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MAINTAINING NATURE'S BALANCE

Restoring and preserving wetlands has become an important consideration in golf course construction.

By Terry McIver, associate editor



'Prior to the concept of mitigation, wetlands were being lost all the time, without being replaced.'

—Steve Beeman

As he might tell you in a matter-of-fact way, Steve Beeman builds swamps and marshes. Not the kind you find in the Florida Everglades, but lush and vital wetlands areas that preserve nature's balance within the confines of Florida golf courses.

Beeman's company, Ecoshores, Inc., of Palm Coast, Fla., restores and mitigates freshwater, estuary and dune environments. A marine biologist by training, Beeman started the company with \$250 in 1978.

Beeman builds and restores wetlands for golf course developments in northern Florida. A spin-off company, Shoreline Associates, Inc., is run by Pam Reeder, who beautifies the southern half of the state with innovative systems for shoreline protection.

"Water management districts now require that new lakes or open water retention ponds be vegetated with 30 percent of the total surface area in wetland littoral shelves," explains Beeman. "Plants and grasses filter out nutrients, pesticides and fertilizers from the system's water before it is released into other waterways. The shelf allows sunlight penetration onto the shallow bottom, making it a rich nursery for aquatic plants and animals."

Reducing hostility

"To mitigate" means to provide relief, or to make less harsh or hostile. Armed with a variety of wetlands plants such as cord grass, pickerelweed and arrowhead *Sagittaria*, Beeman is present at the early stages of a golf course development to insure that the project does not displace a significant amount of marsh wildlife.

At Hammock Dunes, a private golf community in Palm Coast, Fla., for example, developers identified about 40 acres of functioning wetlands to be preserved. Mosquito ditches and borrow pits were opened up and connected to the marshes and lakes to form a water management system.

Today, more than one year later, cord grass flanks the shores around the community's marshes and lakes, alternately submerged and exposed with varying water levels. The grass grows rapidly and creates an extremely dense root mass for effective

erosion control and nutrient uptake.

Taking the initiative

Recent concerns over the depletion of Florida's wetlands makes this concept more popular than when Beeman began Ecoshores 12 years ago. While working as a field biologist for the Florida Department of Environmental Regulation, Beeman noticed that no one was thinking seriously about planting shoreline marshes for erosion control in place of the more costly, often destructive, and bureaucratically controlled method of



To build a marsh: different plants require varying quantities of saturation, referred to as a hydro-period. This staggered planting method also provides insurance against frequent droughts.

sea wall construction.

"We began by planting shorelines for erosion control," recalls Beeman. "As it evolved, we built some sand dunes at ocean front golf courses, then fresh water marsh and swamp construction for mitigation, replacement, and also as habitat creation."

Convincing the skeptics

Beeman's work is highly regarded by many golf course and environmental professionals, which leads to a number of good referrals. Some, however, are not easily convinced.

"We've gotten a lot of respect from some true environmentalists," says Beeman, "but we've also gotten a lot of flak from those who don't want to see developers get another

tool for developing. They don't realize that prior to the concept of mitigation, wetlands were being lost all the time, without being replaced. In my opinion, it's better to replace them and let them evolve back into a natural wetland."

Beeman notes that golf course developments he works on usually end up with more wetlands on the site than existed originally.

"It's usually part of the plan, part of the agreement worked out between the developer and governmental agencies. We're giving more wetlands back, trying to make up for some of the losses of the past 100 years, when people just went in and wiped out wetlands because they were in the way."

A mandatory, three-year monitoring program is followed once a wetlands project is completed, during which wildlife survivability is monitored and nuisance vegetation removed.

According to Beeman, man-made wetlands do indeed function as natural marshes within that three-year time frame.

"The best sign that you can use to tell that a wetland is being utilized is the presence of benthic animals, which are those that live in the sandy marsh bottoms," Beeman explains. "They're turning it into a natural system, part of the food chain."

Ron Andrews, superintendent of the Grand Harbor Club and River Club in Vero Beach, says another reason state and local governments should encourage mitigation is because

many projects result in a net gain of wetlands.

"Maybe a permit like ours allowed 12 acres of fill in wetlands," explains Andrews. "In return for that, they got all that other marsh rehabilitated, along with 43 acres of created marsh."

Andrews believes that if the monitoring program can prove that marsh restoration is successful, more golf course developers will explore mitigation as an advantage when trying to obtain building approval.

Tight government purse strings are another reason Andrews thinks mitigation should be encouraged.

"This is very expensive work," admits Andrews. "The federal government can't afford to do it. And this land cries out to be rehabilitated." **LM**