



Environmental Stewardship is Looking Up

JOELLEN LAMPMAN



Working for an environmental organization well known for helping enhance wildlife habitat, I spend quite a bit of time talking about converting previously manicured areas into a more natural environment. I become even more excited, however, by the possibilities that lie in naturalizing hardscapes like unused parking lots. A number of our members are now looking up to find new areas to create habitat, conserve energy, and improve aesthetics.

Greening the roof of a new or existing building is the new frontier. A new initiative based on a very old idea, large cities have been promoting green roofs primarily as a way to reduce storm water runoff and decrease the need for costly water treatment infrastructure expansions. Other benefits, such as reducing energy use for heating and cooling, extending the life of roofs, reduced air pollution, and improving aesthetics, have led to the expansion of these roofs, including an ever-growing expansion into the service industry.

What is a green roof?

A green roof is often described as a lasagna-like system with the different layers being topped off with living plants on the building's roof. Intensive green roofs are accessible to the public and are limited by the structural integrity of the building, the imagination, and budget. Paths, benches, flowers, a putting green, trees, shrubs, and waterfalls are just a few of the features that might be found on an intensive roof. They are labor-intensive; require ongoing irrigation, and continuous maintenance. Extensive roofs are not accessible to the public and are primarily for water quality management and aesthetics. Once the plants are established there should be no need for irrigation, although installing a drip irrigation system is a good idea for times of drought. Most of these roofs are flat, but they can be installed on roofs with a pitch up to forty-five degrees. A variety of systems are available to choose from for installing green roofs. All systems will include a waterproof layer, drainage, a growing medium, and the plants.

What are the costs?

The cost of a green roof is, unsurprisingly, higher than that of a traditional roof and is usually estimated at an increase of \$6.50 per square foot for an extensive roof. The primary costs are associated with the growing medium and plants. As you will see in our case studies, how the plants are established can affect the cost dramatically.

Shadow Wood Preserve, Fort Myers, Florida

In 2003, Shadow Wood Preserve installed the first green roof in the state as part of the construction of a new maintenance storage facility. Their challenge was to design a system that could withstand the subtropical climate, since most of the work previously done on green roofs took place in the more moderate European climate. Through a cooperative partnership between developer, the state regulatory agency, and a private consultant, it was determined that the correct choice of plants was the most important determination as to whether a green roof was successful or not.

Golden Arrow Lakeside Resort, Lake Placid, New York

A flat roof between the main lobby and the restaurant was an eyesore and when the opportunity to enhance it arrived, Jenn Holderied, Director of Marketing and Owner of the Golden Arrow Lakeside Resort jumped at the



Drip irrigation was installed at Shadow Wood Preserve to help the plants establish and help them through periods of drought.

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The visibility of the roof from the Glendale Country Club parking lot put aesthetics at the forefront of many decisions.



The green roof at the Golden Arrow Lakeside Resort was installed using grids. The view out this window is greatly enhanced from the old asphalt roof.



The use of grass on top of the roof necessitates the need for ongoing irrigation at Merion Golf Club. The growing medium was blown in, spread by hand, and then smoothed by machine. Note the waterproof membrane.



chance. "Similar to a garden," says Holderied, "the roof includes a bed of soil and plants that is more aesthetic, improves air quality by releasing oxygen into the air, reduces dust and storm runoff, provides insulation during the winter and helps cool air during the summer." The resort was able to install 3,400 square feet of green roof using a grid system.

Glendale Country Club, Bellevue, Washington

The need for a new roof came at a bad economic time for Glendale Country Club, but the necessity of the project, combined with the club's long time commitment to environmental excellence, led them to install a green roof. The parking lot is at a higher elevation than the clubhouse and a desire for a finished look upon installation increased the initial price tag of the project. Rather than go with the less expensive method of seeding in or installing plugs, the plants were grown out and came in sod-like rolls at a cost of \$4.80 per square foot.

Merion Golf Club, Ardmore, Pennsylvania

The decision to install a green roof on the new Turf Operations Complex at Merion Golf Club was based on the proximity of the building to the 18th hole. A flat, grassed roof would blend in better than a pitched roof.

The cost of the growing medium, installation, seed, pre-plant fertilization, and three bluebird nest boxes came to \$30,000. Besides improved aesthetics, other benefits have been member pride (the roof is a regular stop on guest tours), staff motivation, and an expectation of \$3,000 per year savings in heating and cooling.

What are the financial benefits?

While a green roof will cost more to install, a full life-cycle analyses out of the University of Michigan found that the installation of a green roof would cost \$464,000 versus \$335,000 for a conventional roof. Over its lifetime, however, a longer life expectancy of the green roof combined with reduced energy needs would save about \$200,000.

Green roofs are not yet a do-it-yourself project, so be sure to enlist the services of an experienced contractor. I found the website www.greenroofs.com to be very helpful and it includes a section called "Greenroofs101", an industry directory, and numerous case studies. ●

Outreach and Education: A Neighborhood Approach

SUZI VAN ETTEN

As an environmental education organization, it is our job to provide education about environmental stewardship. The cornerstone to all of our programs is outreach and education, a way for members to 'pay it forward' and provide education about environmental stewardship to staff, residents, and visitors. Many times members find this program requirement to be a challenge. How do you educate people about maintenance facilities or water quality monitoring? The subject may seem too complex or too mundane. Or perhaps the task seems daunting because even a simple, inexpensive display still costs money and you worry that it won't grab people's attention.

In the Green Neighborhoods Program,



we ask members to do outreach and education. But we also ask members to complete a project that creates community awareness—informing the larger community about what you do. Often our members in other programs forget that



reaching out to the larger community can provide a valuable learning experience to a wider network of people (and help you meet the outreach and education requirement).

Photographs courtesy of Hideaway Beach Association.

A recent *Neighborhood for Nature Award* recipient, Bonita Bay Community Association, has done a phenomenal job of creating learning opportunities for the larger community of Bonita Springs. The Association's Grounds and Maintenance Department worked with the Bonita Springs Literacy Council to landscape the grounds of the Council's new facility. The opportunity created a partnership that provided Literacy Council students with an opportunity to participate in environmental stewardship. ●

Tip 1

To start a similar partnership, look for local charity organizations that could use a hand with landscaping or whose clients could benefit from your knowledge about environmental stewardship with buildings and grounds.

Bonita Bay Community Association also partnered with local schools. They have helped to construct two award-winning butterfly gardens at elementary schools, that now serve as living classrooms showcasing local flora and fauna. Using donations from residents, and working in cooperation with the Lee County School Teachers Environmental Group, the Association created *Awesome Butterflies*. Serving as an educational resource for teachers, *Awesome Butterflies* is a DVD collection of presentations and age-appropriate education materials.

Tip 2

To use your on-site project as an educational tool, take photos and make a presentation for students. For outreach, contact local teachers about showing the presentation.

Another recent *Neighborhood for Nature Award* recipient, Hideaway Beach Association, constructed a display to highlight the wildlife on their property. Posters provide pictures and descriptions of the various birds Association members may encounter on the property. Hideaway Beach Association also included information about bird box projects and publicized water monitoring data, to help educate members about providing a safe habitat as well as the importance of keeping water clean in order to make wildlife sightings possible.

Tip 3

Writing a small piece in the property newsletter or taking photos of wildlife with information about the steps you are taking to ensure they have a clean and safe habitat is a great way to provide outreach and education.

The most important lesson you should take from any of our programs is spreading the word. Educating others about the projects you do as part of the program will help people to understand why you are doing it, why they should think about it, and how they can do it at home. Everything you do in our programs, no matter how small or complex is important to the environment and should be shared with others.

An Exciting Day at Shark's Tooth Golf Club

NANCY RICHARDSON AND LARRY LIVINGSTON

Everyone likes to tell a story that involves knee-slapping and a lot of exaggeration and many are excited when a day's routine is interrupted by something exciting. For Larry Livingston, that exciting story happened in July of 2010, when an airplane landed on the seventeenth hole of his golf course.

Larry was the superintendent for the eighteen-hole Shark's Tooth Golf Club located west of Panama City Beach, Florida. The golf course was designed by architect Greg Norman and boasts open

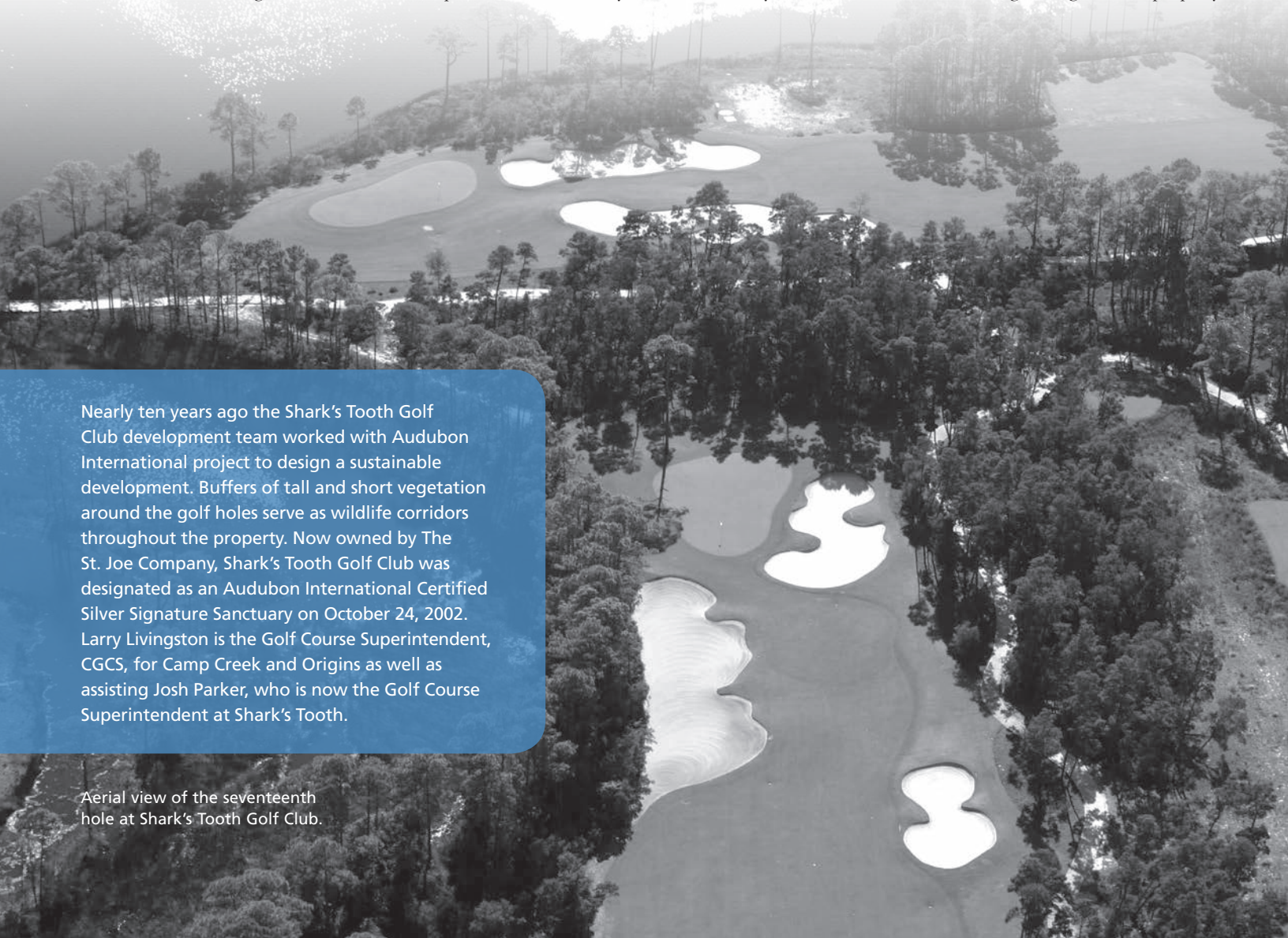
space and preserved areas totaling sixty-three percent of the total property. Protected corridors of large live oak, cypress, and coniferous wetlands surround many of the golf holes. Other notable plant species include Curtis' sand grass, parrot pitcher plant, large-leaved jointweed, and Gulf Coast lupine.

As part of the approach to sustainable development and long-term management, preserving the native vegetation allowed Shark's Tooth Golf Club to become an extraordinary wildlife sanctuary

intertwined with a golf course. Golfers regularly see lots of wildlife including hawks and waterfowl and an occasional American bald eagle flying above the course. Time spent by the staff on an invasive plant removal program to keep exotic species from displacing the native plantings has resulted in drawing even more wildlife to the property. Staff members have also taken note of the recent covey of quail frequenting the area to the right of hole fifteen, and Eastern Bluebird nesting throughout the property.

Nearly ten years ago the Shark's Tooth Golf Club development team worked with Audubon International project to design a sustainable development. Buffers of tall and short vegetation around the golf holes serve as wildlife corridors throughout the property. Now owned by The St. Joe Company, Shark's Tooth Golf Club was designated as an Audubon International Certified Silver Signature Sanctuary on October 24, 2002. Larry Livingston is the Golf Course Superintendent, CGCS, for Camp Creek and Origins as well as assisting Josh Parker, who is now the Golf Course Superintendent at Shark's Tooth.

Aerial view of the seventeenth hole at Shark's Tooth Golf Club.





< The pilot was unable to stop the plane before the dense vegetative corridors between the tee complexes.



The plane was removed by the maintenance staff and positioned for take-off.

One afternoon, a winged visitor of another sort landed at Shark's Tooth Golf Club. It was just a short time after take-off before the engine of a *Cessna 172* started to lose power and stalled at four thousand feet. The pilot needed to find a place to land fast! Since the beaches were full of people and the highways were full of vehicles, he began looking for open space. The closest thing he saw to an open field was a golf course fairway. The quick thinking pilot dodged large trees and sand traps, and was able to land the plane safely.

The pilot did not know that he was landing in a sanctuary. To him, Shark's Tooth Golf Club was a clear open space where he could safely land the plane. The southern boundary of the property on which he landed sits on Lake Powell. This seven hundred and thirty-seven acre lake has been designated as an *Outstanding Florida Waters* by the Florida Department of Environmental Protection because it is the largest coastal dune lake in the state of Florida. When the dunes are breached by either the lake or the Gulf of Mexico, Lake Powell becomes part fresh water and part brackish water providing a unique environment for a distinct aquatic ecosystem. Two hundred of those acres are designated as preserved wetlands and uplands with one hundred seventy acres for the golf course.

Since the engine was silent as it came down, no one heard it coming. Lining the plane up with the green, the pilot aimed

for the tee of the seventeenth hole. But even on the par five with thirteen hundred feet of turf to land on, he could not stop the plane before it went into the dense corridor of palmettos beyond the tee. Fortunately, no one was hurt and the plane remained in the palmettos overnight.

The next day, the owners of the rental plane came out along with a representative from the Federal Aviation Administration (FAA). Maintenance staff helped to push the plane out of the palmettos and onto the turf where it could be inspected. A mechanic from the airport scrutinized the engine and then, after numerous phone calls, the FAA representative said that the pilot could fly the plane off of the golf course. But first he needed to determine that there was enough room to get the plane safely off the ground and back into the air.

Preparing for the worst, the pilot said that if he was not airborne by the time he reached the start of the fairway waste bunker, he would abort the takeoff. Golfers, staff, and other onlookers were watching as the plane sped down the fairway. As the plane reached the fairway bunker it was not quite off the ground. Shortly after passing the abort point, the plane lifted off and started to climb. However, it was obvious that the plane would not gain enough altitude to get over the tall pine trees behind the green.

As the plane approached the trees, it banked to the left and flew through a previously unseen gap in the trees to disappear from sight. Everyone breathed a sigh of relief. It was an exciting ordeal and one that Larry will remember for a long time to come. ●

A Spotlight on Our Sponsors

For the past two decades, Audubon International has made great strides in our efforts to help communities and golf courses enhance their natural resources and wildlife habitat areas, improve efficiency, and minimize potentially harmful environmental impacts. The support we have received from our members, industry partners, and Initiative Sponsors has been critical to our success.

Our Golf and Environment Initiative Sponsors recognize the positive impact our programs have on the nature of the game of golf. Many of them offer products and services they feel can assist our members in achieving their environmental management goals.



AHEAD, a leader in golf headwear, apparel and accessories, is proud to be a supporting sponsor of Audubon International. We applaud all those involved in taking a leadership role in making our planet a greener, more sustainable place for all living things. As a company, we strive to be more environmentally friendly. We offer products that use both natural and man-made materials, which are better for the planet and for golfers. Adding approved Audubon International logos and distinctions to your apparel and headwear tells everyone you're committed to making a difference. Wear your eco-badge of honor proudly! To learn more visit www.aheadweb.com.



CourseVision

Course Vision is the industry leading mapping solution for golf course superintendents. Four of the top seven management companies along with numerous public, daily fee, private and Top 100 courses trust Course Vision with their most valuable data.

You can't enhance your property's existing natural habitats and landscaping unless you know what makes up your property. Course Vision automatically creates a complete inventory of your entire property without you and your staff spending countless hours. This inventory becomes the foundation of your Audubon certification efforts and will be used in both graphical and numeric form throughout the process. To learn more visit www.coursevision.com.



**JOHN DEERE
GOLF**

John Deere Golf believes in the mission of Audubon International, and through our sponsorship, we hope to further highlight the critical role golf courses play in protecting the surrounding environment and natural resources through following best practices.

Now, more than ever, golf courses are looking for ways to provide additional value to their players and communities. Through Audubon International and the ACSP program, courses can further demonstrate how their operations are enhancing and protecting the environment.

Since environmental stewardship is critical to the future success of the industry, John Deere Golf is proud to support Audubon International and the many courses that have become members. To learn more visit www.deere.com/golf.

Recycling For Over a Century

RON DODSON

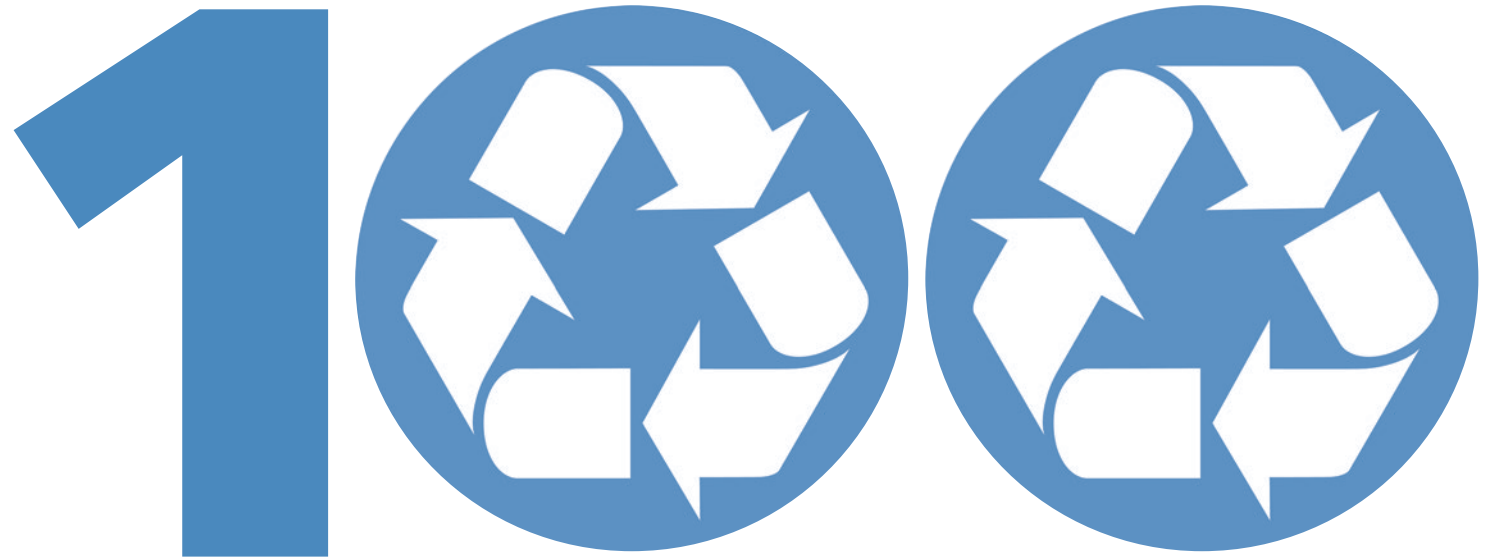
Audubon International promotes Sustainable Resource Management. A part of that is to reduce waste and capture materials that are often thought of as “just waste” and turn it into valuable resources. This is recycling and re-use at its core.

One of our long-time members, Griffin Industries, based in Cold Spring, Kentucky has been doing this for well over a century. They are among the original recyclers. In addition to this, they have

year, Darling International, the largest rendering company in the United States and headquartered in Texas, has merged with Griffin Industries in a cash and stock deal valued at about \$840 million.

“We are truly honored to have the opportunity to combine our two companies. Griffin Industries has built one of the most successful rendering and bakery by-products companies in the United States. Griffin’s long standing tradition of excellent customer service

by the US food industry annually, of which the rendering industry processes 52 billion. Without recycling, some processors would turn to incineration or landfills. Dumping 50 billion pounds of these byproducts would reduce the country’s available landfill space by 25% a year, taking up all available space in only four years, and leaving traditional landfill materials without a disposal site. Additionally, land filling animal byproducts contributes to the production



also embraced the proactive approach of promoting conservation that is espoused by Audubon International. Griffin has twenty-one of their manufacturing facilities registered in our program; nineteen of those are designated as Certified Audubon Cooperative Sanctuaries.

The Northern Kentucky-based company collects animal wastes from processing facilities and cooking fats from restaurants. At their rendering plants they then produce refined fats used in high-temperature lubricants, paints, tires, soaps, polishes, and cosmetics. During the past

and highly efficient operations will truly enhance our company for today and the future,” Darling’s CEO Randall Stuewe said in a recent press release. “The combination of our two companies fills out our national footprint and gives us the ability to better serve our customers from coast to coast.”

“America likes its meat. For every pound of red meat that is consumed, there is a corresponding pound of inedible meat byproduct that must be disposed of. Over 60 billion pounds of these inedible byproducts are generated

of methane gas and odors, and attracts rodents and bacteria, making such use of landfills a potential health and environmental hazard.” Rendering appears to be the most cost-efficient, environmentally desirable and bio-secure solution to this disposal problem, and yields commercially usable products as its result. This combination is central to the core values associated with Audubon International’s Principles for Sustainable Resource Management and it is something that Darling and Griffin has been doing for 125 years. ●

Renew Your Membership Through The Bayer Accolades Program!

If you are a participating member of the Bayer Accolades Program, we are pleased to announce that you can now use your rewards points to purchase ACSP Golf Memberships! If you're not a member, there's never been a better time to join! Enroll today, and with the purchase of select products, you can receive points that can be redeemed at Audubon International!

Simply login to BayerAccolades.com and go to the "Rewards Catalog" section. Enter "Audubon" in the search box or by selecting "Memberships" in the catalog menu.

Redeem your points for a free year of membership today!

Stewardship News

Audubon International publishes *Stewardship News* four times a year. Inquiries, contributions, or letters to the editor should be addressed to:

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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 ACSP Golf Program is sponsored by The United States Golf Association.

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