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The highest standards

"In the resort industry, you have to do a lot of volume to turn a profit," says Smyly, who has been with the company for 14 years. "Particularly here on Hilton Head Island, you have to have a very high standard for the final product—from your landscape management to fine china."

Despite his respect for the current management, Smyly remains in awe of Fraser, the man who at age 21 had a vision of Sea Pines as a thriving resort.

Pointing to perhaps the most recognized part of the island, the large oak tree called "Liberty Oak," with Harbour Town's candy-striped lighthouse in its background, Smyly explains that it took an extra \$60,000 from Fraser to save the tree when the harbor was developed.

"Charles Fraser had a photographic, projective mind," Smyly says. "The way the buildings are set in conjunction with the landscape...there's no negotiation there between man and nature. It all just comes together."

And it's Smyly's job to keep it together. During the resort season, which runs from March 1 to Sept. 1, Smyly and his summer staff of 48 (it dwindles to about 25 in the winter) are responsible for more than 300 acres: villa properties, clubhouses, the Hilton Head Inn, restaurants, and Harbour Town village.

Villa management produces revenue which supplements the regular budget. But Smyly calls it a thankless job. "There are 5,000 property owners who all have their own green thumbs and their own direction to follow," he says.

The four golf courses in Sea Pines are maintained by others although Smyly occasionally helps out a superintendent. (One time, his crew had seven days to plant 1,000 azaleas on a course before a big tournament.)

Varieties of turf

Although Charles Fraser is the vision behind the resort, landscape architect Robert Marvin designed many of the areas. The Greenery, a local landscape contractor, did most of the original installations.

Turf on the island consists of the three major warm-season varieties: hybrid bermudagrass, centipede, and St. Augustine. "Centipede is a hardy grass," explains Smyly. "The golf courses use bermuda for its aesthetic

value, and St. Augustine grows well under the shade of the large oak trees."

Besides oaks and live oaks, characterized by willowy branches drooping over roads, the island's most abundant trees are palms. Ornamental pampas grass adds a tropical look to many of the villas. It also helps naturally control erosion.

Some native plant materials haven't survived the recent harsh

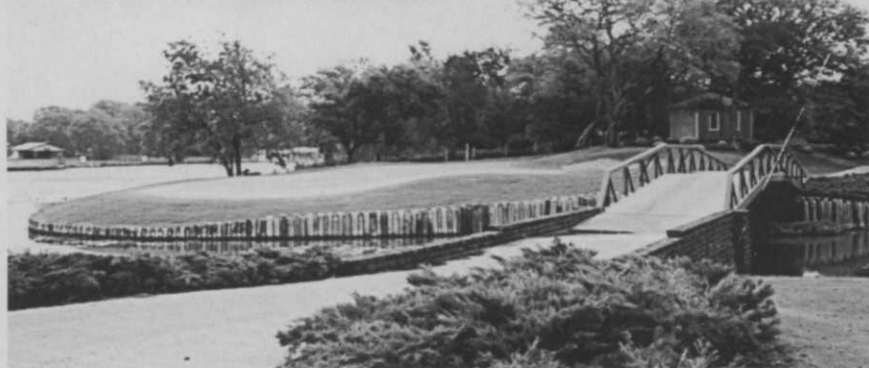
winters. "We've had to redirect our thinking to late-blooming materials," says Smyly.

Unusual weather still doesn't weigh as heavily on Smyly's mind as does the threat of a hurricane. Hurricane David in 1979 forced evacuation of the island. "It's like Russian roulette," he says.

"Eventually it's going to happen."

—Heide Aungst

A COOL BREEZE IN TEXAS



One of the reasons for the popularity of Horseshoe Bay is the ample water supply, a pleasant change from other Southwestern resorts. The 16th hole at Applerock, one of three courses at the resort, provides a picturesque setting.

Draw a mental image of south central Texas. Include cacti, tumble weed, dust, and pancake-flat prairie stretching as far as the eye can see.

But some Texans just north of Austin have a secret oasis—a place that looks more like Eden than Tombstone Gulch. Tucked into 50 miles of rolling, fertile green hills is a series of sparkling channel lakes, beginning with Lake Austin and ending with Lyndon B. Johnson Lake in Marble Falls. Alongside "Lake LBJ," the striking beauty of this unexpected hill country reaches its pinnacle at Horseshoe Bay Country Club (HBCC) Resort, where you can follow roads like "Bay West," and "Smuggler's Cove."

"The hills and the lakes definitely set us apart from most Southwestern resorts," says Alan Houdek, the HBCC director of golf course and amenity grounds maintenance. "But we have some other things we're proud of here that keep people coming back year after year."

When HBCC opened in 1971 on

what was previously the Coca-Cola Ranch, it was primarily a yacht club, marina, and riding stables. Today, additions include 14 tennis courts (four under a dome) and 54 golf holes. The 4,600-acre resort is the largest Robert Trent Jones-designed complex in the continental United States.

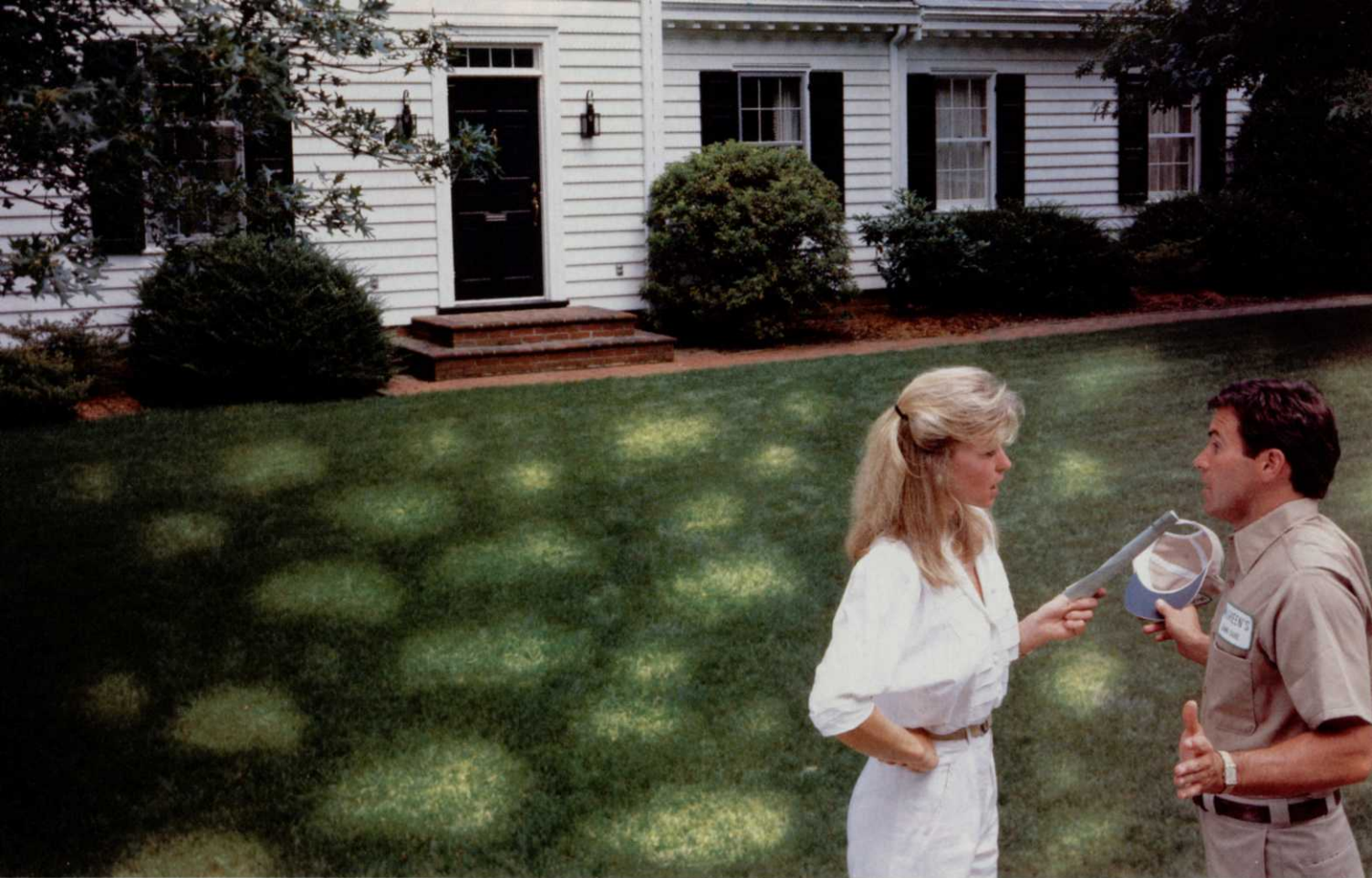
And golf is the drawing card. "Our primary clientele are the retirees who own homes here," Houdek says. "They live here because of the golf."

Another factor is the resort's aesthetic appeal—the kind of appeal that involves hard work and expert care. Owner Norman Hurd favors Oriental influences in the landscape: statues, fountains, and sculptured ornamentals.

Torrid Texas winters

This year is Houdek's 13th at HBCC. He's experienced some challenges the past few years.

Two years—1984 and 1985—were entirely out of character for south central Texas' climate. Both years,



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THE LEADER IN INNOVATION

LANDSCAPE PROFILE *continued*



Alan Houdek maintains his Penncross bentgrass greens at $\frac{5}{32}$ -inch.

brutal winter temperatures caused damaging freezes. "In '84, we had about two weeks of sub-20's temperatures," Houdek remembers. "The next winter wasn't quite as bad, but between the two, we lost all of our 50-foot palm trees."

Each of the three courses has at least 10 holes with water hazards. The tees are Tifdwarf bermuda, the

that draw people to Horseshoe Bay. Houdek says that he has applied 2 $\frac{1}{4}$ pounds of Bayleton per acre every three weeks during the warm season for the past three years, and it has kept dollar spot from being "much of an issue."

A fast fungicide

The primary disease, Houdek says, is brown patch. "It's just a predictable, consistent disease in this part of the country from May through October," he says. "There are a number of chemicals with comparable prices that can control it, but Dyrene fungicide is the fastest I've tried."

He alternates the Dyrene with Scotts Fluid Fungicide, which also gives him satisfactory results.

Houdek is thankful for the independence his job at Horseshoe Bay gives him. "We're privately owned, and I prefer it that way," he says. "We care about the members' opinions, but we still get the pride of knowing it's our course done our way."

"I run a pretty tight ship, and I know the owner is happy with what his money is getting him."

Houdek predicts almost 100,000 rounds next year. Within 10 years, he predicts the resort to be within Austin's rapidly expanding boundaries. That means the number of retirement and second homes around Horseshoe Bay will multiply rapidly.

"And then," he says, "the secret will be out." **WT&T**

*'We're privately owned,
and I prefer it that way.
We get the pride of
knowing it's our course
done our way.'*

—Alan Houdek
Horseshoe Bay C.C.

fairways Tifway bermuda, and the greens Penncross bentgrass maintained at $\frac{5}{32}$ of an inch.

"We were one of the first to use Penncross in this part of the country," Houdek says. "For quite some time, we were the most southerly course in the nation using it."

Houdek controls a light grub problem by applying Oftanol insecticide once a year.

The more difficult problems are turf diseases associated with the same weather conditions—moist lake air and balmy temperatures—



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COMING BACK

A pest of the past, the green June beetle, is once again causing headaches for many in the Eastern United States. The pest was silent for 30 years.

by Ruth S. Salvaggio and Dr. John L. Hellman

The green June beetle is making a comeback.

The pest, *Cotinis nitida* L., has increased so much in numbers the last several years that it is now common in turf of the eastern United States.

A native from Massachusetts to Kansas and south to Florida and Texas, the green June beetle caused severe damage to the Capitol grounds in Washington, D.C. around 1880 (Chittenden and Fink, 1922).

It continued to caused damage to turf, tobacco beds, and vegetable crops for several decades (McKinney and Milan, 1926).

In the last 30 years, it has received little notice except when the adults fly in July. Today, the green June beetle population has increased once again and is causing damage from Long Island to the Carolinas.

A closely related species, *Cotinis texana* Casey, shares the same common name but is dominant only in the southwestern states (Ritcher, 1945).

Identification

The green June beetle adult, usually $\frac{1}{4}$ to 1 inch long and $\frac{1}{2}$ inch wide, is usually forest green on the top, and may or may not display lengthwise tan stripes on the wings.

Its underside is metallic bright green or gold, bearing legs with stout spines to aid in digging.

In Maryland the names "June bug" and "June beetle" are commonly used for this insect. However, do not confuse the green June beetle with the familiar brown May or June beetles that fly toward light on summer nights. The green June beetle adult flies only during the day.

Only the immature or larval form of this beetle causes damage to turf. The larvae are white grubs with three growth stages and are similar to those of many other scarab species.

Their body lengths reach $\frac{1}{4}$ inch, $\frac{3}{4}$ inch, and 2 inches, respectively.

Salvaggio and Hellman work in the Dept. of Entomology at the University of Maryland.



The green June beetle grub crawls on its back, is about the same width along its entire body length, and has stubby legs when compared to other white grubs.

The larvae have stiff abdominal bristles to gain traction.

Other typical white grubs, like the Japanese beetle grub, are narrower, have longer legs, and crawl right-side up.

The life cycle

The green June beetle completes one generation each year. Adults begin flying in June and may continue into September. The peak number of adults occurs in a two-week, mid-July period in Maryland and Virginia.

On sunny days, adults fly over open grassy areas, while at night, they rest in trees or beneath the turf's surface.

Green June beetles are frequently mistaken for bees because their wings emit a "buzzing" sound as they fly. The adults are attracted to flowers and feed on the sap of trees, apparently causing no damage.

They are attracted to fruit and are known to attack soft-skinned fruit such as figs, peaches, grapes, and apricots. Hence, in southern states, they have been dubbed "fig eaters."

The adult female releases a pher-

omone which attracts males around her on the ground or on lower limbs of trees and shrubs. Males often fly low over the grass trying to locate females.

After mating, females burrow 2 to 8 inches into the soil to lay some 20 eggs at a time. Females are attracted to moist, sandy soil with high organic matter but are found in several other soils.

Historically, grub infestations have stemmed from piles of manure which were spread for fertilizer. However, in more recent times eggs and grubs may be in mulch that was exposed during the egg-laying period.

The incorporation of composted sewage sludge products and other organic materials have made many sites more attractive to and favorable for these beetles.

Most eggs hatch in late July and August, and by the end of September, most are third stage larvae.

The larvae feed on dead organic matter in the soil and thatch, as well as on living tissue. The grubs remain active into November in Maryland. In most southern states grubs may be

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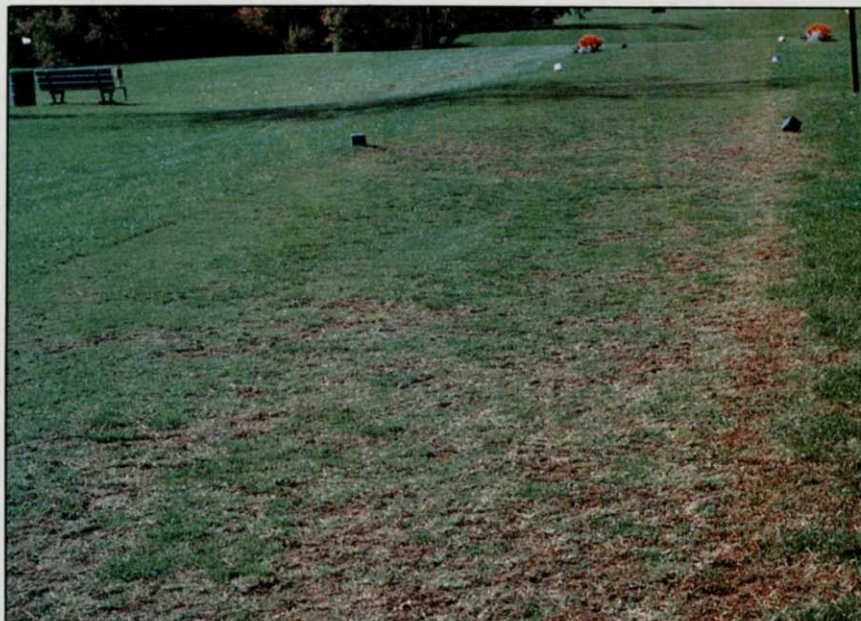
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A golf course tee damaged by the green June beetle. Notice the difference between the grass on the tee and the grass in surrounding areas. Grass cut at a greater height is less stressed and damage is less visible.

TABLE 1
Chemicals for Control

Formulation	lbs. AI/A		Label Rate/ 100 sq. ft.
	Lowest	Label	
Sevin 80S	6.0	9.0	4.0 oz.
Diazinon 4EC	2.0	5.5	4.0 fl. oz.
Proxol/Dylox 80SP	---	8.0	3.75 oz.
Turcam 76WP	2.0	4.0	2.0 oz.

come active on warm winter nights.

In colder areas they overwinter as third stage grubs in burrows 8 to 30 inches deep. They resume feeding once the ground warms in the spring and change to pupae after a few weeks.

In Maryland, pupation occurs in late May or early June. The adults begin emerging about three weeks later.

Damage to turf

The green June beetle grubs differ from other white grubs by their unusual habit of tunneling, which damages turf.

Smaller stage grubs tunnel in the top four inches of the ground, loosening the soil, eating, and thinning the thatch. In Maryland, this starts in early August when the disturbed grass may wilt or die if conditions are dry. The damage is not obvious when grub density is low or if the grass receives ample moisture.

As the grubs grow, they burrow deeper, creating more severe damage. Tunnels to the surface are kept open and the grubs push little mounds of loose soil—similar to earthworm cast-

ings—to the surface.

To determine whether a mound was made by a green June beetle grub, wipe the mound away and feel for a hole about as wide as a finger. Fecal pellets may also be present. Fresh activity is especially visible after a heavy rain.

The mounds and holes are visible by mid-August but the damage becomes more pronounced in following months as grubs continue to grow.

The grubs do feed on some roots but the major damage to the turf is due to the upheaval of the soil and dislodging of roots from the soil.

The green June beetle grubs, especially third stage grubs, come to the surface at night to feed and may at times, "graze" on the turf. Grubs may also be found in the twilight hours and on overcast days.

Their trails through dew are frequently seen on golf course greens. The mounds and holes disfigure turf while the tunneling kills the grass. Drought-stressed turf and grass that is cut very short succumbs easily to this damage.

Grass cut at a greater height is less stressed and the damage is less visible.

Grass species with broader blades—such as tall fescues—hide damage better than fine-bladed grasses such as ryegrasses, bentgrasses, and red fescues.

These grubs also cause indirect problems. Spaces open up as the grass dies, allowing for weed encroachment. Turf managers using reel mowers say the loose soil from the mounds accumulates and dulls the cutter blades especially when dew is still on the grass.

Additionally, predators—small animals and birds—damage turf as they dig for the grubs.

Biological control

Today there are no effective biological agents available to control this grub.

The most common parasite, a type of digger wasp (*Discolia dubia* Say.), captures a grub, brings it into the nest, and lays an egg on it. The resulting larva feeds in the grub, eventually causing death.

In 1985, many golf course superintendents reported a higher number of digger wasps around sand traps, a direct result of more green June beetle problems.

Though these wasps help reduce the grub population, they cause fear because of their stinging tendencies.

Milky disease products, effective against Japanese beetle, do not control green June beetle grubs. *Bacillus thuringiensis* Berliner products have no effect on white grubs.

Control recommendations

To prevent damage to turf, one must apply controls to grub stages before many mounds are evident. Damage should be expected if high grub populations were present the previous year or control was inadequate.

An increase in adults from the previous year is an indication to expect damaging populations.

One can determine density of grubs in August by digging a square foot of soil four inches deep and counting the number of grubs.

After mid-August, samples should be 10 inches deep to find the larger grubs. If more than five grubs per cubic foot are present, control is necessary.

Insecticides are effective on all grub stages and applications are warranted anytime between August and September, provided damaging numbers remain active.

Spring chemical applications are not generally recommended since the grubs are active just a few weeks and