



## *Deer Associates eNews*

News from the Deer Research Program at the Caesar Kleberg Wildlife Research Institute

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### **Living in an Oven: Deer Movements during Summer in South Texas**

**By Dean Wiemers**

The influence of environmental variables such as temperature and wind on movements and habitat selection of white-tailed deer has been intensively researched in northern climates. However, there has been little research on effects of environmental variables on deer behavior in subtropical climates like that found in southern Texas. Understanding how these factors influence deer behavior is important in making management decisions that could affect your deer herd. For example, resource managers often choose dense areas of brush for brush management. Clearing woody plants may increase herbaceous forage for wildlife and cattle, but it may negatively affect the deer herd because deer may depend on those areas to stay cool during the summer.

#### **Background & Objectives**

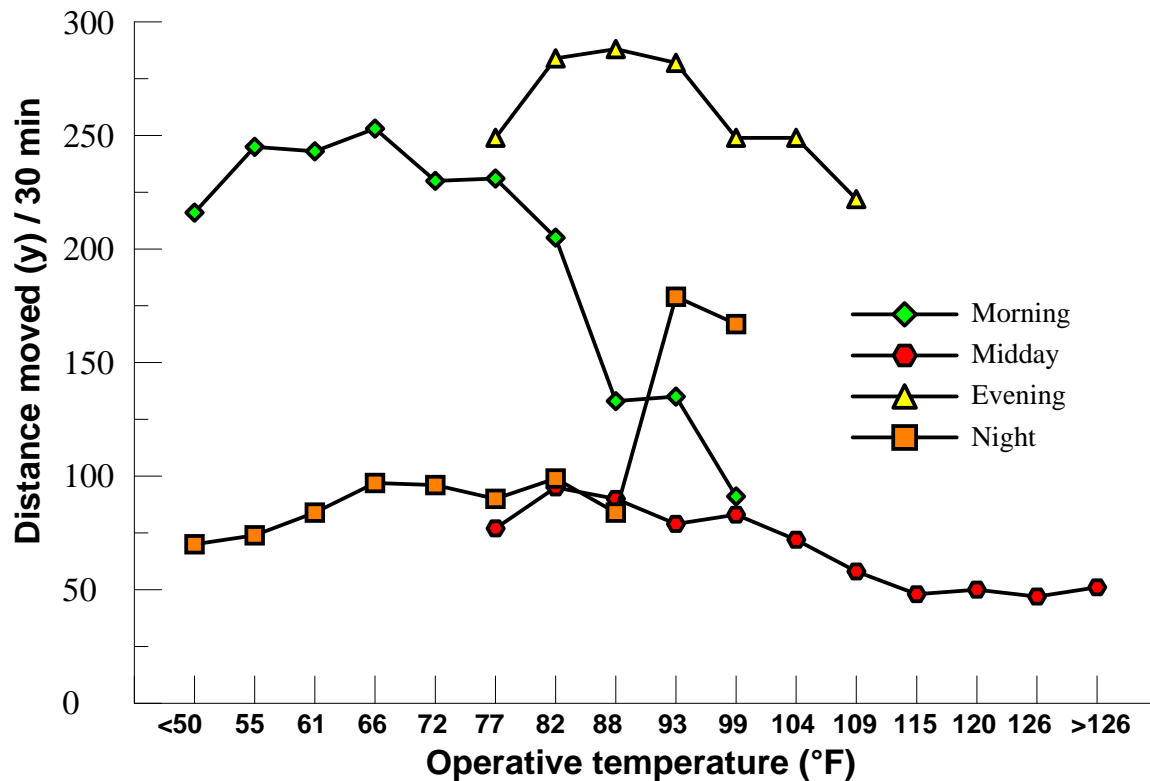
High temperatures can challenge deer in many ways, such as by increasing water requirements and energy expenditure. To reduce heat loads and maintain energy balance, deer reduce activity and may seek cooler micro-habitats such as the shade beneath woody plants. For example, researchers from Texas Tech University found that deer densities during summer were higher in areas with 60% to 97% brush canopy cover than in areas with less canopy cover.

One of my research objectives was to determine at what temperatures deer reduce activity and the effect of wind velocity on deer movement. The old adage of hunters is that if wind is blowing too hard, deer won't be moving. I investigated if this was true in the summer when wind may promote activity by helping cool the deer.

I computed 'operative temperatures' to measure the heat experienced by deer because operative temperatures incorporate not only the air temperature but the heat an animal gains from the sun and from hot objects in the deer's environment, such as the ground. Wind velocities were measured using a weather station. Eight white-tailed deer bucks were caught and outfitted with global positioning system (GPS) collars that took locations of each deer every 30 minutes from March 20, 2008 to August 20, 2008. I also partitioned each day over the five month study into four time periods: morning, midday, evening, and night.

#### **Results**

Deer began to reduce activity in the morning when operative temperatures were greater than 82° F. Deer drastically reduced activity during midday and moved little when operative temperatures exceeded 104° F. When daytime temperatures were extremely hot, night-time temperatures tended to be hot as well. Deer were inactive during the hottest days and had to forage at night to maintain energy balance. Consequently, night time activity was greatest during nights when operative temperature was highest. Wind velocity did not appear to influence deer activity. Additional analysis will help determine what plant communities deer seek when temperatures soar in southern Texas.



Operative temperatures and distances moved by white-tailed deer bucks during four periods of the day from March to August. Distances moved are given in yards per 30 minutes.

#### What do these findings mean?

- Because reducing activity is one way deer cope with high temperatures, managers should ensure deer do not need to move long distances to find forage, water, and cover.
- Although wind velocity may affect deer behavior during fall and winter, there was no evidence deer movements changed with wind velocity during summer. This suggests late summer camera surveys should be just as productive on windy days as calm days.
- A consequence of temperature effects on deer behavior is that deer will not be active and visible when it is hot. Thus, seeing few deer during summer does not necessarily mean deer populations are low.
- Nocturnal activity is likely to be higher during hot nights; not because deer like hot nights but because they like the hot days associated with hot nights even less.

#### About the Author:

Dean Wiemers is a Ph.D. student at Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville. Under the guidance of Dr. Timothy Fulbright, Dean is studying environmental factors that influence white-tailed deer habitat selection. For more information on Dean, check out his [webpage](#).