

GOLF COURSE[®] INDUSTRY

INSIDE

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SSSSNAKES!

THEY'RE NOTHING TO MESSSS WITH!

THE FOLKLORE WILL
SCARE YOU.
THE REALITY WILL
SOOTHE YOU.

Experts explain how to properly approach these critters when you encounter them on the course.



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#GCITWEETUP16

It's hard to believe we're about to hold our fifth annual TweetUp soon in San Diego. The first one began pretty inauspiciously in a windy parking lot outside the Las Vegas Convention Center in 2012.

We just wanted to create a place for people with an interest in social media to gather and connect in the real world. That simple idea was more complicated than we thought.

The show organizers weren't too thrilled with the idea of us doing it back then, so we decided to go guerilla and just hold it outside. We didn't have any kind of sound system (or, for that matter, any clue what we were doing) so we went to a Best Buy or someplace and bought a cheap plastic bullhorn.

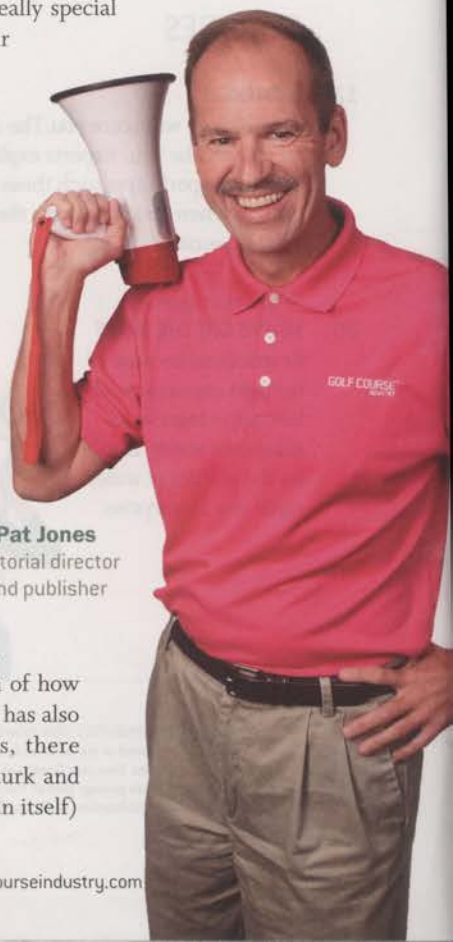
I liked the crazy bullhorn idea not only because it made me even louder, but because it was a little reminiscent of the scene in the movie "Dog Day Afternoon" where Al Pacino is yelling "Attica, Attica!" and stirring up trouble. I'm all about stirring up trouble every once in a while.

Since then, the TweetUp has grown and become something really special (thanks in big part to our friends at Aquatrols who sponsor it, nurture it and help to promote it on their excellent social media channels). The number of superintendents and others using Twitter and other platforms has skyrocketed. Dr. Micah Woods recently did a quick study and suggested that there are at least 23,000 turfheads on Twitter globally. More than 9,200 follow us on Twitter alone ... the most of any golf/turf media. That's pretty cool.

And the sophistication of how you're using social media has also grown dramatically. Yes, there are many who still just lurk and listen (which is valuable in itself)



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Pat Jones
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TEERING OFF

and also many who just post the occasional course condition bulletin. But, for a growing number, it's become a way to tell stories about their agronomic and non-agronomic programs, share ideas with colleagues around the world and build relationships that often turn into valuable "real-world" friendships and connections too.

We try to identify and recognize those who are using social media in effective and innovative ways through the GCI Super Social Media Awards. Now is the time to enter so please feel free to email me with your suggestions (and don't hesitate to nominate yourself). The goal is to identify and promote best practices on social media so that others can learn from the best, just like every other aspect of our business. Get your nominations in today!

“ I liked the crazy bullhorn idea not only because it made me even louder, but because it was a little reminiscent of the scene in the movie 'Dog Day Afternoon' where Al Pacino is yelling 'Attica, Attica!' and stirring up trouble. I'm all about stirring up trouble every once in a while.”

But, allow me to return to the bullhorn for a minute. It still sits on the shelf in my office. For me, it's become a symbol of what GCI is intended to accomplish in the market. It allows voices that otherwise might not be heard to be broadcast loud and clear out to you. It continues to be part of our TweetUp logo but it's grown to represent our whole philosophy. Without that bullhorn, you might not hear voices like Tim Moraghan, John Kaminski, Jeff Brauer, Henry Delozier, Monoe Miller, Bruce Williams, Terry Buchen, Brian Vinchesi and Paul Grayson. That would be unacceptable to me, and I hope you'd feel the same.

The bullhorn has become a symbol for GCI because it represents our role in this business: to inform, to provoke, to stimulate and to advocate. I'll bring that old plastic megaphone along and have it at our booth at this year's GIS in San Diego as a reminder of where we started ... and where we're going. **GCI**



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NOTEBOOK



Myrtle Beach momentum

We collected so many goodies (editorial ones, of course) and had so much fun in Myrtle Beach (inside the convention center, of course) we compressed our official **Carolinas GCSA Conference and Show** newsletters into a magazine friendly format. Enjoy!

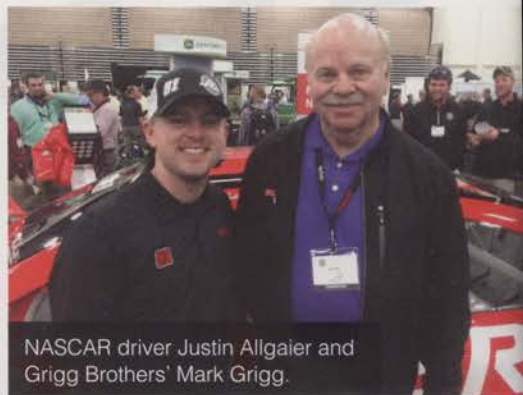
1,300+
ATTENDEES

400
SOLDOUT
BOOTHs

346 PARTICIPANTS

LET'S BEGIN WITH THE NUMBERS. And they were impressive. More than 1,300 industry professionals attended educational seminars. All 400 trade show booths were sold. The golf championships attracted 346 participants to the Fazio, Love and Norman courses at Barefoot Resort.

The golf title stayed on The Grand Strand, as Tradition Golf Club assistant superintendent Tom Taylor fired a 73 on the Norman Course. The Turf Bowl title also stayed in the Myrtle Beach area, as the Horry Georgetown Technical College quartet of Mike Haviland, Mark Blackwelder, Zach Davis and Tim Moore outwitted their competitors. Linville Ridge Country Club's Steve Sheets received the Distinguished Service Award while Hope Valley Country Club's David Lee succeeded Chechessee Creek Club's Bill Kennedy as president.



NASCAR driver Justin Allgaier and Grigg Brothers' Mark Grigg.

A NASCAR SPRINT CUP SERIES DRIVER, former Clemson and NFL defensive back, and somebody who lasted 12 rounds with Mike Tyson mingled with superintendents on the opening night of the trade show.

Justin Allgaier, who finished 30th in the 2015 Sprint Cup Series points standings, brought the No. 51 Brandt



Donnell Woolford and James "Bonecrusher" Smith.

car to the Grigg Brothers booth. Brandt, a manufacturer of agriculture specialty products, acquired Grigg Brothers in 2014, and the affable Allgaier has made appearances at multiple golf industry events.

Clemson football fever reached the show floor, with past great **Donnell Woolford** visiting Myrtle Beach to promote PremierPRO, a hybrid Bermudagrass used on golf courses, athletic fields and home lawns. Woolford now serves as an advocate for natural grass playing surfaces. His memories of playing on artificial turf are painful. "I played 10 years in the NFL," he says. "I think I would have played 20 had all the fields been grass. It's safer than what we played on, with the

technology and stuff they have now it's so advanced. It makes it better."

Woolford brought along a friend who competed on canvas: former heavyweight boxing champ **James "Bonecrusher" Smith**. The Myrtle Beach resident held the title for seven months before running into Tyson on July 3, 1987.

THE EDUCATION PORTION OF THE SHOW had a congenial conclusion as eight superintendents relayed lessons from their own experiences to help colleagues. Presenters included Wade Hampton Golf Club's **Thomas Bailey**, Carolina Country Club's **Robert Young**, Kiawah Island-Turtle Point's **Steven Agazzi**, Grandfather Golf & Country Club's **Pete Gerdon**, Country Club of Landfall's **Jeff Mack**, Pine Like Country Club's **Richard McDaniel**, Dataw Island Club's **Brian Hollingsworth** and Bryan Park Golf Club's **Kevin Smith**. In the final presentation, Smith described how Bryan Park recover from major winterkill damage suffered earlier this year. His story is a remarkable example of how an unexpected ordeal can ultimately improve a golf course. "The silver lining is beginning to shine brightly," Smith says. "The golf course is dramatically improved."



Wade Hampton Golf Club's Thomas Bailey opened the "Innovative Superintendents" panel by discussing his course's drainage.

From THE FEED

We spent a recent weekend watching live golf coverage originating from courses in South Africa, The Bahamas, Vietnam and Australia. We know many of our followers enjoy seeing courses from around the world, so we asked them the country they enjoy seeing the most (besides the United States and Canada) on a golf broadcast.



Tony Nysse

@tonynyssegcs

Melbourne, Australia.

Sandbelt Bunkers. I wish my exams at MSU were this easy to answer!



Matthew Wharton

@CGCGreenkeeper

@tonynyssegcs second that and will add the UK for me provided it's a links course!



Jeff Whitmire

@jeffwcc1_jeff

Another for Melbourne. The emphasis is on the playing surfaces and leave the rest of the course natural. Perfect!



Jason Haines

@PenderSuper

hand down Australia.

Melbourne sand belt



Nick Johnson

@penskeblue2fan

Britain, of course



Fort William C.C.

@Golf_FWCC

Scotland.....nuff said.

#StAndrews #OldCourse



Join the conversation

on Twitter

@GCIMagazine!

CRITICAL POSITIONING



Henry DeLozier is a principal in the Global Golf Advisors consultancy. DeLozier joined Global Golf Advisors in 2008 after nine years as the vice president of golf for Pulte Homes. He is a past president of the National Golf Course Owners Association's board of directors and serves on the PGA of America's Employers Advisory Council.

If you have plans to make 2016 the best year in the history of your club and course, you should make sure you know your competitive position. If you don't, stop everything you're doing – budgeting, planning, staffing, even cutting the grass – and define it. The right position is that critical to your success.

An organization's position is what it owns in the minds of customers and consumers. Companies with established positions include Southwest Airlines, which owns inexpensive, no-frill flying; Apple, which owns computing simplicity and has at least partial ownership of technological innovation; Google, which owns search; and Häagen-Dazs, which owns premium ice cream. When we think of those industry segments, we not only think first of those brands, we also believe they are in a category by themselves – a category of one.

NOT A TAG LINE OR SLOGAN

A position should not be confused with a tag line, a slogan, a mission statement or a logo. A position is an expression of a sustainable competitive advantage. Those other things only communicate a position. That's why Jack Trout and Al Ries – who literally wrote the book on this ("Positioning, the Battle for Your Mind") – say positioning is not what you do to a product; rather it's what you do to the consumer's mind to make sure the product (or golf course) is correctly positioned in the consumer's consciousness.

But, you might be asking, "What does positioning have to do with me? I'm a superintendent/food-and-beverage manager/membership director – not the marketing person. My answer is that everyone is a marketer. It doesn't matter what your title is or what your job description lists as responsibilities. If you're not doing everything you can within your sphere of influence to drive customers and prospects to your facility, you're not doing a complete job. That's true in any profession – maybe more so in today's competitive golf marketplace, where new members and loyal customers are our most valuable currency. And the job starts with understanding your position.

AN EXERCISE IN POSITIONING

So how do you go about deciding what your club or facility's position should be? Positioning exercises at major corporations can take months and cost lots of money. But there are ways to shorten the process, control costs and still get effective results.

Your objective is a well-crafted positioning statement that defines your unique competitive advantage. Writing on MarketingsProfs.com, authors Ford Kanzler and Athol Foden say a positioning statement should answer two essential questions from the customer's point of view: "What's different about your business?" and "What unique benefit is derived from your product or service?"

The best way to address those questions is through a disciplined research process. If you decide to manage the process in-house, here are four steps that will lead you to the position that's right for your facility.

Shop the competition. Play their course, tour their clubhouse; while you're there, listen to what people are saying about what they like and don't like.

Convene a focus group. Invite a group of longtime members or loyal customers to a site other than your own and ask them why they've stayed a member and why they keep coming back to your course.

Host an offsite meeting of your staff. Include department heads, assistant managers and hourly employees. Ask them how they think you could win against competitors? What can we do that they are not doing? What do they hear members and customers say they love – and hate?

Crunch the data. Take all of the input from the various audiences and distill it into as brief a statement as possible – no more than one or two sentences – that clearly defines your target audience and what you offer that is not available anywhere else. Tattoo your new position on your forearm so you won't forget it. **GCI**

Check this out...

Global Golf Advisors is providing complimentary copies of *Positioning, the Battle for Your Mind*, to the first 100 readers who go to bit.ly/1MVU44C to request one of the most important marketing books ever written.

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**THE FOLKLORE WILL
SCARE YOU.
THE REALITY WILL
SOOTHE YOU.**

Experts explain how to properly approach these critters when you encounter them on the course.

By **Guy Cipriano**

Dr. Steve Johnson lives in a state with more than 1,000 golf courses yet he has dabbled in the sport just once. Instead of being skilled with a 9 iron, the associate professor in the University of Florida's Department of Wildlife Ecology and Conservation studies a key component of the ecosystem capable of inciting misguided fear among players and maintenance crews alike.

Johnson is a snake guru and he'll tell anybody who works outdoors, including superintendents and their crews, dangerous snakes are part of the office landscape.

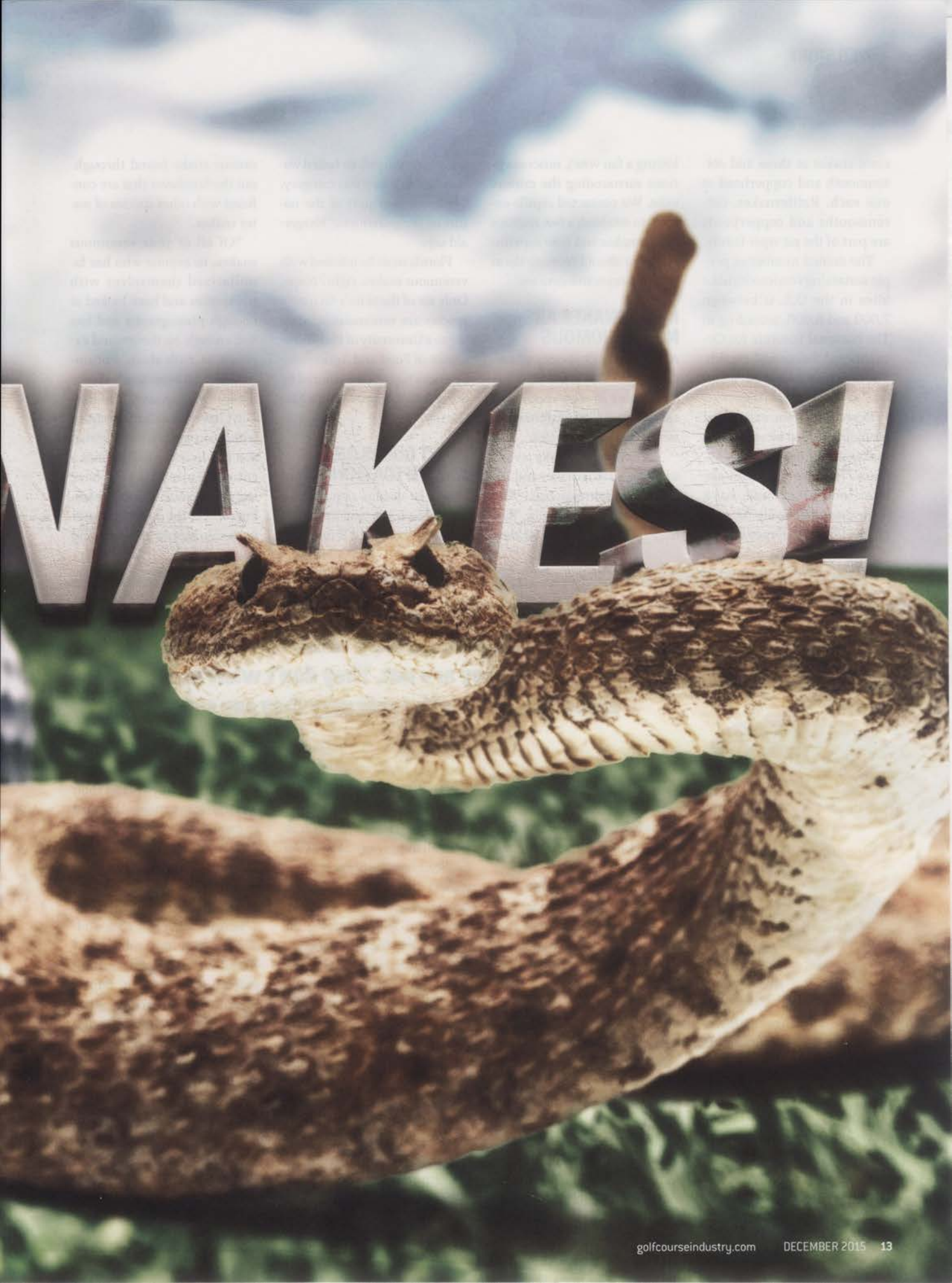
"Golf courses are places where you are going to encounter venomous snakes," he says. "If they are in high and dry areas, you have potential for Eastern Diamondbacks. If you live out West, there are a whole bunch of pit vipers that people are likely to encounter. In the Southeast, you have cottonmouths that are potentially around water features."

Shaking yet?

"But it's not something people need to be worried about," Johnson adds. "I would be more worried if I pull up my smartphone and there is a cell of nasty weather coming my way, and I need to get off the golf course so I don't get hit by lightning. That's a much bigger threat than any snake."

The number of snake species residing in North America varies slightly over time because of changing taxonomy. Johnson lists the total at 156 species, with 23 being venomous. Rattlesnakes lead the venomous pack with 18 species, followed by





difficult to find, which means
 they are left vulnerable to
 the sun's rays and other
 environmental factors. The
 snake's head is positioned
 in a way that allows it to
 see its prey, but it also
 makes it a target for
 predators. The snake's
 body is covered in a
 pattern of dark spots
 that help it blend into
 its surroundings. The
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WAKKESI!



coral snakes at three and cottonmouth and copperhead at one each. Rattlesnakes, cottonmouths and copperheads are part of the pit viper family.

The annual number of people sustaining venomous snake bites in the U.S. is between 7,000 and 8,000, according to The National Institute for Occupational Safety and Health. The organization claims “about five” of those people die.

Experts insist the majority of problems caused by venomous snakes stem from human ignorance. The biggest rattlesnake in Arizona, for example, has a strike distance of only 30 inches, says Phoenix Herpetological

and plain- and yellow-bellied water snakes fit into this category. “They are just part of the nature on the golf course,” Fitzgerald says.

Florida must be infested with venomous snakes, right? Nope. Only six of the state’s 46 native species are venomous, according to a University of Florida Institute of Food and Agriculture Sciences report co-authored by Steve Johnson and Monica McGarrity.

MOST SNAKES ARE NON-VENOMOUS

Arizona has 13 species of rattlesnakes. The state also has 61 species of non-venomous snakes. Snowbirds are often unaware of the second fact.

“Everybody thinks every snake is a rattlesnake, and it’s not,” Russ Johnson says. “The other thing they think is, ‘Rattlesnakes are mean.’ And they

and plain- and yellow-bellied water snakes fit into this category. “They are just part of the nature on the golf course,” Fitzgerald says.

Florida must be infested with venomous snakes, right? Nope. Only six of the state’s 46 native species are venomous, according to a University of Florida Institute of Food and Agriculture Sciences report co-authored by Steve Johnson and Monica McGarrity.

DON'T GUESS ON IDENTIFICATION

When in doubt, consult the regional reptile and amphibian guidebook. And if one isn’t

venomous snake found throughout the Southeast that are confused with other species of water snakes.

“Of all of your venomous snakes, to anyone who has familiarized themselves with the species and have looked at enough photographs and has had enough on-the-ground experience with them, cottonmouths are immediately identifiable,” Willson says. “But they don’t have great characteristics where you can say, ‘Here’s what you can look for that defines a cottonmouth.’ They do have large triangular-shaped heads, but most of the common water snakes do have large heads, and

“Everybody thinks every snake is a rattlesnake, and it’s not. The other thing they think is, ‘Rattlesnakes are mean.’ And they are not. They don’t want to bite you at all, because that’s the only way they can secure prey.”

—Russ Johnson, Phoenix Herpetological Society

are not. They don’t want to bite you at all, because that’s the only way they can secure prey.” Humans, by the way, are not rattlesnake prey.

Arkansas, a crossroads state with distinct ecosystems, is a home to around 30 snake species and only five are “dangerous in any way,” says Dr. J.D. Willson, an assistant professor in the Department of Biological Sciences at the University of Arkansas.

Most snakes found in Texas are “really, really small snakes that are really common and completely innocuous,” says Dr. Lee Fitzgerald, a professor and curator of reptiles and amphibians at Texas A&M Brown snakes, earth snakes, rat snakes,

sitting on your office desk or bookshelf, invest in one.

As the de facto expert on almost all things outdoors at your facility, crew members and customers are likely to call on you first when spotting a snake on the course. Misidentifying the species could spark unnecessary panic or, even worse, place somebody in a perilous situation. “Letting folks know immediately whether it’s venomous will reduce the chance of them interacting with it and having that negative interaction that can result in a bite,” says McGarrity, an aquatic invasive team leader with the Texas Parks and Wildlife Department.

Cottonmouths, also known as water moccasins, are a ven-

they will actually spread their head out into a triangular shape to essentially look scary. I just can’t tell someone that a snake with a triangular-shaped head is venomous, because that’s certainly not the case.”

Fortunately, most state wildlife agencies have established websites to aid reptile and amphibian identification. Superintendents unsure of what they are seeing can post pictures on the public “Snake Identification” Facebook group (<http://on.fb.me/1O4MIO5>) to receive quick identifications from trained herpetologists.

ENLIGHTEN OTHERS

Once you possess knowledge about a course’s ecosystem,



there's no sense keeping it to yourself. Steve Johnson recommends refreshing your crew every spring or fall, when snake activity is at its peak in most parts of the country, about the species they might encounter. View it as part of your normal safety training.

The education can even extend to curious members/customers. A consistent message should be emphasized during these sessions. "It's important to let people know that the greatest risk for a snake bite comes from handling a venomous snake," Fitzgerald says. "Trying to pick up a snake or dealing with a snake is a lot more dangerous than just letting it go."

In the Southwest, it's common for resorts to train staff members on how to properly handle snakes, Russ Johnson says. Signs on a golf course alerting customers of snake activity might be an extreme measure, but he adds a clubhouse or pro shop poster explaining the region's snakes and other misunderstood critters can eliminate fears. "It can be done in a very positive way and not to a point where you scare people away," he says.

WHERE ARE THEY?

Large birds such as falcons, hawks, herons, owls and raptors prey on snakes, so it's unlikely a rattlesnake or copperhead will crawl across a green or fairway at sunrise.

Snakes are "ambush" hunters, which means they spend most of their time in hiding places, Willson says. Of all the potential places to find a snake on a golf course, near water features top many experts' lists because of the thick vegetation often lining creeks, ponds, lakes

The **BIG** squeeze

Work on a golf course in South Florida? Noticing fewer small mammals on the property?

Blame it on something that shouldn't be there.

Burmese pythons, a non-venomous invasive species native to Asia, are causing serious problems in a 4,000-square mile region south of Lake Okeechobee. "Most people see it on the Discovery Channel and you think it's a joke or being blown out of proportion," says Dr. J.D. Willson, an assistant professor in the Department of Biological Sciences at the University of Arkansas. "From an ecological standpoint, it's a disaster."

Here's what is known about Burmese pythons in South Florida: Their establishment as wild animals in Florida started around 2000, thousands have been removed and population estimates are difficult to determine. What are the chances of spotting one on a golf course?

"They are probably on or around most golf courses, especially in suburban Miami, suburban Naples and those areas," Willson says. "But your chances of seeing one are probably not that high. They are incredibly good at hiding."

The University of Florida's Dr. Steve Johnson agrees. "It's possible, but I would say it's probably unlikely that you would see one," he says. "Most pythons stay in thick vegetation hiding in areas where they can be camouflaged."

Willson recently conducted a python detectability study in South Carolina. The study involved placing 10 snakes in a 100 foot by 100 foot enclosure with some bushes, ponds and other natural vegetation. The pythons ranged between 6 and 10 feet long, and 19 observers received 30 minutes to find the snakes. Only two pythons were spotted during the period.

Pictures of pythons on golf courses are rare, although a photo a golfer took of an alligator eating a python at The Classics Country Club at Lely Resort in Naples went viral last month and received significant media attention. "They are duking it out for top predator position," Willson says. "Big pythons eat small alligators. Big alligators eat small pythons."

Superintendents and crew members who suspect a python might be on their course can call the Florida Fish and Wildlife Conservation Commission exotic species hotline at 88-IVE-GOT1 or report the sighting online at IveGot1.org. Photos assist with the identification process. A training program called REDDy also has been established for identifying and reporting large, invasive reptiles (<http://ufwildlife.ifas.ufl.edu/reddy.shtml>).



and marshes. McGarrity recommends leather gloves when working in these areas.

Rocks offer cover from predators and protection from the heat in the desert. Tree lines and leaf piles are other areas that must be approached with caution. A copperhead is “essentially invisible” when laying near brown leaves, Steve Johnson says. Wearing boots when working in wooded areas decreases the risk of a bite, McGarrity says.

Human activity can also create places for snakes to temporarily reside, and Russ Johnson warns against allowing debris to linger.

“The biggest thing I have seen when I have been called out to golf courses is that they are clearing out a group of trees and they will have slash piles off to the side and they will leave them there for an ungodly amount of time,” he says. “Golf courses bring out a lot of rodents, rabbits, small birds and everything else like that. What they will get in these slash piles and, of course, snakes will gravitate to them because it’s a food source. The sooner the course clears the piles out, the fewer hiding places snakes have. To them, that’s a haven. It’s not only a great place to find food, but it’s cover in the summer. When it’s miserably hot, it gives them a place to get shade.”

Garbage bags sitting on the ground outside and inside the maintenance shop or clubhouse are another potential hiding place.

HANDLE BITES RIGHT

Developing a multi-step protocol for handling snake bites can limit the amount of damage inflicted by one while decreasing the odds of a repeat incident.



Cottonmouths are found throughout the Southeast. They are also known as water moccasins.

First, McGarrity says, don’t try to identify, chase or capture a snake following a bite. “That will result in someone else getting bitten and that’s not going to be helpful,” she says. “Doctors will be able to diagnose what type of snake that bit someone from the symptoms. Keep the person calm, try to limit their activity and get them to a hospital. Call 911. You can call the poison control center, and let them know where they are going so they can consult with the doctors.”

Most bites, according to McGarrity, occur on hands and feet. She adds other helpful post-bite measures include removing jewelry and restrictive clothing and using a Sharpie to circle the swollen area and record the time of the bite on the patient.

If venomous snakes are widespread in your area, Steve Johnson says you should keep a list of nearby hospitals stocked with anti-venom. He recom-

mends seeking medical care when unsure of the species that bit somebody or whether venom was delivered during a bite.

SNAKES POLICE YOUR ECOSYSTEM

Eradicating snakes would rob a golf course of perhaps its best and cheapest form of critter control. Snakes eat rats, mice, rabbits, chipmunks, squirrels, frogs, insects, lizards and even each other. And, yes, some species eat gophers, moles and voles.

“Many of the rodent-eating snakes play an important role in keeping rodent populations down, especially in places where the wild predators have been eliminated because of development,” Willson says. “That’s one thing about snakes. They don’t take a lot of space. A large rodent-eating snake like a rat snake or a rattlesnake can survive in a pretty small piece of habitat, whereas something like a bobcat or mountain lion needs

tens or hundreds of square miles to live successfully.”

AND THAT SNAKE YOU FOUND IN A VALVE BOX...

Ever open an irrigation box and see a snake chilling inside it? There’s a good chance that snake can hurt your irrigation system more than your body.

“Black racers, which are very widespread and non-venomous, will commonly get into utility boxes and things like that and lay their eggs,” McGarrity says. “That’s one tip: Recognize that none of the pit vipers that we have lay eggs. Because the pigmy rattlesnakes and young black racers look very, very similar, learning to identify those two and learning that you’re not going to have pigmy rattlesnakes hatching can help reduce some concerns.”

Rat snakes are another non-venomous species you might find in a manmade object – including your shop. **GCI**

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CENTRAL CONTROL: ASK THE RIGHT QUESTIONS



Brian Vinchesi, the 2009 EPA WaterSense Irrigation Partner of the Year, is president of Irrigation Consulting Inc., a golf course irrigation design and consulting firm headquartered in Pepperell, Mass., that designs irrigation systems throughout the world. He can be reached at bvinchesi@irrigationconsulting.com or 978/433-8972.

Sorting through the various types of irrigation control systems available on the golf market has always been a difficult task. In the past, it was easier to see which product may be better than another as there were major differences between the various manufacturers. It was also easy to choose between 2-wire (decoder) or field controllers based on your management style. However, with today's technologies and competitive environment, the waters have become murkier and as a result the decision is tougher, both in terms of what type of control system and whose product to purchase.

Today's irrigation control system is still your basic computerized central controller operating off a database and communicating with sprinklers out in the field. However, the equipment from the computer out provides for many more options than in the past. Is it hard wired, radio or a combination of the two? In a combination system, where instead of having the interface(s) in your maintenance facility office, they are installed remotely in the field communicating with the central by radio and hard wired to the sprinklers or controllers from the interfaces. This significantly shortens communication cable runs and reduces the amount of grounding needed as there is less communication cable that needs to be protected. If you are considering a 2-wire/decoder, there are lots of options today. The decoder or module can be off the sprinkler in a valve box, attached to the sprinkler case, in the sprinkler case or part of the sprinkler valve solenoid. Which is the best choice for your course, your pocketbook and your sanity?

With a decoder/2-wire system, there are fewer wires than with a field controller system, but it is a different type of wire. Having one more expensive wire running throughout the course versus a single inexpensive wire for each sprinkler doesn't take much math to figure out which costs less, but there is also the cost of field controllers versus the cost of decoders and a high percentage of the wire savings from a conventional field controller system could/should be used to increase the lightning protection on a decoder/2-wire system. On the decoder/2-wire systems, the grounding requirements are manufacturer driven, but it is wise to supplement it for a less troublesome system and longer life. Lightning protection should consist of a number of different pieces of equipment – not just a grounding rod. Appropriate equipment includes grounding plates, surge suppression devices, cable fuse devices, exothermic connections and shield/bond wires.

It was only several years ago the irrigation industry was starting to talk about system integration and the central control system being interactive with the pump system. Now integration has become a big part of the control system decision making process. The integration questions to ask the seller of a potential central control system include:

- Will the control system talk/integrate with a pump station? Which manufacturer's pump system can each manufacturer's central controllers integrate with and what will the integration get you? Minimally you want pressure, flow and pump status information.
- Will the central communicate with soil moisture sensors permanently installed on the golf course? Do the sensors have their own software or is it part of the central control system software? How is the sensor communicating back to the central controller? Is it wired or wireless or both? Can the software adjust the irrigation schedule automatically?
- What are the central controller's remote control options? All the manufacturers have handheld radios with a million key strokes to do what you want, but in today's day and age shouldn't you be able to operate your system from a smart device? Does the manufacturer have an app?
- Do you want to have a weather station and connect to it from the central control system? Do you run wire to it or use radio? Is a weather station still the best investment for getting weather data for your course or is an app or other type of sensing equipment better?
- If you have an existing lightning detection system or purchasing a new one, do you want to have it interact with the irrigation controls to disconnect communication and power connections during electrical storms?

You must consider these questions before choosing a central control system and associated technology. But it's not that easy. Systems continue to change rapidly as the irrigation industry follows other industries. That's good for golf course irrigation, but you will also find that the control system will obsolete itself quickly. Make sure you don't start behind with a new purchase by asking the right questions. **GC**



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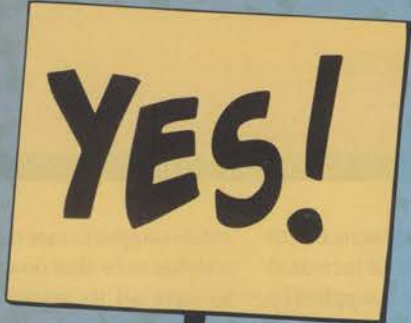
By **Rob Thomas**

Perhaps Hungarian physiologist Albert Szent-Györgyi described the importance of water best when he said, "Water is life's mater and matrix, mother and medium. There is no life without water."

Golf courses worldwide have been making a concerted effort to reduce their use of water for years. Many of these voluntary actions had both the environment and budget in mind. In the Western United States,

however, where drought conditions have reached dangerous and historic levels, mandatory restrictions have become the norm.

In April of this year, California governor Jerry Brown issued Executive Order B-29-15, ordering the State Water Resources Control Board to impose restrictions to achieve a 25 percent reduction in potable water use statewide, and to impose restrictions on commercial, industrial and institutional properties such as campuses, golf courses and cemeteries,



THE RIGHT

to implement water efficiency measures to reduce potable water use in an amount consistent with the 25 percent statewide reduction.

According to Kathryn D. Horning of California-based Allen Matkins law firm, the governor left it up to the State Water Board to determine the precise nature of the regulations. The Board adopted drought emergency regulations that went into effect May 18 and remain in effect for 270 days, unless renewed.

The emergency regulations

target three different groups — urban water suppliers (water suppliers who serve more than 3,000 customers or supply more than 3,000 acre-feet of water annually), smaller water suppliers and end users, which is where golf courses come into play.

“For end users, the State Water Board imposed a variety of use restrictions, such as prohibiting irrigation runoff and washing down driveways and sidewalks,” Horning says. “Included among these is a restriction on commercial,

industrial and institutional properties that use a water supply, any portion of which is not from an urban water supplier or a smaller distributor. An example here would be a golf course with its own well. Such properties must either limit outdoor irrigation with potable water to no more than two days per week, or reduce the amount of potable water usage that is not obtained from a water supplier by 25 percent.”

The two-day watering law for golf courses in California is far from black and white.

“The emergency regulations only pertain to potable water use,” Horning says. “Many golf courses use recycled or reclaimed water that is not considered potable. The emergency regulations would not apply to these properties.”

“Additionally, if a golf course is supplied by an urban water supplier, it is up to the supplier to determine its own restrictions,” she adds. “Many, but not all, suppliers have imposed two-day-per-week limitations. Others are imposing individual percent cutback requirements,

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or providing an allowance with much higher fees for increased use. And if water is supplied by a smaller supplier or the water is self-supplied, the supplier has the option of cutting back to two days per week or a 25 percent reduction.”

Washington State University has been dealing with water rights at its Pullman campus – also the location of the university-owned Palouse Ridge Golf Course – which has one integrated water system serving the entire grounds, according to attorney Sarah E. Mack from the Seattle-based law firm of Tupper Mack Wells.

The system is supplied by multiple groundwater wells and water rights, some dating back to the 1930s, in the Palouse Basin, where declining water levels in the aquifer have been observed for some time. Mack says WSU voluntarily reduced its groundwater pumping and implemented a rigorous conservation program about 25 years ago. And, during the 2000s, the school began planning for expansion and modernization of its old nine-hole golf course, now Palouse Ridge.

“At around the same time, the Washington legislature amended the water code to allow municipal water suppliers greater flexibility in how they use their water rights,” Mack says. “That legislation was controversial; some environmentalists and [Native American] tribes objected to what they believe is an unwarranted expansion of ‘municipal’ water purveyors. WSU took advantage of the new law to obtain authorization from the State Department of Ecology to consolidate its pumping in two modern wells (each of which has the capacity to supply the

entire campus in case the other well has to be shut down), and to have all its water rights reflect that they are for ‘municipal’ water supply purposes.

“Although this water right change was unrelated to the Palouse Ridge Golf Course project, people opposed to using land for the golf course expansion joined forces with people opposed to the new municipal water law, and the university was embroiled in litigation over its water rights from 2006 to 2015,” she adds. “This spring, the Washington Supreme Court finally ruled in favor of Washington State University.”

Can a course be guaranteed access to water? It depends on the water source and who supplies the water, according to Mack.

“In most western states, if you hold a ‘senior’ (older) water right you are entitled to use water ahead of people who obtained their water rights after you did,” she says. “But that does not guarantee that water will be available; it just guarantees your place in line.

“If you rely on groundwater and your well runs dry, you have to deepen your well. If you rely on surface water and the stream runs dry, you may be out of luck,” Mack adds. “If you receive water under contract from a municipal system, irrigation district or reclamation district, usually those contracts will guarantee water deliveries only if adequate supply is available.”

Robert Good, senior vice president/hydrogeologist at Leggette, Brashears & Graham, of Farmington, Conn., says access to water is regulated differently across the country, but for the most part access or

usage is permissible up to certain threshold volumes.

“Water withdrawal above state-specific threshold volumes may require the user to register their withdrawal with the state agency (Department of Environmental Protection or similar),” Good says. “In some states, users must also obtain a permit from the state agency for their withdrawal over the threshold volume, which considers such items as impacts to existing permitted uses, impacts to local surface water and groundwater resources, water conservation and project justification. So in most instances you could say that access is guaranteed, i.e., a property owner has the right to develop reasonable water resources on their property.

“Higher amounts of withdrawal may also be guaranteed with a registration or permit, provided you can demonstrate there are no associated negative impacts,” he adds. “If your withdrawal interferes with other users or resources, you may be denied access.”

Horning says California water rights are generally considered cognizable property rights, and also are based on a priority system, with senior rights holders taking priority over junior rights holders.

“Those whose rights are more junior will be cut back before those with senior rights,” she says. “However, all water use is limited by Article X, section 2 of the California Constitution to ‘reasonable and beneficial use.’ In the past, water use by holders of the most senior rights were never really questioned, but the State Water Board has become much more active in investigating all water use, and declaring certain uses

not to be reasonable or beneficial regardless of seniority.

“Also, what may be reasonable and beneficial at one point in time, may not be reasonable and beneficial at other times, such as in drought conditions when supplies are limited,” Horning adds. “The concept of reasonable and beneficial use in a time of drought is one of the main bases for the emergency regulations, and affects both those who directly hold water rights, and those who receive water from a supplier based on a contract or agreement. The concept of who has rights to water and who may be limited has become very controversial.”

A course with a contract guaranteeing access to water may not be in any better position than one with nothing in writing. Regardless of any contract in place, Mack says the “guarantee” is only as good as the amount of water the supplier can deliver.

“Drought is a classic example of a condition that’s beyond the control of the water supplier – which would probably excuse it from any contractual obligation to deliver water,” she says.

Mack adds that over the last few years large water suppliers, dependent on federal permits or federal water projects, in several western states have had their supplies curtailed in order to protect endangered species. Also, drought conditions can lead to water curtailment – a town, irrigation district, or property owner with “junior” water rights would be forced to curtail use in order to protect “senior” water rights.

For Kurt Vogel, general manager of Yolo Fliers Club in Woodland, Calif., working out of three wells has been suf-

ficient, but the club will likely cut its gallons of water used in half compared to 2013 numbers. A member-owned private golf club that was established in 1919, the Yolo Fliers Club used approximately 40 million gallons of water in 2013, but is looking at more like 20 million gallons this year.

"Right now we are all attempting to satisfy the governor's 30 percent cutback request," Vogel said. "We only irrigate the golf course during the months of March through September."

The Yolo Fliers Club maintenance staff has gotten creative in an effort to lower water usage.

"We have removed certain out-of-play areas from the grassy areas that are normally irrigated and maintained," Vogel says. "Our course covers 110 acres. We have probably eliminated 10-20 acres of irrigated turf at this time and will only attempt to keep them alive. These areas may become pretty unsightly but are really not in the playable areas of the course."

Considering the myriad course designs and the vastly different regions in which they're located, there really is no way of even "ball-parking" an estimate on typical water usage.

"Transpiration rates vary tremendously across the country, as does the acreage of irrigated greens, fairways and rough, soil conditions, and the types of grasses and their water needs. Other use factors include superintendent application rates and members expectations. In the Northeast, a typical 18-hole golf course that includes approximately 60 acres of irrigated turf has a maximum daily water demand of approximately 300,000 to 350,000 gallons per day," Good

NOTHING IS GUARANTEED

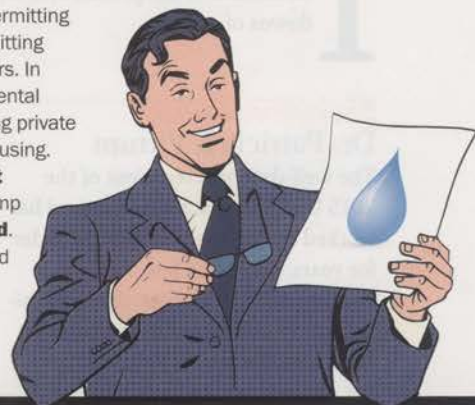
You were once guaranteed access to water, but that access can now be restricted.

"Most states have adopted a 'grandfather' approach to existing withdrawals, as long as the users have met certain reporting and registration requirements," says Robert Good, senior vice president/hydrogeologist at Leggette, Brashears & Graham, Inc. of Farmington, Conn., said. "So in some cases existing/past withdrawals can't be restricted; but in some cases they can."

Here are two examples that illustrate this point:

1. In 1982 Connecticut adopted the **Water Diversion Policy Act (WDPA)**, requiring anyone who withdrawals **more than 50,000 gpd** (gallons per day) to obtain a permit for their withdrawal. The permit application requires a rigorous evaluation of potential impacts, including following a prescribed plan for long-term pumping tests receptor evaluations. The Act included an important "grandfathering" provision that allows for the registration of existing diversions prior to July 1982, which could be registered until July 1983. This registration was strictly administrative, and required no testing or receptor evaluation. Essentially you filled out a form with your withdrawal capacities and you were registered. Parties who registered were "grandfathered" into the WDPA such that their past registration was effectively a permit, as long as they didn't change or modify their withdrawal. If you did not register a previously existing withdrawal, you had to get a permit.

2. New York recently adopted a similar program for permitting water withdrawals. New York has had a water permitting requirement for public water supplies for many years. In 2009 the New York State Department of Environmental Conservation required that all water users, including private supplies (that include golf courses), must report their water using. In 2013 the NYSDEC adopted a **Water Withdrawal Permit** requirement for any water system that had the capacity (pump and/or system sizing) to withdrawal more than **100,000 gpd**. If you reported your withdrawal prior to 2012, it is considered to be "grandfathered" and the permit process is very streamlined, with no requirements for evaluation potential impacts. If you didn't report, you are subject to the full measure of the permit.



says, noting this is significantly above most permit threshold values. "Remember that irrigation water usage in most of the country is seasonal, occurring during the growing season. In the Northeast, this typically lasts from mid-April to mid-October; approximately 180 days. So the average daily water demand is significantly less, on the order of 100,000 gpd (gallons per day). But note again, regulations typically consider maximum capacities and daily demands, although I am aware of a few states that consider average daily or total monthly usage."

Whether water for irrigation

is plentiful or not, the industry continues searching for better ways to keep turfgrass alive and healthy. While the desire is there, much work lies ahead.

"Many courses are looking for ways to water courses with recycled or reclaimed water rather than potable water, but the main issue is whether infrastructure is available to bring recycled water to the course," Horning says. "Some are exploring whether groundwater is available, especially if the groundwater is not drinkable and could be used for irrigation. Some courses are replacing turf with drought-resistant or native plants, installing

smart watering systems, lining lakes and letting certain areas go brown."

Mack suggests putting in the thought and planning now to successfully navigate the uncertain future.

"Be proactive about anticipating and adapting to possible water scarcity," she says. "From turf to technology, there's so much innovation in the golf course industry; embrace it. If you continually improve your water use efficiency, you will improve your ability to adjust to climate change." **GCI**

Rob Thomas is a Cleveland-based writer and frequent GCI contributor.

THE FOURTH ANNUAL GRAINY AWARDS



Tim Moraghan, principal, ASPIRE Golf (tmoraghan@aspire-golf.com). Follow Tim's blog, Golf Course Confidential at www.aspire-golf.com/buzz.html or on Twitter @TimMoraghan

It's that time of year again, when I gleefully recount the season just ended by bestowing the Grainy Awards. They are the Oscars of the outdoors, the Grammys of the greens, and my heartfelt attempt to recognize the up and downs of golf.

HUMANITARIAN AWARD

Dr. Patricia J. Vittum

The well-deserved recipient of the 2015 USGA Green Section Award has worked tirelessly and under the radar for years, known by few outside the Northeast. This long overdue recognition of one of this country's foremost entomologists speaks volumes about her contributions and dedication.

BEST DIRECTOR

Kerry Haigh, PGA of America

Not only was the Whistling Straits course setup for the PGA Championship dramatic, it perfectly showcased the skills of the best golfers in the world. And how nice that Kerry stayed behind the camera and didn't try to steal the spotlight from the real stars.

BEST CINEMATOGRAPHY

Fox Sports Network

Give the new kids on the block an A for effort. Their innovative graphics, unusual camera angles, and special effects were both entertaining and educational. Pretty impressive for their first performance, and a good indicator that just like when playing golf, the more they do it, the better

they'll get. However, it is worth noting that they deserve a giant raspberry for Sound Direction: Some of the stars talked too much, some not enough, some you couldn't tell if it was Juli Inkster or Brad Faxon. (At least Greg Norman has an accent, although we sometimes still didn't understand him!) At times, the Fox crew made us wish the U.S. Open had been a silent movie.

BEST VISUAL EFFECTS

Michael Lee, manager of golf course maintenance, Kohler Company

Along with Kerry Haigh's direction, one reason the PGA Championship was such a joy to watch was that Michael and his staff had Whistling Straits in perfect shape. (No one wanted a sequel to Chambers Bay.) The course looked good, played hard and let the actors steal the scenes. The Clint Eastwood of golf course maintenance, Michael remained cool, calm and collected. He made my day.

BEST FANTASY FILM

Donald Trump's Top 10

The Donald was quoted as telling someone in the best-course-list busi-

ness that all 13 of his courses should be in the Top 10. Delusional or just bad mathematics? Or maybe just Trump being Trump. Every movie needs a good cartoon. (By the way, Mr. Trump, if America should put up that wall you want, who's going to take care of your golf courses?)

BEST ACTOR

Jordan Spieth

His major performances, off-course demeanor, professionalism, politeness and compassion are awe-inspiring. This leading man is the real deal, someone the golf world—make that the whole world—can look up to and young people should emulate.

BEST ACTOR IN A SUPPORTING ROLE

Rickie Fowler

When his fellow players voted him (anonymously) most overrated on the PGA Tour, it lit a fire under the Titan of Technicolor. Rickie cleaned up his look and cleaned house at Sawgrass, over-acting during Sunday's final round and in the playoff (watch the birdie—three times) to capture The Players Championship. We also like the cameo appearance by his swimsuit-model girlfriend. Encore.

BEST CHILD ACTOR

Billy Horschel

His attempt to rebuild the greens at Chambers Bay with his putter put the not-yet-30-year-old's childish side on screen for all to see. Not that we blame him—those greens could bring the brat out in anybody—but save the tantrums for after school, please.

People's Choice

Did I miss any star turns or flops in 2015? Who, or what, else should get a Grainy this year.

Tweet your submission to

[@TimMoraghan](https://twitter.com/TimMoraghan)

BEST ORIGINAL SCREENPLAY

Presidents Cup Captain's Pick

Could Captain Jay Haas scripted it any better? Using his captain's prerogative, he picked his son, Bill, who went on to score the winning point on the last hole of the final match of The President's Cup, securing the trophy for Team USA. It was a good, old-fashioned tearjerker and we loved it.

BEST SHORT (LONG) SUBJECT

The Anchoring Ban

When anchoring of the long putter to your body becomes illegal on Jan. 1, the growth of the game will be impeded once again. Eliminating this method of putting purely due to aesthetics shows just how out of touch the governing bodies are. They've taken golf, which should be a "Field of Dreams," and turned it into "The Big Chill" for thousands who just want to enjoy playing without worrying about putting like "Slap Shot." If anchoring were so effective (and detrimental), wouldn't everyone be doing it?

BEST FOREIGN FILM

2015 Solheim Cup

Sportsmanship took a back seat to gamesmanship, which fired up the lackadaisical American team and spurred them on to victory over the Europeans. When Suzann Pettersen went "Blind Side," walking off the green without clearly indicating whether her opponents' putt was conceded, U.S. golfer Alison Lee and partner, Brittany Lincicome assumed (incorrectly) that the putt was good. Their error, as it's the players' responsibility to know and understand the Rules. Still, I could have done without all the tears and drama: Save it for the Grainys telecast.

BEST ENGINEERING EFFECTS

Robotic Mowing Devices (RMD's)

When RMDs become the norm and put people out of work, do golfers

benefit? Do we really want to lose the human touch and feel so important to our profession? While I support technological advances, what happens when the manufacturers go out of business or the robots unionize?

BEST PRODUCTION DESIGN

The Superintendent's Dog Calendar

Better than a Christmas card is the arrival of the annual dog calendar, as festive and fun as any holiday blockbuster. It's guaranteed to put a smile on your face—and a wag in your tail.

WORST COMEBACK

Rory McIlroy

After receiving the 2014 Grainy for Best Comeback, young Rory must have spent too much time reading his reviews. Then he goes out and tries to star in "Bend It Like Beckham." More like "The Jerk!"

BEST ANIMATED FILM

Waste Management Phoenix Open

Dubbed the greatest show on grass, the Waste Management Phoenix Open is the year's best-attended event, a fan's fantasy, one big party. Too bad the PGA Tour trying to drain it of color and action by stifling the spontaneity of the players. Hey, Mr. Finchem: Leave it alone. That's Entertainment.

BEST MAKE-UP AND HAIR STYLING

Fox Broadcast Crew

Their hair was fine, but their faces had more wrinkles than Brangelina's sheets. The new poster children for promoting the use of sunscreen are Juli Inkster, Greg Norman and Brad Faxon. The dinosaurs in Jurassic Park take better care of their hides.

WORST MOVIE/WORST DIRECTOR OF THE YEAR

U.S Open at Chambers Bay and Mike Davis

We didn't need Price Waterhouse

to double-check the votes. This year's U.S. Open was "Titanic," "The Towering Inferno" and "Armageddon" rolled into one. Course architect Robert Trent Jones Jr. gave them a fine stage, but (executive) director Davis bungled things by overthinking course setup and forcing players to ad lib. The result was a tragi-comedy. And when Mother Nature chose to deviate from the script by playing things sunny, warm and windy, Davis was too concerned with his own time on the silver screen, doing interviews, tending to his ego instead of agronomy. Luckily, young hero Jordan Spieth rode into town to save the day and this potential bomb. By the way, the USGA is trying to raise money for its newest charity, the Home for Underused Irrigation, selling a celluloid bracelet that reads "WW-MDD" for "What Would Mike Davis Do?" It's coming soon to a U.S. Open near you. **GCI**



HASSLE-FREE



MAKEOVERS

THE RISE OF **SLIT-DRAINAGE** AND **GPS TECHNOLOGIES** ARE PROVIDING AGRONOMIC AND FINANCIAL ALTERNATIVES TO CONVENTIONAL GREEN RECONSTRUCTION TACTICS.

By **Hal Phillips**



here was a time when problem greens sooner or later meant full-on reconstruction, especially push-up putting surfaces built prior to the widespread advent of USGA-specified greens mixes. But the demise of methyl bromide, the emergence of slit-drainage and GPS technologies — along with an economic climate that increasingly views green reconstruction as a luxury — has changed the way superintendents, architects and contractors view green rehabilitation.

“The reality is, this combination of technology and thrift has made us all more creative in the way we problem solve today,” says Bob Lohmann, founder and principal of Illinois-based Lohmann Golf Designs and its sister construction division, Golf Creations. “The combination of GPS mapping capabilities and slit-drainage in particular has really expanded our capability to rehab older greens without total reconstruction while expanding them if need be, adjusting contour and still putting them back exactly as they were — or better than they were, if we’re doing proper slope analysis and adding square footage that can be pinned.”

Most superintendents deal with a handful of greens that aren’t performing the way they should. Sometimes it’s more pervasive. But even if it’s just one putting surface, these alternative approaches allow supers to address problems in a quick, cost-effective fashion — instead of waiting for a critical mass of agronomic or playability issues (and gathering the money to reconstruct them all, in the traditional sense).

“I would definitely say this is a trend,” says Brian Whitlark, USGA agronomist in the West Region. “In fact, I’ve done five course visits in the last three months where I’ve talked clubs out of rebuilding greens and saved them a great deal of money. In many cases they can just remove 3 inches of material, 4 at most, put some sand back, float it out and regrass.”

The American Southwest isn’t exactly ground zero for the regrassing movement; many greens here are newer, sand-based, and not so prone to drainage issues. Still, many courses here are contemplating transitions from Bermuda greens to those featuring Mini Verde or Champion Bermuda — equally prized in this part of the country for their bent-like texture and speed qualities.

This past summer, Golf Creations was hired to resurface 22 greens at Anthem (Ariz.) Country Club with Mini Verde. “The club asked us to map the existing greens on a 10-foot grid prior to renovation, because they wanted them put back exactly as they

were,” Lohmann says. “Well, we did that and we shared that info with the original architect, Greg Nash. Together we used this GPS imagery to perform a much needed slope analysis. Mini Verde is a better-performing putting surface, in terms of speed, compared to the older Bermuda we replaced. So Greg’s input was really useful in creating more pins and subtling out several slopes that would’ve been really troublesome if we put them back exactly as they were, with the faster Mini Verde.

with new sand mix to allow for this recontouring and the ultimate hydro-sprigging of Mini Verde. The depth of soil mix on Anthem’s 22 greens was quite uniform overall — something Golf Creations was careful to preserve where possible when recontouring and regrassing.

On older courses, the depth and content of a soil mixture/profile can vary wildly from green to green, even within a single green. This is something superintendents have long known to be true, as certain greens and certain areas of a

capability is a must, slit-drainage technology has proved a vital part of the rehabilitation equation.

“With slit drainage, what you’re really doing is lowering the water table beneath that putting surface,” Lohmann says, “and in terms of removing excess ground moisture, it’s incredibly effective — combined with the fact that you’re not even taking that green out of play for more than 24-48 hours. With that moisture removed, you get more oxygen in there and promote that really good

analysis — and artful insight from the superintendent and architect, who understand the agronomic impacts of what you’re doing well before you put a shovel in the ground.”

EVOLVING MINDSETS

Lohmann and his design/construction teams were among the early advocates of greens analysis and alternative reconstruction. This mindset took hold a decade ago with a putting surface rehabilitation program at Westmoor Country Club in Brookfield,

Wis. TDI Golf rebuilt four greens there using a heavy (4-inch) mix layer over native topsoil to replicate the other 14 push-up greens; all 18 greens were “precision drained” (a.k.a. slit-drained) by TDI sister company XGD Systems, then regrassed. This effort alone was noteworthy — but it was the work of Westmoor’s maintenance crew preparing those 14 push-up greens that got Lohmann’s attention.

Prior to re-grassing, the staff at Westmoor had made modifications to specific problem areas on these existing greens by carefully adding or removing top mix to eliminate sand dams and gain pin locations. The work was tedious, as current superintendent, Bryan Bergner, will attest — he was an assistant at the time and charged with overseeing the task.

By this time, GPS mapping capabilities were well established in the construction world, but few in the golf business made the connections between this precision technology and green resurfacing, where slope can require accuracy to a half-inch. Watching Bergner



An economic climate that increasingly views green reconstruction as a luxury has changed the way superintendents, golf course architects and contractors view green rehabilitation.

“In the end, the mapping we did [to enable complete replication] allowed us to make some really important adjustments to those greens — and make the case to the Anthem board that this was the right thing to do.”

[Sadly, this job was among the last ones performed by Mr. Nash, who passed away in August at the age of 66.]

At Anthem, three inches of Bermuda turf and soil profile were removed and replaced

green dry out more quickly (too much profile), or fail to drain as well (too little). Even with this anecdotal knowledge, however, a major question exists: What to do about it, short of ripping them up and rebuilding?

There was no drainage component to the Anthem work, and this is typical of regrassing efforts in the Southwest, Whitlark says. Further east, where retrofitting older, push-up greens with suitable drainage

root growth.

“But it’s not a perfect scenario, in every case, when it comes to green rehabilitation because so many factors impact performance. The depth of a soil profile has a huge impact on drainage capacity. Changing that depth, say, when you’re adjusting slope, can affect the way the finished green will drain or dry out. It’s a balancing act that requires a measure of science — surface and sub-surface

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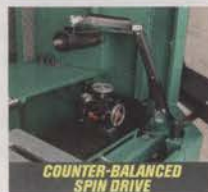
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Lohmann Golf Designs founder and principal Bob Lohmann says the combination of GPS mapping technology and slit-drainage expands the capability to rehab older greens without total reconstruction.

and the crew measure and re-measure by hand got Lohmann thinking there must be a better way. GPS mapping became an invaluable tool in Lohmann's arsenal at that moment.

At Pine Valley Country Club in Fort Wayne, Ind., LGD recently performed this sort of GPS-aided, slope analysis on two problem putting surfaces. These were USGA greens with the normal amount of mix in most places, 11-12 inches. Slope analysis indicated that a 1-2 inch adjustment in most areas would suffice to improve slopes for pinning — keeping the profile within a reasonable 10-14 inch parameter. But the 12th green, in particular, featured a really steep front that Pine Valley superintendent Steve Mueller wanted to soften, to allow more pin positions.

"In order to get that front portion to a slope that was manageable, we had to add 5 inches of mix in some places," Lohmann says. "So now you're at 15-17 inches, which means that part of the green is going

to dry out faster. Steve knew that this spot would require hand-watering to keep it moist enough, but he decided that was worth it — to create the playability his members wanted on the front of that green.

"That's a really good example of what we mean by 'green analysis.' You can scrape or add mix to reduce slopes — without rebuilding — but there can be agronomic repercussions to reducing or adding mix in a certain area of a green, making it drain too fast and dry out, or hold moisture longer than the rest of the green. Every green is so different. The analysis is case by case, so it's important to explore potential outcomes before you start tearing into a putting surface."

At Pine Valley, Lohmann performed this analysis as a first step — using the data to allow crews to pull the sod off, stockpile it temporarily, make the necessary adjustments to the soil mixture (depth and contour), then put the sod back on.

In 2013, across town from

Pine Valley, at Fort Wayne Country Club, Lohmann performed a similar analysis and recontouring for superintendent, Brian Chalifoux — taking several inches off isolated, dry spots where mix was too deep.

"We had 2 feet of mix in some of these areas. You can't live with that," Chalifoux says. "Twelve is ideal, but you don't have to get that exact number. We measured the depth of the mix, which varied all over the map. Bob had the charts, so he came in and moved some of that excess sand while recontouring at the same time. He also channeled a lot of water away from the bunkers. Bob brought the professional expertise; he made sure we didn't make mistakes — but he also listened to our expertise regarding specific issues on site. The greens came out fantastic. Most of the members couldn't even tell they'd been touched."

If members at Fort Wayne had helicopters, they might feel a bit differently. Because he had several greens where

drainage capacity was limited, Chalifoux hired crews from Kentucky-based Golf Preservations to install slit-drainage in those spots. Matching the backfill mix with the existing green profile is never perfect. As a result, the parallel pattern left by the slit-drainage process can remain visible for some time after play resumes — especially in the spring, when the grass is lean, Chalifoux says. Two years post regrassing, these lines are slowly fading. "This was definitely the answer," Chalifoux says.

CREATIVITY ON A BUDGET

Lohmann and Golf Preservations did themselves one better this past summer by slit-draining, recontouring and expanding 15 putting surfaces at the municipal Newman Golf Course in Peoria, Ill., using turf rescued from the recently decommissioned Donovan Golf Course down the road.

"The issue at Newman was the issue we see most everywhere: Root growth on these



Recapturing lost green space as part of a greens reconstruction can help disperse foot traffic and increase pin locations on the putting surface while expediting the movement of water out of the profile.



old, push-up greens was down to nothing," says Todd Quitno, a Lohmann senior architect. "The greens would hold water after a major rain and lose grass during the heat of summer. They were obvious candidates for slit-drainage — but these greens were tiny circles, none of them more than 3,000 square feet. The original green pads were there, so there was lots of room for expansion."

"Lohmann Golf Designs had actually done a lot of planning ahead of time," says Samson Bailey, owner of Golf Preservations. "They had estimated the area they wanted to expand — basically they kept us inside the irrigation system, so we could leave that intact. It took us two

weeks to slit-drain 15 greens, using a 2-inch system on 6-foot spacing, including the drainage and sod in the expanded areas."

Quitno had painted out these areas on the periphery, extending 180 to 270 degrees around the old green pads. This added an average of 1,000 square feet per green. "We cut those areas out 4-6 inches deep, at least half with a shovel because some of these extensions were only 2-4 feet wide," Bailey says. "All those extensions had drainage installed and we filled the coring with a 6-3-1 backfill mix of sand, peat soil... We worked with the natural grade and softened it a little further to blend it in and run it off properly. We tried to make it as natural as

we could."

This is where the departed Donovan entered the equation. Golf Preservations harvested enough bent/*Poa* turf from Donovan to add 15,000 square feet of putting surface around the 15 greens at Newman. Bailey says he thought the newly expanded greens looked playable two days after the transfer, but golfers were kept off for two weeks. In a month, the colors matched up, golfers were back on the course.

"The ability to recapture lost green space is such a huge deal," Quitno says. "You hear a lot about that sort of thing when folks are restoring famous old golf courses. But your course doesn't need to be old or famous. You can lose appreciable square footage on a 20-year-old course. At a public course like Newman, being able to spread traffic around a green is vital for turf health, as is getting the water out of the profile quickly.

"At an exclusive, private layout, you can often get away with fewer pinning areas on smaller, vintage greens — because they don't have the traffic. Newman does and that's why, combined with the slit drainage, we were able to have such a huge impact on playability and maintenance there. They were frankly skeptical

about spending that money, especially when they had just closed another Park District course. But full credit to Golf Preservations. They tied it in beautifully and finished fast."

Lohmann noted that 20 years ago, a good percentage of these clubs would have been convinced, or at least been counseled — by the architect, by the superintendent, by the prevailing golf industry S.O.P. — to simply rebuild these troublesome greens, though perhaps not at a muni like Newman where budgets are always tight. However, the same cost-efficient processes are now being considered across the board.

"That's not to say that at some point, it doesn't make good sense — the best sense — to rebuild greens, but it's something we're trying to avoid because it's so expensive, so time-consuming for course staff, and it takes the course out of play," Lohmann says. "That's why GPS-aided greens analysis is so important. You've got to understand what's there now. If you really know the problem areas, you can assess beforehand the impact you can have with this more surgical approach." **GCI**

Hal Phillips is a Maine-based freelance writer, managing director of Mandarin Media, Inc., and former editor-in-chief of Golf Course News.



Staffing

S T R O N G

Callawassie Island Club's Billy Bagwell brings a family crisis to the forefront and provides inspiration for others enduring a similar plight.

By Trent Bouts

On June 29, Carolinas GCSA directors each received an email from executive director Tim Kreger. It read: "I just got a call from Bill Kennedy asking me to share this sad news with you all. Billy Bagwell's wife, Amanda, has been diagnosed with stage three breast cancer. She just turned 30. Please keep

Billy and Amanda and their family in your thoughts and prayers....Bill Kennedy will keep us all posted...."

Bagwell, from Callawassie Island Club, is himself a Carolinas GCSA director and Kennedy, from Chechessee Creek Club, is the association president. Kennedy is also Bagwell's closest superintendent neighbor

Callawassie Island Club director of agronomy Billy Bagwell and his wife Amanda pictured with their sons William and Brantley. Amanda was diagnosed with stage three breast cancer earlier this year.

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in Okatie, S.C. So it wasn't just sympathy that the directors felt, there was also sadness because this news was personal for each of them.

But as their hearts were sinking with the reading of each line of Kreger's email, two others were already beginning to lift. "Amanda and I decided we want to bring light to the darkness," Bagwell says. "We're taking the approach that we are going to be ambassadors for a cause rather than victims of a disease. We are going to do all that we can to raise awareness. That might help other people catch it as early as possible or offer some hope and support to those who might already be going through it."

To that end, the Bagwells have made their experience very public with Billy writing a blog - *The Lump in the Road* - that shares intensely personal perspectives on their journey. It was after reading a blog written by the husband of another young woman with breast cancer that Billy says Amanda gained a "huge morale boost." Seeing the benefit his wife derived from that experience, he decided to follow suit. "My goal with our blog is to kind of pay it forward," he says. "Hopefully it can serve as inspiration for the next person who finds themselves in this situation."

One recent post provides a clear example of what the Bagwells face and how they are going about it. That post from Sept. 21 reads in part: "Amanda was warned about the cumulative effect of the chemo. But as with most things, you never know until you experience it firsthand. Well, the days following the most recent

round of chemo were the hardest yet. Amanda experienced all the same symptoms, exhaustion, nausea, loss of appetite, headaches, bone pain, etc. But this time they hit her hard and lasted longer than ever.

"It becomes harder for me each time to watch her go through this stuff. Sitting by, almost helpless as she can barely get out of bed. I so want to take the pain away, rid her body of this cancer, free her of the emotional stress this journey brings. I know deep down I can't snap my fingers and it become true, but I continue to pray, continue to have faith, continue to be strong at the

moments when Amanda can't.

"She only has two more rounds of chemo and I am thankful for that, but I continue to worry more about the next step in this journey. Surgery, radiation and reconstruction still remain and the more we learn about those steps the more Amanda dreads those days to come. I'm beginning to change my outlook that this journey is a marathon. It's not a marathon, it's an ironman."

The Bagwells have two sons, Brantley, 3, and William, 11 months. The cancer was discovered after Amanda finished breastfeeding William. "Cancer was the last thing we thought of," Bagwell says.

"Amanda had mastitis with our first son and we thought she'd get some antibiotics and a week or two later everything would be good like it was then."

Instead, her visit to the doctor sparked a whirlwind of specialist visits and tests including biopsies, the results of which "confirmed the worst day of our lives," Bagwell says. "We're both very analytical. We said, 'Tell us the truth and we'll come up with a strategy to deal with it.' They said, 'If you don't do anything, you will be lucky to survive five years.' I looked at Amanda and thought, 'OK, we're fighting for your life.'"



Callawassie Island Club director of agronomy Billy Bagwell shares the experiences of his wife Amanda (pictured) and her fight with breast cancer on a blog called *The Lump in the Road*. "Hopefully it can serve as inspiration for the next person who finds themselves in this situation," Bagwell says.

“Don't think this can't happen to you just because you're young. From a husband's perspective, make sure you remind your wives to check regularly and be as supportive as possible. But if you find yourself in this position, remember that it's OK to let some of the emotion out.”

—Billy Bagwell

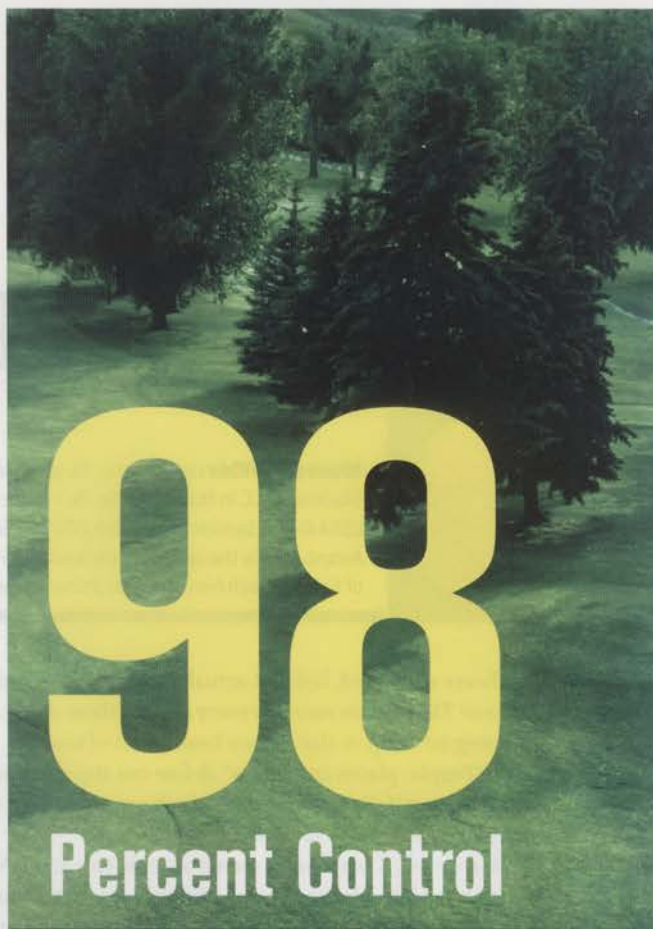
Four months in, Amanda's tumors have softened and reduced in size as a result of treatment, both positive signs. “We're gaining on it but we still have a long way to go,” Bagwell says. “We're big believers. It was only a God thing that got us through the next few weeks after the diagnosis. It seemed like everything we needed to fall into place actually fell into place. We're very thankful.”

Bagwell is also thankful for support from within the golf course industry and to the membership at Callawassie Island Club which turned out in even greater support this year for the club's annual LoCo Motion fundraising event for breast cancer research. “The outpouring of support has just been unbelievable,” he says. “We haven't had to cook a meal since June. Someone is bringing over dinners every other day. There have been so many offers of help.

Sometimes it's hard to accept help – but we know it's there.”

Bagwell hopes their blog will help prompt readers to “do their due diligence.” “Don't think this can't happen to you just because you're young,” he says. “From a husband's perspective, make sure you remind your wives to check regularly and be as supportive as possible. But if you find yourself in this position, remember that it's OK to let some of the emotion out. Find someone whose shoulder you can cry on. Don't bottle it all up because you'll never survive. For me, having faith that, no matter what, the Good Lord is going to bring me and my family through this means everything. We're determined to embrace whatever he brings and find the good in that.” **GCI**

Trent Bouts is a Greer, S.C.-based writer, editor and frequent GCI contributor.



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AUTUMN GOLF TRIP



Monroe Miller retired after 36 years as superintendent at Blackhawk CC in Madison, Wis. He is a recipient of the 2004 USGA Green Section Award, the 2009 GCSAA Col. John Morley DSA Award, and is the only superintendent in the Wisconsin Golf Hall of Fame. Reach him at groots@charter.net.

I always wondered, before I actually retired, how could retirees take a vacation? They are on vacation every day! So these days I tell people that we are going on a trip or that we are headed out of town.

“People, places and things” define our trip intentions, and often that involves golf. So it was this fall. In the world of golf, there are endless people, places and things to focus on.

The day we left, Cheryl and I served as registrars at our Wisconsin Turfgrass Association’s golf fundraiser. It was a full house at the beautiful Blue Mound Golf and Country Club. Golf Digest’s Ron Whitten and Jerry Tarde put BMGCC on their Top 200 list. Incorporated in 1903 and designed by Seth Raynor, it saw Walter Hagen win the 1916 Western Open and watched Gene Sarazen take the PGA Championship in 1933. Babe Didrikson Zaharias won the 1940 Women’s Western Open, and Dr. Cary Middlecoff took home the trophy for winning the 1955 Miller Open. Blue Mound was a great launching point for our trip.

Once play had started, we headed out of Milwaukee. Luck was with us and we cruised through Chicago and landed in South Bend by late afternoon. We saw the Golden Dome, went to the stadium, and were surprised to see no one on the golf course that is right on the campus.

It isn’t very far from South Bend to suburban Cleveland. We stopped at the world headquarters building of GIE Media, the outfit that sends you GCI communications. Pat Jones was out of town, but we were thrilled that Mike Zawacki and Guy Cipriano were in the building.

The weather across upstate New York was excellent, and the foliage color was near peak as we drove Alt Hwy 20 from Geneseo to near Albany. Although we missed Barb and Frank Rossi, we did spend a couple of great nights in New York country inns. Excitement built as we neared Cooperstown and the Baseball Hall of Fame, but our real destination was the Otsego Golf Club. The club is a couple of miles south of Springfield Center, N.Y., and Highway 20 on the north shore of Otsego Lake. Bright sun and deep blue skies greeted us as we drove into the course; the colorful wooded hills were reflected perfectly on the glass smooth surface of the lake. I was excited after a short distance on the entrance road – the golf course crew was aerifying greens and I chatted to chat. The superintendent and two crew members were finishing up dragging the green adjacent to the road.

I was inspired to stop at the Otsego Golf Club by a brief article in the July 2015 issue of Golf Digest. Stephen Hennessy shared his visit to the course, a “classic course that offers a taste of what golf was like in an earlier time.” The course is one of the 20 oldest public courses in our country, and a visit there

takes you back over a hundred years. The ambiance isn’t manufactured; it is for real. The course has changed little since it opened in 1894 and it still doesn’t have an irrigation system. When needed, a portable pump is used to water greens only. Not only are fairways not watered, they are never fertilized or sprayed for disease. The golf course is the ultimate example of low inputs, and yet I saw some very nice looking bentgrasses.

I have always felt welcome at any golf course I have visited, but nowhere were people more friendly than at Otsego. The modest clubhouse walls are covered with news clippings and other artifacts from OGC’s long past. We sat briefly on their Adirondack porch and felt just like golfers several generations ago must have felt.

It is only a few miles from OGC to the Baseball HOF and Museum, and on the way there we stopped at the Leather Stocking Club in Cooperstown. They were busy with an outing preparation and decided the superintendent didn’t need a visit from a Wisconsin colleague at that time. The course was beautiful and in excellent condition. We toured the Baseball HOF, parking six parking places from the front door, and then we headed for Vermont.

On our second day there we drove to Dorset and the Dorset Field Club. It can be a dicey proposition to claim a course is the oldest in America, but it seems to me that Dr. Geoffrey Cornish is a reliable source. In his book “Eighteen Stakes on a Sunday Afternoon” he lists The Dorset Field Club as the “first organized golf club in the U.S. (1886),” followed by Foxburg Country Club (1897) and St. Andrews Golf Club (1888).

It was pouring rain the morning we visited the DFC. The golf course was closed, but the pro shop was open. I introduced myself, explained why I was there on that wet day (looking for information on the course history), (MILLER continues on page 46)

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TRUCK'N



Paul F. Grayson is the Equipment Manager for the Crown Golf Club in Traverse City, Mich., a position he's held for the past decade. Previously, he spent 8½ years as the equipment manager at Grand Traverse Resort & Spa. Prior to that, he worked as a licensed ships engine officer sailing the Great Lakes and the oceans of the world.

We had great fun running the new Jacobsen Truckster through its paces at the Crown Golf Club. Jacobsen was very helpful in expediting my request for a demo and supporting its repair. Many of my neighbors are getting their utility vehicles licensed for on-road use, and using them

as their everyday driver. The amount they cost and the cost of the modifications to make them street legal make them more expensive than a normal car to drive, but I can see they are having a lot more fun getting to drive them every day rather than just weekends or at deer camp ... Makes that morning commute an adventure.

The Truckster XD 4WD [#1] arrived for the test halfway through the bunker rebuilding project. The mission was to complete the project before bad weather set in. When it arrived, the headlights were not working and needed to be fixed before the Truckster could join the work in progress. During the time we had the Truckster, there were some cold and some rainy days where we would have liked to have had the heated cab option. The four-post ROPS on the Truckster are drilled and threaded to screw on the roof, windshield, doors and back window if you choose the full cab option.

The ride was very rough, making the suspension seat option essential rather than optional. Without the suspension option, the seats are mounted hard to the frame.

The Reese hitch was a pleasant surprise [#2] and would be useful on other projects around the course. Testing the Truckster on the bunker project gave the heavy-duty tailgate hinges a workout and they held up well.

The lift cylinder for the bed [#3] got a lot of use, dumping 3,550-pound loads of dirt or sand one right after the other and held up well.

The nosepiece of the vehicle [#4] was removed to replace the headlight bulbs, replace the fuse in the panel on the passenger's side and to check the brake fluid

level on the driver's side.

The fuse block [#5] uses several different sizes and ratings of automotive style fuses.

During a break from the work, I put the Truckster up on the lift [#6] to see why the ride was so stiff and to see the underside more closely.

A surprise I found while the Truckster was on the lift is that the springs and shocks do not work because there is no travel in the suspension system [#7]. The frame rides on the



#1



#2



#3



#4



#5

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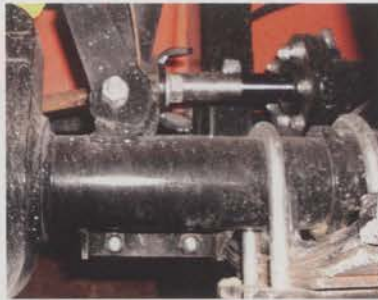
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axle where a rubber ball (colored yellow in this picture) is fitted between them. Most suspension systems have travel limit blocks like this but usually allow the suspension to travel 4 inches before hitting the stop. Hard up against the stop like Truckster's suspension is, you can carry heavier loads without concern for the springs. Hay wagons are this way.



#9

The only thing that flexes in this suspension system are the tires [#8], which explains the rough ride and the bouncing. For speed, the vehicle could go 19.7 mph on the level street. But going cross country, the texture of the course dictated that I had to drive slowly to prevent hurting my back.

The Truckster arrived here at the Crown Golf Club with the headlights not working [#9] and only one key, probably because of my last-minute request and Jacobsen's rush to get it to me before the bunker project ended. After a phone call, Jacobsen sent the keys and headlight housing from the factory in North Carolina. I got new headlight bulbs delivered to my shop from NAPA auto parts and picked up an auto fuse assortment from a hardware store located on the corner

of the golf course. The hardware store is our parts warehouse of commonly available items, and many of my suppliers offer overnight delivery at no extra charge so I can run my shop while carrying very little inventory. Every golf course should have a hardware store located on the edge of the property.

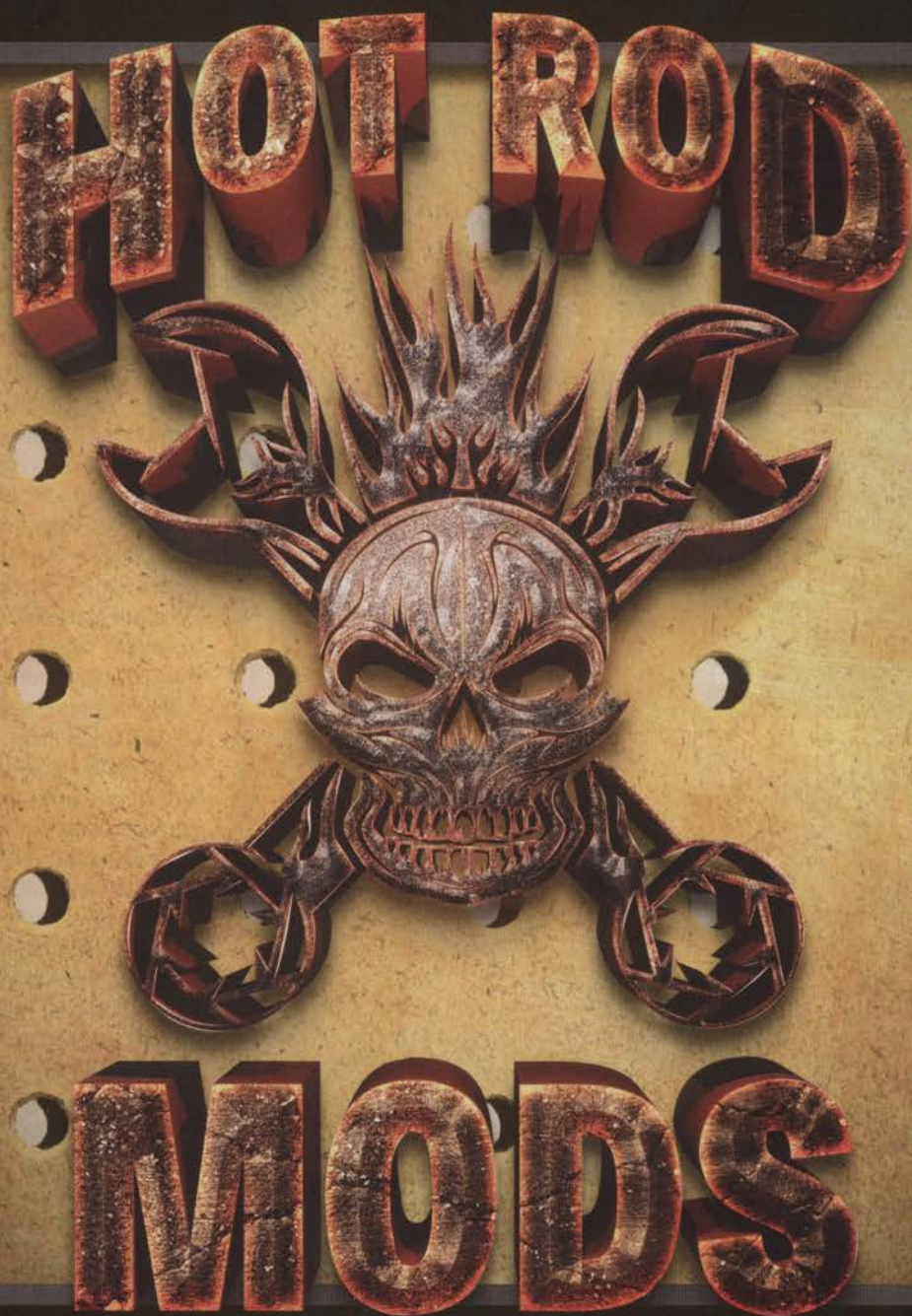
Everyone who drove the Truckster loved it and wanted to add it to our fleet of vehicles. In the difficult conditions of the bunker construction project, the four-wheel drive Truckster worked very well. It never got stuck or had any trouble with the hills or bunkers. The hauling capacity was amazing. The construction of the vehicle is definitely heavy duty. I would recommend that you be sure to



Where there's smoke...

Here is the answer to the question "Do you smell something burning?" The smoking gun, oh, I mean, the smoking halogen bulb with plastic melted onto it. It looks like both bulbs may have been damaged by pulling the nosepiece off the vehicle without reaching up from under the dash to disconnect the headlight bulbs before removing the nose cowling. The nose cowling is not a hinged hood with a latch but instead is a plastic cover held in place by tabs forced into slots and needs to be pulled off with some force — damaging to the wiring harness if still connected.

get the seat suspension option and the heated cab option to improve operator efficiency and extend the vehicle's use into cold or rainy days. The shade of a cab is also a welcome relief on hot sunny days. **GCI**



GCI'S TERRY BUCHEN, author of the monthly Travels With Terry column, has been all around this great big world and reports back on equipment alterations and innovations that fill gaps, meet needs, and allow superintendents and their crews to do their jobs more efficiently.

This month, we asked Terry to provide us with the best of the best when it comes to tricked-out superintendent UTVs. While these souped-up course UTVs aren't track ready, they are upgraded with additions that have turned them into high-performance vehicles for tooling around the golf course.



CUSTOMIZED EQUIPMENT MANAGER'S VEHICLE

This 2010 Kubota RTV900 4WD has a home-made lift tailgate (\$200) for easy lifting of walk-behind greens mowers for transporting them back and forth to the mechanic's shop. A separate winch is used with a 1,500-pound capacity that has the yellow-colored up-and-down control mounted permanently on the left side rear. The bed was extended approximately 15 inches on either side using the existing tailgate that was cut to fit and welded in place. A used ramp from a Dual Express Model 3000 DX reel grinder is used as the new tail gate - and a 4-foot x 12-inch -inch flat-steel tailgate extension is used that slips in place over two 1 $\frac{1}{16}$ -inch diameter steering shaft rods from a Toro Workman. Two pieces of 1 $\frac{1}{4}$ -inch 'L' channel welded together, with the grooves cut vertically on each side, is where the tailgate slides up and down from the -inch winch cable. Two chains hold the tailgate in a horizontal position. Additional equipment includes a Mile Marker PE 2.5 winch (\$100), with a 2,500-pound capacity, which is bolted to the front bumper, which is bolted to the frame with 1 $\frac{1}{4}$ -inch box steel added for bracing. A 1,500 watt/12.5 continuous amp 12-volt to 110-120-volt inverter (\$150) is mounted underneath

the hood for operating an air compressor with air tools, a battery charger and grinder. A 6-inch vise (\$30) is mounted behind the passenger seat that can slide 2 feet outwards from the bed that is mounted on a steel plate and sliding square tubing. Two red flashers (\$10) are mounted in the rear below the roof, as this vehicle is licensed with a recreational license plate. A Craftsman toolbox is mounted on the left side with 'L' brackets and angle iron. The 3-cylinder, 36-HP Kubota diesel engine has a SSS Turbo (\$1,600) installed for an addition 15 HP. Robert Smith, equipment manager, at the Merion Golf Club in Ardmore, Pa, spent about 2 months on this project and he is still adding custom features.



VERSATILE FORMER GOLF CART

The 27-hole Grandee Nasu Shirakawa Golf Club in Fukushima Prefecture, Japan, is the only golf course in Japan designed by Robert Trent Jones, Sr., who was ably assisted by Roger Rulewich, in 1995. Shigeto Hayashi is the golf course superintendent. This Yamaha Turf Mate was formerly used by women caddies to transport four golf bags around golf courses in Japan, where this type of vehicle was ultimately replaced by traditional 4-wheel golf carts. Hayashi purchased it used about 10 years ago, along with four spare wheels and tires, for approximately 10,000 Japanese Yen (\$100). It was then modified by removing the upper golf bag holder frame and installing the round plastic case and supports and the hooks for the topdressing drag mat to be attached to, which cost about 2,000 JY (\$20). The greenskeeper operates this vehicle standing up and it is used for course setup, dragging in topdressing, dragging the dew off the fairways, etc. It took about four hours to modify it.



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TRANSPORTING BLOWER AND GAS CAN EFFICIENTLY

Stephen Ehrbar, CGCS, director of golf course maintenance, Nick Sabatino, assistant director of golf course maintenance, and Scott Crisp, equipment manager, make up the team at the Jupiter Hills Club in Tequesta, Fla., who were concerned about the blowers and gas cans tipping over during transport. The brackets, which are fitted onto a Toro Workman, are used to hold the Stihl BG-86 hand blower and the Blitz 1-gallon gas can. The material and tools needed are one 1/2-inch x 1 1/4-inch x 24-inch and one 1/2-inch x 1 1/4-inch x 19 1/2-inch steel or aluminum flat bar. A 1/4-inch drill bit and drill, four 1/4-inch x 1-inch bolts and nuts and a bench vice are used. Measure out 11 1/4 inches from each end of the two flat bars and drill a 1/4-inch hole centered. On the 24-inch flat bar measure out 11 1/4 inches and make a 90-degree bend. On each end of the flat bar measure out 1 3/4 inches and make a 90-degree bend in the opposite direction of the first bend. The bend on the ends provides the mounting tabs for the bracket. On the 19 1/2-inch flat bar measure out 11 1/4 inches and make a 90-degree bend. On each end of the flat bar measure out 1 3/4 inches and make a 90-degree bend the opposite way of the first bend. This bend provides the mounting tabs for this bracket. The larger bracket is for the blower and mounts 5 inches off the floor of the bed. The smaller bracket is for the fuel container and mounts 3 inches off the floor of the bed. Use the holes in the brackets as a template to drill the holes in the utility bed side walls. These brackets are meant to hold an 11-inch x 9-inch blower and a 10-inch x 6-inch fuel container, says Scott Crisp, who designed and built the brackets. It cost less than \$20 per vehicle for the materials and less than one hour total labor time.



GATE VALVE HOLDER:

The 2-inch x 2-inch square-nut irrigation gate valve key used to bounce around in the back of the 2007 John Deere Turf TX Gator 2WD. The roof was removed and the two factory-mounted brackets that held the roof in place on the front hood were modified, by adding a U-shaped bracket with holes drilled on either side for a lynch pin to hold it in place. The gate valve key is held firmly in place and it fits perfectly tight. The bracket was made from recycled parts from an old farm harrow/seeder. It took about an hour labor to modify both brackets. Timothy Brown Cope, superintendent, at the Penny Branch Club in Furman, S.C., conceived, designed and built this great idea.



TURF VEHICLE BLOWER:

This 2011 Billy Goat 18-HP push-type blower produces approximately 3,700 CFM with a wind speed of 180 MPH that originally cost about \$2,700. An Ultra Tow 12-inch Category III trailer hitch receiver, with an Ultra Tow 5-inch x 7¼-inch plate, is mounted underneath the center of the bumper of the 2013 Club Car Turf 2 (approximately \$9,800 including the materials). The blower has a 2-inch male Category III hitch assembly that is held in place to the turf vehicle with one turnbuckle on either side of the bracket after the wheels are removed. The operator uses the throttle on the blower handle and there is an optional electric toggle switch to rotate the shroud. It took about four hours to build. Brian Goleski, golf course superintendent, and J.R. Wilson, equipment manager, from the Noyac Golf Club in Sag Harbor, Long Island, N.Y., were the design and build team.



PROPER STEERING MECHANICALS

Standard steering mechanicals and basic steering alignment is being done properly on this Cushman Turf-Truckster by Jacobsen. The tires were wearing unevenly on the inside, the handling was suspect where the vehicle was "wandering" and hard to hold a straight line due to a negative camber condition and from in-proper tire pressure.

Reading tire wear:

- Wear on the inside and outside of the tire could be caused by under-inflation or worn tie-rod ends.
- Wear on just the inside of the tire could be caused by negative camber or a toe-out condition
- Wear on just the outside of the tire could be caused by positive camber or a toe-in condition

Jacobsen offers a shim (part # 841737 for about \$3.50 each) that can be added between the upper control arm and the frame to push the top edge of the wheel geometry out and correct this condition. Each shim moves the wheel one half a degree. A digital level from Sears (\$40), which has a magnetic base that attaches to a used bed knife cut to length, is used to measure the camber. To install the shim, the two upper control arm bolts are loosened and the shim is slid into place and the bolts are then re-tightened. To make the camber more negative, the bolts are loosened and one shim per ½ degree is removed. The number of shims added or removed depends on the camber measurement and how many degrees the alignment is out. This entire process takes less than 15 minutes.

Mark Yarick is the customer service specialist for North Florida and North Central Florida for Golf Ventures Inc. and he is the former professor and program coordinator for turf equipment management at Florida Gateway College. Yarick also offered these tips: Regularly check the tie-rod ends, ball joints, spindles and wheel bearings for excessive play. Jack-up the steering axle off the ground and wiggle the tire top to bottom and in and out to check for play. Grab the tie-rod ends and move up and down and in and out to check for play. With the steering axle on the ground, start the engine and have a helper move the steering wheel right and left while watching the tie-rods and spindles for "slop." Any steering wheel movement that does not result in tire movement is an indication of excessive steering component.



(continued from page 36)

and was referred to the clubhouse. Three very friendly and helpful women gave me what I was hoping for – a mimeo of the Club’s history written by the club historian in 2003.

A group of players staked out a course in Dorset on Sept. 12, 1886. The original 15 founders used a room in one of their houses as a clubhouse. They made a few golf clubs, and named the holes of their new course in the good Scottish tradition. I especially loved the names Frost Knoll, Clover Patch and Bull Barn. Grant Matson was the club’s first greenkeeper and is generally credited with building the first gang mower built before WW I. A nine-hole addition was built in the late 1990s, and the new holes were incorporated into the old course.

The rest of our trip was one of perfect weather, lots of historical sites and friends of long standing. One of those friends has cut a pretty wide swath in the turfgrass sciences – Dr. Guenhwa Jung. Tenured at UMass-Amherst, he is part of an impressive program of research, education and extension. Geunhwa is one of the brightest and most enthusiastic men I have met and we were lucky to have him on the faculty at Wisconsin for a while. We met his colleagues Dr. Scott Ebdon and Elizabeth Wiernasz. Scott manages the NTEP program (among many other responsibilities), and he used the color contrast between the very dark green of ‘Blueberry’ Kentucky bluegrass and the light green cultivar ‘Washington’ Kentucky bluegrass to spell “UM TURF,” on a plot area of their turfgrass research farm.

Very early on Columbus Day we drove to The Country Club at Brookline. Dr. Cornish lists TCC as the first country club in North America – 1882 – and the club built its golf course in 1893. The parking lot was nearly empty when we drove in. A few players were practicing, but no members were

in the pro shop. The assistant golf pro couldn’t have been more friendly or helpful. I bought a copy of the book written about the club’s rich history, and asked the assistant pro if I could drive down to the shop and meet Bill Spence, the superintendent. He suggested it wasn’t going to be possible, and I didn’t want to interrupt the busy early morning work in any way.

We stood on the porch, imagined the racetrack that was out front a long time ago and enjoyed watching a dog accompany the fairway mower working on the hole headed our way.

After wandering through Rhode

“ I know there will be no easy or quick solution to save our disappearing artifacts, but maybe awareness and some conversations have begun.”

Island, Connecticut and western Massachusetts for a few days, we headed to the USGA headquarters and museum. Kim Erusha was traveling so we didn’t get a chance to visit with her. She was actually in Wisconsin at 2016 U.S. Open venue – Erin Hills. Fortunately, I also had a mission to talk with the director of the museum and discuss the possibility of establishing a golf course museum. I had an excellent talk with Robert Williams, but he is leaving the USGA soon. Fortunately, Michael Trostel, then the senior curator/historian of the USGA Museum, was also there. Trostel has since been promoted into the top spot. I know there will be no easy or quick solution to save our disappearing artifacts, but maybe awareness and some conversation have begun.

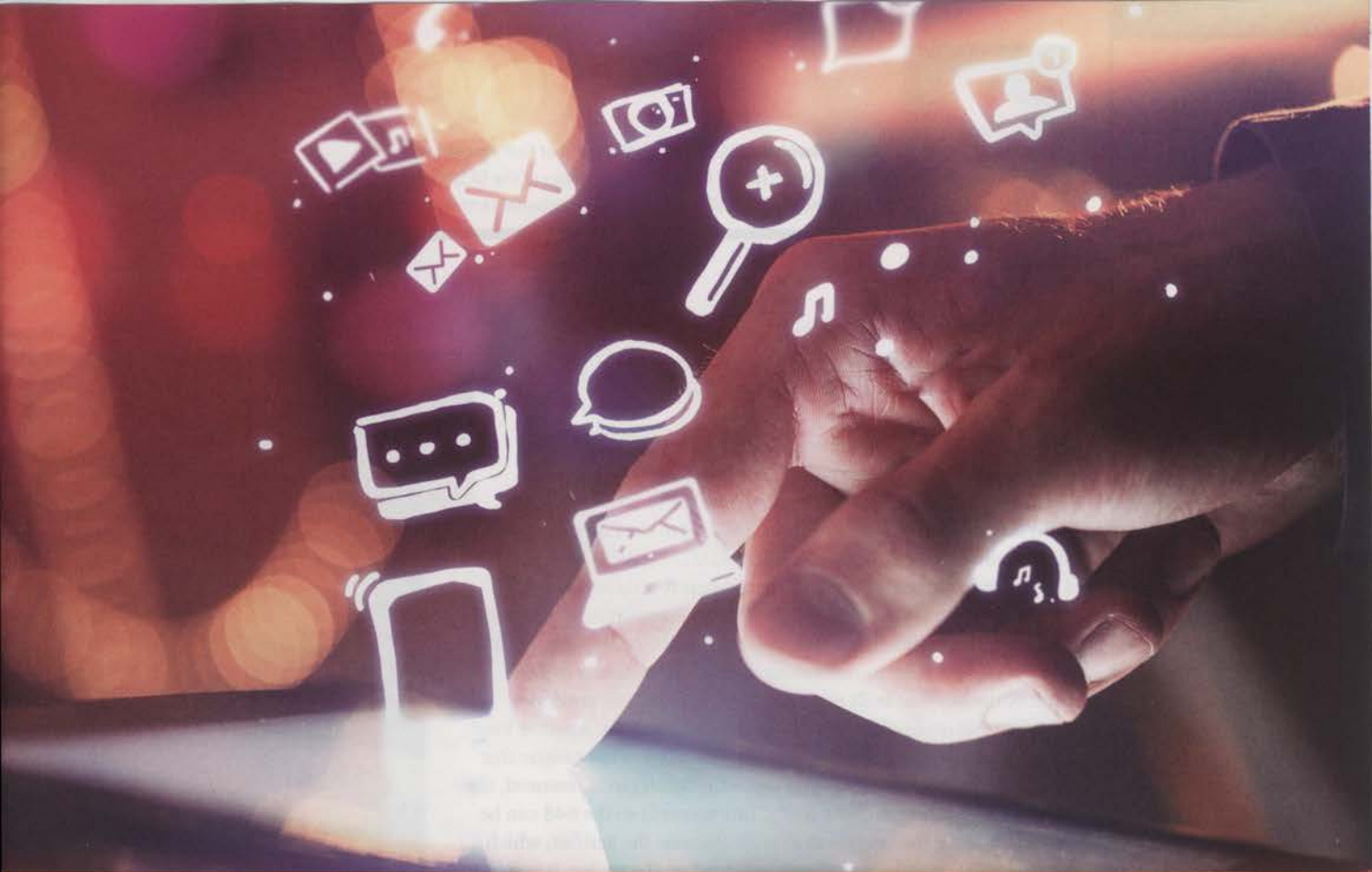
Eventually every trip comes to an end, and we started heading west toward home. Latrobe Country Club

was a required stop, as it has been many times before for us, and we made a couple of pro shop purchases. Mainly we just soaked up the atmosphere that gave us Arnold Palmer.

Since we were near days end, we stayed in State College at the Penn Stater Hotel. The campus is changing and growing, like most campuses, and it has had an impact on turf plots at the Valentine turf research farm.

The next morning took us through the beautiful Pennsylvania landscape as we wandered up to the village of Foxburg and the Foxburg Country Club. I have visited this special place several times. In fact, a few years ago I left our hotel early and drove over to FCC and found the superintendent getting the course ready for the day’s play – blowing leaves, cutting cups and mowing greens. This year the manager gave us a brief tour of the clubhouse, the former home of a member that the club purchased in 1941. The founder of the club, Joseph Mickle Fox, established it in 1887, making it at least one of the “oldest continuously used golf courses in the USA.” The course hasn’t changed much over the years; skinny fairways and small greens challenge golfers. It was in wonderful condition. I love the stories about how, years ago, players would hit balls from the backyard of the clubhouse into the Allegheny River below. Trees have grown and homes have been built, making that truly a thing of the past. And there is a museum upstairs – the American Golf Hall of Fame – that includes two clubs made by Old Tom Morris and a couple made for him. Mr. Foxburg was a native of Scotland and learned golf at St. Andrews and from Old Tom himself.

It was almost sad to leave Foxburg because it meant our golf trip was almost over, leaving only the long drive home. But it was a great trip and I am able to say with all honesty that I didn’t miss a single putt. GCI



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Travels with Terry

Globetrotting consulting agronomist Terry Buchen visits many golf courses annually with his digital camera in hand. He shares helpful ideas relating to maintenance equipment from the golf course superintendents he visits – as well as a few ideas of his own – with timely photos and captions that explore the changing world of golf course management.



Terry Buchen, CGCS, MG, is president of Golf Agronomy International. He's a 41-year, life member of the GCSAA. He can be reached at 757-561-7777 or terrybuchen@earthlink.net.

DUMP BODY TRAILER

Chris Wallace, superintendent at The Links at Brunelli, Timberlea, Nova Scotia, Canada, asked Bob Pruneau, equipment manager, to build a trailer to transport a Toro ProCore 648 Green's Aerifier (09200) to the far reaches of the course. A 2015 Toro Workman HDXD Model 07385 had a dedicated topdressing machine permanently attached to it so Pruneau built a trailer from the dump body that was not being used any longer. An extensive 2-inch by 2-inch square tube framework and 3-inch by 3-inch square tubing to beef up the frame and the front of the box was built on the bottom. The bottom portion of the tongue is made of 2-inch by 2-inch square tubing. Another long piece of 2-inch by 2-inch tubing is placed on top of the tongue that is held in place with a lynch pin. Once the lynch pin is removed, the upper square tubing and the trailer tilts upwards so the 648 can be driven off using the tailgate as a ramp. Because the aerifier, which weighs 1,500 pounds, is perfectly balanced on the trailer, it is easy to reload and the trailer moves back into the horizontal position as the aerifier is moved closer to the tow vehicle. Used wheels, turf tires and axles were recycled. The end of the trailer closest to the tow vehicle was removed so the 648 can hang over the end and the trailer can be balanced properly. It took between six and eight hours to modify it and it would take about four hours to do a second one. It cost less than \$200 to modify. Click on Pruneau's blog for descriptive photos of the upper tongue and underneath framework: <http://golfcoursemechanics.blogspot.ca/2015/10/pro-core-trailer-add-on.html>.



GREEN'S SUB SURFACE AIR BLOWER

This 2015 Billy Goat Model #F1802V Push Blower (\$2,900) was converted to a green's subsurface air blower hooked up to a USGA green's drainage piping. The front shroud was removed and then a 15-inch diameter round steel plate 1/4-inch thick (\$100) was bolted on in its place. A 4-inch steel threaded coupler (\$20) was welded to the steel plate and then a female banjo quick connect fitting (\$60) and a 4-inch by 9-foot heavy-duty plastic hose with two male banjo fittings (\$300) is attached without tools. When not in use blowing air into the green's profile, the blower's metal plate's bolts are removed and the OEM shroud is mounted back in place. There is a permanently installed vault behind the green with a 4-inch diameter drainage pipe riser, with a female banjo quick connect fitting, for easy hookup to the blower's hose. It took about six hours to design, fabricate, build and install. The professional teamwork at the Noyac Golf Club in Sag Harbor, Long Island, N.Y., of Brian Goleski, superintendent, and JR Wilson, equipment manager, have an endless supply of great ideas.



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THE YIN AND YANG OF 2015



Pat Jones is editorial director and publisher of Golf Course Industry. He can be reached at pjones@gie.net or 216-393-0253.

My travels around Turf Nation this past few months have left me with one very clear conclusion: many of you are damned good and ready to put 2015 behind you. Why?

It was a crazy weather year that froze then drowned a lot of grass down South and burned up half the turf in the West.

It seems nearly impossible in some places to hire qualified crew members who can pass a drug test, have a decent driving record and show up to work on time (or show up at all after a few days).

Despite budget pressures, expectations for the appearance and quality of putting surfaces are still largely based on that little toonament they have in Augusta every year instead of the more reasonable standards the USGA and others are loudly proclaiming.

Chapters and associations have had major problems getting members to meetings and shows, including the nearly complete snow-out of the big NERT event in Providence last spring.

University turf programs are losing funding and talent as both the quantity of federal grants and numbers of kids interested in the degree shrink.

And, of course, there's the continued angst of mass media coverage proclaiming that the sport is on its last legs because we're closing a course in the U.S. every 48 hours.

Ugh.

Yet, those same travels around the same big, beautiful country have also given me much to be optimistic about. As always, I choose to see the glass as half-full. Here's the flip-side of the problems I just rattled off.

I'm genuinely impressed with what we're learning about how to head off winterkill and how to manage turf under drought conditions. We're actually gaining a lot of knowledge from the crap Mother Nature throws at us.

For every labor horror story I hear, I meet a super who's had the same crew for 10+ consecutive seasons. When you find the right folks who have that spark of passion for working on the course, treat them well, do small things to say thanks (barbeques, games, training events, etc.) and they'll stay.

Increasingly, the golf media is helping more than they hurt by highlighting courses that aren't wall-to-wall manicured glow-in-the-dark green. Again, there's nothing wrong with green grass – that the color of healthy turf and healthy turf performs environmental miracles – but it's heartening to see the minimalist, more natural look gain some traction with discriminating players. Kudos to Matt Ginella of Golf Channel and other writers who “get it” and support this trend.

Some chapters and turf associations are struggling, but others are getting

creative and proactive. I was very impressed just the past six months with the engagement and smart management of groups including the Michigan GCSA, Mid-Atlantic Assn. of GCS, Georgia GCSA, NW Ohio GCSA (a small but tight group) and, of course, the Carolinas GCSA, which continues to raise the bar for all.

Turf schools may be challenged, but I'm in awe of how the PhDs are using social media and other forms of communication to spread knowledge quickly and effectively. Twitter has, in a way, become a global turf extension network and we're lucky to have that kind of expertise at our fingertips 24/7.

Finally, I know course closures are sad things and they can (but don't always) represent a job loss for a super, but we are overbuilt. Reducing our supply of golf is a necessary evil if we're ever going to have a healthier market.

There are still more than 15,000 courses in America. We have a net loss of about 150 per year at that scary “one every two days” closure rate. But, that's only 1 percent of our inventory that's going away each year. As the real estate market bounces back in areas where courses are overbuilt, we can only hope that the most poorly conceived facilities will be converted to something else (or simply allowed to become managed greenspace) and we can eventually get supply and demand a little more in line with each other.

So, despite the trials and tribulations of 2015, I remain cautiously optimistic. I honestly believe that golf is finally getting its sh*t together from a financial management, marketing and hospitality standpoint. And that's the bottom line: we can no longer rely on another golf boom to come along and magically make it rain money. We have to do it ourselves by being smarter, getting customer-friendly and practicing savvy resource management. And I honestly believe good supers are up to that task in 2016 ... and beyond. **GCI**

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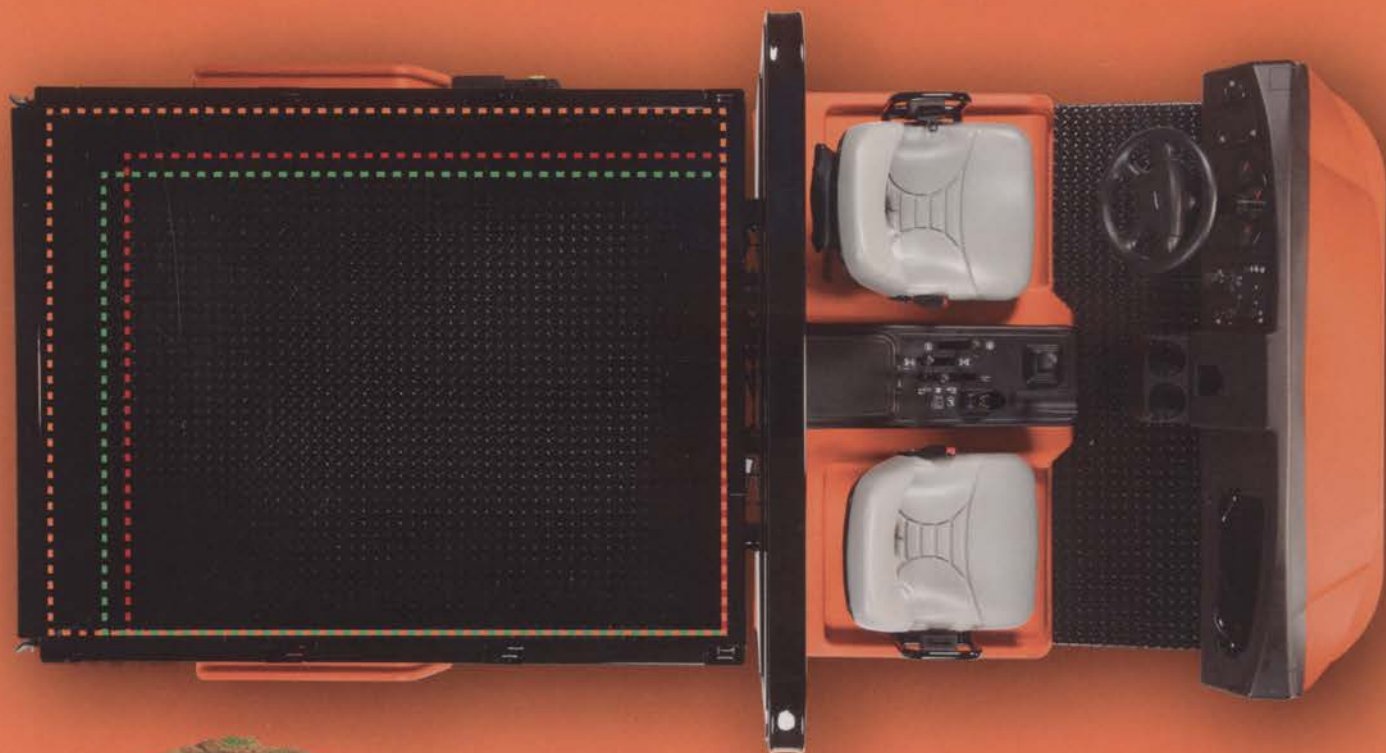
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