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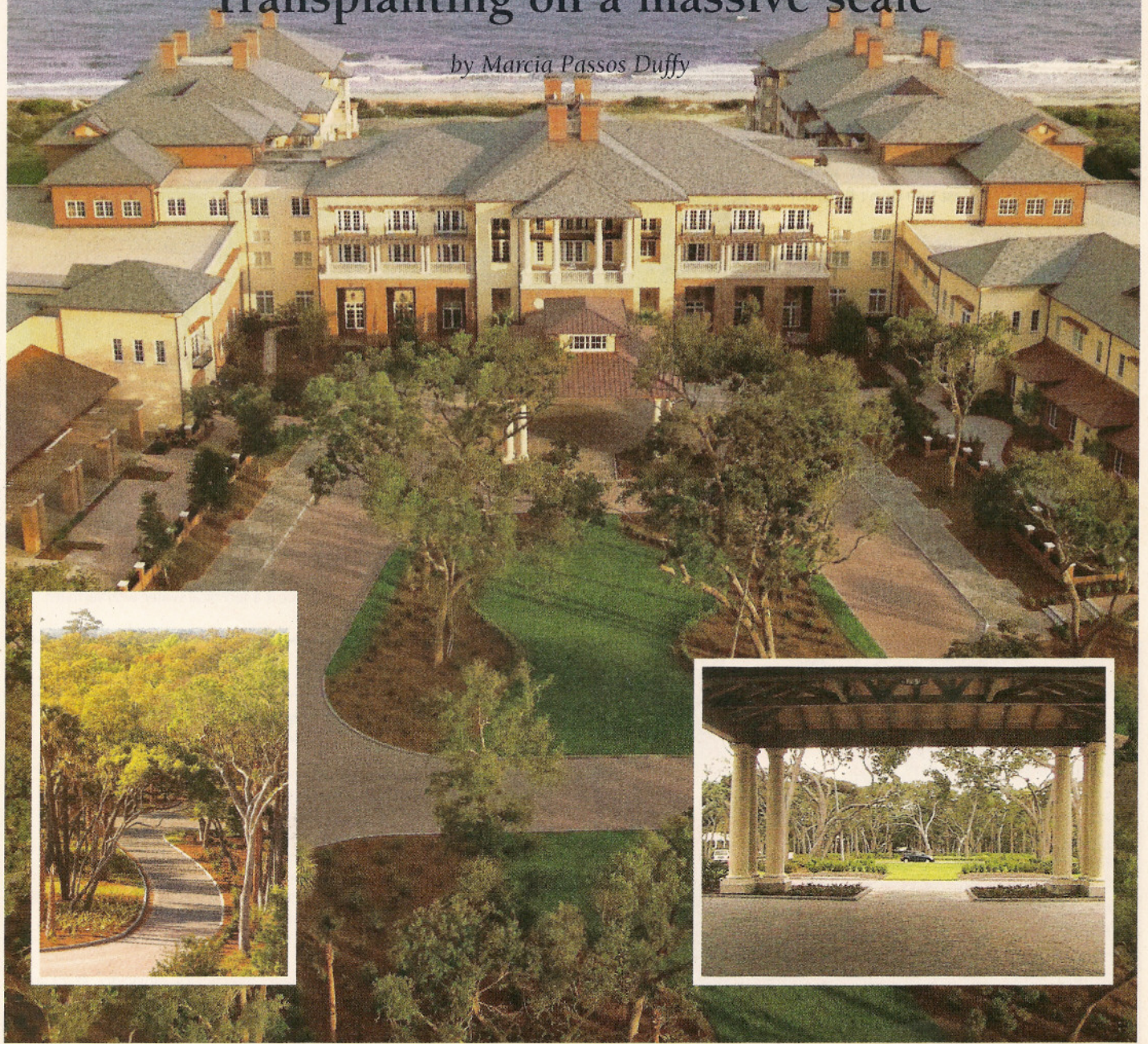
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Instant Forest!

Transplanting on a massive scale

by Marcia Passos Duffy

TOP PHOTO AND INSET LEFT PHOTOS COURTESY OF THE SANCTUARY AT KIAWAH ISLAND. INSET RIGHT PHOTO COURTESY OF DESIGNWORKS.



Top, An aerial shot of The Sanctuary at Kiawah Island upon completion.

Inset left, The approach to The Sanctuary at Kiawah Island, lined with transplanted live oaks.

Inset right, From the hotel entry, the instant forest looks as though it has always been there—the desired result.

Driving along the entrance that leads to The Sanctuary, an oceanfront luxury resort and spa on Kiawah Island in South Carolina, you cannot help but marvel at the hundreds of enormous live oaks that flank both sides of the road. They gracefully curve toward one another, creating an almost surreal tunnel effect. With the bend in the driveway, you see yet another

striking angle of trees leading up to the impressive mansion-like resort.

The effect could lead visitors to believe that this old southern mansion was owned by a wealthy family at one time, but the antiquity is all an illusion created by architects and landscape designers—right down to the 100-plus-year-old live oaks that were skillfully uprooted from the existing land-

scape and placed in strategic areas on the 25-acre property.

“No expense was spared to make this resort look like it has been here for generations,” said Matt Owen a spokesperson for The Sanctuary, which cost \$110 million to develop—down to the color of the bricks, the historically accurate way in which they would have been laid, limestone for the



Left, Creating a maritime forest.
Right, Creating part of the entry for
The Sanctuary at Kiawah Island.

columns, the type of mortar and slate roofing. When it came to the landscaping, the same meticulous attention to detail prevailed. "New properties are characterized by fresh, new vegetation," he said. This was not the look they wanted. "We wanted the whole area to feel like the vegetation had grown up around the building."

From the beginning, the owners of the property knew they wanted to preserve the

trees that were already on the land, Owen said. The island already had a rich history of preservation with 220 species of birds and a healthy population of bobcats, deer and sea turtles. "This is a large island that is beautifully preserved," Owen remarked.

To do this, the owners had to enlist the expertise of landscape architects DesignWorks of Charleston (www.designworkslc.com) and tree-moving specialists

Environmental Designs, Inc. (EDI) of Tomball, Texas (www.instantshade.com). In total, the \$1 million tree relocation project involved transplanting 300 live oaks and 100 palmettos. Some of the live oaks were over 200 years old. In the process, all of the trees survived what would seem to be a traumatic move. The goal was to cut down zero trees, and Lee Garrard, DesignWorks' team leader

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for the project, said they met that goal.

"It was quite an involved project," said

Garrard. It took one year from the time the trees were cataloged until they were set into their permanent location.

The project began with a feasibility study, which included an inventory of all the trees

on the property that could be moved. "We specifically began with the trees that would be impacted by the development of the resort," he said. The trees were tagged, then Garrard called in EDI, who has been in the business of transplanting large trees for over 25 years.

"There's only five companies in the world that do what we do," said Paul Cox, EDI's vice president. The company's roster of clients includes Rice University, the City of Houston, the University of Texas, Ford Motor Company, Stanford University and the Mirage Hotel and Casino.

The process of transplanting these ancient trees involved several steps, Cox said. After identifying the trees to be transplanted, the EDI crew did root pruning, dug a trench around the tree, filled it with native soil and kept it moist. "This is to reduce transplant shock," he said. The trees went through shock even before they were moved. Three months later, after the site (which had to be raised above sea level) was ready for landscaping, the moving began.

For that, EDI brought one of the world's largest mechanical spades. This hydraulic giant, which weighs close to 225,000 pounds, uses individually controlled blades to dig a giant root ball about 8 feet deep and 14 feet wide. Then, the machine lifts the tree from the ground and a tractor pulls the tree to its new location, where it is gently lowered. EDI moved about six trees per day. "It took a couple of hours to move one tree," Cox said, adding it took several weeks of moving trees eight hours a day to get the job done.

Trees weren't just plopped into new holes in the ground, either. "We took each individual tree and put it in the landscape to see where it would work. We treated the trees

A Look at the Live Oak

The live oak (*Quercus virginiana*) is the principal evergreen oak in South Carolina. Although it is adapted to all of South Carolina, it favors conditions along the coast, where it grows wild. The full development of the live oak in this state can be expected only within the warm, humid environment of its natural range. It tolerates cold extremes up through the Piedmont region (not the mountains), but will grow more slowly and may suffer from ice storm damage.

Mature height and spread

Live oak is rounded and wide-spreading, growing 40 to 80 feet tall and 60 to 100 feet wide. In the forest, it stands erect, growing 100 feet tall, but in open landscapes, the sprawling horizontal branches arch to the ground and form a broad, rounded canopy.

Growth rate

This tree grows moderately fast in youth, producing 2 to 2.5 feet of growth per year if properly located and maintained. Trees grown outside the coastal region will grow more slowly. The growth rate also slows with age. One of the longest-lived oaks, it may live 200 to 300 years.

Ornamental features

The live oak is probably best known for its massive horizontal limbs that give old trees their majestic character. The trunk can grow to more than 6 feet in diameter. The leaves remain intact through the winter, then yellow and drop in spring as new leaves expand. Trees growing farther inland, however, become semi-evergreen, losing some leaves in fall and winter. The waxy leaves are resistant to salt spray.

The small, 1-inch acorns are dark when ripe and are primary food for many wildlife species along the coast. They are produced in clusters of one to five.

Problems

Live oak is susceptible to leaf blister, a fungal gall that disfigures leaves but does no appreciable harm. Several insect galls are also found on live oak. No control is available. Oak wilt is a serious fungal disease that can kill trees within a year or two of infection. The disease occurs in six counties in South Carolina: Chesterfield, Kershaw, Lancaster, Lee, Darlington and Barnwell. For more information on problems of oak, refer to the fact sheet at <http://hgic.clemson.edu/factsheets/HGIC2006.htm>.

Landscape use

Live oaks are reminiscent of the Old South, especially when planted along avenues or drives leading to old plantations. Although used extensively for street tree plantings, in time the roots will lift sidewalks or streets if planted too close. It will do well as a lawn specimen, provided it is given plenty of space.

Although it responds best to plentiful moisture in well-drained, sandy soils, it tolerates drier, more compacted sites. Once established, it is drought-resistant. It prefers sun, but tolerates more shade than other oaks because its leaves function throughout winter.

Pruning is only necessary to develop a strong branch structure early in the life of the tree. It should be trained with a central leader. Eliminate young multiple trunks and branches. Prune in mid to late summer to avoid oak wilt disease.

Cultivars and varieties

Cultivars are not available. Almost any seedling live oak makes a good tree.

Note

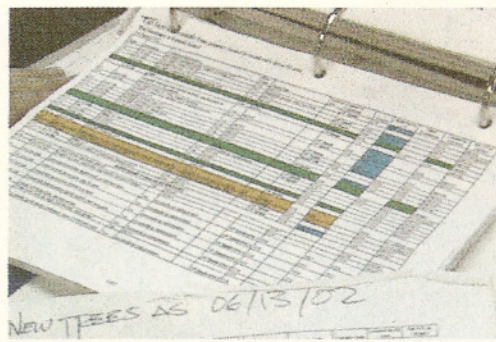
Chemical control of diseases and insects on large trees is usually not feasible since adequate coverage of the foliage with a pesticide cannot be achieved.

Thanks to Clemson University Cooperative Extension's Home and Garden information center for this information <http://hgic.clemson.edu>.

The massive tree spade begins another extraction.



PHOTO COURTESY OF DESIGNWORKS



Left, One of the trees en route to the site.
Right, An inventory of all the trees on site.

like huge pieces of sculpture—some were as big as 48 inches around,” said Garrard. The trees were then turned and positioned until they were in just the right angle. “The effect they were aiming for was almost a spooky, shading kind of experience when driving up to the resort. We handpicked each tree for its spot.” The result, he said, is that the trees do their job. “They accentuate the guests’ arrival.”

Most of the transplanting was done in the winter during dormancy, when most transplanting of large trees needs to be done. Garrard said that moving the live oaks from their original low, wet areas to higher ground has added many years to the trees’ lives. “Some of these trees, which were only about 100 years old, only had another 25 to 30 years of life left. A live oak can live for a thousand years. These trees are now greener, healthier.

“This was a great learning experience for us,” said Garrard, who said his landscape design firm had never worked on a tree transplant

project that was this extensive. “In my opinion, EDI really works miracles in transplanting large trees.” He is also sold on the idea of using existing vegetation in new construction. “Usually, trees are just cut down and wasted. Environmentally, this is much better.”

However, is it cost-effective? Garrard seemed to think so. With nursery stock costing between \$500 and \$5,000, this certainly fell, per tree, on the higher end of that spectrum, but that would be for an 8 to 12-inch live oak. He noted that he could have never purchased a 100-year-old live oak for any price. “The effect is unparalleled,” he said.

The project also had an effect on the island itself, Garrard said. “People were very interested in the process, and [it] woke a lot of people up to the possibilities. It was one of these projects, when it was first proposed, you wonder if you can do it. Then, before you know it, you’re doing it! And you learn things along the way. It is a process [you] like to see utilized. It is really like instant mature landscape.”