complete total of species found for the day was 438. A complete list of the species identified included:

12	Mammal
58	Birds
15	Reptiles & Amphibians
8	Fish
62	Insects
5	Spiders
5	Crabs & Bugs
264	Trees, Plants & Flowers
9	Fungi, Algae & Lichen



### Public Support

The BioBlitz is a great tool for educating people about biodiversity, but to do this, you need to get people to attend the event.

- If you're inviting the public, sending press releases for advance articles to the local media and alerting radio and television stations about the event is a good approach; or,
- If your BioBlitz is for your members only, you can include information in your club newsletter, or post information in the clubhouse, pro shop, or in locker rooms.

### Expenses and Funding

The BioBlitz can be relatively inexpensive to run. There are, however, costs that will be incurred. The following is a list of possible expenses:

- Tent rentals: If you do not have a building or pavilion for the scientists to work under, you may have to rent a tent. Likewise, you may have to rent tents for activities.
- Tables and chairs: You will need an adequate number of tables and chairs for scientific and educational activities.
- Food for volunteers: Consider providing dinner on Friday night for surveyors, breakfast for all surveyors that stayed overnight or arrived early, lunch for surveyors and educators, and snacks/drinks throughout the 24 hours.
- Microphone and speaker rental: You will need these for making announcements throughout the event and for the closing ceremony.
- Other expenses: T-shirts, educational materials, signs, maps, cups, napkins, First Aid kit, etc.

Continued from page 8

species were the Savannah Sparrow and the Hooded Warbler. These species were documented by Dan Best, Chief Naturalist and Ornithologist for the Geauga County Park District. One of the most common species observed during the spring and summer season is the Yellow Warbler.

Using US Department of Energy and EPA standards, 1,350 pounds of carbon dioxide emissions are released into the atmosphere from electrical generating coal fired power plants for each kilowatt hours produced. Thus, the lowered energy consumption results in an annual reduction of over a million pounds of this greenhouse gas from local electrical generating power plants. In addition, this lowered dependency on coal burning fossil fuel electrical generating power plants lowered mercury emissions by an estimated 1000 ppm.

### What's Next?

Sand Ridge met the challenge in 2006 of remaining open and actually thriving. Sand Ridge merged with another club locally to be called the Mayfield Sand Ridge Golf Club. Mayfield is not an environmental asset, but it has all the amenities that Sand Ridge does not. So this club now has the best of both worlds. In addition, equipment is shared between clubs and staff when needed. So, to meet the economic challenges, and remain an environmental gem, Sand Ridge is now Mayfield Sand Ridge Golf Club.

Dr. Hauser worked cooperatively with the Fazio designers in producing the final foot print for Sand Ridge, and they continue to serve as consultants. Sand Ridge has made a name for itself and is now recognized as a premier golfing facility in northeastern Ohio and the Great Lakes Region and is ranked as one of the top 100 courses in the nation by Golf Digest. Congratulations on ten years of environmental stewardship! ●

## Using Geothermal To Save On Energy Costs

BY MARK ALAN CLABURN, TIERRA VERDE GOLF CLUB

A Signature Program member since 1996, Tierra Verde Golf Club opened in 1998 and was certified as an Audubon Signature Sanctuary in October 2000. After operating out of a temporary building for two and half years, the clubhouse opened in 2001. In an effort to maximize energy conservation and reduce energy costs, Tierra Verde decided to invest in a geothermal heat pump for heating and cooling the clubhouse.

Arlington is located in central Texas where summer temperatures average 95 degrees Fahrenheit and air conditioning is a major cost consideration. Although purchasing a geothermal pump is expensive, compared with a standard heating and cooling system, it can realize a cost savings up to 70 percent annually, and the payback period is relatively short, typically between three and five years depending on the cost of electricity.

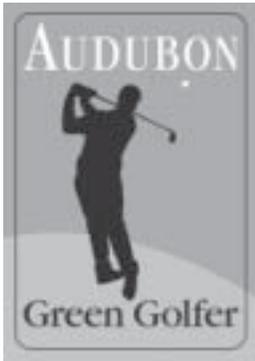
A geothermal heat pump operates by using the constant temperatures of the Earth as either a heating or cooling source. Throughout most of the United States, the soil approximately 4 to 6 feet below the surface remains constant at about 55 degrees Fahrenheit. Consequently, using ground temperature as its starting point, the system needs only to raise or lower the temperature 15 to 20 degrees to reach a comfortable indoor temperature. The system is designed to move water or coolant underground through a series of vertical or horizontal loops. After passing through an exchanger, the liquid is heated or cooled as needed and then circulated through the building.

In order to install the geothermal system, forty wells were drilled to a depth of 200 feet between the practice holes and the clubhouse. Concealed with landscaping or turf, water circulates through the wells and back to the heat pump unit. Staff members check on the temperature of the circulating water and add water when needed. The heat pump is serviced much the same as any other large commercial unit.

Tierra Verde conserves energy and saves money in other ways as well. For example, condensation captured from the unit is directed to a roof guttering system that recycles the water, which is then pumped into one of the course's feature ponds. Other eco-friendly design features include building color and orientation. Because of its light color, the building reflects the summer heat, and it was oriented so that the large double insulated windows are shaded during the hottest parts of the day. A stacked building design includes golf cart storage in the basement, and restaurant, offices, and golf shop on the main level, with administrative offices and mechanical needs on the third level. Thick walls and a roof constructed of concrete tiles with a life expectancy of forty years or more also contribute to the 50 to 60 percent energy savings seen by Tierra Verde Golf Club.



The U.S. Environmental Protection Agency has called geothermal the most energy-efficient, environmentally clean, and cost-effective space conditioning systems available. Roughly 70 percent of the United States electrical energy is used in heating and cooling residential and commercial buildings. Geothermal systems have a longer lifespan than conventional heating and cooling systems, with most loop fields expected to last from 50 to 200 years. Today there are more than 1,000,000 geothermal heat pump installations in the United States that have reduced electricity demand by more than 2.6 Giga Watts and reduced U.S. reliance on imported fuels by 21.5 million barrels crude oil per year.



## Audubon Green Golfer Challenge

Getting golfers to take the Green Golfer Pledge is a simple way for golf course superintendents, club managers, golf professionals, and staff to help carry on golf's tradition of preserving the nature of the game. Learn more and join the Audubon Green Golfer Challenge. Visit our website at [www.golfandenvironment.org](http://www.golfandenvironment.org) and join with us today.

### Audubon International Membership is Growing!

Due to space constraints in this issue of *Stewardship News* please visit our website for a complete list of recent membership activity.

[www.auduboninternational.org](http://www.auduboninternational.org)

## Stewardship News

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Audubon International is a non-profit environmental organization dedicated to fostering more sustainable human and natural communities through research, education, and conservation assistance. Programs seek to educate, assist, and inspire millions of people from all walks of life to protect and sustain the land, water, wildlife, and natural resources around them. Funding is provided by memberships, donations, and program sponsorship. The ACSF Golf Program is sponsored by The United States Golf Association.

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*Look inside for a tear-out fact sheet!*

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