

Innovative Project Helps Golf Courses Ensure Good Water Quality

Superintendents of Eagle Valley, Colorado, kick off their 5th year of water quality testing



Superintendents from Colorado's Eagle Valley, near Vail, are collaborating on a project to monitor water quality and implement environmentally sound maintenance practices.

When the snow finally melts this spring in the high country near Vail, Colorado, a group of thirteen golf course superintendents will be doing much more than preparing their courses for the upcoming season: they'll be kicking off the fifth year of an innovative water quality testing program that is helping to ensure good water quality in this environmentally-sensitive, high mountain valley. Since banding together in 1997, the Eagle Valley Golf Course Environmental Group has monitored nutrient changes in the stream waters on area courses.

"Water quality is obviously an important issue to everyone who lives and recreates in our valley," said Glenn Samuelson, Cordillera Summit Course superintendent. "Many area courses border rivers, lakes, and streams and testing water quality is one way that courses are being proactive, anticipating the needs and questions that people in our communities may have about golf's impacts."

The project is the collaborative effort of area superintendents, aided and supported by Colorado State University's Cooperative Extension Office; Continental Analytical Services of Salina, Kansas; Eagle Valley High School; and Audubon International. With four years of monitoring under their belts and preliminary results showing good water quality exiting the golf courses, the project presents a model for future programs nationwide.

"The goal of our group is to monitor water quality changes, involve and educate the community, and give superintendents another tool that will help them make solid management decisions," explained Kevin Ross, Director of Golf Course Management for Country Club of the Rockies. "We've been able to demonstrate that when managed properly, golf courses can actually help to contain nutrients and other run-

off that might otherwise have an impact on local rivers and streams."

Colorado State Extension Agent Megan Gross agrees, "The nitrate levels in most of the samples we've taken are ten times lower than the levels recommended for drinking water. Nitrates are very water-soluble and our tests show that the courses are doing a great job of preventing this nutrient from entering runoff and contaminating down stream flows."

Collaboration Gets Results

The superintendents, most of whom are active in the Audubon Cooperative Sanctuary Program (ACSP), first got together in 1996 to share ideas on projects and practices that promote sound

environmental management. The initial meeting led to discussions with local CSU Extension Agent Steve Carcaterra, who agreed to oversee the process and independently analyze the results of water samples. By the next season, the group had formed the Eagle Valley Golf Course Environmental Group, which now includes all thirteen courses in the area.

In keeping with the group's commitment to community involvement, each golf course adopted one of the county's schools into the Audubon Cooperative Sanctuary Program for Schools. Over the years, students have not only helped to collect water samples, they've initiated habitat improvement and environmental education projects on their own school grounds.

(continued on page 11)

Eagle Valley Golf Course Environmental Group:

Beaver Creek Golf Club—Shane Nelson
Cotton Ranch Golf Club*—Wade Vecchio, CGCS
Club at Cordillera:
Cordillera Mountain Course**—John Upthegrove
Cordillera Short Course**—Scott Todd
Cordillera Summit Course—Glenn Samuelson
Cordillera Valley Club**—Scott Todd
Cordillera Director of Golf Management
—Tim Taagen

Country Club of the Rockies*—Kevin Ross, CGCS
Eagle Ranch Golf Club—John Martin
Eagle-Vail Golf Club*—Chris Leavitt, CGCS
Eagle Springs Golf Club*—Bryan Morison
Red Sky Ranch Golf Club—Mike Valiant, CGCS
Sonnenalp Golf Club*—Neil Tretter
Vail Golf Club**—Jim Myers

* Member ACSP

** Certified Audubon Cooperative Sanctuary

Audubon International Vision

Sustainable Communities Campaign

Community means many things to many people. To an ecologist, it may mean the plants, animals, and living systems that are the underpinnings of a healthy environment. To a sociologist or planner, it may mean people living in a common area that are supported by a network of services, resources, and transportation. To Audubon International, it means all of the above and much more.

This year we are launching our Sustainable Communities Campaign. This campaign is our effort to take the *Audubon Principles for Sustainable Resource Management* and the various program components of the Audubon Cooperative Sanctuary System and apply them on a community-wide basis. To pilot this concept, we have been working for more than two years with the City of Eufaula, Alabama, in their efforts to move toward a more sustainable community through community participation and education projects. Our next step is to launch this effort in several existing and planned communities around the country.

A community-wide approach to stewardship and sustainability facilitates coordinated, integrated conservation efforts, while still emphasizing individualized involvement. During the next several months, we will highlight the various efforts underway in regard to the Sustainable Communities Campaign and invite all of you to become involved.

Now is the time to reach out beyond our own properties into our neighborhoods and local communities. By demonstrating our own commitment to environmental stewardship, we become a catalyst for environmental change and begin to create an environmental ethic that lays the foundation for a sustainable future in the communities where we live.



Ronald G. Dodson
President and C.E.O.

Spring Is In The Air

Spring is in the air, and for many wildlife species that signals one thing: *mating*. This is the time when a flurry of activity characterizes birds, mammals, amphibians, and insects alike as they don brighter colors, croak, sing, and search for the ideal partner and suitable place to shelter their young. Hence, the time is here for you too to get ready for the season's activity.

Check your nest boxes

- Clean out your nest boxes, especially if you didn't clean them in the fall. Remove old nests, any insect cases, or debris inside. Repair any damage to hinges or openings.



Checking nest boxes on a weekly basis can help ensure nesting success. Briefly counting eggs or young does not disturb the birds.

- Set up a simple system for checking your boxes. Once a week is ideal. Keep a record chart handy to record what you see and monitor the success of your boxes. Audubon International can supply you with a monitoring record. Contribute your results to our on-line nest box survey at the end of the season at: www.audubonintl.org/projects/nestbox.

Attracting Bluebirds

Cornell University recently published factors commonly associated with repeated successful nestings of Eastern bluebirds in nest boxes in suburban areas of upstate New York. These guidelines concur with data from our yearly *Nest Box Survey* and anecdotal field notes from sites across North America. Follow these suggestions to increase your chances of attracting bluebirds to your boxes:

- Place nest boxes near short, mown grass. Sites with mature trees and near grasses and other low vegetation under the shade of 20-foot high trees are also noted to be among the most successful nest box sites. Golf courses and cemeteries can be ideal locations.

- Open land, similar to a meadow, is preferred. An expanded front or backyard with a garden is fine. Sites that are wooded or highly suburbanized are not likely to attract bluebirds.
- Place boxes away from nearby buildings that may harbor house sparrows. House sparrows can parasitize bluebird nests and kill the young.
- Overhead utility wires, or nearby scattered trees, provide a place for bluebirds to perch while hunting for insects below.

Avoid Too Much Spring Cleaning

Remember all the fall outdoor chores that you didn't get to—leaves that still need raking, hedges that need trimming, patches of lawn that need renovation? Then add all the chores that winter whipped up—fallen branches, broken fences, winterkilled shrubs—and soon your list of spring-cleaning chores is longer than ever. Here's a small habitat conservation tip that may help shorten your list: Avoid cleaning up *too much*.



Place songbird nest boxes at eye level for easy access. Here, Samantha Blum checks a box at Colonial Acres Golf Course in upstate NY.



Murphy Creek Golf Course, CO

Evaluate the wildlife value of a dead or dying tree, along with aesthetics and safety, when deciding whether a tree needs to come down.

- Leave some dead branches for birds to perch on. Likewise, leave dead trees where they don't pose a safety hazard—you'll be rewarded by a host of woodpeckers and other cavity nesting birds.
- Don't remove all the fallen leaves from wooded areas. Leaf litter provides valuable cover for many wildlife species and helps return nutrients to the soil.
- Before clearing or thinning hedgerows along property boundaries, evaluate their value as wildlife habitat. Many birds nest in hedges or seek them out for pro-



Last year's fallen leaves provide this year's shelter and food for fungi, beetles, earthworms, salamanders, and numerous other species that contribute to the health of woodlands.

tection from predators while feeding or resting. Leave hedgerows that can serve as corridors that link larger habitat areas.

- Do you really need to mow it all? Survey your property for areas that could be naturalized with taller grasses and wildflowers.

Time to Burn

Fire is beneficial to the health of many ecosystems. In fact, grassland and pine communities require periodic fires for rejuvenation. Plants and animals of fire-dependent communities are not only adapted to a life with fire, many cannot survive without it.

Spring presents a window of opportunity for property managers to burn grasslands and fire-dependent forests safely. Many ACSP members use controlled, or prescribed, burns as an effective management tool. If you are interested in learning more about how to conduct such a burn, consider the following key points:

- A prescribed fire is one purposefully set in a skillful, preplanned manner, under predetermined weather conditions, in a definite place, to achieve a specific purpose. Preparation is crucial to the success of a controlled burn program.
- A typical program involves training in fire safety, behavior, and ecology; educating and notifying the public; preparing a burn plan; and establishing a program to monitor the effects of the fire.



Donovan Golf Course

Prairie grasses and wildflowers are a blaze at ACSP member Donovan Golf Course in Illinois. Fire removes vegetation that competes for light, moisture, and nutrients with fire-adapted species. It also releases formerly unavailable nutrients from the organic matter it consumes, warms the soil, and prepares a good seed bed.

- Your burn plan should detail equipment needs, specific burn objectives, and required weather parameters, such as wind speed and direction, relative humidity, temperature, and fuel moisture levels.
- Contact your state conservation department for information about laws regulating the use of prescribed fire and training opportunities. Your regional offices of the USDA, Forest Service, U.S. Department of the Interior, and U.S. Fish and Wildlife Service have a variety of information on fire safety, fire management laws, and values and methods of conducting controlled burns.

Introducing Our Newest Certified Audubon Signature Cooperative Sanctuaries

In 2000, six properties enrolled in the Audubon Signature Program were certified as *Audubon Signature Cooperative Sanctuaries*. These properties joined the ranks of sixteen others now certified in the program and nationally known as demonstration sites for environmentally sensitive design, development, and management. Here, we showcase three of our recently certified Audubon Signature Cooperative Sanctuaries. Future issues of *Stewardship News* will feature the innovative accomplishments of additional Audubon Signature properties.

The Reserve: Tierra Verde Golf Club/ Martin Luther King Jr. Sports Complex—Arlington, Texas *1st Certified Audubon Signature Sanctuary in Texas*

As the City of Arlington Parks & Recreation Department faced the need to expand its sport facilities, a keen desire to conserve existing natural resources and cut operating budgets, while providing quality recreational opportunities, led them to join the Audubon Signature Program. The result is two facilities that showcase the region's unique biodiversity, provide an educational interpretive program for the community, and offer sport enthusiasts an outlet for their activities. Located within the Dallas-Ft. Worth metroplex, The Reserve is a 250-acre recreational facility that includes a golf course and an adjacent sports center built on a site historically used for cattle grazing, hunting, and homesteading. Conservation highlights include:

- Tierra Verde (which means *green earth*) Golf Club, an 18-hole municipal golf course with three practice holes and a driving range, comprises only 93 acres of the site. An additional 150 acres, including creeks, bottomland hardwoods, native grasslands and prairies, is preserved.
- Corridors and vegetative buffers exist between every hole on the golf course. Wildlife species are able to travel from one end of the course to the other without having to traverse maintained turf.
- 115 acres of the site, including wildflowers and native plum thickets, remained untouched during development and provided valuable cover and food sources for insects, birds, and mammals.
- Ten acres of degraded land were reestablished with blue-stem, Indiangrass, switchgrass, and sprangletop.
- Five acres of ponds and over 9,000 linear feet of shoreline were created to provide habitat and water sources for migratory waterfowl.
- Tierra Verde uses 'raw water' for irrigation. This water, which is tapped prior to purification, conserves potable water for domestic consumption and provides cost savings.
- Just 20% of the 100-acre site designated for The Martin Luther King Jr. Sports Center was developed for ball fields, park areas, concession and restroom buildings, parking lot, storage, drives and walkways. The remaining 80 acres contains bottomland hardwoods and native

grassland. The MLK Sports Center is the first sports center in the world to become certified as an Audubon Signature Cooperative Sanctuary.



(Left) Bob Best, Golf Course Superintendent, and Evonne Sandas, Superintendent of Golf Operations for the City of Arlington, Texas, discuss future naturalization projects for one of the few remaining out-of-play turf areas at Tierra Verde.

(Below) Tierra Verde at the Reserve, the first certified Audubon Signature Sanctuary in Texas, is preserving and creating wildlife habitat for wildlife, such as the great egret.



West Bay Club—Lee County, Florida 8th Certified Audubon Signature Sanctuary in Florida

Audubon Signature Program staff worked closely with the development team of this residential golf community to preserve and improve the unique biodiversity of this property. Located along the lower reaches of the Estero River at its confluence with Halfway Creek, the site is home to twenty-seven vegetative communities, including slash pine flatwoods, cabbage palm hammock, freshwater marsh, and rosemary scrub. Conservation highlights include:

- Seventy-six percent of the 868-acre site was left in open space.
- Twelve lakes were created and 150 acres of wetlands were enhanced throughout the entire residential golf community.



West Bay Club

West Bay was so successful at preserving habitat that Care and Rehabilitation of Wildlife, Inc. (C.R.O.W.), a Sanibel Island based wildlife rehabilitation organization, now uses the property as a release site for wildlife.

- Thirteen lakes totaling 59 acres provide storm water management and wildlife habitat for species such as the snowy egret, cormorant, great blue heron, and river otter.
- Forty-one acres of upland preserve land were set aside for the gopher tortoise, a Florida species of special concern. 624 active and inactive burrows were documented with an estimated 217 gopher tortoises living on the property.
- West Bay Club has created a database of plants and animals observed on its property. This database is accessible to the general public via its web page at: www.westbayclub.com.



Lakes and wetlands are a primary feature of the West Bay Club, located along the lower reaches of the Estero River.

Sanctuary Golf Course at WestWorld—Scottsdale, Arizona 1st Silver Certified Audubon Signature Sanctuary in Arizona

Situated in the foothills of Maricopa County's McDowell Mountains, this 18-hole daily fee golf course is built on the remnants of a bulldozed area of the Central Arizona Project. (CAP is a massive water diversion project that supplies water to much of southern Arizona.) By following the habitat enhancement plan developed through the Audubon Signature Program, this 279-acre former waste area was restored to its native Sonoran desert scrub plant community and now features acacia trees, cacti, ironwood, and many varieties of wildflowers. Conservation highlights include:

- The golf course contains only 77 acres of turfgrass, woven among desert habitat and one large water feature.
- Wildlife species include quail, roadrunners, jackrabbits, foraging hawks, cactus wren, javelina, deer, and coyote.
- Water allotment from the CAP, which supplies water to the golf course, totals only 400-acre feet/year. Through the use of a one-of-a-kind filter station and recharge well

system, this amount will be sent through a purification process and reintroduced into the ground water table 130 feet below the surface.



The Sanctuary at West World

The Sanctuary Golf Club at West World provided opportunities to restore native Sonoran desert to a former waste area.

Check us out online at: www.audubonintl.org

Find out more about our organization, programs, and educational resources, or browse our online store for ACSP signs, shirts, nest boxes, and more!

Breeding Season

Though amphibians are seldom seen for much of the year, spring is *the time* to hear frogs and catch a glimpse of salamanders. That's because after a long and silent winter, most amphibian species are now ready to burst forth in a frenzy of breeding activity.

Although some amphibians breed on land, most migrate to ponds and marshes in the spring and summer to breed in the water. In much of the country, these breeding migrations will take place during the upcoming months of March, April, and May. You can recognize the major migration times because the roads near wetlands will be covered with hopping frogs and slithering salamanders on rainy nights. Please slow down and give them a break—or even help them across the road!

There are several ways you can enhance your property to ensure that frogs and salamanders are able to breed successfully. Here's a look at what amphibians need and how you can provide it.

Good Water Quality

Good water quality is one of the most important factors in ensuring that a pond is a suitable site for amphibians to breed. Although some frogs—like bullfrogs in much of the country—seem able to survive in just about any kind of water, many species are extremely sensitive to even small amounts of water pollution. Recent research suggests that pesticide exposure is a major cause of amphibian extinctions in the western U.S., and that prolonged exposure to fertilizer run-off can kill certain amphibians even at levels that would be allowed in drinking water.



Woodway Country Club, CT

Monitoring water quality will give you a good read on the health of ponds and streams.

Improve water quality—reduce and filter runoff:

Several things can be done to reduce chemical pollution in potential breeding sites. Make sure that drains from highly managed turfgrass do not empty directly into wetlands. Instead, they should open onto the ground in a location where the run-off must go through as much vegetation as possible before reaching a body of water. Vegetation, including everything from high grass to forest, is an excellent filter to remove fertilizer and pesticide residues.

Create no-mow, no-spray buffer zones:

Create a no-mow, no-spray buffer zone around the edge of a wetland or pond. The more-natural plant community that results from not mowing will provide a better buffer than mowed turfgrass. Keep all spraying well back from the water's edge to ensure that there is an opportunity for filtration to occur. Audubon International recommends that such buffer zones be at least 25' wide, and more on slopes or when space allows.

Shallow Water With Emergent Plants

Amphibians are not fish, and they don't like deep water. Few will breed in water more than two feet deep. Many breed in temporary ponds that hold water only in the spring and dry up in late summer. Shallow water (6–24") with emergent vegetation growing in it is ideal.



Highly manicured shorelines eliminate habitat for many wildlife species, including frogs and salamanders.

Add or enhance shallow water areas:

To make suitable breeding areas in a deeper pond, you can add a shallow area on one side or all the way around the edge. Such shallows—called “littoral shelves”—occur along the edges of most natural ponds and lakes.

Whether the shallow water is around one edge or throughout the whole pond, it is important that it be planted in emergent vegetation—that is, plants whose roots grow under water but whose tops lie on the surface or stick out of the water. These plants provide a variety of important functions, depending on the type of amphibian. Some frogs need underwater stems to attach their eggs to, some climb the emergent stems to search for mates, and some just like the shelter and protection from predators. If you are creating or improving a shallow water habitat area, you can usually find appropriate native emergent plants at a good garden center.



Many ACSP members naturalize pond margins to improve habitat for amphibians. Shoreline plants also reduce erosion and filter runoff.

Photo: Due Process Stable, NJ

Leap Into Action

In this issue of *Stewardship News*, we bring you the second feature in our six part series on improving habitat for frogs and other amphibians. As regular readers know, Audubon International is one of the conservation organizations that participated in the founding of **Partners in Amphibian and Reptile Conservation (PARC)**. As a part of that effort, we have launched a new initiative to help conserve frogs and other amphibians from significant population declines. Working closely with the **United States Geological Survey (USGS) North American Amphibian Monitoring Program (NAAMP)** and PARC, the initiative involves collecting valuable data about amphibians and educating ACSP members about conservation activities that enhance and protect habitats for frogs and salamanders.

Mary Jack

Amphibians, including frogs, toads, and salamanders, are important components of natural ecosystems. A healthy population can consume thousands of troublesome insects every night.

Freedom From Predators

Amphibian adults, eggs, and larvae (tadpoles for example) make wonderful food for a variety of predators. Fish are among the worst, seriously depleting frog and salamander populations in the waters they share.

Target ponds without fish:

If you are designating a pond for amphibian breeding, it is important to keep fish out of it. Choose a new pond that has never had fish introduced, or a shallow or temporary pond that would not be a good home for fish.



Though salamanders may conceal their eggs under rocks or amidst the cover of underwater vegetation, both eggs and young are easy prey for fish. When possible, keep fish out of ponds you are enhancing for frogs and salamanders.

Photo: Larry Woolbright

Connected Habitats

Amphibians can move only a few hundred yards from their terrestrial habitat to their breeding site, and they prefer to stay under cover. That means a successful breeding site should be fairly close to wooded habitat where amphibians spend the summer, and it should be connected to that habitat by a substantial corridor of natural vegetation.



Try to connect water with woods to create a travel corridor for amphibians moving between their breeding sites and terrestrial habitats.

Create a corridor:

The best connection is a band of woods wider than the trees are tall, with an intact understory and deep layer of leaf litter on the ground. However, that is not always possible, and you should not give up just because you can't provide the best solution. Some amphibians are less sensitive than others and some, as noted above, will even travel across paved roads. The best strategy is to give them the most natural corridor the site will allow. An un-mowed strip of wildflowers is much better than mowed turf; a row of shrubs is better yet; and a row of trees with shrubs planted beneath them is still better.

Get Involved!

We hope you will listen to frog calls and watch wet roads near wetlands in your area this spring to see what amphibians are in your neighborhood. Compare that with what you see and hear on your own property, and then consider what projects you can do this year to make your site a better home for breeding amphibians.

We strongly encourage you to contribute information about the frogs on your property to nationwide research efforts underway at the **USGS North American Amphibian Monitoring Program (NAAMP)**. For details and additional resources, contact:

NAAMP: <http://www.mp1-pwrc.usgs.gov/amphib/>

Frogwatch USA: <http://www.mp2-pwrc.usgs.gov/FrogWatch/>

Partners in Amphibian and Reptile Conservation (PARC): <http://www.parcplace.org>

Creating A Desert Garden

By Jeffery Comer, Assistant Superintendent, TPC of Scottsdale

Property Name:	Tournament Players Club of Scottsdale—Desert Course
Location:	Scottsdale, Arizona
Type of Course:	Daily Fee/Resort Municipal
Eco-Region:	Sonoran Desert

Project Description

To raise awareness about our involvement in the Audubon program and to help our guests identify some of the native species that can be found on the golf course, we planned and installed an *Audubon Garden* featuring native Sonoran desert plants. We chose a high profile area filled with overgrown saltbush and weeds and planted it with native species of trees, cacti, scrubs, and grasses. Identification placards near each plant educate guests and perhaps even inspire people to use these native species in their own home landscaping.



Jeff Comer

BEFORE

Before—The area is overgrown and unattractive.

Goals

1. To make our guests aware of our involvement in the Audubon Cooperative Sanctuary Program by providing them an area that exemplifies our environmental efforts.
2. To showcase the beauty of well planted native species.
3. To attract wildlife, such as the cactus wren and hummingbirds, to the area.

Implementation and Maintenance

To create an attractive garden on this overgrown site, we first had to strip the area of all non-native species of plants.

We then selected several native species that represented those found throughout the golf course and designed the garden to feature attractive groupings of various plants.

To our good fortune, the City of Scottsdale donated all the native plants to us. Our landscape foreman “rescued” more than 300 plants from city-owned sites that were earmarked for development. Initial grow-in required us to allot several extra hours in hand watering, irrigation installation, weeding, and sign building. We regularly weeded the area while plants became established and, subsequently, we installed a layer of crushed stone to reduce weeding. Because the plants selected are all drought tolerant, no supplemental water is required now that the garden is established.

AFTER



Jeff Comer

environmental CASE STUDY

After—A diversity of native plants create an interesting and attractive garden.

Several additional garden features nicely compliment the plants. Signs, with both common and species names of each plant, help golfers become familiar with the native plants in our landscape. We installed a birdhouse to show guests our nesting program and saved a dead tree snag in the area for birds of prey to use as a perch.

Results

Even while we were still installing the garden several cactus wrens began nesting in the chollas and a couple of hawks were observed hunting from the tree snag. The garden beautified the area and created a point of interest on the course.

Equally important, building this area raised curiosity from our local guests, who asked many questions about our Audubon Cooperative Sanctuary efforts. *This was a first.* Golfers took note of the garden and complimented our efforts. Many customers have asked us how to grow native plants at their homes. Showcasing native species of plants gave us a way to communicate subtly with our guests and raised their perceptions about our environmental concerns for our community.

The desert garden achieved all of our goals and even some unexpected positive results. We were pleased with the response from golfers, but our staff, too, took a keen

“
Showcasing native species of plants gave us a way to communicate subtly with our guests and raised their perceptions about our environmental concerns for our community.
”

interest in the project. The garden spurred them to become positively involved in our overall Audubon program. We hope this increased awareness by our staff and guests will be carried off the golf course to our surrounding communities, where greater attention to native plant gardening can help preserve the desert landscape that makes this area so unique.

Perspective and Recommendations

This was a very easy project and we would highly recommend it. This project had such a positive response

that we are thinking about installing additional gardens.

Economic Costs and Benefits

Costs: Little cost in man-hours (~200 hours) and in installation of quick coupler for watering. In our case, the plants were free.

Anticipated or actual financial savings? None

For More Information

Contact ACSP Project Coordinator: Jeffery Comer,
APSS & CPSS, Assistant Superintendent
TPC of Scottsdale
(480) 585-4196

Board Member Cobb Wins 2001 USGA Green Section Award

Audubon International Board Member Dr. Patricia Cobb, of Opelika, Alabama, a respected Extension specialist and applied researcher during a lengthy career at Auburn University, has been named the recipient of the 2001 Green Section Award by the United States Golf Association. This annual award recognizes persons for distinguished contributions to golf through work with turfgrass.



During her 21-year tenure as an extension entomologist

at Auburn, Cobb specialized in turfgrass integrated pest management (IPM), management of soil insect pests, and IPM for landscape and woody ornamentals. Cobb's research and IPM recommendations resulted in substantially reduced costs and pesticide use, and increased environmental awareness.

"Pat is truly deserving of this recognition," said Ron Dodson, President of Audubon International. "She has long been a positive influence on issues related to golf and the environment. Audubon International is very pleased to include Pat as one of our Board members—her insight and vision greatly benefit our organization."

Pelican Island Elementary School Receives Gift for Open Space Purchase

ACSP member Pelican Island Elementary School, in Sebastian, Florida, recently received a gift of \$20,000 from the Treasure Coast Golf Course Superintendents Association to purchase environmentally sensitive land adjacent to the school. The donation, along with a matching grant provided by the U.S. Wildlife Department and other funds raised by the school, will be used to acquire Coastal Xeric Scrub Habitat currently zoned as 18 residential lots.

Fifteen acres of the school's property are pristine Coastal Xeric Scrub, a fragile ecosystem that is home to no less than five species of endangered and threatened animals, including the Florida scrub jay, gopher tortoise, and scrub lizard. The school's "Eco-Troop" has established a nature trail through existing scrub habitat and students are attempting to purchase the additional lots to ensure that this part of Florida's prehistoric sand ridge is not only preserved, but also available for educational purposes.

The Treasure Coast Association was among the first golf course superintendent associations in the country to make a significant commitment to the Audubon Cooperative Sanctuary Program and has contributed funds each year since 1995 to conservation projects at local schools. Its partnership



with schools and involvement in the ACSP has ensured the success of numerous environmental education programs. We extend our congratulations to Pelican Island Elementary School and heartfelt thanks to Treasure Coast's superintendents for helping to make this preservation effort a reality.

If you or someone you know is interested in making a donation in support of Pelican Island Elementary's land purchase, please contact Bonnie Swanson, Principal, Pelican Island Elementary School at swansonl.cs.com.

Education Packets Now Available

Looking for detailed information on water conservation or migratory birds? Need tips on naturalizing your property, feeding birds, or creating habitat for amphibians? We hope you'll find what you're looking for in one of Audubon International's new *Education Packets*. Each packet contains a compilation of articles, fact sheets, or case studies that present a wealth of information on a variety of conservation topics. To order, visit our web site at: www.audubonintl.org, or call Paula Realbuto at (518) 767-9051, extension 11.

Education Packets

- Environmental Case Studies
 - Wildlife and Habitat Conservation
 - Bird Basics
 - The Complete Nest Box Project
 - Migratory Bird Conservation
 - Amphibian and Reptile Conservation
 - Conserving the Spectacular Variety of Life
 - Water Conservation
 - Assessing Your Resources
- Packets are available for \$20 each.

membership NEWS

Audubon Cooperative Sanctuary Program

New Members

Golf Program

Australia

Lakelands Golf Club, Gold Coast, Queensland

Costa Rica

Los Sueños Marriot Beach and Golf Resort

West Indies

St. Andrews Golf Club, Maraval, Trinidad

Alaska

Stone Bridge Meadows Golf Club, Fayetteville

California

Apple Mountain Golf Resort, Camino
Porter Valley Country Club, Northridge

Connecticut

Madison Country Club, Madison

Florida

Carefree Country Club, Winter Haven
Pablo Creek Club, Jacksonville

Idaho

Crane Creek Country Club, Boise

Illinois

La Grange Country Club, La Grange
Rolling Hills Golf Course, Godfrey

Indiana

Grand Victoria Casino and Resort by Hyatt,
Rising Sun

Massachusetts

Egremont Country Club, Great Barrington

Maryland

Baltimore Country Club, Timonium

Missouri

Whitmoor Country Club, St. Charles

North Carolina

Forest Creek Golf Club, Pinehurst
Mill Creek Golf and Country Club, Mebane
Star Hill Golf Club, Cape Carteret

Correction

The Audubon International Research Department telephone number was incorrectly listed in the January/February *Stewardship News*. The correct telephone number is (518) 885-7819.

New Jersey

White Beeches Golf & Country Club, Harworth

Nevada

Empire Ranch Golf Course, Carson City

New York

Pinnacle State Golf Course, Addison

Ohio

Cambridge Country Club, Cambridge

Pennsylvania

Diamond Run Golf Club, Sewickley

Rhode Island

Beaver River Golf Club, Hope

South Carolina

Belfair Golf Course, Hilton Head Island

Texas

Black Horse Golf Club, Cypress
The Club at Falcon Point, Katy
Deerwood Club, Kingwood
The Golf Club at Cinco Ranch, Katy
Heather Run Golf and Fish Club, Waco
Hills of Lakeway, Austin
The Links at Land's End, Yantis
Plantation Golf Club, Frisco
The Trophy Club Country Club, Trophy Club

Washington

Gold Mountain Golf Complex, Bremerton

Business Program

Texas

City of Arlington, Arlington

School Program

Florida

Destin Middle School, Destin
J.A. Thompson Elementary, Vero Beach

Kentucky

Phillip A. Sharp Middle School, Butler

Nevada

Ollie Detwiler Elementary, Las Vegas

Backyard Program

Michigan

Overby Farm, LLC., Bloomfield

New York

Sudbury Property, Brooklyn

Texas

Thomas Property, Conroe

Virginia

Weems Property, Nellysford

Recently Certified Audubon Cooperative Sanctuaries

Golf Program

Tiara Rado Golf Course, Grand Junction, CO
Polo Park East, Davenport, FL
Wildcat Run Golf & Country Club, Estero, FL
The Clubs of Lakeway, Austin, TX

Business Program

Hollyhock Hollow Sanctuary, Selkirk, NY

Backyard Program

Alexander Property, Bedminster, NJ
Thomas Property, Conroe, TX
Weems Property, Nellysford, VA

Re-Certified Audubon Cooperative Sanctuaries

TPC of Scottsdale, Scottsdale, AZ, certified since 1996
IGM—The Habitat at Valkaria, Malabar, FL, certified since 1998
Victoria National Golf Club, Newburgh, IN, certified since 1999
Timbers at Troy, Elkridge, MD, certified since 1998
Gull Lake View Golf Club, Augusta, MI, certified since 1995
Beatrice Country Club, Beatrice, NE, certified since 1996
Fowler's Mill Golf Course, Chesterland, OH, certified since 1994
Padre Isles Country Club, Corpus Christi, TX, certified since 1998

Audubon Signature Program

New Signature Members

Briar's Creek Golf Club, Johns Island, SC
Bulls Bay Golf Club, Awendaw, SC
Eagle Ridge Golf Club, Summerfield, FL
Harbor Hills Country Club, Lady Lake, FL

Innovative Project Helps Golf Courses Ensure Good Water Quality

(continued from page 1)

"At the Leading Edge of the Industry"

As the local golf industry grows, the water quality project is evolving. In the future, the program may expand to test more than just surface water. Some courses may begin to sample water that has percolated through greens, tees, and fairway drainage systems. Others may be involved in storm event research or ground water testing.

"Through this program, golf course manage-

ment in the Eagle Valley is at the leading edge of the industry," confirmed CSU's Gross. "This group represents a new generation of superintendents who practice integrated pest management, incorporate native plant species within the golf course, protect wildlife habitat, and use state-of-the-art computer programs and weather stations to help use water more efficiently. These superintendents are truly concerned about the impact their courses have on the environment. And frankly, I'm extremely impressed with what I've seen."

in this
ISSUE

In This Issue
Spring Is In The Air



George Coulter

Learn about the variety of stewardship projects taking place on Audubon Cooperative Sanctuaries and find out how you can participate in a host of conservation activities this spring.

STEWARDSHIP
news

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

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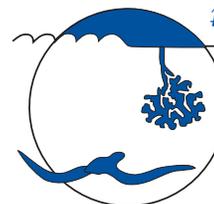
Display photos, project news, conservation tips, and a wildlife inventory to generate interest and participation in your Audubon Cooperative Sanctuary activities.



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