WHITE-TAILED DEER

Movement and Mortality Rates

Results from an Auburn University Study, Compiled by Ray Metzler, AFC Wildlife Biologist

It occurs in the forests every fall . . . slightly less than 200,000 hunters spend over 4 million man-days pursuing Alabama's white-tailed deer annually. Changes to hunting regulations and widely utilized self-imposed club harvest restrictions during the past decade have influenced survival rates and movements of white-tailed deer. These regulation changes and self-imposed harvest restrictions are a few reasons why many hunters now spend a great deal of time and money trying to learn as much as possible about survival, movements, and whereabouts of deer on their property. The Auburn University School of Forestry and Wildlife Science, with financial assistance from the Division of Wildlife and Freshwater Fisheries, the Westervelt Company, and three individuals recently finished a two-year survival and movement study in four areas. Two were conducted in public wildlife management areas (WMAs) – Barbour and Oakmulgee; two on private land, in Marengo and Pickens counties.

(Continued on page 20)

Deer were captured using a sedative injected intramuscularly by dart gun, tagged and fitted with a transmitter, then released.

White-Tail Deer: Movement and Mortality Rate

(Continued from page 19)

Adult male and female deer were captured using a sedative injected intramuscularly with the use of a dart and dart gun. Each captured deer was fitted with ear tags and either an orange or brown collar containing a transmitter that allowed the researchers to locate the animal. Orange collars contained GPS units that determined locations at given intervals. Hunters on and around the four study sites were requested not to shoot deer with orange collars, so the maximum amount of movement data could be obtained. Brown collars had a mortality sensor that activated after eight hours of inactivity. The sample of deer wearing brown collars was used to determine age- and sex-specific mortality rates.

Mortality

A total of 79 individual deer comprised the sample used to investigate causes of mortality. Of the 30 mortalities documented throughout the study, 23 were hunting related. Natural mortality was relatively low and accounted for only five of the observed deaths. Post-breeding exhaustion (one), hemorrhagic disease (one), and three natural mortalities of unknown causes made up the identifiable natural mortalities. Two of the 30 mortalities could not be categorized as either natural or hunting related.

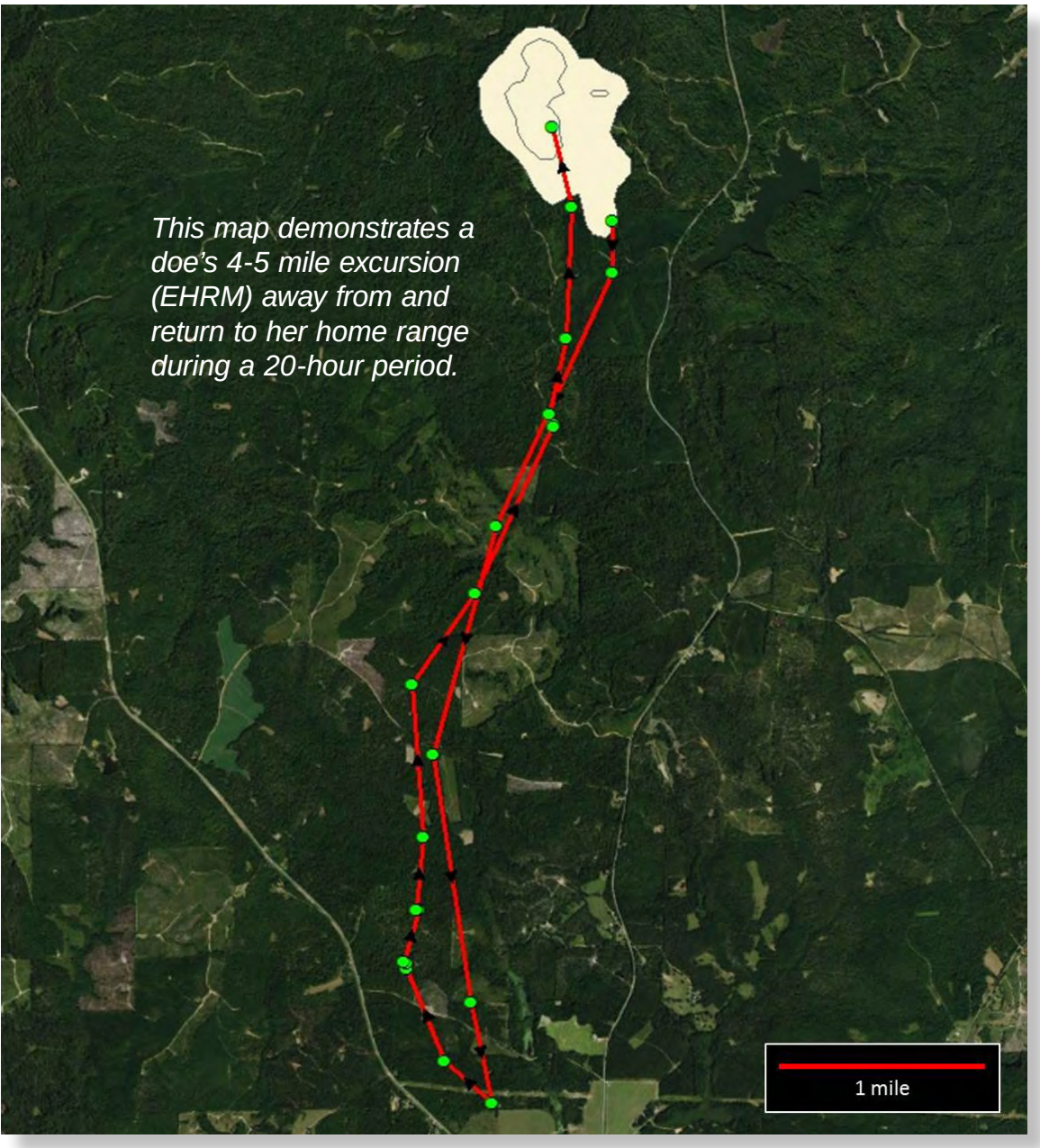
Adult males experienced lower survival rates than females, and mature deer (3.5 years of age or older) had lower survival than immature deer (less than 3.5 years of age). The data support the thought that hunters select for older age class deer, regardless of gender. The annual survival (32 percent) of mature males was lower than reported in other studies conducted throughout the Southeast. Harvest rates for both males and females were similar when comparing public land and privately-owned study areas. No mortality was attributed to deer-vehicle collisions. This anomaly may be attributed to the rural nature of the study areas as it is apparent that Alabama's white-tailed deer do experience some mortality due to vehicular collisions, especially in more urban areas where there are more vehicles.

The study results suggest that natural mortality plays a small role in limiting the adult portion of Alabama's white-tailed deer population. Fawns were not targeted for collaring in this study, although results may have varied if fawns had been collared. Hunters often call coyotes the scourge of the earth, voicing their belief that they are a serious predator of white-tailed deer. Coyotes have been the focus of several recent studies and population control efforts by hunters and managers. Some previous studies support the belief that coyotes can negatively impact fawn recruitment and limit population growth, especially when coupled with high hunter harvest of female deer. Hunters and managers should monitor fawn recruitment and harvest rates on their hunting property to maintain a stable, healthy population of white-tailed deer.

Movement

A total of 33 deer comprised the sample used to evaluate movement and displacement of deer in this study. Man-days of hunting was greatest on weekends for both public and private lands. Nocturnal movement [occurring in the night] was consistently greater than diurnal movement [occurring in the daytime] through-

Right: Use of a receiver and directional antenna facilitates in locating tagged deer.



out the study for both bucks and does. Daytime movement of deer decreased significantly when comparing Friday to Sunday but increased to normal levels again by Wednesday. Differences in daytime movement of mature and immature female deer was not discernible in this study. However, the movement rate of mature males was 10 percent less during daytime hours than immature males and net displacement was 31 percent less. Total distance moved during diurnal hours decreased by approximately 28 percent from Saturday to Sunday. Decreases in movement rate and net displacement support most deer hunter's beliefs that 'pressured deer' become more 'nocturnal' and tend to hang out more in a core area where they feel secure.

Bucks were more likely to undertake an excursion or extra home range movement (EHRM) than does. The greatest number of EHRMs for males was 26 EHRMs over 387 days for a yearling male, and 27 EHRMs over 455 days for an adult male. The 30-day period prior to mean conception date for each study area was the period in which EHRMs were most prevalent. This indicates that the search for receptive mates is a driving factor leading to increased activity during that magical time of year ('the rut') for Alabama deer hunters.

On average, female EHRMs extended 805 meters farther than male EHRMs. However, males took 1.6 times more EHRMs than females. The furthest EHRM was 12,276 meters undertaken by a one-year-old male over an 84-hour period before returning to its home range. This excursion was characterized by nearly continuous movement. Average duration of EHRMs was 15.8 hours. The one-hour period before or after sunrise was the period in which the highest percentage of EHRMs began. Researchers suggest that EHRMs are typically brief in nature because deer recognize the point at which the danger of continuing appears to outweigh any remaining potential benefits. They therefore return to their home range within a matter of days. Juvenile males in this study exhibited dispersal activities that were preceded by EHRMs to their final home range sites.

Data from the study highlights the importance of hunters minimizing their movements and approaching hunting areas from downwind. It is important for hunters to be as 'invisible' in the woods as possible throughout the year, but especially during the hunting season.

Use of game cameras has become quite common for many hunters to monitor local deer populations and antler development throughout the year. Periodically, a deer shows up on camera that was never seen before and may only be seen in pictures for a day or two. These studies seem to support a notion that these random camera sightings could possibly be the result of an excursion or EHRM. The results also point out the need to always be ready during the hunting season because that 'buck of a lifetime' may show up unexpectedly and never be seen again if you aren't prepared to shoot!

Editor's Note: The information for this article was obtained from the theses of Kevyn Wiskirchen and Todd Jacobsen, both former students of Dr. Stephen S. Ditchkoff, William R. & Fay Ireland Distinguished Professor, Auburn University School of Forestry and Wildlife Sciences. Each thesis is available electronically for downloading from the following website: https://etd.auburn.edu/.