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East FOUNDATION

NOVEMBER 2021

We promote the advancement of land stewardship through ranching, science, and education.

FROM THE CEO

What's So Great About the Fall?

NEAL WILKINS

What's so important about the time between the equinox and the solstice? This year, fall officially began with the fall equinox on September 22 and will conclude with the winter solstice on December 21. On September 22, the Earth's axis was exactly perpendicular to the sun. This means that the length of daylight was just about the same as the length of darkness. Until the solstice, the days get shorter, and the nights get longer. At winter solstice, the sun in the sky of the northern hemisphere is at its furthest south, and it is the longest night of the year.

In South Texas, it still seems like summer for a month or so into the fall season, but the shortening day length nevertheless has its effect. Many wild plants and animals respond to changes in day-length in predictable patterns.

One of the most predictable of these patterns is seen in white-tailed deer. For bucks, the change in day-length kick-starts the secretion of testosterone. Increased testosterone due to shortened daylight results in the hardening of antlers and the shedding of velvet. For does, the shortening day-length leads to hormonal changes that ultimately result in estrus – otherwise known as coming into heat – which is a short 24-hour period when a doe invites copulation and can be successfully bred. All of this comes together with the most anticipated time of the season – the rut. This is the month-long period when bucks tend to lose all caution while they focus on a single-minded pursuit.

Breeding is a big event for any species – but for deer there is a lot at stake. First, all the opportunity is crammed into a short season. This creates competition for breeding opportunities. Recently published work from Auburn University indicates that mature bucks develop a pulse of testosterone during the rut. When compared to younger bucks (less than 2.5 years), mature bucks have more than twice the testosterone of younger deer, but only during rut. In fact, they found very little difference in testosterone concentrations throughout the remainder of the year.[1]

In South Texas, the rut consistently peaks on or about December 21. In fact, parts of South Texas go into rut much later than other parts of Texas. For example, in the Eastern Edwards Plateau, the peak of rut can be as early as the first week of November, and in the Northern Gulf Prairies (Galveston Bay to the Sabine River), the peak can come during the final week of September.

In 2018, scientists with Caesar Kleberg Wildlife Research Institute published results of their research on white-tailed deer reproductive success.[2] They found that bucks searching for mates increased their travel movements by two- to four-fold during the rut. During this same period, bucks lost significant body weight (up to 30%), mostly because they reduced their time foraging. For bucks, the most successful mating strategy included repeatedly traveling among small groups of does, with the idea of breeding the most receptive mates.

Fall con't.

This strategy requires good time management as well as a good memory of locations to breed the maximum number of does. This is where mature bucks were most successful. Younger bucks were successful mainly during the peak of the rut when more females were receptive than could be easily bred by mature bucks. In other words, young bucks sneak in at the peak of business.

Breeding is an important event and one worth fighting for – but only if strategies like extra energy reserves, time management, and spatial memory result in two dominant bucks tending the same doe at the same time. Then the score must be settled.

So, here is the big question. What are the circumstances under which two mature bucks would go to battle? This is a rare and dramatic event – and it is what most deer hunters in South Texas really want to see. Two mature bucks fighting over a female. This confrontation happens when bucks of equal dominance encounter the same doe that is ready to breed.

Experience, body condition, persistence, and time management all play a role in what happens during the rut. When all else is equal, and breeding is at stake, the fight is on. All of this is a natural consequence of a simple change in the angle of the Earth's axis.

In this issue of our newsletter, you will read more about what happens across our operations throughout the fall. Despite the cooler weather, shorter days, and extra time spent with our loved ones during the holiday season, it remains an important time of year for our ranch operations and for many of our science and education programs.

May your holiday season be productive and enjoyable as well.

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[1] Gomes M.A., Ditchkoff S.S., Zohdy S., Gulsby W.D., Newbolt C.H. Patterns of testosterone in male white- tailed deer (*Odocoileus virginianus*): Seasonal and lifetime variation. *Ecol Evol.* 2021;11:5320– 5330. https://doi.org/10.1002/ece3.7423

[2] Foley A.M., Hewitt .D.G., DeYoung R.W., Schnupp M.J., Hellickson M.W., Lockwood M.A. Reproductive effort and success of males in scramble-competition polygyny: Evidence for trade-offs between foraging and mate search. *J Anim Ecol.* 2018;87: 1600–1614. https://doi.org/10.1111/1365-2656.12893

SCIENCE AT WORK

Grazing in the Coloraditas

ANDREA MONTALVO

In 2014, the East Foundation set aside 19,000 acres of land to research the effects of different stocking rates and grazing systems on rangeland health and wildlife populations. The area, known as the Coloraditas Grazing Research and Demonstration Area, or CGRDA, is one of the largest grazing studies in the nation. The CGRDA comprises 10 pastures spanning three major ecological sites resulting in a mix of native open grasslands, dense mixed brush, and swaths of non-native buffelgrass (*Pennisetum ciliare*) from old root-plowed strips.

The CGRDA was set up as a working laboratory for the Foundation to examine the complex relationships between cattle and wildlife management from an economic and ecological perspective by conducting grazing research at an operational scale (large pasture size) and over a long period (to capture the variation in precipitation cycles).

Our first project on the CGRDA was designed to examine the effects of inflexible stocking rates on cattle, range, and wildlife. Phase I was defined by a combination of a high (one Animal Unit [AU] per 35 acres) and moderate (one AU per 50 acres) stocking rate in both continuous and rotational (three pasture, one herd) grazing systems.

During the treatment or grazing phase of this project (December 2015 to May 2018), the ranch experienced large swings in precipitation, with 2015 and 2016 as some of the wettest years (24 to 26 inches per year) and 2017 as one of the driest (15 inches).

Figure 1A. Aerial view of range conditions in the rotational pastures during Phase I of the Coloraditas Grazing Research and Demonstration Area on the San Antonio Viejo Ranch, December 2017.

Figure 1B. Aerial view of severely impacted range conditions in the continuous pastures during Phase I of the Coloraditas Grazing Research and Demonstration Area on the San Antonio Viejo Ranch, December 2017.

Ultimately, the inflexibility in stocking rates combined with below-average precipitation during the growing season led to our decision to defer cattle from the entire experiment in May 2018. We did this to prevent damage to our rangelands (preserve below-ground root biomass to improve range recovery) and curb economic losses of cattle. Before deferment, warm-season forage biomass in the continuous treatments declined by 80% and 65% (high and moderate stocking rates, respectively) from October 2016 to October 2017. Forage in rotational pastures declined by 18% and 27% (high and moderate stocking rates). Thus, while our rotational pastures could have held up (Figure 1A), our continuous pastures were severely impacted (Figure 1B) (See Montalvo et al. 2020 for more details).[1]

Grazing deferment lasted from May 2018 to November 2020. During this time, we designed Phase II of the experiment and took a more adaptive approach to our treatments. Adaptability and flexibility are paramount in grazing management, as demonstrated by the Phase I trial. With this in mind, how do we mimic this approach in an experimental framework that monitors various grazing levels and their impact on other biotic factors?

Our solution was to set harvest efficiency as our treatment. In other words, we took the principle of "take half, leave half" or the practice of setting stocking rates based on 25% of the total forage available to cattle to leave proportions of forage on the ground and account for losses over time.

We held that 25% harvest efficiency as a constant treatment level so that stocking rate could still fluctuate annually with aboveground biomass. In addition, we added another treatment level of 12.5% harvest efficiency assigned to pastures to test an extremely conservative grazing program. We are also looking at these harvest efficiency levels across two grazing systems, a continuous and a

Coloraditas con't.

rotational (three pasture, one herd). Stocking pastures in this way is similar to the advice a landowner would get from a government or private consultant, as 25% harvest efficiency is common practice.

This phase of the grazing study will allow us to document changes in cattle herd performance, range condition and health, and wildlife species richness and abundance through the lens of an adaptive management program over the long term.

November 2021 marked our first year of stocking rate adjustments based on annual forage standing crop (clipped samples) and grazable acreage. Stocking rates increased or stayed the same in three out of four treatments and decreased by seven AUs in the continuous grazing treatment at 25% harvest efficiency. However, there was only a 0.6% (two AUs) decrease in the total number of animal units. We hope this study provides helpful information to other cattle operators in the South Texas region on the function of their cattle program within the natural world.

[1] Montalvo A., Snelgrove T., Riojas G., Schofield L., and Campbell T.A. Cattle ranching in th "Wild Horse Desert"- Stocking rate, rainfall, and forage responses. *Rangelands*. 2020;42: 31–42.
https://doi.org/10.1016/j.rala.2020.01.006

FROM THE RANCH

Fall into Cattle Work

ZANE HERRIN

Fall brings with it the busiest season to the cattle operation. People are stretched thin while putting in long hours, and the anxiety that comes with these workings can be daunting. In August and September, we sell the remaining stocker calves against advantageous feeder cattle contract months. We also gather the bulls needed for fall turnout and coordinate with our veterinarian to perform breeding soundness exams and collect samples to test for trichomoniasis—a venereal disease of cattle that causes early pregnancy loss and occasional late-term abortions.

We begin our "fall works" in September and work cattle every week until mid-November. The spring-calving cows are gathered in the fall to pregnancy test and wean their (roughly) eight-month-old calves. Most of the cattle are gathered using a feed truck over the course of a few days before the working. This requires a significant time commitment by the unit foreman as days are still hot and the cattle move better early in the morning and late in the evening.

Our leverage point is the ability to utilize water sources to drift cattle closer to our gathering point and even use water to trap the flighty cattle. We gather the cattle from the trap into the pens then strip the cows off the calves horseback. The calves are loaded onto a trailer and hauled to our preconditioning yard at the San Antonio Viejo Headquarters where there is hay and feed.

Once the pens are cleared of the calves, we pregnancy test the cows. We utilize a portable hydraulic squeeze chute to restrain the cows to protect themselves and the people working. An ultrasound camera is utilized to confirm pregnancy status. The pregnant cows stay in their calving season with similar cows, but the opens (not pregnant) go elsewhere.

All cows staying in production are administered annual vaccines and a dewormer. Some open cows are moved to our El Sauz Ranch where they are immediately exposed to bulls from November 1st to February 1st. Older cows that are open are removed from the herd and marketed. Upon completion of the working, cattle are driven or trailered to new pastures with fresh grass so the previous pasture can be rested.

Once the cowherds have been worked for the week, we process the calves at the preconditioning yard where we administer boosters of calfhood vaccines, deworm, record weights, apply ear tags, and separate steers and heifers. We feed and ride through the calves daily for two weeks then administer one more modified live vaccine as we turn them out on grass where they will graze for 90 to 180 days.

Thanksgiving provides some relief, but it is short-lived as we start branding our fall-calving herds shortly thereafter. The cattle are gathered and handled the same way. To work the calves, we rope and drag the calves to administer calfhood vaccines, brand, ear notch, and castrate the bull calves. We sort off the dry cows (those that didn't have a calf) and deworm all the wet cows (those that did). Calves and cows are paired back together and moved to fresh pastures.

ALUMNI PROFILE

ALLIE KOHLER

Allie grew up in a small, forested town in northern Minnesota, where her simple lifestyle taught her to admire and respect the environment from an early age. Allie obtained her B.S. degrees in Biology and Natural Resources in 2018 from Northland College, where her main research involved the discovery of ultraviolet fluorescence in flying squirrels. This discovery captured audiences worldwide in outlets such as *National Geographic*, ***Nature***, *Popular Science*, *New York Times*, and *BBC*.

From Wisconsin to Texas, Allie then moved across the country where she received her M.S. degree in Wildlife and Fisheries Sciences at Texas A&M in 2020. Her thesis work involved South Texas grassland bird ecology in relation to cattle grazing practices on the East Foundation's San Antonio Viejo Ranch. Her results suggested that for some species, lower stocking rates and rotational grazing regimes may be keys to successful avian conservation efforts, which in turn support diverse ecosystems and cattle health.

Allie is currently a Ph.D. student at Colorado State University where she is researching white-tailed deer management and ecology.

In her own words:

"Conducting research at the East Foundation was an incredible experience that provided me with new skills and knowledge that I have carried with me throughout my academic career. One of my favorite aspects of working on their ranches was the chance to learn about other research projects taking place throughout the property.

When conducting bird surveys, I would frequently see other researchers in the field, and I would stop to ask about their studies. While advancing my research on birds, I also gained valuable insight into other projects involving ocelot ecology, nilgai captures, and white-tailed deer management. This interdisciplinary cross-pollination was an unexpected but highly rewarding outcome of working at the East Foundation, and I am beyond grateful to have had these unique opportunities."

Upcoming Events

NOVEMBER 30

Investment Committee Meeting in San Antonio

DECEMBER 5

Land Stewardship Ambassador Spring 2022 Kickoff Meetings

DECEMBER 6-8

Quail Surveys on San Antonio Viejo Ranch

JANUARY 10-12

East Foundation Board Meeting in Hebbronville

JANUARY 17-20

Large Mammal Aerial Surveys

JANUARY 22-23

Land Stewardship Ambassador Overnight at the Witte Museum

JANUARY 24-28

Coyote Captures at San Antonio Viejo Ranch

EMPLOYEE PROFILE

SARAH HERRIN

Sarah Herrin was born and raised in San Antonio, Texas. Her family owns a construction company and raise cattle and goats. Growing up she spent a significant amount of time in the Hill Country working and raising livestock enabling her to experience the best of both worlds in both the city and country.

As an Educator for the East Foundation, Sarah is the live presenter for the majority of our Virtual Field Lessons and she teaches at our in-person field lessons on the San Antonio Viejo Ranch. We offer Virtual Field Lessons once a week through Zoom and, on the San Antonio Viejo, we host elementary through high school students from surrounding South Texas communities.

Before working for the Foundation, Sarah worked at the Texas Wildlife Association as the administrative assistant for the Texas Youth Hunting Program. TYHP offers youth hunts that are safe, educational, and affordable. It was there that she discovered that she had a passion for educating children about the importance of hunting as a conservation tool.

Sarah enjoys the opportunity to open students' eyes to the outdoor world around them. Many students don't realize that working cattle ranches and the natural resources found on them impact all of us in many positive ways. She is proud to be part of a team that is dedicated to offering this knowledge to students across Texas.

In her free time, Sarah enjoys photography, baking, reading, and being outdoors with her animals. She lives on the San Antonio Viejo ranch with her husband, Zane.

PARTNER SPOTLIGHT

Caesar Kleberg Wildlife Research Institute

The Caesar Kleberg Wildlife Research Institute (CKWRI) is the leading wildlife research organization in Texas and one of the finest in the nation. They provide science-based information for enhancing the conservation and management of Texas wildlife. The CKWRI develops knowledge and as a result, provides information on sound management practices to sustain the ecological vitality of the region and shares these findings with land owners, land managers, conservationists, hunters, and wildlife enthusiasts.

The faculty and students of the Institute have long-standing, trusted relationships with private landowners on whose land they conduct research. An abiding respect for private landowners and the work they have done to protect wildlife and habitat is the hallmark of the Caesar Kleberg Wildlife Research Institute. In fact, the Institute works with hunters, wildlife managers, conservationists, and policy makers alike to provide scientific research that is used to manage and conserve game and non-game species.

East Foundation conducts research on our lands focused on those issues that have the greatest impact to the productivity of working ranches and native rangelands. We work closely with CKWRI students, faculty, and staff to address issues such as wildlife and rangeland response to drought and prescribed fire, endangered species recovery, invasive and exotic species impacts, wildlife conservation and management, and sustainable grazing systems.

The Grass is Always Greener

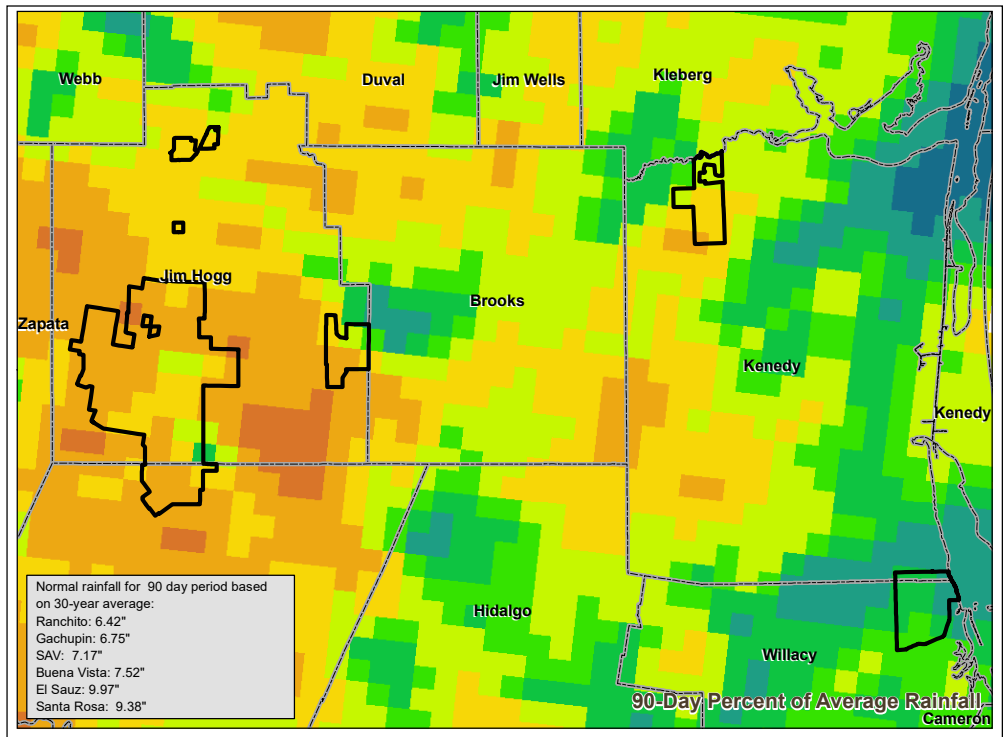
ALLIE BIEDENHARN

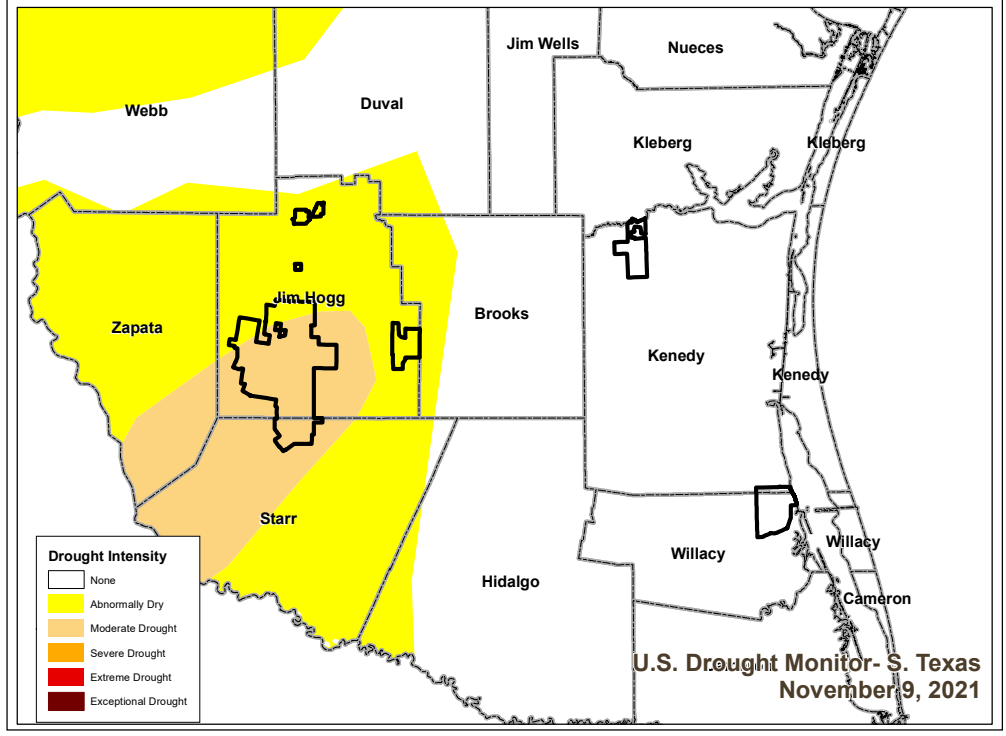
They say the grass is always greener on the other side of the fence. In our case that is true, at least for our coastal ranches where we continued our extended run of good rainfall, while further inland conditions are considerably drier. The San Antonio Viejo has certainly not fared as well as the coast, receiving less than a quarter of "normal" rainfall for this time of year.

Drought has crept its way back into south Texas, and with the onset of La Niña resulting in colder than normal sea surface temperatures across the eastern equatorial Pacific, we can expect a warmer and dryer winter for our part of the United States.

The San Antonio Viejo ranch has slipped into moderate drought conditions. We recorded only two to five inches of rainfall across the ranch over the last three months—less than one-quarter of what we normally receive this time of year.

The Santa Rosa and El Sauz ranches on or near the coast, however, continue to receive ample rain and have zero drought conditions. Santa Rosa recorded between five to nine inches of rainfall across the ranch, while El Sauz received 10 to 15 inches of rainfall.





For more information on drought and other weather events or to view information specific to your part of the state please visit: https://droughtmonitor.unl.edu.

El Sauz Education Area Construction Update

TREY DYER AND TINA BUFORD

To accommodate the growing demand for East Foundation's educational programs in the Rio Grande Valley, we have begun construction of a new educational facility located on our El Sauz Ranch located near Port Mansfield, Texas. The approximately six-acre facility will allow students to be immersed in the diversity and abundance of habitat and wildlife located on El Sauz.

A 35-foot by 70-foot pavilion situated on a concrete slab has recently been constructed and will serve as the center of activities. It has a clear view of a wildlife watering hole and the surrounding sand dune complex. Located near the pavilion is a 320-square-foot storage facility where staff can keep essential items such as tables, chairs, and supplies.

Getting an early start, our crew has been working hard on the new concrete slab that will hold the 35-foot by 70-foot pavilion. This large pavilion will become the center of activity for our education events on El Sauz.

From the main pavilion, students will travel the newly constructed, improved trail system while stopping at six learning stations along the way. A 30-foot by 30-foot pavilion situated on a concrete slab has been constructed at each station to provide a comfortable and effective learning experience.

Nestled within a new trail system, six 30-foot by 30-foot pavilions will provide seperate learning stations where our employees and partners will provide stations for students to attend. Topics include native wildlife of Texas, endangered species conservation, proper land management and its impact on water quality, cattle management, the settlement history of South Texas lands, and various technologies used in ranching.

By fall of 2022, all pavilions will be equipped with electricity to provide power to lighting and fans. This is a multi-year project with plans for restroom facilities and an observation deck located atop the nearby dunes to provide students a 360-degree view of the surrounding natural landscape, which includes a unique complex of sand dunes, pastureland, wetlands, the surrounding coastline, and oak forests on the ranch.

This project has been generously supported by our lead sponsor, Elliff Motors; three Patron level sponsors, Enbridge, Makena, and Texas Regional Bank; and five additional donors at the Sustainer level. Sustainer sponsor Las Huellas has been our partner in educating South Texas students since 2014. We look forward to hosting thousands of students at this site annually with the help of our partners and sponsors.

EAST FOUNDATION EL SAUZ EDUCATION AREA

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South Texas

WILDLIFE SYSTEMS

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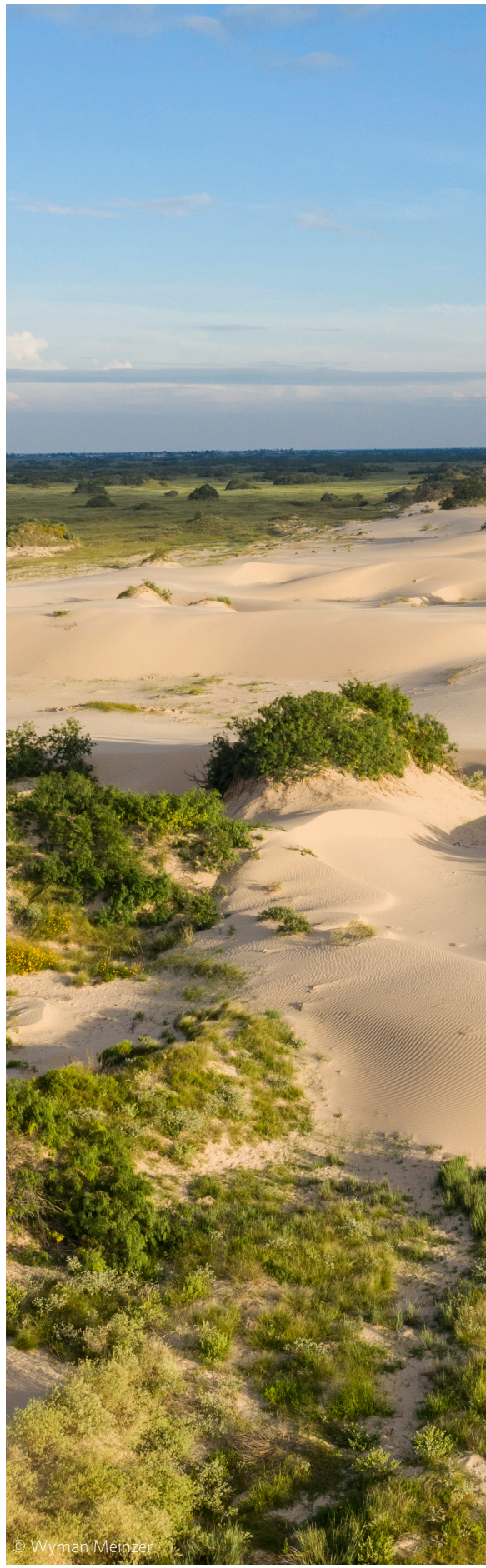

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SECURITY REPORT

Brazen and Bold

MATT ROBINSON

The fight against smugglers of undocumented immigrants continues and there is no doubt we are losing the battle. Seldom does a day go by without incident. I followed a smuggler's truck on Highway 16 almost to the checkpoint the other day. They turned around before the checkpoint at our Ranchito gate.

I continued to the checkpoint and advised the Border Patrol. They had no one to respond immediately, so the truck went to the southmost Ranchito gate, cut the chain, and put their own lock and chain on the gate. I received a call 30 minutes later from a neighbor and Border Patrol that the same truck had just crashed through the north fence of Ranchito to bypass the Border Patrol checkpoint. The truck was able to escape, and no one was caught.

The next day, I met the same truck heading south out of Hebbronville at a high rate of speed with the Highway Patrol hot on his heels. I turned to help and by the time I caught up, the truck had crashed into our neighbor's pasture and the occupants had fled on foot.

Three of the occupants were caught. Because of this incident, Border Patrol deployed cameras at Ranchito in case it happened again. I was gone from Ranchito for a day but when I came back, I noticed the chain on the gate to my house in Ranchito had been removed and replaced with a new chain and lock. Sure enough, we found the smuggler's image on the Border Patrol cameras.

The camera monitors did not pick them up because they assumed it was a ranch truck. The smugglers hauled the load through Ranchito and went right by my house at 1:00 in the afternoon.

Nobody was caught from that incident either. We left their locks and chain on the gates in hopes they would try again, and we could catch them. Every officer in the area had a description of the truck. Several days later the truck was spotted and stopped headed back to Ranchito. Here is a picture of how the undocumented immigrants were packed in the truck.

Unfortunately, this is just one example of the illegal activities happening on East Foundation ranches.

CONFUSED

Let me bring up a smuggling issue most people do not think about. When people are being smuggled through our properties, there are times some cannot make the trip and need help. They come struggling up to our ranch homes and facilities with blisters on their feet, and just wore out.

It is natural that we would want to help them by providing food and medical attention. The problem is when they receive help, the word is passed to the smugglers that help is available at our homes. As time goes by, our homes become known as places that provide assistance.

We need to remember that this assistance is given to people that are not only trespassing on our property, but in the United States illegally, and through criminal smuggling operations. I know it is very hard not to help people in need. However, for the safety of our ranch staff and guests, it is best to wait for Border Patrol to arrive to give them assistance. We do not want to promote any illegal activity on East Foundation even if our intentions are good.

EPIPHANY

I was sitting on my backyard swing under an old oak tree a few days ago when all a sudden my eyes crossed. When they uncrossed, I realized something had hit me on top of the head. I looked and noticed a grapefruit-sized acorn (maybe not quite that big) still traveling upward after bouncing off my head. The first thing that came to mind was that it is amazing how fat the deer and turkey are this year.