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ESTIMATING DEER POPULATION SIZE

by Charles A. DeYoung

Inventory of deer is the most basic of the various types of information that managers and researchers collect. Some argue that inventory is not needed if careful data are collected on things like weights of harvested animals or bites taken on preferred brush plants. Nevertheless, inventories, censuses, or surveys are universally attempted in order to monitor deer populations. Following is a synopsis of the evaluation over the years by Caesar Kleberg Wildlife Research Institute researchers of 4 techniques used within Texas to survey deer.

Helicopter

Helicopter surveys for deer work well for larger acreages in regions like South and West Texas with low brush and canopy coverage of less than 50%. However, they do not work well in forested areas with dense and tall trees.

Advantages include the ability to collect data on a variety of species in addition to deer such as quail, hogs, and predators. Helicopter surveys give a good, quick look at habitat conditions and fence-line issues. Data such as does/buck and size classes of bucks tend to be pretty accurate, although subject to variation from count-to-count.

Disadvantages are that counts from a helicopter are quite variable from survey to survey. Surveys only a week apart can provide a very different tally of deer. Therefore, it is best to view trends in a series of counts versus putting a lot of weight on a single survey.

Accuracy can vary from 15 to 65% of deer counted, depending on conditions on the day of the survey and density of the brush. Fawns tend to be undercounted more than adult deer, perhaps by as much as 30%. Winter surveys tend to result in more deer seen versus autumn surveys, but fawns can be difficult to distinguish versus adult deer. Helicopter rental is not cheap, so there are cost considerations for this technique.

Editor's Note: Dr. Charles DeYoung is a research scientist at the Caesar Kleberg Wildlife Research Institute and professor emeritus at Texas A&M University-Kingsville.

This Issue

By The Numbers

4–5.5 length in feet typically obtained by the adult western coachwhip snake (Texas Snakes: Identification, Distribution, and Natural History, J.E. Werler and J.R. Dixon, University of Texas Press)

6 or 7 typical number of eggs laid in the clutch of the black-crested titmouse (Handbook of Birds of the World, Vol. 12, del Hoyo et al., Lynx Edicions)

Camera

Camera surveys provide a good option for smaller properties, but may be difficult to execute over thousands of acres. A camera density of 1/100 acres or less is best, and surveys should last at least 2 weeks. Surveys can be done along deer trails and at watering sites, but the number of photos obtained may be low.

Individual bucks can be identified by unique characteristics of their antlers during camera surveys, day or night.

Most camera surveys are done at feeder sites or over bait piles. A delay of 3 to 5 minutes between photos will make reviewing of the photos more efficient.

If cameras are placed over feeders that are surrounded by fencing, fawns will not jump over the fence and, thus, will not be photographed until late autumn or winter when they are capable clearing the fence. However, fawn counts can be obtained by placing a second camera at each site facing outside the fencing. If surveying over feed, adult deer counts will be biased toward bucks, and fawns will be undercounted until winter.

Camera survey results are usually an undercount of total deer numbers by perhaps 20 to 30% and may not provide accurate sex ratio or fawn survival counts in the autumn. However, they can provide accurate counts of bucks based on antler characteristics.

Spotlight

Night spotlight counts can be an inexpensive way to inventory deer. Spotlight counts are most useful in relatively open habitats; however, they do not work well in dense brush or forest.

Spotlight counts tend to vary from count-to-count so it is best to take an average of several counts, up to 5 or 6 if feasible. Deer tend to bed down early in the night when most spotlight counts are conducted. More deer will be counted in the middle of the night, but few observers want to stay up that late.

Ideally, spotlight counts should be several miles long. It is best to have 2 observers in the back of a truck, each shining a spotlight on only one side of the route. Sex ratio and fawn survival data are best if collected using binoculars to view each pair of eyes shining in the spotlight. However, this means the truck has to be stopped often and significantly slows the count. Biologists use a more sophisticated method called distance sampling to estimate deer numbers from spotlight surveys, but this will not be covered here.

Drone

Recently, there has been interest in using drones to survey deer. Daytime regular optical video from drones is not useful in surveying deer. Deer generally do not run from drones and very few will be detected from regular video.

Thermal cameras used on cool or cold nights work better and many detections are clearly deer. However, frequent "blobs" are detected that are hard to interpret. Are they deer, or hogs, or livestock, or some other medium-to-large sized animal? Drone pilots cannot compensate well for variation in altitude as the drone is flown over hills and valleys. This results in variation of strip width covered by the drone and

There is increased interest by wildlife managers in using drones to conduct surveys for deer.

introduces variation in calculating the results.

Perhaps the main barrier to drone surveys is that a pilot's license to fly at night with relatively expensive thermal cameras carried by larger drones is out of reach for most managers. Research may eventually result in protocols for useful drone surveys of deer. However, at present, results may not be reliable. Certainly, regular optical video from recreational drones will not provide reliable deer counts. ~

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http://www.ckwri.tamuk.edu

CKWRI NEWS

Two Advisory Board Members Retire

Many people support the Caesar Kleberg Wildlife Research Institute (CKWRI) and believe in its mission. One critical group of enthusiasts is the CKWRI Advisory Board. Until this year, the board was composed of 21 passionate supporters from across the state.

This past spring, **Jim McAllen** and **Dick Jones** stepped down from the advisory board after serving for 35 years. Both are from storied

CKWRI Advisory Board members honor retiring members Jim McAllen and Dick Jones (seated L to R) with emeritus status.

South Texas ranching families and became advisory board members in 1984, 3 years after the CKWRI started. Over the past 3 and a half decades, Jim and Dick have been steadfast in their support, thoughtful in their guidance, and generous with their time and treasure. They have opened their ranch gates to CKWRI students and scientists. They have represented the multitudes of South Texas ranchers whose passion for the land and its wildlife makes the region a conservation gem. They have established endowments to support the CKWRI into the future. Best of all, they will remain connected to the CKWRI. Jim and Dick are the first CKWRI Advisory Board members granted emeritus status. So, while their ties to the Institute will loosen, the CKWRI will still benefit from their wisdom and love of South Texas. Congratulations to Jim and Dick and thanks for all you do for wildlife conservation. ~

IS A SUMMER BURN A "HOTTER" BURN?

by Sandra Rideout-Hanzak, David Wester, and Jose S. Avila-Sanchez

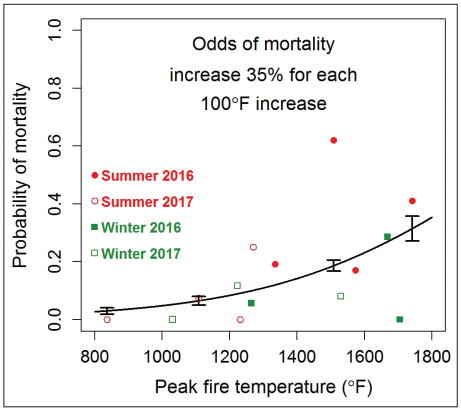
If you've ever planned a prescribed fire, one of the first questions you thought about was "When should I burn?" And, you might have received a lot of advice about that. Some people likely told you that you need a "hot, summer fire," and that a winter fire would be too "cool."

It's true that different seasons of burning have produced different results in a variety of ecosystems. And, we can tell you it sure feels like you just opened the gates to Hell when it's over 90°F and you light a prescribed fire. But, what do the data tell us about fire temperature during different seasons? Is a summer fire really "hotter" than a winter fire, and is it as simple as winter vs. summer?

We have an ongoing prescribed fire study in which we are comparing winter burning (January–February) with summer burning (July–August) in gulf cordgrass communities along the South Texas coast in Willacy and Kenedy counties. We burned 2 pasture-sized plots (at least 500 acres each) in the summer and 2 in the winter during both 2016 and 2017. As part of that study, we used temperature data loggers to determine the peak fire temperature in each burn. The data loggers themselves were buried in the soil for protection from the extreme heat, and a heat-resistant temperature probe was placed at the ground level in an area that represented the average fuel load (amount of grass).

In gulf cordgrass, we found that fuel load was not directly correlated to high fire temperature as it is for other grassland fuels. Perhaps this is because of the volatile oils found in gulf cordgrass. We did find that gulf cordgrass was more likely to die in a fire when we recorded a higher peak temperature than a fire with a lower peak temperature. Our high temperatures ranged from just over 800° to nearly 1800°F, and the odds of a gulf cordgrass plant dying increased about 35% for every 100° increase in temperature regardless of season (see figure below).

While the highest temperature was recorded during summer 2016, the lowest high temperature was recorded during summer 2017. Additionally, winter 2016 burns recorded temperatures very nearly as high or higher than both summer burns. Statistically, there were no differences between high temperatures in summer and winter, and there was no greater mortality of gulf cordgrass from summer burning



Higher fire temperature causes greater mortality of gulf cordgrass.

Editor's Note: Drs. Sandra Rideout-Hanzak and David Wester are research scientists at the Caesar Kleberg Wildlife Research Institute and professors in the Department of Rangeland and Wildlife Sciences at Texas A&M University-Kingsville. Mr. Jose Silverio Avila-Sanchez is a graduate student in the Department of Rangeland and Wildlife Sciences working with Dr. Rideout-Hanzak.

Did You Know?

Adult male alligators are typically longer in length than adult female alligators.

Badgers are solitary animals except when the mating season occurs.
(The Mammals of Texas, W.B. Davis and D.J. Schmidly, Texas Parks and Wildlife Press)

than from winter burning. But, there were differences in mortality between the 2 summer burn seasons. The summer 2016 burn treatments resulted in much higher mortality of gulf cordgrass than summer 2017. Mortality from both winter burn treatments varied, but was lower than summer 2016 and similar to summer 2017.

It is human nature to attempt to simplify. But, sometimes fire effects are complex and difficult to explain. When we look at plants, we can't see what they are "doing." We can't see how busy they are at the cellular level when they are greening up during the spring or when they are sending carbohydrates to the roots during late summer.

It is easy for us to forget that plants are actually "doing" anything, but we know they are. Plants are investing energy into different processes at different times of the year, and every year presents a perennial plant with a unique set of environmental circumstances ranging from rainfall to temperature to insects to grazing pressure.

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A CKWRI student lights a prescribed fire.

Our results show that heat generated by summer and winter burns is not different in gulf cordgrass, and that gulf cordgrass responded differently between the 2 summer burn years. We conclude that while season of burn is an important consideration, it is not the most important determinant of results. Growing conditions before and after burning have a greater effect on gulf cordgrass response than season does.

We recommend that the timing of prescribed burning in gulf cordgrass be based on available soil moisture, weather patterns, and plant stress. We also recommend winter burning over summer burning if growing gulf cordgrass forage is an important objective. This period is also important because summer burning can result in heat-related hazards to burn personnel. ~

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What Do They Eat?

The thirteen-lined ground squirrel forages on grasses and herbs in spring and seeds, flower heads, and insects later in the season.
(The Mammals of Texas, W.B. Davis and D.J. Schmidly, Texas Parks and Wildlife Press)

Ladder-backed woodpeckers dine on various insects, including beetles, caterpillars, and ants, and will occasionally eat fruits.
(Handbook of Birds of the World, Vol. 13, del Hoyo et al., Lynx Edicions)

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