

Survey Results and Interpretation

Recent research suggests that camera surveys may underestimate the number of does and fawns in a population. Where this occurs, using camera surveys alone may incorrectly estimate doe-to-buck and fawn-to-doe ratios (herd composition) and underestimate the total population. Incidental deer observations should be collected in addition to conducting camera surveys each summer. Data collected through these methods provide additional herd composition data which can be compared with those collected through camera surveys. If warranted, adjusted herd composition ratios may be applied to camera survey data to obtain "adjusted" population estimates. Remember, regardless of the survey method used, the result is a population estimate and not a true count.



Sample Survey Calculations

Acres surveyed = 600

Camera sites = 6
(1 camera per 100 acres)

Consecutive survey days = 10

Total # of deer photographed = 196

Bucks = 36
(Individual bucks identified = 11)

Does = 108

Fawns = 52

Use the ratio of individual bucks identified (11) to the number of bucks photographed (36) as the population estimate multiplier: $11/36 = 0.31$

Estimated Population:

Bucks = 11

Does = $108 \times 0.31 = 33$

Fawns = $52 \times 0.31 = 16$

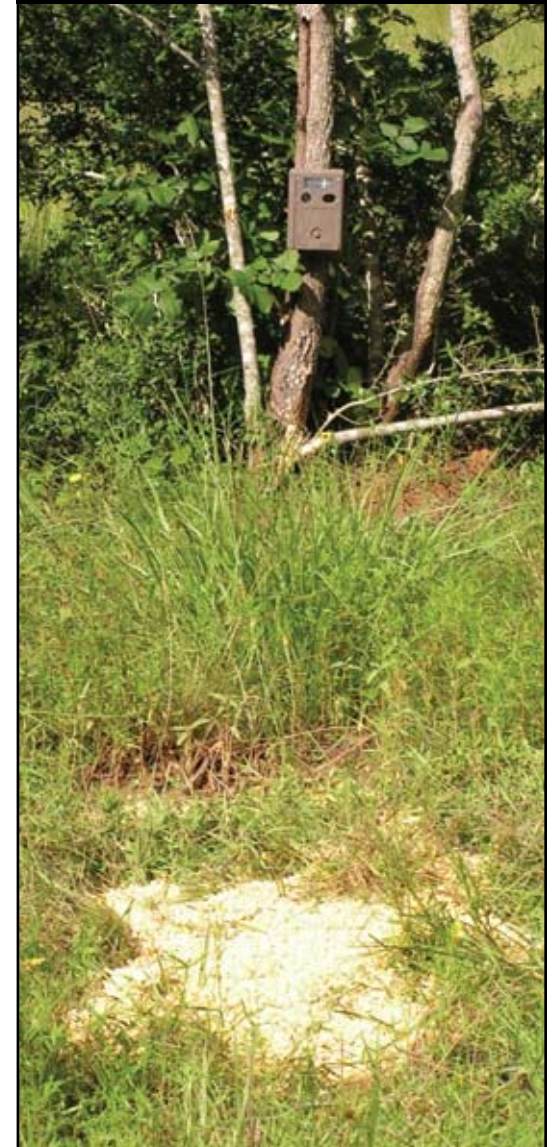
Total Population = 60 deer

Acres per deer: $600/60 = 10.0$

Doe-to-buck ratio:
does/bucks = $33/11 = 3.0$ or 3:1

Fawn production:
fawn/doe = $16/33 = 0.48$ or 48%

Surveying White-Tailed Deer Populations Using Infrared-Triggered Cameras



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Importance of Deer Surveys

Collecting reliable biological data is the backbone of a white-tailed deer management program. In order for a deer management program to be successful, the manager must diligently monitor trends in population density, herd composition, body condition, and habitat quality. Collectively, these data allow deer managers to make informed management decisions that will help maintain a stable and healthy population.

Deer Survey Methods

Since the early 1930s, researchers, biologists and land managers have used drive counts, pellet-group counts, aerial surveys, track counts, winter harvest surveys, vehicle mortality surveys, thermal infrared imagery, spotlight surveys and remote sensing to estimate the age, sex, and number of deer in local populations. Due to their low costs and relatively high precision, the Texas Parks and Wildlife Department has primarily used spotlight surveys to estimate statewide deer densities for decades. Spotlight surveys have also been the most recommended method for density estimation on private lands. However, spotlight surveys are most accurate in habitats with high visibilities and lack of forested cover.

New, Alternative Survey Method

With recent advances in technology and the innovative ideas of wildlife biologists, the use of infrared-triggered cameras (a.k.a. game cameras or trail cameras) has emerged as an acceptable alternative to spotlight surveys for estimating herd composition and density of deer populations. This method can be especially useful for surveying deer on relatively small tracts of land, properties without all-weather roads, and in densely forested habitats. In addition to estimating herd composition and density, the camera technique allows hunters and managers to determine the age structure and antler quality of bucks in order to decide which bucks should and should not be harvested.

Survey Timing

The accuracy of infrared-triggered camera surveys depends upon the ability to attract deer from all age and sex classes to baiting stations. This is best accomplished using whole, shelled corn in late winter, after breeding season has concluded, and before antlers have dropped. However, in order to determine the number of does and bucks which need to be harvested, density and age and sex ratio estimates are often desired prior to the fall hunting season. Research conducted in Texas indicates that relatively precise survey results can be obtained by conducting surveys during September and October. Surveys conducted during September and October ensure that (1) fawns are old enough to accompany does to feeding locations, (2) hard mast has not begun dropping in large quantities, drawing deer away from bait stations, and (3) bucks have completed antler growth, allowing the hunter/manager to identify individual animals.

General Instructions for Conducting Infrared-Triggered Camera Surveys

1. Conduct the survey during September and October to obtain population estimates, sex ratios and fawn recruitment prior to the hunting season.
2. Position cameras near high deer use areas such as food plots, natural food sources, and deer trails dispersed evenly across the land tract at a rate of one camera per 100-160 acres.
3. Install cameras on a tree or suitable post facing a solid-colored backdrop such as heavy brush to eliminate background movement and unidentifiable deer. Backdrop should be 50-150 feet away from camera. Face the camera either north or south to avoid sun glare.
4. Eliminate standing grass, tree limbs, debris, feeders, and other obstructions that may interfere with the complete photograph of deer up to about 50 feet in front of the camera.
5. Place corn on the ground approximately 10 feet from the camera. Turn off all automatic feeders during the survey period. Prebait the area 4-6 days before you begin taking photographs.
6. Install and set the camera to record date and time. Set the sensor unit to a 5-10 minute delay.
7. Photograph deer at each station for 10 days. If cameras are limited, each camera may be rotated to a new unphotographed station each 10-day period.
8. Check stations daily to ensure bait is available and cameras are functioning properly.
9. At the end of the survey period, analyze all of the photos and tally the total number of bucks, does, and fawns. Then use antler characteristics, pelage, and body traits to identify the number of individual bucks photographed. Do not include unidentifiable deer.
10. Enter the data obtained from Step 9 into the appropriate formulas and perform calculations to determine the estimated population.

