twosomes on weekend mornings, which still allows players time to spend with their kids.

After seeing the market crash, and a dip in the membership in 2007, the club hosted a membership drive. "It was extremely successful. We're at a number of 300 people and a couple people on the waiting list," Carey says of the increase that went from 255 in just a year.

As for inviting potential new members, the club also has seen a great deal of excitement over its guest packages. A member can buy 10 guest rounds, and if they pay in full they receive a 20 percent savings.

Not golf

Taking the idea of the game's structure to a completely new level is a game called "Flogton." Launched in 2011 under the direction of the Alternative Golf Association, the program ("not golf" backwards) was developed to make the game more enjoyable for recreational players.

The AGA proposes that new, high-performance equipment and "fun-fostering" rules can bring a whopping 20 million golfers back to the game.

"I don't think the 20 million 'others' are mad at golf. They just have found other things to do with their time," asserts Alternative Golf Association Chief Executive Officer Pat Gallagher. "They don't care as much as golf thinks they should care. Golf hasn't done anything effective to bring them back."

Gallagher says it is entirely possible to develop cutting-edge equipment that will lure many of the 20 million recreational golfers back to the game. But he says it will require "a coordinated effort driven by innovation and endorsed by the opinion leaders in the game."

That said, the AGA is working with engineers, both inside and outside the industry, to develop new, inspiring gear that will expand players' games. This, coupled with new rules and formats under Flogton, will hopefully improve players' golf experiences.

Measurement of success

The PGA's and USGA's efforts to grow the game have been well received by the "From (our threehole course) we get a ton of people out there, in really all different levels, not just beginners, but people who also want to play a quick three holes and that's it."

—Lisa Schwinden, head golf professional, Osgood Golf Course, Fargo, N.D.



public, but Phelps emphasizes that more research must be done to identify trends in the game.

"The biggest thing that is missing, and has been missing, is that there's been no measurement of success," says Phelps. "There have been these initiatives for the past five to seven years and they come out with a new name or tagline every other year or so. But nobody has been able to put together a program or the resources to measure the success...how many are still playing?"

Schwinden, who doesn't have the resources to measure her programs, knows that it would be beneficial if she did. The LPGA/USGA Girls Golf Club she runs at the course has seen significant growth. What began with 30 women is now up to 200 participants in just five years.

As for retaining players, she says, "We're all for trying. Now that we've got these kids that are out there, it is to try and keep them in the game and playing."

Phelps suggests that courses run their last tee time at 4:30 p.m. and let families and beginners take to the course during final tee times.

"Is there something that we can do that would get rid of some (intimidation) or break the mold on some of that and have people be able to come out and relax, hit the ball a little bit and have some fun with their friends and go home happy?" asks Phelps.

Phelps comes from a golf family. His father, Dick, was president of the ASGCA in 1980, and his brother Scott is the CGCS at the Golf Club at Newscastle in Washington. For Phelps' term as president, he wants to focus on playability, affordability and sustainability of the game he loves.

"We're not trying to replace traditional golf. At this point it's trying to get people with clubs and balls in their hand learning to swing and learning to make contact with the ball and learning to have fun," says Phelps. "Eventually they will move on and learn to enjoy the game the big game." ■

Ibsen, editor of Kansas! magazine, picked range balls in a previous life.



Act Now for Better Fairways

BY CLARK THROSSELL, PH.D.

Zac Reicher, Ph.D., is a professor of turfgrass science at the University of Nebraska-Lincoln and develops strategies to re-establish a desired turfgrass species to replace annual bluegrass and keep it out. He can be reached at zreicher2@unl.edu.

Q The heat this summer is taking its toll on annual bluegrass (*Poa* annua) in fairways across the country. What do you suggest as a recovery strategy?

Take advantage of Mother Nature removing the annual bluegrass and seed the dead and thin areas with perennial ryegrass, creeping bentgrass or possibly low-mow Kentucky bluegrass. Seed as soon as you see the annual bluegrass turning yellow. Once the annual bluegrass turns yellow, it is not likely to recover.

Q When should superintendents seed their fairways?

Today. Even if it is early August, you want the seed of the desired turf to get a head start when there is no competition from annual bluegrass and annual bluegrass seed has not started to germinate. And in many locations the annual bluegrass won't begin to germinate for another month.

A superintendent's goal should be to get the perennial ryegrass or creeping bentgrass seed in the ground, germinating and growing as soon as possible. This gives the desired turf a huge head start on annual bluegrass. And follow that with an aggressive program to keep annual bluegrass from becoming re-established.

Not only is seeding with a desired turf in early August a sound agronomic idea, the golfers will see an aggressive effort to improve the golf course.

Q You emphasized that it is critical for a superintendent to act aggressively to keep annual bluegrass from coming back and dominating the stand. What are your recommendations to achieve this? If a superintendent seeds perennial ryegrass or Kentucky bluegrass, one strategy we have had good success with is applying Tenacity (mesotrione) at seeding. Make a second Tenacity application after two mowings or 28 days after seedling emergence, whichever is later.

After the perennial ryegrass is established, a superintendent could use Prograss (ethofumesate) to control any annual bluegrass. A fall application of a



Overseeding bare areas will be successful in the short-term. But by spring, visible rows of the desired turf (above) often will be crowded out by annual bluegrass.

pre-emergence herbicide on an established perennial ryegrass or Kentucky bluegrass turf is another option to control annual bluegrass.

If a superintendent seeds creeping bentgrass, a strategy that has worked for us is applying Velocity (bispyribacsodium) after the creeping bentgrass has been mowed at least twice. A second application of Velocity 28 days after the first application will help control annual bluegrass.

Q Please provide a little background on pre-emergence herbicide applications in the fall to control annual bluegrass seed as it germinates.

Several pre-emergence herbicides are labeled for use on established golf course fairways to control annual bluegrass, and they are effective when applied at the proper time. Apply a preemergence herbicide in late August or early September, depending on location, prior to peak annual bluegrass seed germination.

With mild fall and winter weather we have noticed annual bluegrass germinating late in fall, and this past February, we saw a big flush of annual bluegrass seed germinate. This year has been abnormally mild. We wouldn't expect annual bluegrass to germinate in February most years, but a pre-emergence herbicide applied in late summer would likely control annual bluegrass germinating throughout the fall. An additional pre-emergence application may be needed for control throughout the winter and spring depending on your location.

Clark Throssell, Ph.D., loves to talk turf. He can be reached at clarkthrossell@bresnan.net.

TURFGRISS TRENDS

ANIMAL INSTINCTS

Ground Squirrel Control on Golf Courses

By Jim Knight, Ph.D.

ecause ground squirrels are primarily meadow and grassland rodents, golf courses provide an especially attractive habitat for them. Unused portions of golf courses often provide a reservoir of ground squirrels, which become problems whenever dispersing juveniles settle on groomed portions of the property. Damage from ground squirrels on golf courses includes damage to turf and bunkers from the squirrels' feeding and burrow digging activity.



There are more than a dozen species of ground squirrels. The Richardson, shown here, is among the most common.

Life history and biology

The United States is home to more than a dozen species of ground squirrels. They are found in every region of the country except in the Southeast. Franklin ground squirrels are found in the eastern part of the northern Great Plains; Richardson ground squirrels in the western Great Plains; Washington ground squirrels in the Northwest; Columbian ground squirrels in the northern Rockies; and Townsend ground squirrels in Nevada and Utah.

The thirteen-lined ground squirrel is the most widely distributed, with a range that extends from Alberta, Canada in the North to Texas in the South and from central Ohio in the East to Colorado in the West.

Ground squirrels live in extensive underground burrows with many entrances. They hibernate during the winter and store large quantities of food in burrow caches. They

begin hibernation early, and some species in drier areas go into hibernation in August.

Males become active in early spring, one to two weeks before females do, and breeding takes place immediately after females emerge from their burrows. After a 28-day gestation period, two to 14 young are born. Densities of ground squirrels *Continued on page 34*

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can range from two to 20 or more per acre.

It is important to know the difference between ground squirrels and pocket gophers, which are found throughout most of the same range. Although these two species look very different, there is some confusion, because ground squirrels are sometimes called "gophers."

Pocket gophers not only look different from ground squirrels, they also behave differently. Whereas pocket gophers spend 99 percent of their lives underground feeding on roots and tubers, ground squirrels feed above ground. And while pocket gophers plug their tunnel entries tightly with soil, ground squirrels have open entrances to their tunnel systems. Also, ground squirrels look like common tree squirrels, while pocket gophers have cheek pouches and external incisors and look more like short-tailed rats.

Ground squirrels are not protected in most states. There are, however, species or subspecies that are protected in some areas. For example, the northern and southern Idaho ground squirrels are a Species of Concern; and Iowa, Pennsylvania and Missouri require special permits before controlling ground squirrels. It is best to check with your state wildlife agency before implementing control programs.

A small population of ground squirrels can sometimes be controlled with body-gripping traps.

Control

Superintendents often ask whether they should try to reduce the ground squirrel population or eliminate it. It makes more



economic sense to eliminate the population. Ground squirrels, with an average litter size of 10 and a maturity age of about 10 months, are very productive. One female can have offspring resulting in over 100 progeny in just three years.

But despite the large brood, the juvenile mortality rate is about 85 percent. Most of that mortality occurs in late summer, when the mother drives her offspring out of her burrow. The offspring die of exposure, starvation and predation, among other things. However, if a nearby population has been reduced, the multitude of burrows available results in extremely high juvenile survival and any reduction in population is immediately offset. The extra effort to eliminate the local population will result in a smaller chance of reinfestation.

Because of the above-mentioned dispersal behaviors of ground squirrels, it is wise to cover burrows after control programs are completed. The ground should be revegetated so the area will be less likely to attract disseminating young animals.

Individual or small populations of ground squirrels can be controlled with traps. For most golf course problems this may be the most practical method of control. Bodygripping (also known as Conibear) traps can be placed over the hole, and all entrances to a burrow system should be covered. Several to dozens of the No. 110 size traps should be used so trapping can begin on one side of the colony and progress across the area. The traps should be staked to prevent scavengers from dragging them off. Body-gripping traps are available at hardware stores and online.

Fumigants can be used in small areas of ground squirrel infestations if the soil is dense and moist. If soils are loose and dry, the gas will dissipate before it can effectively be concentrated in the system. Gas cartridges and aluminum phosphide are fumigants registered for ground squirrel control.

Gas cartridges have a fuse that is lit and then placed in the hole. All entrances must be plugged so the gas can be forced to dissipate through the burrow system. The ground squirrels then die of asphyxiation.

Toxicants registered for ground squir-



rel control include anticoagulant and single lethal-dose baits. Anticoagulant baits cause internal hemorrhage and require that an animal ingest them multiple times for the baits to be effective. After initial placement of anticoagulant baits, a second treatment is required two to three days later.

But anticoagulant baits are more readily eaten by ground squirrels, because the squirrels like the way they taste. The risk to nontarget animals is reduced because of the need for multiple feedings. To maximize success and to ensure safety, be sure to read and follow label directions.

Timing of ground squirrel control is very important, especially when using toxicants. Timing may be the most critical factor affecting success. When using toxicants, the target period for control is early spring. Begin control as soon as possible after both the males and females have emerged.

After green-up occurs, the grasses and forbs are much more palatable than grain, and ground squirrels will be reluctant to accept baits. Additionally, control measures prior to the birth and emergence of young ground squirrels will be much more efficient.

Anticoagulant baits such as Rozol are readily accepted by ground squirrels when hand-placed near the burrow entrance. These baits cause internal hemorrhage, so multiple feedings are required. Plan to treat when several days of dry weather are expected so a second treatment can be placed two to three days after initial treatment.

Zinc phosphide, a restricted-use pesticide, is a single lethal-dose poison. One feeding with it is enough to kill ground squirrels. However, because zinc phosphide is distasteful, it is necessary to prebait the area with clean, untreated oats to ensure the squirrels will readily accept the poisoned grain.

Distribute the poisoned bait two to three days after pre-baiting. When mixed with moisture in a ground squirrel's mouth or stomach, phosphine gas is produced and causes rapid death. It is important that the ground is dry *Continued on page 36* For large populations, hand placement of toxicants is an economical method of ground squirrel control.

Continued from page 35

when the zinc phosphide is placed.

Use of bait stations also is a practical control method on golf courses. Place approved anticoagulant baits, such as Ramik Green, in containers and distribute them throughout the area to be controlled. Space bait stations about 65 yards apart along borders or fences. Ground squirrels are then able to eat the bait throughout the day.

Ground squirrels, with an average litter size of 10 and a maturity age of about 10 months, are very productive. One female can have offspring resulting in over 100 progeny in just three years. Bait stations can be made from three, 24-inch-long pieces of three-inch PVC or drain field pipe. Connect the pieces with a tee and cover the upright part of the tee with a removable cap. Stand the station upright and attach it to a fence post or posts driven into the ground.

Remove the cap and fill the tube with bait labeled for bait stations. Ground squirrels enter the bait station through the horizontal pipes and eat the bait, which is made available as it drops down from the capped vertical pipe.

Remember, anticoagulant baits must be eaten continuously for a three- to five-day period in order to be effective. If the bait stations are allowed to go empty, the toxicant will not work. Be sure to keep the bait station filled and to follow all label directions on the rodenticides.

Live traps can sometimes be used to remove a very small number of ground squirrels. In golf course situations, this may be desirable when the ground squirrels are near the clubhouse or some other public place. The small 5x5x18-inch traps work well and are available online. I recommend baiting with peanut butter that is coated with rolled oats.

When an animal is live trapped, there is often a desire to release the animal at a distant location. Research has shown this may not be a desirable, nor a humane, option. If a ground squirrel is released, it will normally try to return to its home. Ground squirrels often die of exposure, starvation or predation. Releasing a ground squirrel with an existing colony will not work, because the resident animals will drive it away.

Drowning is one humane way to dispose of live-trapped ground squirrels. But shooting ground squirrels is not usually safe or practical on golf courses and is seldom an effective method of control. Shooting is expensive and time consuming and causes the animals to quickly become cautious. At best, shooting reduces the population only until late summer, when juveniles repopulate the vacated burrows.

Propane-exploding devices have been advertised to control ground squirrels. They are intended to fill the burrow system with propane and then ignite it to kill the rodents. The resulting explosion is certainly satisfying and some operators have reported some degree of control. Because the devices are expensive, it is usually difficult to demonstrate they are an economically efficient method of ground squirrel control.

Other methods have been proposed to control ground squirrels. Ultrasonic devices have not proven to control, disturb or displace ground squirrels when tested in unbiased research trials. Flooding the tunnel system with water from a hose will sometimes force the squirrel from a burrow if the burrow system is not extensive and soils are heavy. Avoid flooding burrows that are adjacent to foundations or structures that may be damaged by water.

Gumballs have been reported to clog the intestinal track of ground squirrels. Most of the claims are anecdotal, and although individual ground squirrels may nibble on gumballs, there is no evidence populations will consume enough to result in reliable control.

Jim Knight (jknight@montana.edu) is a professor and Extension Wildlife Specialist at Montana State University. He specializes in practical wildlife management and conducts seminars, workshops and on-site training for golf course superintendents across the country. He is particularly interested in hearing from superintendents about their wildlife management methods.

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Golfdom

The Company Line

NEW PRODUCTS FOR SUPERINTENDENTS

Redesigned Website and Logo

Precision Laboratories continues to mark its 50th anniversary with its launch of a redesigned website and logo. The company's former website underwent a complete renovation to make accessing information easier for customers. The new design allows visitors to easily find and share product information, technical bulletins and research.

While Precision's new logo still is dominated by a leaf, the new leaf is integrated into the text and now faces to the right to form a "P." *Precisionlab.com*

Nematode Control

Nemitol, a new broad-spectrum, soil-applied pesticide from Engage Agro USA, controls soil-borne pests and diseases in turf. The company states that Nemitol is approved for organic agriculture, has a four-hour REI, causes no turf damage, has no notification requirements and has minimal PPE requirements for operators. Nemitol contains Allyl Isothiocynate, which activates on contact with water to quickly penetrate and gas the soil while the capsaicin and capsaicinoids bring added residual control and repellency. Engageagrousa.com



Water Savings Calculator

This new free app from **Hunter Industries** is designed to help system owners reduce water consumption, save money and promote healthy local environments. Available exclusively on Hunter Industries' website, the interactive tool features five individual water use calculators that show the financial and sustainable advantages of MP rotators, Solar Sync sensors, check valves and pressure-regulated spray bodies.

To use the app, open it up, enter general information about the landscape and water cost in question and hit the calculate button. The calculator will then estimate how much water and money can be saved if the latest Hunter products are installed.

The app is optimized for the iPad and compatible with all kinds of personal computers and browsers. Video tutorials that introduce and explain the calculators are also available on Hunter's website. *Hunterindustries.com*



Auxiliary Tank

Turfco introduces the optional 3-in-1 Auxiliary Tank for its patented and patent-pending T3000i spreader/sprayer. The 3-in-1 Auxiliary Tank fits securely on the front of the T3000i without obstructing the view or inhibiting the handsfree speed control system. With the ability to complete three different tasks, the tank provides maximum versatility and productivity and saves 10 to 15 minutes of work.

First, the 3-in-1 tank acts as an auxiliary tank to increase the spray capacity of the T3000i to 31 gallons. Using the same liquid in the 15-gallon auxiliary tank and the primary 16-gallon tank enables the operator to spray up to 124,000 square feet. The auxiliary tank connects to the main tank system, feeding directly into the primary tank. It quickly attaches or detaches, increasing the machine's overall capacity.

The 3-in-1 Auxiliary Tank also can spray two different liquids, making it easy for operators to spray separate areas without switching equipment. The secondary liquid can be sprayed with the additional front-mount spray nozzle for the auxiliary tank, which sprays in six- or nine-foot widths. Switching from the primary nozzle to the front-mount spray nozzle is quick and easy and increases productivity. Lastly, the product includes a hand wand for spraying in smaller, more confined areas. *Turfco.com*

Reusable Paper Towels

Bambooee launches its Reusable "Anti-Paper" Towels. The perforated towels are made of certified organic and sustainable earth-friendly bamboo and hang on any standard paper towel dispenser. The company states that the biodegradable towels are more absorbent than regular



paper towels and can be machine washed and reused at least 50 times.

As a result, the company says, one roll of these paper towels equates to 120 rolls of the average paper towel. The difference can save customers a significant amount of money annually, the company states. Bambooee.com

Lightweight Lighting System

The BrimLit from Nite Ize is a flexible and lightweight lighting system that attaches to the brim of a hat for portable illumination. It can be used for hands-free tasks such as working in crawl spaces or searching for tools in dark places.

Formed from high-density

EVA foam, it clips easily and securely to the underside of any hat, cap or visor brim. Its powerful springtension clips automatically adjust to the brim's thickness while its slim and curved form ensures it stavs out of the way. The BrimLit features four LED bulbs that can be set to low or high. Niteize.com



Mini Meters

Netafim USA introduces the M Series of small sub-meters for residential and commercial dripline irrigation systems. The new mini-meters communicate directly with irrigation controllers and measure water usage for more efficient resource management.

The M Series can be installed with all Netafim landscape dripline and is adaptable to other low-volume systems. The meters are available in 3/4-inch and one-inch diameters. They feature durable plastic or corrosion-proof metal bodies. The sub-meters monitor flow rates from 0.2 to 20 gpm at pressures up to 140 psi.

The meters feature just one moving part, an impeller that contacts with the water flow, to ensure minimal wear and tear and longer life. To prevent fogging, the meter's magnetic-driven registers are hermetically sealed and encapsulated within the metal or plastic bodies. Netafimusa.com

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The 19th Hole with...

Chris Erickson

Superintendent, The Crosby at Rancho Santa Fe, San Diego, Calif.

What's your favorite beverage following 18 holes of golf? An iced tea. If I'm feeling a little crazy I might make it an Arnold Palmer. Although, I do miss Gatorade in a glass bottle. I think it tasted so much better back then.

If you were going to go on America's Got Talent, what talent would you bring to the table? I have no talent that America would be interested in watching on national television.

What's your favorite maintenance tool?

The Drill & Fill. We use it everywhere because it's simply an amazing and effective piece of equipment that provides immediate and long term improvements to the turf and soil. So, if you are reading, Drill & Fill Manu-



facturing, I think that promo plug is worth a free set of drill bits.

Where are you originally from?

That's a difficult question. It would depend on the definition of "originally." I am of Swedish and German descent but was born in Lawrence, Kan. I grew up in South Texas and then in Ventura County, Calif. See what I mean? Oh, and I did not become a Jayhawk – I went to Kansas State.

Are you married? Kids? A beautiful wife (Elizabeth) and two beautiful daughters (Valorie, 5 and Ella, 19 months.) Life is good.

Best part of the 2011 *Golfdom* Summit?

No.

The location (Pinehurst Resort.) Golfdom did a phenomenal job for an inaugural event. Pine-





hurst was absolutely beautiful and I thought the 1-on-1 sponsor meetings were a great way to arrange meaningful time with those sponsors that made it happen.

Ever had a reoccurring nightmare?

Yes! I'm taking a final exam in college and haven't been to class once during the semester and I don't know anything that's on the test. That never really happened to me but I bet it has happened to someone out there.

How is K-State football going to do this

year? I think being good comes in different forms. You can be the best but lose your integrity to get there. I hope my alma mater is good this year but more important to me, maintains their integrity as an organization. That's good enough for me and I can't wait for the season to start because I love Fall football.

So you're saying Kansas is going to beat them? Not a chance.

As interviewed by Seth Jones, July 18th, 2012.