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DMP Parents Don't Pass Bigger Antlers To Wild-Born Offspring

By Colleen Schreiber on Wednesday, April 24, 2024

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SAN ANTONIO – Raising big bodied, big antlered bucks is something of a pastime for a number of Texas landowners and deer managers. For many it's simply a fun kind of pastime; for others it's become an intensely studied and intensely applied, well-honed practice.

There are many who are attempting to manipulate the genetics of a deer herd in their mission to raise these big bucks, and there are many tools available to try and aide this process along, particularly in Texas. One such tool is the Deer Management Permit (DMP) which authorizes owners of high-fenced properties to temporarily detain white-tailed deer in breeding pens located on the property for the purpose of natural breeding. In essence it is an attempt to manipulate the population of wild genetics by selecting large antlered, large, bodied bucks to breed with wild does in the hopes of passing those better genes on to the population as a whole.

The essence of a question posed at a recent Deer Associates annual gathering was does this tool really work? Are genetics alone enough to produce trophy bucks?

Joe Hediger, DVM, and graduate student at Caesar Kleberg Wildlife Research Institute shared some of what he and other scientists found on this topic, a culmination of 15 years of research work done on the Faith Ranch in southwest Texas. Specifically, Hediger focused on that part of the research looking at early life conditions impact on the morphology of white-tailed deer, namely antler size and body size.

Two hypotheses were formulated, the first being that male whitetails born into a DMP will have larger bodies and larger antlers compared to wild deer with no DMP ancestry. As Hediger noted, this particular hypothesis questions the impact of what researchers refer to as the "silver-spoon effect", which as the name implies means special conditions are available to enable the offspring to get a boost early in life.

The second hypothesis was that male whitetails born in the wild to DMP born parents will have larger antlers and larger bodies compared to wild deer with no DMP ancestry. More specifically, they wanted to know if DMP born parents could influence the average antler size and body size of their offspring.

The study area was in the western Rio Grande Plains of South Texas near Carrizo Springs. Within the Faith Ranch, two 1100-acre pastures served as the study site. Enclosed with eight-foot-tall fence, feeders and water stations were available every 90 acres. The release pasture housed the two five-acre DMP enclosures. Within each DMP there were two feeders and one water station.

In November 2006, all the native whitetails were removed as best as possible in the release pasture, while the eastern pasture was left alone making it the control. At the same time, each of the five-acre DMPs were populated with 15 wild does and one wild buck taken from an adjacent pasture.

After 11 months, the does and their fawns were turned into the 1100-acre release pasture. This pasture then became known as the transgenerational treatment because after a period of time the offspring from DMP parents began raising their own offspring enabling them to test their hypotheses.

To maintain a density of one deer per 10 acres, untagged yearlings and adults were removed through hunter harvest. Any deer that entered the study were captured as fawns, marked and released. This enabled researchers to know with 100 percent certainty the age of the deer. Those deer were then recaptured annually with an aerial net gun and measurements recorded for each individual deer.

Any deer captured in subsequent years that did not have a tag was culled all to keep densities similar between the control and the transgenerational release pasture. This process led to nearly 2000 capture histories of over 500 individual whitetail bucks over 15 years.

Hediger shared the antler score results by size and age. Looking across age class, the antler size for individuals born and raised in the DMP exceeded the antler size of bucks in the transgenerational treatment and the control. However, the antler size for deer in the transgenerational/release pasture were similar to those in the control.

Additionally, researchers found that antler size peaked for the deer born and raised in the DMP at 7.5 years of age, a year earlier than those in the control and the transgenerational treatment.

As for senescence, which basically is when a deer's age begins to impact body size and antler size, they found that for the DMP it was at 8.5 years of age; for the control and the transgenerational pasture, it was 9.5 years of age.

"We didn't expect the difference in senescence between the three groups," Hediger said.

They also did not anticipate what they found with respect to change in body size. Across all age classes, DMP deer were smaller bodied when compared to deer in the control and the transgenerational/release pasture.

Specifically, the body weight for individuals born and raised in DMPs and the control pasture peaked at 7.5 years of age, but it was at 8.5 years of age in the transgenerational treatment.

As for senescence, deer began losing weight at 8.5 years of age in the DMP and the control and at 9.5 years of age in the transgenerational treatment.

"We did not expect to see such a dramatic difference in body size in our DMP enclosures," Hediger reiterated.

They exhausted possible reasons like rechecking the body size of the individuals populating the DMPs to ensure they had not selected smaller bodied does and bucks. They were similar to other pastures, Hediger said. They also wondered if it could be due to high densities in the DMP resulting in a nutritional effect. They ruled that out as well because the deer in the DMP were on ad libitum feed and water.

"We believe the effects that we saw in the DMP born individuals body size had to do with the environment the individual experienced in utero and the first four months of life," Hediger told participants.

He further explained that does receive environmental cues that affect their physiology and behavior. These cues are transmitted to the growing fetus. Thus, the doe in a sense prepares the fawn for the environment it is likely to face as an adult.

"We surmise that the DMP born fawns may be programmed to allocate all their energy into their antlers at the expense of body size given they were born into a relatively safe environment with no predators and ad libitum feed," Hediger told the group.

Summarizing, Hediger told the group that there was a site dependent senescence effect.

"The DMP antlers start to decline at 8.5 years of age; the control and transgenerational treatment at nine years of age," he reiterated.

Furthermore, DMP antlers peaked at 7.5 years of age and the control at 8.5 years. Also, the DMP antlers were consistently larger than the antlers of the deer in the control. This was not a surprise given the sires were originally selected based upon antler size.

However, again it was surprising individuals born and raised in a DMP did not pass on their large antler phenotypes to their offspring although they did pass on their small body size.

"There was little effect on the population of the DMP-sired offspring," said Hediger. "Even though we didn't see transgenerational effects with antlers, we did see it with body size in the pasture with individuals with DMP ancestry."

He added that the DMP born individuals had larger antlers and likely higher reproductive success because they were born into a more favorable, controlled environment which set the stage for their future.

"This would fit the silver spoon effect," said Hediger.

However, big picture DMP born and raised individuals did not influence improving the average antler score of their offspring.

"This is important because if the goal is to boost antler scores in the population, DMP alone is unlikely to do so," Hediger said.

Put another way it is possible to improve the average antler scores of the population of deer by consistently releasing DMP born individuals, but any improvement comes from using those DMP individuals and not transgenerational born individuals.

"It's a very effective tool at raising large antlered individuals, but the silver spoon effect is not passed on to their offspring," Hediger concluded.



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