



The fourth green at Everett (Wash.) G&CC had long suffered from shady conditions, especially in the rainy winter months of western Washington.

Trees, turf and high-tech tactics

A golf course in the woods of Washington relies on computer modeling to help “sell” a tree-removal plan.

Ron Furlong

“Woods are like communities and trees are like men. In each there are a lot of common nuisances and parasites that are best out of the picture altogether.”

— A.W. Tillinghast, *“The Course Beautiful”*

When Herb Waterous, CGCS, formerly of Scarsdale Golf Club in Hartsdale, N.Y., and now working for ArborCom Technologies of Toronto, Ontario, first visited us at Everett Golf & Country Club early in the summer of 2000, he couldn’t hide his amazement. Even though his journeys have taken him to hundreds of golf courses in North America, he was still in awe at our ability to manage turfgrass amidst more than 2,000 towering Douglas firs packed into fewer than 100 acres.

We specifically brought Waterous out to look at one

area on our golf course — the fourth green. Although Waterous, a 30-year GCSAA member, saw the green in wonderful shape in June, had he visited anytime during the previous winter he would have seen a different green altogether. True to legend, it does rain pretty much from October through April here in western Washington. Some people think we just make this up to keep the tourists away. Light, steady, constant rains leave most golf courses in the region saturated for many months.

We are fortunate at Everett G&CC to have one of the better-draining courses in the area. Thus, when we do get a problem, it sticks out like a bad haircut. The fourth green is surrounded by 120- to 140-foot Douglas firs and some cedars. When Waterous came out we actually tagged 142 trees that at some point



After ArborCom Technologies was consulted, several trees were removed from around the fourth green, and sunlight now drenches the putting surface throughout the day.

shaded the green. Drainage on the green has never seemed to be a problem. However, during the winter rains the green becomes slimy and, occasionally, nearly unplayable. Finding pin placements in January and February is a

challenge.

It didn't take a group of rocket scientists to tell us what our problem was. But knowing your problem sometimes isn't enough. The business of going into an area and destroying many trees is not an easy sell, nor should it be. You can stand on the green and look around you and have a pretty good idea which trees are the problem, but if you start to pick and choose you'd better be right, because tree removal is irreversible. Sure, we can plant new trees, but the height of our trees makes replacing them difficult.

Light and turf science

Let's step back for a moment and talk about light requirements. According to James Beard, Ph.D., author of "Turf Management for Golf Courses," "Turfs growing in shade typically are lower in shoot density; have a shorter root system; have more erect stems; exhibit a more rapid rate of stem and leaf elongation; and possess more succulent, ... delicate tissues that are prone to traffic stresses."

Sounds a lot like Everett's fourth green.

In "Turfgrass Science and Culture," Beard continues, "Radiant energy from

the sun is converted to chemical energy ... by ... photosynthesis. Mowed turfs are capable of absorbing and converting to chemical energy only 1 to 2 percent of the total incident radiation energy. Light absorption, quality, duration and intensity are important to the growth and development process of turfgrasses...Shading adversely affects the microenvironment in which turfgrasses must grow...Turfgrass adaptation to shade does not involve a single factor but a complex microenvironmental regime. The low light intensities weaken the turf ... A complete loss of turf occurs if the light reduction is severe enough. However, the light intensity is sufficiently above the compensation point in many shade situations to permit maintenance of an acceptable turf. Several hours of full sunlight plus the diffuse light from leaf reflection and transmission are usually adequate for turfgrass growth under properly maintained individual trees."

We also know, though there is some debate in this matter, how much more important morning sun is than afternoon sun. Many leading turf physiologists say they believe that between three and four hours of morning sun are

More Info: www.gcsaa.org

Key points

- Too much shade on the fourth green — especially during the rainy winter months — was a known problem at Everett G&CC. But selecting specific trees and "selling" the membership on their removal was difficult.
- A Canadian technology firm came to the course to collect data, construct a computer model of the site and its trees and provide a comprehensive report of findings and recommendations.
- The computer model presented complicated information in an easy-to-understand way and helped committee members make and justify tree-removal decisions.

needed in most situations for a healthy stand of turf.

Not just the facts

Okay, so we know shade can be a detriment, and we also know we can get by with some tree removal or pruning, but it doesn't have to be wholesale. Where do we go from there? That's where ArborCom stepped in to help us at Everett G&CC.

ArborCom came onto our site, collected data, constructed a computer model of the site and then provided us with a comprehensive report of findings and recommendations.

The computer model for light penetration took into consideration every day of the growing season. The recommendations minimized tree removal while maximizing sunlight, illustrating exactly what would be achieved before and after limbs were cut and saving tree pruning and removal dollars because only necessary limbs and trees would be cut. The report presented complicated information in an easy-to-understand way and helped committee members make and justify decisions.

This last item, helping committee members make and justify decisions, is perhaps the most important benefit offered by computer modeling. Sometimes knowing one's problem is simply not enough. Having the facts and documentation to back it up are imperative.

Calling for backup

With several thousand towering Douglas firs, mixed in with a good number of cedars of nearly the same size, Everett G&CC's Randy White, CGCS, has been battling the tree/turf issue ever since he became superintendent at this private club, 20 miles north of Seattle, in 1987. The issue on the fourth green has been a problem he and the club's tree committee have been addressing for some time. Some pruning, topping and even removal has

been done over the years to help the turf. When White, a 19-year member of GCSAA, realized the problem needed an even bigger solution, he enlisted the services of ArborCom.

In June 2000, Waterous came out to begin the work. First, he mapped the green and surrounding trees, using the company's SunSeeker instrument, which is a transit, telescope and compass all in one. First, the area of the green is determined, and its location in three-dimensional space. Then, the trunks of the



One of the huge Douglas fir trees nearest the fourth green was removed in August 2000, after ArborCom made recommendations and the course was visited by UGGA agronomist Larry Gilhuly.

trees and their limbs are also measured. Trees can be measured individually or, sometimes, as a group. Several times, because of the tightness and close proximity of a couple of firs or cedars, Waterous would pair off a couple of trees as one. Each tree is measured with relation to the density of its canopy. I got to be the one standing in front of each tree having the SunSeeker pointed at me.

Because all of the trees were not visible from the center of the green, Waterous took measurements from several additional locations.

After every tree was shot and evaluated, Waterous returned to his computer with all this information to determine light penetration to the green, using the company's SunShader software. The next day he gave a presentation to White and the tree committee. Using color graphs and diagrams, digital photos and computer-generated images, he was able to show us how much light was currently getting to the green during each month of the growing season and the specific scenarios, if implemented, that would alter the shade on the green at any time of the year. In fact, it showed any time of any day of the year.

First steps

Finding the most problematic trees, and then, by either virtually pruning or removing certain trees, seeing how that affects the shade on the green before actually removing them has obvious benefits.

We ran two scenarios (additional scenarios have an added cost). It was amazing to see how the removal of certain trees would alter the light on the green during specific months. For example, the first scenario recommended removal of 28 of the 142 trees we tagged. With that scenario, we could go through each month on the computer and see how the light increased on all areas of the green.

The front left of the green is by far the worst, most heavily shaded throughout most of the year. With the "virtual removal" of these select trees on the computer, we were able to increase our morning sunlight to this area from anywhere from one to three hours per morning, depending on the month. One hour may not sound impressive, but for an area that receives almost no sunlight during certain months, it is a drastic improvement.

Two trees were noted specifically for their detriment to the green, and were



The fourth green at Everett G&CC is shown before and after two large trees near the green were removed. The photos were taken at the same time of day on Aug. 20 and 21, 2000.

labeled for removal as quickly as possible. One of these trees sat next to the green to the right, only a few yards off the putting surface. At one time there was an entire corridor of trees along the right side of this green. Except for this survivor, they had all been removed. The other tree sat to the east of the green a good 130 yards away, between the fifth and sixth holes. Both trees were dear to the membership, specifically the lone fir next to the green. However, with the help of ArborCom's input the prospect of removing these trees drew hardly a blink. Everyone knew how weak this green became during the winter months, and it was easy to see the negative impact the trees were having on the putting surface.

Even more assistance in the ease of removal came in August 2000 with the annual visit of Larry Gilhuly, USGA Green Section executive director of the Northwest Region. As he has at many different golf courses in the past, he strongly supported ArborCom's recommendations. Just a week after Gilhuly's visit the two culprits were brought down. The removal of those trees as early as possible was critical. The light the front of the green begins to get in August and September can only help all the more in October and November when the rains come. And come they will.

Up to par

Following removal of the two worst trees in August, the tree committee

came back to look at the remaining trees in ArborCom's scenario. Twenty-eight trees had been reduced to 26 with two firs now gone. The committee took nine more of the 26 off the endangered list, to come up with a grand total of 17. These seventeen were brought before the board of directors, along with ArborCom's results and the USGA agronomist's suggestions. The board elected to go along with the recommendations, and during the months of December 2000 and January 2001 the 17 giants were removed. It sounds like a lot, but the removal of 17 trees in an area where there are hundreds of trees exactly the same size and character is not so drastic. The improvement noted on the green early in 2001 was significant.

I think it's important to note that we consider ourselves environmental stewards. In fact, in August 2000 Everett G&CC became only the sixth golf course in the state of Washington to achieve full certification in the Audubon Cooperative Sanctuary Program for Golf Courses. We don't take tree removal lightly. But we do know that at some point, in certain situations, tree removal is a necessary evil. We are a private golf club providing a service of championship golf to a demanding membership. A green not up to par with the others for half of the year is not acceptable. With the help of ArborCom and the USGA, we were able to scientifically demonstrate to our membership our specific problem.

Since we started with a quote from the late great A.W. Tillinghast, known to many as the dean of American golf course architects, let's end with one as well:

"There are times when some truly grand trees have to go, and it is not without a pang at their passing."

Ah, but go they sometimes must, as Tillie himself knew.

Long live our fourth green.

GCM

Ron Furlong is assistant superintendent at Everett (Wash.) Golf & Country Club and a nine-year member of GCSAA.