

Wildlife and Habitat Management

The superintendent as wildlife manager

BY SHELLY FOY

Heavy development in Florida is eliminating living area for many of our birds and animals. The Florida Game and Freshwater Fish Commission's official list of Endangered and Potentially Endangered Species List of June 1, 1994, lists 118 fauna and flora species in Florida as endangered, threatened or vulnerable.

In some locations, golf courses are the last remaining green spaces and their value to wildlife is immeasurable. So not only are golf course superintendents land managers, but wildlife managers as well.

All wildlife need food, water, cover and space to survive. These four combined elements make up an animal's habitat.

How do you manage wildlife?

You provide for their needs; food to keep up energy levels, water to drink and bathe in, cover for breeding, nesting, sleeping, feeding and travel, and space to live and raise their young. The more elements, the more wildlife.

Throughout this article, many ideas and strategies are presented. They may not all be appropriate or needed at your golf course. The important point is that you implement programs you are comfortable with and have the time and energy to accomplish.

Every golf course is different, each idea of management is different. Step back and take a look at the big picture and decide what is right for your golf course and your golfers. Be patient and realistic about your expectations. A well-thought-out plan of action will be appreciated by everyone.

Creating a wildlife inventory

According to the Florida Game & Fresh Water Fish Commission, Florida has 1200 species of animals, which makes us the third most diverse state in the nation. Golf courses in Florida also have the opportunity to provide a valuable resting and feeding stop for migrating birds, as the East Coast is along the Atlantic Flyway.



Habitat Elements

- Conifers
- Grasses and legumes
- Hummingbird plants
- Summer plants
- Fall plants
- Winter plants
- Nut & acorn
- Feeders
- Water
- Dust beds & grit
- Salt
- Brush and rock piles
- Tree snags
- Nestboxes
- Cut banks, cliffs & caves
- Butterfly, bee & moth plants

A wildlife inventory can provide you with information such as what species are on-site, nesting and feeding information, as well as if your course is being used as a migration stop. Also, without knowing what species you have on your site, deciding what programs will be best for your course will be difficult. An ongoing inventory will help you to document the success of the enhancement projects you are implementing.

Ideas:

◆ Post a large-scale map of your facility which lists as much detail as possible (buildings, plant material, lakes, etc.). Have a journal or log under the map where golfers can note date, location, species and any other pertinent information. For golfer convenience, try locating this journal near where they post scores.

◆ Create a wildlife library in your proshop or clubhouse where members can "check out" books on wildlife. Have a journal or log where sightings can be registered. As an educational tool, have a

board where you can highlight a different wildlife species each month, or educate members/golfers of the benefits of certain management practices, (snags, naturalization, etc...)

◆ Create a card (part of your scorecard maybe) which has pictures of the most common wildlife species on your golf course and a title that says, "Have you seen me today?" Even golfers who are not familiar with names of species can recognize them with a picture. Provide a few lines where they can note where they saw them and anything special that they observed.

◆ Take the time to educate your staff on the wildlife present on the course. Have a journal or log in the maintenance building where they can note sightings.

◆ Invite a local bird group, scout group, high school or college biology class to help you create an inventory, perhaps on a day the golf course is closed. Schools are always looking for new ways to interest students in learning.

ASCP: Part III

In part 3 of this series on the Audubon Cooperative Sanctuary Program for Golf Courses, ideas for fulfilling the "Wildlife & Habitat Management" category will be presented. Information for this article was gathered through many sources and they are listed at the end of this article.

- ✓ Environmental Planning
- ✓ Member/Public Involvement
- ✓ **Wildlife & Habitat Management**
- ☐ Integrated Pest Management
- ☐ Water Conservation
- ☐ Water Quality Management



Dave Coogan (in hat), environmental technician at Tampa Palms G&CC, demonstrates aquascaping plant materials and techniques at ACSP workshop for wildlife.

Workshops for Wildlife

The USGA Green Section, Audubon Society of New York, Colliers Reserve Country Club, and Tampa Palms G&CC recently hosted two workshops on the Audubon Cooperative Sanctuary Program for golf courses. The first workshop was Aug. 15 at Colliers Reserve in Naples. Over 50 people were in attendance to learn more about this program. Speakers for the day consisted of Time Hiers, Colliers Reserve; Shelly Foy, USGA Green Section; Ron Dodson, Audubon of New York; Pat Utter, Florida Power & Light; Jeremy Cook, Collier County Waste Management; and Kris DeLaney, botanist.

On Aug. 17, over 30 people attended at the ACSP workshop at Tampa Palms. Host Superintendent Greg Plotner, Ron

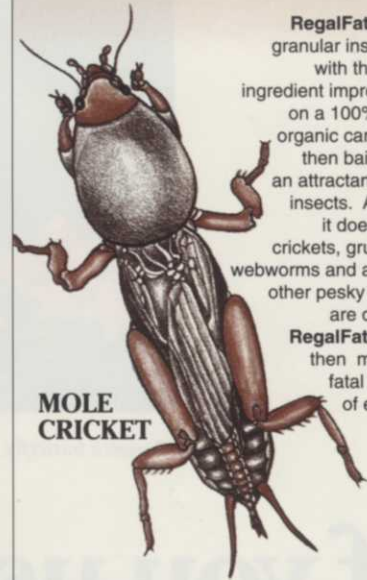
Dodson, and Shelly Foy walked everyone through the ACSP Resource Inventory form and each of the six certification categories. Dave Coogan, Tampa Palms Environmental Technician, gave an informative and entertaining talk on the establishment and management of aquatic plants.

Based on the positive response to the first two workshops, the Palm Beach GCSA will be hosting a third workshop at the Banyan Golf Club in West Palm Beach in January. We are currently searching for a workshop locations in North and Central Florida. If your chapter or club is interested, call Shelly Foy at (407) 546-2620.

—Shelly Foy, USGA Green Section

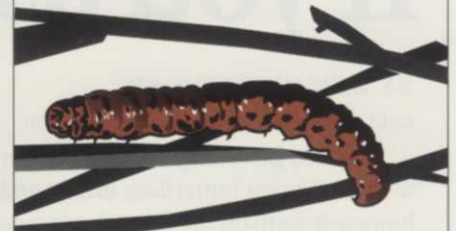
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Butterflies can be mostly free —



Monarch butterfly.

Photo by The Nature Conservancy

If you use the proper plants

BY KEN WORKINGER

KELLY GREENS GOLF & COUNTRY CLUB

Butterfly gardening is a way to conserve the natural environment and bring butterflies, insects and other wildlife back to human-invaded areas through plant gardening. When land is plowed and pushed up, native plants are mostly destroyed in the building process and replanted with exotic or popular species to man. By designing and building a butterfly garden using native plants, you not only help bring back the population of butterflies, but you will add a lot of beauty and color to your property.

Butterfly gardening works like this: Butterflies are equipped with a keen sense of smell and are able to identify food plants from quite a distance. If you use the proper plants, it won't be long before butterflies make your home or golf course, their home. The selection of plants is very important for having a successful butterfly garden. There are flowering plants that provide nectar necessary for adult butterflies. Nectar is a sweet sugary substance produced by flowers. There are also host plants that provide food for the larva or caterpillar. Because

caterpillars are particularly choosy eaters, host plants must be chosen carefully. Most species of butterflies will only lay eggs on one species of plant. So, it is important to choose the proper plants for the butterflies present in your area.

Some of the most common and easiest butterflies to find host plants for in South Florida consist of Giant Swallowtails, Black Swallowtails, Zebras, Julias, Queens, Monarch, the Gulf Fritillary and many Whites and Yellows (Sulphurs). See chart below for species of butterfly and preferred host plants for them.

When designing your garden, be sure to determine the full-grown size of the plants that you are going to use so that you can plant them and don't have to cut off flowers to maintain a feasible height.

Also, try to keep most of the garden in the full sun and preferably out of strong winds (next to fence or hedge). Butterflies prefer large blots of colors and strong accents. Once you start seeing butterflies in your garden, make note of the butterfly and what host plant they are on and watch those plants for the next three or four days. You should see tiny caterpillars emerge

Please see page 46

Florida Native Wildflowers to Provide Nectar

Perennials

milkweeds (*Asclepias* spp.)
 asters (*Aster* spp.)
 Blazing star (*Liatris* spp.)
 Boneset (*Eupatorium* spp.)
 False ageratum (*E. coelestinum*)
 Goldenrod (*Solidago* spp.)
 Ironweed (*Vernonia* spp.)
 Florida Paintbrush (*Carphephorus corymbosus*)
 Pennyroyal (*Piloblephis rigida*)
 Purple coneflower (*Echinacea purpurea*)
 Stoke's aster (*Stokesia laevis*)
 Vervain (*Glandularia* spp.)
 Wild petunia (*Ruellia caroliniensis*)

Annuals

Spanish needles, or beggars ticks (*Bidens alba*)
 Seaside heliotrope (*Heliotropium curassavicum*)
 beach sunflower (*Helianthus debilis*)

Biennials

Black-eyed susan (*Rudbeckia hirta*)
 Thistle (*Cirsium horridulum*)

Shrubs

flatwoods plum (*Prunus umbellata*)
 sparkleberry (*Vaccinium arboreum*)
 Blue porterweed (*Stachytarpheta* spp.)
 Firebush (*Hamelia patens*)
 Garberia (*Garberia fruticosa*)
 Lantana (*Lantana* spp.)
 Wild sage (*L. involucrata*)
 New Jersey tea (*Ceanothus americanus*)
 Tarflower (*Befaria racemosa*)

Florida Larval Plants

Asters (*Aster* spp.)
 Cannas (*Canna* spp.)
 Carrot family (*Umbelliferae*)
 Citrus family (*Rutaceae*)
 Coontie (*Zamia floridana*)
 Dutchman's Pipe (*Aristolchia* spp.)
 Figs (*Ficus* spp.)

Laurel family (*Lauraceae*)
 Legume family (*Fabaceae*)
 Milkweed family (*Asclepiadaceae*)
 Mustard family (*Brassicaceae*)
 Passionvine (*Passiflora* spp.)
 Pawpaw (*Asimina* spp.)
 Senna & Partridge Pea (*Cassia* spp.)
 Water hyssop (*Bacopa* spp.)

This is a partial listing of native plants found throughout Florida that attract butterflies. For more specific information regarding your region, call your county extension office or the Florida Native Plant Society, (407) 299-1472.

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Chart 1: Florida Butterflies

Name	Characteristics	Food Sources	Florida Location
SWALLOWTAILS 10 Florida species			
Zebra Swallowtail	Long winged, white w/dark stripes & red spot on lower hind wings	pawpaws	All
Black Swallowtail	Small, dark rows of yellow spots, iridescent blue spots on hind wings	carrot family	All
Giant Swallowtail	Large, black & yellow	citrus family	All
Pipevine Swallowtail	Medium, dark w/iridescent blue on hind wings	various species of Dutchman's pipe	Common north of Fort Myers
Spicebush Swallowtail	Large, dark, row of yellow spots on wings, orange spot on upper edge of hind wing	laurel family, including spicebush	All
SULFURS AND WHITES 19 Florida Species			
Checkered White	Medium, white, checkered w/brown markings	mustard spp. including peppergrass	All
Cloudless Sulfur	Large, yellow	cassia spp.	All
Great Southern White	Large, white, dark markings on tips of fore wings	salt tolerant mustards	Coastal Peninsular Florida
Little Sulfur	Small, bright yellow, brown markings on fore wings	cassia spp.	All
Sleepy Orange	Rich-orange, dark brown bands	cassia spp.	All
HAIRSTREAKS AND BLUES			
Atala	Rare, once thought extinct, blue w/dark wing edges & bright orange abdomen	coontie	Extreme South
Gray Hairstreak	Small, dull gray, orange spots on lower hind wings	oaks, hawthorns, mainly pea & mallow spp.	All
Red-banded Hairstreak	Tiny, dark gray fore wings & blue markings on hind wings	wax myrtle & oaks	All
Spring Azure	Tiny, blue	woody trees & shrubs	North Florida south to Gainesville
White Hairstreak	Blue, black wing border, white M marking on hind wing	various oaks	All
METALMARKS 1 Florida Species			
Little Metalmark	Small, copper-colored	thistles	All
SNOUT BUTTERFLIES 1 Florida Species			
Snout Butterfly	Long pointed noses, orange & brown w/white spots on upper wing tips	sugarberry, other hackberry trees	All

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from eggs. These caterpillars will feed on your plant and can sometimes destroy it quickly, so observe them daily. Remove the overload and replace them, either on other plants of the same species or give some to a friend. Most elementary schools would love to have them so students can observe the caterpillars change to *chrysalis* or pupa stage and then to a beautiful butterfly.

More butter fly garden tips:

- ◆ Plant with year round blooms in mind and in sunny, warm

locations.

- ◆ Butterflies are cold blooded, and can fly only when their body temperatures are between 85 - 100 degrees Fahrenheit. Try placing rocks in open sunny areas of your garden as "basking" sites.

- ◆ Butterflies, like all wildlife, depend on food, water and cover. Understanding their habitat needs is necessary for a successful garden.

- ◆ At least one and preferably more watering areas should be

Please see page 48

Chart 2: Florida Butterflies

Name	Characteristics	Food Sources	Florida Location
BRUSHFOOTED BUTTERFLIES 23 Florida Species			
American Painted Lady	Medium, orange w/brown, white & blue markings abundant in spring & fall	aster family	All
Buckeye	Medium brown w/purple eyespots on wings	plantains, matchheads, false foxglove & wild petunia	All
Gulf Fritillary	Bright orange w/black & silver spots	passion vines	All
Julia	orange-brown, likes edge of woodlands	passion vines	South Florida
Ruddy Daggerwing	rich orange w/thin brown lines, long thin tails, likes woodland edges	various figs	South Florida
White Peacock	medium, orange brown, dark spots & wavy lines on wings, likes moist areas	water hyssop, occasionally wild petunia	Florida Peninsula
Zebra Longwing	Black w/bold yellow stripes, likes edge of wooded areas	passion vines	All
GOATWEED BUTTERFLIES 4 Florida Species			
Florida Leafwing	Rare, medium orange-brown, mostly forest dwellers	hackberry trees	Miami area south through the Keys
Hackberry Butterfly	Medium, orange brown	hackberry trees	All
NYPHHS AND SATYRS 8 Florida species			
	small to medium, shades of brown, likes woodlands and edges	various grasses	all
MONARCH BUTTERFLIES 3 Florida Species			
Monarch	Boldly marked, orange & black, usually near coast, toxin absorbed from milkweed plants protects from predators	exotic scarlet milkweed & native milkweed vine	All
Queen	Chestnut orange w/dark margin around wings & small white spots	milkweed	All
Tropic Queen	Orange 2/black markings	milkweed	All
GIANT SKIPPERS 2 Florida Species			
	Large, moth like, dark brown w/gold markings	yucca spp.	
SKIPPERS 65 Florida Species			
Long-tailed Skipper	Medium, brown, w/long green tails	variety of legumes, including green beans	All

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included in your garden. Try a clay pot saucer with sand added and a rock in the middle, or create a depression in and around your garden and either keep water in it or let rain replenish it.

◆ Don't place your garden in an area difficult to get to or to see. Try a garden around the clubhouse, pro shop or practice putting green.

- ◆ Eliminate all chemical applications in garden area.
- For more information on butterfly gardening, contact The Xerces Society
10 Southwest Ash Street

Portland, Oregon 97204

North American Butterfly Assoc.
39 Highland Avenue
Chappaqua, NY 10514

You can also contact your local county extension agent for information on butterflies in your area.

If you're in Coconut Creek and have the time, stop by **Butterfly World** for an up-close look. West Sample Road, (305) 977-4400.

Managing Endangered and Threatened Species

'We protect the scrub jay by protecting their habitat. They prefer isolated sandy areas with low vegetation, preferably scrub oak and saw palmettos, which is the primary vegetation of John's Island West.'



Photo by The Nature Conservancy

Curious scrub jays will often land on carts and check out the golfers.

BY GREG PHENEGER
GOLF COURSE MANAGER
JOHN'S ISLAND WEST

The West Golf Course at John's Island Club is maintained in a very natural state. While this plays havoc with errant golf shots, it is a haven for wildlife.

The course was built on a natural sand dune with the holes on the eastern boundary running along a wetland area. The vegetation includes but is not limited to live oaks, scrub oaks, sand pines, slash pines, hickory, sabal palms and saw palmettos. At one time, paths were cut

through the vegetation to facilitate speed of play. These areas have been revegetated with native material.

All noxious vegetation is currently removed by two full-time and two part-time crew members. The noxious material is removed very selectively by hand so we do not disturb any nesting sites or food sources. We have begun a major revamping of the irrigation system around the greens to reduce or eliminate the radium of water thrown into the woods to lessen the growth of noxious vegetation. After the work around the greens is completed, the irrigation project will move to the tees, then fairways.

The course is home or a food source to many threatened species of wildlife. A bald eagle regularly fishes the pond at #18. The eagle's nest is on property adjacent to the course that is owned by John's Island but has been turned over to the county for a wildlife habitat.

Another threatened species is the scrub jay, which is very popular among members and crew. The major spot for locating them is along holes 3 and 4.

We protect the scrub jay by protecting their habitat. They prefer isolated sandy areas with low vegetation, preferably scrub oak and saw palmettos, which is the primary vegetation of John's Island West.

They are very popular due to their unique nesting habits. A breeding pair's nest is attended not only by the pair, but by other jays as well. They help feed the young, keep the nest clean and guard against other jays and predators. The same helpers tend to stay with the nest at least one to two years.

The popularity of the scrub jay has increased due to the helpers' inquisitiveness. A cart with golfers sitting fairly still will attract them to land very close. They will stand on the roof and peer under to get a good look and slowly inch right up to you.

Our membership takes great pride not only in the golf course condition, but in trying to do our best to cooperate with nature and protect the habitat, both for golf and nature.

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Wildlife Cover Enhancement



Creating a feeding station to attract wildlife is easy and rewarding at Tampa Palms G&CC.

BY GREG PLOTNER, CGCS

TAMPA PALMS GOLF & COUNTRY CLUB

Consistent with Tampa Palms Golf & Country Club's goal to preserve and protect the natural beauty of the forested wetland environment found on and around the golf course, it is our commitment to use native materials as much as possible in helping to aid the abundant wildlife on our course to seek shelter, food and nesting sites.

The use of native plants is encouraged, as they blend in with the beauty of the course and require less maintenance than manmade landscape settings. Some of the native vegetation communities at Tampa Palms that provide valuable cover and food sources for the variety of wildlife on the course are as follows:

Saw Palmetto (*Serenoa repens*)

Provides an abundance of cover for many species of wildlife. Spring flowers provide nectar for honeybees and the fruit is eaten by several bird species.

Sawgrass (*Cladium jamaicense*)

Provides cover for wading birds looking for food, and its seeds are eaten by some birds.

We also have an abundance of pickerelweed, bulrush and cordgrass (listed previously under aquatic plants).

These are a few of the valuable native plant communities that are present on the course at

Tampa Palms. Try experimenting with some of these plants in your next landscaping effort. The results will speak for themselves.

Why Use Native Plants?

They have been around a long time and are well adapted to the Florida environment. This means less water and maintenance is required relative to ornamentals. Native plants also offer the best food sources for wildlife as well as help preserve Florida's natural heritage.

Anytime you are planting material on your golf course, consider its value to wildlife. Does it provide a food source or cover? Try to provide a diversity (plant form, size & fruiting time) and stagger plantings so that food is provided year round.

A Note About Exotics

Exotics are foreign plants and animals imported and introduced into a new environment. The bad thing about exotics is that they have no natural enemies and they can quickly crowd out native species. Three exotics that cause problems, particularly in South Florida, are Brazilian peppers, Australian pines and Melaleucas. Melaleucas are a particular threat because they invade and overtake wetlands. In North Florida, Kudzu can overtake a small pine forest in only a few years.

The Answer? **Get Rid of Them!**

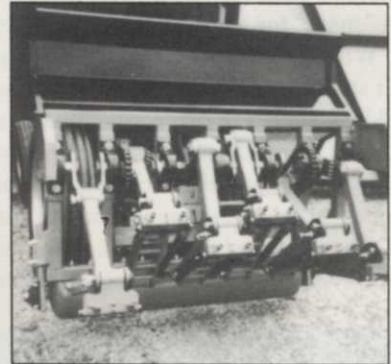


Using native plants provides food and cover for wildlife at Colliers Reserve CC

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Tree Snags: Birds Love Them

"You're going to leave that dead tree standing by the green on No. 15! Are you crazy?"

No, you are not crazy. You are providing a source for over 22 Florida birds, not to mention other wildlife species who depend on "snags" for a place to nest, eat, sleep and raise a family.

What is a snag? A snag is a dead or partially dead tree that is left standing. Snags are valuable resources to many species of wildlife. Something for you to think about, is that more than one third of forest dwelling birds and mammals require a hole or cavity for nesting and shelter. Insects are attracted to the dying wood and lay their eggs, which in turn attract such birds as woodpeckers and nuthatches. A plus for golfers is that many of the bird species that call snags home are insect eaters.



Ospreys often build their nests in snags, such as these at Tampa Palms G&CC.



Snag heaven at Summerfield GC!

Unless a snag is a threat to safety, such as adjacent to the cart path, or in danger of limbs being blown off and falling on someone, let it be. You might receive a complaint or two. If so, take the opportunity to educate your members or golfers about the value of snags. Try reprinting a snag article in your club newsletter or posting information in the clubhouse or pro shop.

The next time you are having a shade problem and need to do some selective thinning, have root invasion problems, wind or lightning damages a tree, try a little something called "girdling".

Simply remove a 4-inch-wide band of outer and inner barks around the trunk of a tree 6 to 20 inches in diameter. Make sure the cut goes at least one inch below the bark to cut off flow of food and water between the roots and leaves. The tree will eventually die, leaving a snag to help increase the population of cavity nesting birds and mammals.

What makes a good or a bad snag?

Good snags should have decayed heartwood at the right height for a cavity. Obviously, diseased trees or trees infested with pine bark beetles should be removed and taken from the property. Outer sapwood rot with healthy interior heartwood is also bad, it's hard to excavate and shallow nests are more at risk to predators.

If you have a snag and want to help create a cavity, drill a 2-inch-diameter hole into the heartwood about 3 inches below stout limbs so that the openings point downward to provide protection from rain as well as predators.

Once a snag falls to the ground and it's not in the way, leave it there because it continues to be beneficial to wildlife as well as returns important nutrients to the soil.



Cavity-dwelling birds are attracted to snags at Colliers Reserve.

Other Florida Plants and Their Value To Wildlife

Trees

AMERICAN BEECH (*Fagus grandifolia*) grows in North Florida, fruiting season is the fall, nuts eaten by variety of birds and mammals, deciduous

BUTTONWOOD (*Conocarpus erectus*) evergreen, good cover and nesting plant, fruits from spring through winter, salt tolerant

SOUTHERN RED CEDAR (*Juniperus silicicola*) evergreen, good cover and nesting sites, blue fruit from fall through winter, grows statewide

BALD CYPRESS (*Taxodium distichum*) pest free, produces seed cones eaten by squirrels and Sandhill Cranes

FLOWERING DOGWOOD (*Cornus florida*) bright red fruit eaten by many birds, grows in North and Central Fl

HACKBERRY OR SUGARBERRY (*Celtis laevigata*) grows throughout Florida, dark fruit eaten by many birds

HAWTHORN (*Crataegus spp.*) North and Central Fla., deciduous, fruits in spring -summer, fruit eaten by birds, good cover & nesting

HOLLIES (*Ilex spp.*) fruit eaten by many species of birds, good cover, evergreen, need male and female for berries

RED MAPLE (*Acer rubrum*) seeds eaten by birds

OAK SPECIES (*Quercus spp.*) several oak varieties in Florida, acorns are a primary food source with high energy levels, provides good cover and nesting sites

SABAL OR CABBAGE PALM (*Sabal palmetto*) state tree, honeybee attractor, fruit eaten by birds, palm thatch used as nest building material

PINES (*Pinus spp.*) pine seeds have high wildlife value, provides good nesting cavities

Shrubs

BEAUTYBERRY (*Callicarpa americana*) purple fruit in the fall eaten by birds, grows in all areas of Fl.

BLACKBERRY (*Rubus spp.*) summer berries very valuable to wildlife, good cover

WILD COFFEE (*Psychotria nervosa*) red berries in summer used by a lot of wildlife species, evergreen

CORAL BEAN (*Erythrina herbacea*) valuable hummingbird nectar plant, grows in all areas of Fl.

ELDERBERRY (*Sambucus canadensis*) excellent food source, fruits year round, good cover

FIREBUSH (*Hamelia patens*) blooms spring through winter, excellent plant for hummingbirds and butterflies

NECKLACE POD (*Sophora tomentosa*) nectar plant for hummingbirds, attracts insects and in turn birds

FLORIDA PRIVET (*Forestiera segregata*) spring flowers attract insects and in turn many birds, small dark fruit spring through summer

SASSAFRAS (*Sassafras albidum*) excellent food source for songbirds, grows in North and Central Fl., dark blue fruit

WAX MYRTLE (*Myrica cerifera*) fall through winter berries attract many birds, salt tolerant, grows throughout the state

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Nestboxes



Purple martin house at CC of Florida. Each purple martin can eat up to 2,000 mosquitoes per day.

If your golf course does not have tree snags, putting up nestboxes is an alternative to helping balance the loss of natural habitat.

Development and loss of tree snags has resulted in a reduction of nesting sites for many bird species. Some cavity nesters, like the woodpecker, prefer to excavate their own holes, and most others depend on the cavities abandoned by those woodpeckers. If your golf course does not have tree snags, putting up nestboxes is an alternative to helping balance the loss of natural habitat.

Your first step should be to find out what birds you want to attract. Study your golf course and the birds that are already present. Identify areas of your site that match the preferred habitat of the birds you are trying to attract.

This is where a detailed map of your property would come in handy. Next, make sure you choose the correct nestbox. Whether you buy your boxes or make them, each species has different box requirements. Check the chart below for some of the most common cavity nesters found in Florida and their specific box requirements.

Some golf courses use birdboxes as 150-yard markers. Be sure to place them close to the rough and out of play as much as possible.

Nest boxes on golf courses can help educate

and entertain, but much more importantly than that, they can help increase bird populations.

NESTBOX TIPS:

- *Put boxes up in the summer to fall to allow them to "season" before the spring mating season
- *Place in a location familiar to you and in areas which allow easy access (for monitoring and cleaning)
- *Place openings to Southeast and angled down slightly to offer protection from rain and predators
- *Boxes that are brown, tan or gray (natural) are the most frequently used
- *Do not treat the inside at all, leave natural
- *Boxes should be hinged to allow for easy monitoring and cleaning
- *Boxes should have drainage in the bottom
- *Boxes should have holes in top for ventilation and a light source
- *The roof should overhang 2-3 inches to also help protect from rain and predators
- *During nesting season, check boxes weekly and remove any unwanted guests
- *Remove nests once the young have left (clean box)
- *Be patient! Sometimes it can take a year or two before birds will find the boxes
- *Bluebird boxes are sometimes taken over by

swallows. To solve this problem, place 2 boxes, 12 ft. apart, one for the swallows and one for the bluebirds. Swallows don't mind bluebirds, but will not let other birds near nests.

*If your homeowners have a lot of cats, encourage them to put bells on their collars.

PURPLE MARTIN HOUSE:

Indians took dried gourds and hung them around their homes to keep the insects under control. Since purple martins have been known to eat 2000 mosquitos a day, having them around is not a bad idea! They are also extremely faithful to their nest sites and return each year.

Gourds are still a popular purple martin home today. To make a purple martin house out of gourds:

- *Dry the gourds thoroughly
- *Cut a 2-1/2 inch entrance hole in the middle of the side
- *Scrape out gourd seeds
- *Drill 1/2 inch holes in bottom for drainage and 1/4 inch hole in top for hanging

*Mount on pole 14 ft. high in an open field, 15 ft. from trees, building etc.. and near open water

*Replace used gourds each year

The Audubon Society of New York has plans for various birdboxes and nesting platforms. For more information, call (518) 767-9051.

MONITORING NESTBOXES

Why should you monitor nestboxes? Monitoring allows you to become familiar with the birds as well as help you determine the correct way to deal with predators, parasites or competitors. During the nesting season, check the boxes weekly or bi-weekly and make notes of birds, eggs, the number of young, etc.

The USGA and the Audubon of New York want to develop a nationwide account of wildlife on golf courses. Nestbox monitoring and annual bird counts are two ways of accomplishing this goal. As a member of the Audubon Cooperative Sanctuary System, your golf course will be sent information on nestbox monitoring and annual bird counts.

You may be saying, "I just don't have



A simple but effective nestbox for bluebirds or wrens.

Chart 3: NestBox Specifications

Species	Ent. above floor (in.)	Ent. diam. (in.)	Floor width (in.)	Cavity depth (in.)	Height above ground (ft.)	Habitat	Nesting/Breeding
Barred Owl Barn Owl	10-16	6	12x12	18-25	10-30	Forest types, hardwoods & swamps	Jan-March Sept.-June
Bluebird	6-10	1-1/2	5x5	8-10	5-6	Dry pinelands (snags)	March-June
Carolina Wren	1-6	1-1/2	5x5	8-10	5-6	Woodlands-dense understory vegetation	Feb.-August
Chickadee	6-8	1-1/8 1-1/4	4x4	8-10	5-15	Woodlands - suburbs	April-May
Crested Flycatcher	6-8	2	6x6	8-10	8-20	Woodlands	April-June
Downy Woodpecker	6-8	1-1/4	4x4	8-10	6-20	Woodlands	April-May
Flicker	14	2-1/2	7x7	16-18	6-20	Open woods & suburbs	March-May
Purple Martin	1-2	2-14 2-1/2	6x6	6	10-20	Close to water	March-July
Red Bellied & Red Headed Woodpeckers	9-12	2	6x6	12-15	8-20	Backyards-forest types Open forest, suburban woodlands	April-June May-August
Screech Owl	10-20	3	8x8	16-24	10-30	Woodlands-suburbs	March-June
Tufted Titmouse	6-8	1-1/4	4x4	8-10	5-15	Woodlands- suburbs	April-June
Wood Duck	18-20	3x4	10x10	24	water 5-25 land 10-25	Wooded wetlands	March-July



Wood duck nestboxes such as the ones at Jupiter Island GC, work best in pairs.

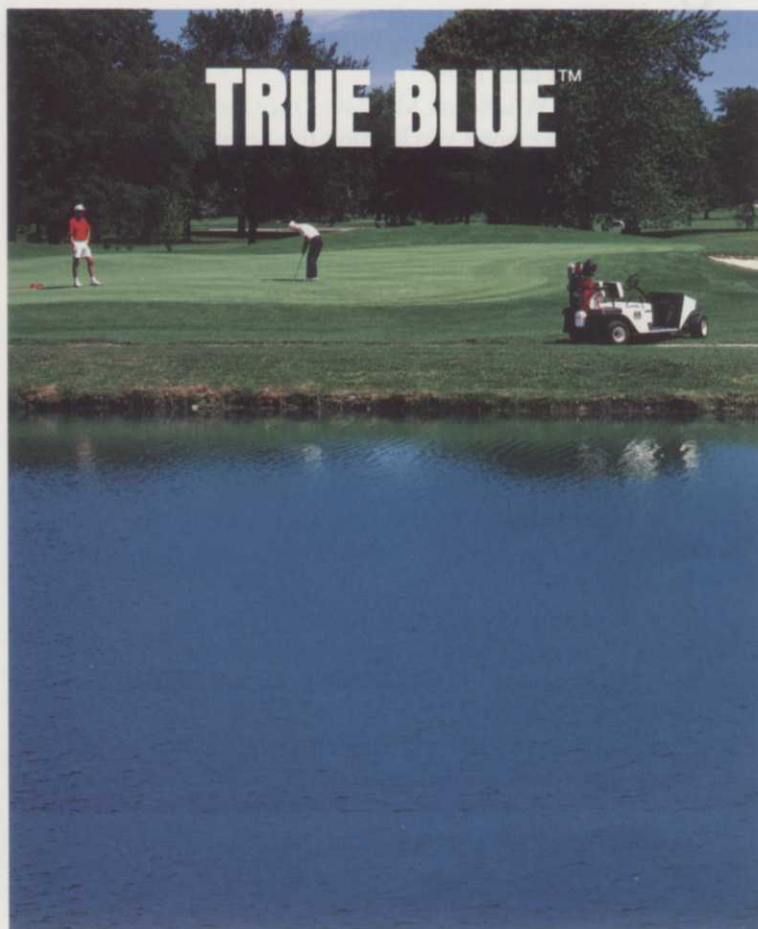
time to monitor those boxes every week," and that's okay. Here are some ideas focused around not doing all the work yourself or taking time away from a busy staff.

1) Ask golfers to participate by noting any activity they may see on a conveniently placed journal in the clubhouse or proshop.

2) Invite local bird groups or schools to help during the nesting season.

3) Start an "Adopt A Box" program, where your members or golfers can adopt one box for a year. They can donate, and/or maintain and monitor one box for a year.

4) Have your staff or crew members check the boxes on their daily trips around the course. (give them each 1 or 2 to check daily)



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Wildlife and Habitat Signs on Golf Courses

Are you having trouble getting members and golfers to realize the value of wildlife and habitat enhancement? Try a little educational tool called a sign. It's amazing how a few appropriate words can change the opinion of what someone is looking at.

Is the area by No. 12 an eyesore that needs to be mowed, or is it a "Naturalization Project Under way!"? Is the area by No. 2 fairway in need of clearing, or is it a "Critical Nesting Habitat!"?

By letting golfers know about habitat enhancement projects, they will be more supportive of changes and you will be educating them and letting them know your golf course cares about the environment.

Here are several samples of signs on golf courses around the state. If your golf course uses signs and you don't mind sharing, please send a picture or slide, or write it down on a piece of paper and send to: USGA, P.O. Box 1087, Hobe Sound, Florida 33475.

Sign ideas from the Audubon Society of New York State:

◆ "This area is being (has been) naturalized to improve wildlife habitat and environmental quality at XYZ Golf Course. The Grassy Field Habitat that you see is particularly attractive to red-tailed hawks, bluebirds and fox."

◆ "Edge Vegetation is especially valuable for wildlife. Note the variation in height of the trees, shrubs and grasses. This creates excellent opportunities for songbird nesting, feeding and protection."

◆ "As a member of the Audubon Cooperative Sanctuary System, XYZ Golf Course is undertaking naturalization projects

to enhance the environment. Estimated date of completion for this project is June 1995."

◆ "Future Wildflower Meadow: Once meadow flowers are established, we hope you'll enjoy the beauty and variety of native flowers and grasses in this area."

◆ "XYZ Golf Course is committed to providing a high degree of environmental quality while maintaining the playability and challenge of a golf course. (Mowing height of this rough is being raised to promote strong turf growth. This out-of-play area is being maintained in a natural state. Native trees in this area provide excellent wildlife food sources).

◆ "Shorebirds, like herons, egrets, ducks and geese need shoreline vegetation for food and cover. In order to provide habitat for these birds, we will be allowing taller vegetation to grow along this pond margin."

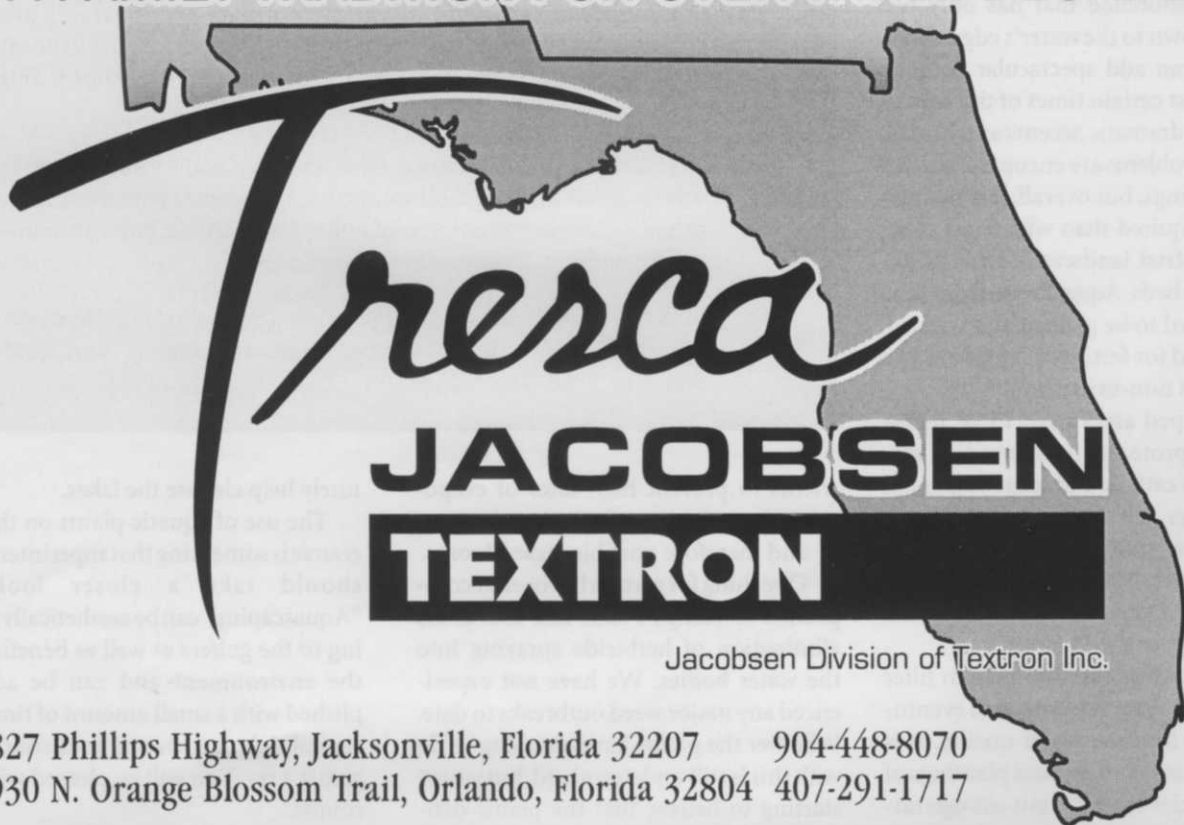
◆ "Lake buffers enhance both water quality and wildlife habitat. Please support our efforts to grow native plants/wildflowers/shrubs."

◆ "Throughout the golf course you will see a variety of bird houses. These have been specially designed to provide nest sites for "cavity nesting" birds including Eastern bluebirds, tree swallows and wrens".

◆ "These boxes help to provide roosting sites for bats. These small, insect-eating mammals are an important part of our integrated pest management program. A single brown bat can consume up to 600 mosquitos in an hour!"



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Aquascaping

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improved
water
quality*

BY GREG PLOTNER, CGCS

TAMPA PALMS GOLF & COUNTRY CLUB

Aside from benefits to the ecological welfare of the aquatic environments on the golf course, the planting of the shorelines of lakes and ponds can be done for purely aesthetic reasons. Relatively small plantings of these aquatic plants (*see table below*) in shallow bays and key focal points can relieve the monotonous and sterile look of a shoreline that has only turf growing down to the water's edge. These plantings can add spectacular color to the course at certain times of the year, as well as add dramatic accents and beauty.

Some problems are encountered with these plantings, but overall, less maintenance is required than with most common terrestrial landscapes such as annual flower beds. Aquatics do, from time to time, need to be pruned and weeded, but the need for fertilizer, irrigation and pesticides is non-existent.

Aquascaped areas need to be maintained and protected from invading species such as cattails and torpedograss or the invaders can overrun the aquatic plants. Hand pulling of these invaders seems to work best because herbicides, when sprayed, can damage the beneficial plants as well as the invaders.

Aquatic plants can also help to filter out nutrients from the water and eventually help to improve water quality. It is still uncertain whether mass plantings of aquatic species can filter out enough nu-

trients to prevent high rates of evapotranspiration

and therefore possible algae blooms.

One thing for certain has been accomplished at Tampa Palms and that is the elimination of herbicide spraying into the water bodies. We have not experienced any major weed outbreaks to date. Whether the plants have anything to do with this is still undetermined, but we are starting to believe that the plants defi-

nately help cleanse the lakes.

The use of aquatic plants on the golf course is something that superintendents should take a closer look at. "Aquascaping" can be aesthetically pleasing to the golfers as well as beneficial to the environment and can be accomplished with a small amount of time and capital. Select an area on your course and give it a try. You will be pleased with the results.

Aquatic Plants for Florida

SOFT RUSH (*Juncus effusus*) Seeds are eaten by various birds. Helps keep shoreline erosion in check. Reproduces by seeds and rhizomes. Can be found in wet meadows and along shorelines and provides good cover for wading birds.

GIANT BULRUSH (*Scirpus californicus*) Provides cover and nesting sites for ducks and various wading birds. Can be found along shorelines and in ditches.

YELLOW CANNA (*Canna flaccida*) Blooms in the spring and summer with showy yellow petals. Can be found in wet meadows and ditches.

BLUE FLAG IRIS (*Iris virginica*) Queen of Florida wetlands. Blooms in February and March and lets us know spring has arrived. Reproduces by seed or division.

ARROWHEAD (*Sagittaria lancifolia*) Produces tall white floral stalks in the spring and fall. Provides good cover for wading birds looking for small fish, insects or crustaceans near lake edges. Underground tubers are eaten by waterfowl, including ducks, swans, sandhill cranes and others.

PICKERELWEED (*Pontederia cordata*) Produces seeds which are eaten by some waterfowl. Also produces a showy purple floral stalk in the spring and fall. Can be found along lake shores and in wet meadows.

SOFT STEM BULRUSH (*Scirpus tabernaemontani*) Produces seeds which are a valuable food source for a wide variety of birds. Can control shoreline erosion and helps filter out nutrients and runoff. Provides a source of cover for birds.

CORDGRASS (*Spartina bakeri*) Provides good shoreline erosion control. Can be found in many locations ranging from sand dunes to fresh water lakes.



Above, Soft stem bulrush hosts food for white heron while Yellow canna, right, is a showy bloomer in the spring and summer at Tampa Palms GC&CC.



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Conclusion

The ACSP for golf courses is only a part of the Cooperative Sanctuary System. Businesses, schools and back yards can also be registered in this program. The concept is the same; programs are just geared to that particular property.

If your golf course is close to a school, why not consider helping them to become a cooperative sanctuary as well?

The back yard program can be a very effective educational tool for superintendents, as well as for homeowners. Ask the Audubon Society of New York to mail you some back yard brochures and place them in your clubhouse or proshop. Once your members become involved in this program, it won't be long before they will be saying, "Hey, why don't we implement more of these programs on the golf course!". It's a good opportunity for them to learn about the Audubon Society of New York and how the cooperative sanctuary system works.

The information presented in this article is not complete by any means, but hopefully will give you some idea of how to get started making your golf course a sanctuary for wildlife. By implementing these and other beneficial programs and by involving your golfers/members, you will be educating as well as gaining support. More tolerance and support for programs you are implementing and less complaints... you can't beat that!



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