By Katie Tuttle

Stick your neck out

When endangered animals depend on your environment for survival, it's time to coexist.

Located in Rio Grande, Puerto Rico, Bahia Beach Resort & Golf Club is home to more than just humans, and the Bahia Beach staff wants to do their part in keeping it that way.

Of the many animal inhabitants on the island, perhaps none is more special than the leatherback turtles. Leatherbacks are the largest species of turtle, some as large as seven feet in length and reaching up to 2,000 pounds in weight. They are also an endangered species. Although numbers aren't specifically known, National Geographic statistics say that the number of leatherbacks in the Atlantic Ocean is stable or increasing, which is a good sign.

Bahia Beach is doing their part in helping this increase through their endangered species conservation program.

The resort and golf club is located in a very important ecological area on the island. It is surrounded by rainforest and a river runs along beside it. Since the rainforest is the only one nearby, it makes it a very important, natural area. Because of this, Bahia Beach staff decided they needed to work with the environment instead of against it.

Started in 2006, Bahia Beach contacted Audubon International about wanting to do a sustainable project.

"That's how we started our journey with Audubon," says Marcela Cañón, natural resources manager at Bahia Beach Golf Club. "We wanted to work with nature."

Their first step was working on residence projects with the villas and verandas at the resort. Everything was developed under Audubon and everything on their management plan was approved by Audubon.

Bahia Beach's management plans include wildlife conservation, water quality and conservation, energy saving and waste management. A subcategory of water conservation is their endangered species conservation program, which includes leatherback turtle and manatee protection.

Formal leatherback nesting season is from March to August, and this is when the turtles travel an average of 3,700 miles between where they feed and where they breed, which is the same beach as where they were hatched.

"These animals are amazing," says Cañón. "They come back to the same beach, but they also migrate to different areas. They don't come back every year to nest, so the numbers vary."

Bahia Beach has a turtle watching volunteer program that involves both staff and community members.

"People are really proud of it," Cañón says. "They take care of their turtles, and that's really important."

When a turtle comes ashore, volunteers clean it. They then call the National Resources Puerto Rico Department, which will send an officer to the location to follow the turtle until it begins nesting.

When the turtle is finished nesting, the area is marked off with rope and a sign is put in place, stating that federal law protects the area and no one is allowed inside the rope. The eggs do not hatch until two months later.

Marcela Cañón, natural resources manager at Bahia Beach Golf Club, with a few newly-hatched sea turtles.

Below: a female sea turtle laying her eggs. Right: leatherback hatchlings dig out of the nest.

"[The number of hatchlings] changes so much," says Cañón. "A turtle lays from 80 to 150 eggs. Out of those, around 60 to 70 will hatch."

The number of nests also varies year to year. In 2012, Bahia Beach had six nests and only about 250 turtles hatched. The year before, they had 24 nests and counted over 1,500 turtles.

Even though the turtles hatch, that doesn't mean they're necessarily going to make it to the water.

"Just one out of 1,000 survives from hatching to adulthood," says Cañón. "One of their most dangerous phases is from hatching to the water because they have lots of predators."

More volunteers are on site for the hatching. The staff is able to track the eggs from laying to hatching, so they know exactly when the small turtles should be making the trek from the nest to the water. The volunteers are there to try and keep them safe as they make the big journey to the water, keeping predators and unsuspecting humans away.

"We have increased the number of turtles that survive from 1-out-of-1,000 to 10-out-of-1,000," says Cañón.

Along with protecting the turtles, the resort also turns it into an educational opportunity for the guests, as well as the people in the community.

"We have an educational program that comes with it," says Cañón. "We have a different campaign each year. We talk to the kids in public schools about these issues and we always include the turtle conservations. We help to change minds."

"It's something amazing," she adds, "to see what people do. To see kids transmit the message to their homes."

Another way they educate the community is by holding a yearly beach cleanup at the end of April. Usually 250 to 350 people show up to help pick up the trash that's washed ashore. Cañón says this event helps people realize that anything they throw into the water has the potential to cause harm to sea life.

In fact, trash is a large cause of death in Leatherback turtles. The turtles' main source of food is floating jellyfish, which can look very similar to floating pieces of plastic and trash. When the turtles ingest it, they can choke and die. On a few occasions, the turtles have been found to have as much as 11 pounds of plastic in their stomachs.

With the beach cleanup program, people

> "People are really proud of it. They take care of their turtles, and that's really important."
> – *Marcela Cañón, Bahia Beach Resort & Golf Club*

Dogs' best friend

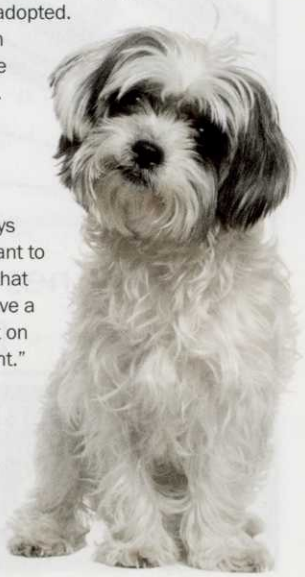
Along with the turtle conservation, Bahia Beach also has a stray dog recovery program. While the dogs aren't native, wild animals to the island, they have become a huge problem.

"People are not aware of all the needs of a pet," says Bahia Beach Resort & Golf Club's Marcela Cañón. "They just throw them to the streets."

The stray dog problem in Puerto Rico is now in the thousands, with most of the dogs starving to death, getting hit by cars, or being sent to animal shelters, where they are euthanized.

Bahia Beach rescues some of the dogs, taking care of them and trying to help get them adopted. The resort even pays to take the dogs to the vet.

"We're trying to be a responsible part [of the community] says Cañón. "You want to do something that will last and have a positive impact on the environment."



Just one sea turtle out of 1,000 survives from hatching to adulthood, and one of their most dangerous phases is from hatching to the water. Volunteers are on site for the hatching to keep the turtles safe as they make the big journey to the water.

are both helping the environment, and understanding that they need to do their part to take better care of it.

"Think of everything you throw that ends up on the beach," Cañón says. "[They] see it because they have to pick it up, little by little."

Overall, Cañón says the response of resort guests to the turtle conservation projects has been overwhelming. They are able to be a part of this moving, very touching event and it is something that will always be with them.

"They'll always have wildlife conservation on their mind," she says.

An example of this is a story Cañón will always remember. One of the guests at the resort was a young boy who was in a wheelchair.

"He loved turtles," she says. "He had never actually seen a wild turtle."

While the family was staying at the resort, the staff called them down and took them to the beach to see a hatching.

"It was something really amazing to see the light in his eyes when he saw the little tiny turtles," Cañón says. "He was just overwhelmed with happiness. It was something major; it was something amazing." **GCI**

Katie Tuttle is assistant editor at GCI.

Strict BALANCE

Raptor Bay GC features unique and innovative wildlife conservation initiatives. By John Torsiello

WCI Communities and the Hyatt Resorts, developers of Raptor Bay Golf Course in Bonita Springs, Fla., worked hand-in-hand with environmental groups and agencies to create sustainable natural areas for flora and fauna to share the land with golfers.

Raptor Bay GC stands as a shining example of such a partnership. The course, the first resort golf course in the world to receive the designation as a Certified Audubon International Gold Signature Sanctuary, has created a natural environment that thrives unabated despite the construction of a championship golf course. Great care was taken to preserve the habitat of the property's flora and fauna through such measures as an innovative water management plan, the building of bridges from hole to hole that were elevated on pilings at a control elevation over normal rainy season high water marks, and environmentally sensitive best practice turf management, such as the use of slow release fertilizers, no application of solid fertilizers within 25 feet of any water control feature, use of native grasses and aquatic plants to screen storm water control features, and the adoption of an integrated pest management program.

More than 150 acres of land is preserved within the boundaries of Raptor Bay Golf Club. The skies are alive with life, as a series of nest cylinders and purple martin houses were established on the property, while other nest cylinders attract a wide variety of other birds to the site. An indication of the success of the club's ongoing efforts at wildlife preservation, protection and promotion is the fact that after the nesting work was done, 22 species of birds that were not present in a December, 2001 study were on the property a year later.

One unique wildlife conservation feature at Raptor Bay is the presence of an active eagle's nest. The club enforces a protection plan that defines primary and secondary protection zones based on radial distance from the nest site. Outreach efforts to the surrounding community include the establishment of a mile-long walking trail through a portion of the property, re-

Raptor Bay has created an environment that thrives unabated despite the construction of a championship golf course. Over 150 acres of land is preserved within the club's boundaries.

plete with signage and verbiage that points out features of interest.

The club has also partnered with the Conservancy of Southwest Florida in assessing aquatic fauna community composition along the water features of the golf course, with funding for the study provided to the Conservancy via a matching grant from the National Fish and Wildlife Foundation's Wildlife Links Program.

> "Raptor Bay's success can be contributed to the design and focus on sustainable resource management. If we were to build this course again we would not change a thing."
>
> – *Jason Brod, Raptor Bay Golf Course*

The purpose of the study is to investigate the community characteristics of water dependent animals, such as aquatic insects, fish and frogs in the ponds and wetlands of the golf course, with an eye on determining how differences in physical characteristics may or may not influence the habitat value of various ponds.

The public and hotel guests are thrilled by the efforts Raptor Bay has taken in regards to habitat preservation, says Superintendent Jason Brod.

"The natural layout and abundance of wildlife are two of the most surveyed answers we get from our resort guests," Brod says. "Raptor Bay's success can be contributed to the design and focus on sustainable resource management. If we were to build this course again we would not change a thing."

Raptor Bay's success, he says, has led to an increase in similar efforts at courses in the area.

"The fact that there are now many Certified Gold Signature golf courses in Southwest Florida is a testament to the benefits of this program."

Speaking to water conservation, always a crucial issue for southeastern U.S. courses, Raptor Bay has a remarkably low total, only 60 acres of irrigated turfgrass, compared to a typical golf course that has over 100, Brod says. "This reduction in acreage has had a huge impact on the amount of water required to maintain the golf course," he says. **GCI**

John Torsiello is a freelance writer based in Torrington, Conn., and a frequent GCI contributor.

Top left: Signage on the course. Top right from top to bottom: A bald eagle at the nest, baby eagles in the nest, and an egret. Bottom: a view of the course, showing the natural layout and abundance of wildlife found at Raptor Bay.

Birds of a feather

Among its sustainability initiatives, Currituck Golf Club is a temporary home for more than 400 bird species.

By Helen M. Stone

You might say that Currituck Golf Club is for the birds, and you might be right.

The facility's location on the Outer Banks of North Carolina makes it home to a wide array of wildlife, including wild horses, deer, raccoons, river otters, turtles and a huge variety of birds. Currituck even means "the land of the wild goose."

As a member of the ClubCorp network of more than 150 golf and country clubs, the Currituck Golf Club is located in Corolla, N.C., on what was known as one of the premier destinations for waterfowl hunting. Today, that same waterfowl is nurtured and preserved.

"We were one of the first clubs in the region to become an Audubon certified golf course," says Mike Terry, golf course superintendent. "We kind of led the charge for the rest of them, so to speak."

The Currituck Golf Club is also known as a leader in using recycled water for irrigation. "We irrigate 66 acres with effluent water from the subdivision nearby; we have a dedicated treatment plant. We also have a large freshwater lake supplemented by well water that we use for greens, tees and any areas that might run or spray off the course," Terry says. "It's a pretty intensive irrigation system – actually two systems side by side."

During migration season, bird lovers swarm the area. Both fall and spring bring an amazing array of more than 400 reported bird species. But it was a baby owl that captivated the hearts of the golf course crew and the staff at the Audubon Society.

"Our cart master, a 20-year employee, was cruising through the back nine and saw a little puff ball on the ground near the 17th hole," recalls Mike Terry, golf course superintendent at the Currituck Club. "He got a range picker basket and lined it with pine straw and hung it in the tree that was there." The owlet was carefully placed in the "nest."

Then they stood back and held their collective breaths. "It stayed there and we saw that it stayed alive," Terry said. They began finding bones and other feeding debris at the foot of the tree. Then one day, they actually saw the mother owl. "She was huge and kind of scary!" Terry laughs.

They watched for a couple months as the owlet matured. "We pretty much left it alone," Terry said. "We just kind of kept an eye on the little fella." The young owl ventured from the nest and was "hopping around in the branches" for a bit.

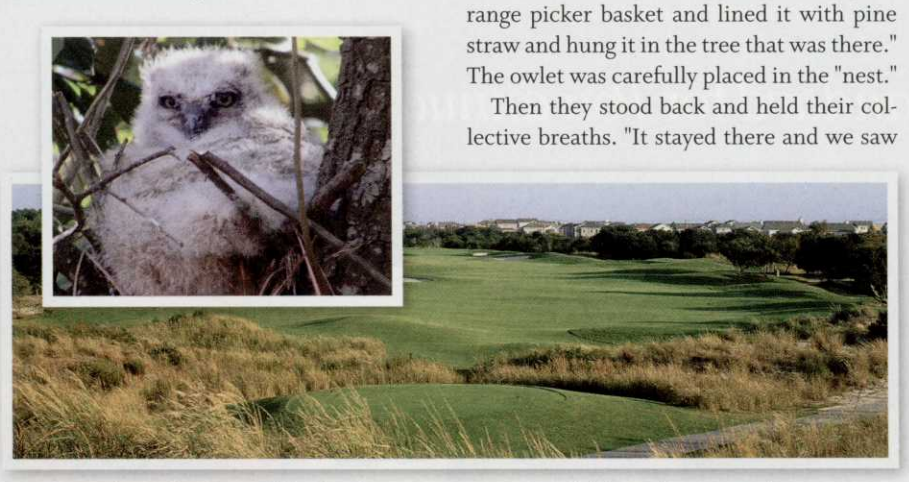
"Then it took off with the mother owl," Terry finishes. He and the crew have seen an owl back in the area and think that it might be the youngster returning home to breed. "It didn't cost us anything but time. It's just one of those great success stories."

"We do a lot to encourage the wildlife on the course," says Terry. "We create brush pile habitat in the natural areas of the course. We try to be as kind as possible."

Some of the wildlife is more of a challenge than an asset. "We have wild pigs that root around on the course," Terry says.

"The deer can be a problem, too. They ate about $3,000 worth of pansies the first year I was here. I learned not to plant pansies!" he laughs. "The otters get in my ponds and eat up all the fish. But that's okay – you learn to co-exist." **GCI**

Helen M. Stone is a freelance writer on the West Coast and a frequent GCI contributor.



Superintendent Mike Terry: "We do a lot to encourage the wildlife on the course."

By Jason Stahl

Talkin' Turkey

Paul Carter's efforts to increase the turkey population at The Bear Trace in Harrison got golfers to gobble in delight.

One day, Paul Carter came around the corner on the No. 5 hole at The Bear Trace at Harrison in Harrison, Tenn., and had to rub his eyes to make sure what he was seeing was real: 17 turkeys congregating in the fairway. As superintendent of the course since 2001, he had only seen one or two here or there. But 17? A superintendent with a different mind-set might have looked at them as a nuisance and immediately implemented a strategy to keep them off the course… but not Carter.

"Our attitude was that they were here first," he says. "Our course is on state park property, and we're operated by the Department of Environment and Conservation, so anything we can do for the environment, we do."

The Bear Trace has become home to a flock of turkeys, and instead of trying to get rid of them, superintendent Paul Carter decided to work with them.

After consulting with a local course that also had a large turkey population, Carter decided to purchase some cracked corn and put it down on the property. He didn't want to spread it all over the course, though, so with some good old-fashioned ingenuity, he and his crew built a 6-foot feeder tube out of some leftover 4-inch, double-weld ADS drain tile and ran it up a tree. They drilled a couple holes at the top, with the theory being that as the turkeys ate the cracked corn, gravity would fill up the feeding trough at the bottom.

Unfortunately, all the animals came to the party: birds, squirrels, deer, you name it. And the crafty deer figured out if they knocked off the trough with their hoofs, all the corn would come pouring out. So Carter and his crew went back to the drawing board and came up with a different design using four-inch PVC tubes, which has so far thwarted the deer and other creatures and kept the corn for the turkeys.

The cost, says Carter, has basically been zero while the return on the investment has been through the roof.

"It's great for the golfers, who don't normally get to see turkeys," he says. "People stop and take pictures of the wildlife, and they'll come in the clubhouse and talk more about that than the golf course itself."

Thanks to Carter and his crew's efforts, about three dozen baby turkeys or "poults" have hatched at the course in the last three years. Their work with the turkeys as well as building mallard duck nesting tubes, bluebird and southern wood duck houses, and eliminating 50 acres of highly maintained turf has led to numerous awards: four consecutive GCSAA Environmental Institute for Golf awards, two Tennessee Governor's Environmental Stewardship Awards, and certifications by Audubon International and the Groundwater Foundation.

A lot of Carter's colleagues are now using his plans and designs on their own golf courses. He's proud of what he and his crew have accomplished and is excited to continue down the path of sustainability.

"We've experienced nothing but success out of it, and it didn't hardly take anything to do." GCI

Jason Stahl is a Cleveland-based writer and frequent GCI contributor.

More than a HOLE IN ONE

When a colony of animals calls your golf course home, it may be easier to just move them. By Katie Tuttle

A golf course is often home to many different pests and obnoxious creatures that wreak havoc on the turf. A lot of times it is easier to try to get rid of them, but maybe that's not the right answer. Maybe you need to move them.

That's what The Heritage Golf Course at Westmoor did with the prairie dog colony thriving on the land the course was built on.

Prior to construction in 1998, Heritage worked with Audubon International to create a best management practices plan that would ensure the course be built Sanctuary Certified.

One of the issues with the land was that a prairie dog colony containing 100-150 prairie dogs was located on the front nine of the planned course.

"We thought instead of trying to work around the prairie dogs, we'd move them," says superintendent Lance Johnson.

An area of similar size to the colony was identified southeast of No. 5 and construction began. A contractor came to the course and made starter holes five to six feet deep for the prairie dogs to expand upon and create their own tunnel system. After the new habitat was created, they were able to start the relocation process.

A prairie dog specialist came out to humanely remove the prairie dogs from their holes. Using a 250-gallon water trailer filled with water and dish soap, the specialist stuck the hose in the holes and filled them with soapy water. The soap would irritate the prairie dog's eyes and they would crawl out slowly, making it easier to catch them. The process took a few weeks and they ended up catching 120-130 of them.

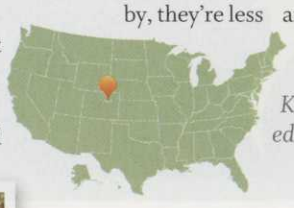
Since the relocation, the colony has existed, even though the size has dwindled. A bubonic plague outbreak down the road within the last few years traveled to Heritage's colony, resulting in the loss of some of the prairie dogs. Currently, there are 20 to 30 left.

Despite the new holes, some of the prairie dogs did continue to come out onto the course. To discourage that, Heritage put in a buried chain link fence, roughly 600 feet long. The fence was eight feet tall, and they put about five feet of it into the ground. They also used straw bales and native grass to build a better environment to keep them there.

"We were trying to create a visual barrier, because if a prairie dog can't see it, they won't go there," Johnson says.

The habitat isn't perfect, but Johnson says it gets the job done.

"Every now and then we get a couple coming across," he says. "As the years have gone by, they're less and less interested in coming to the golf course." GCI



Katie Tuttle is GCI's assistant editor.

The course had a contractor make starter holes for the prairie dogs to expand upon.