

Deer, Predators, and Drought

New research holds surprises

By Rory K. Aikens
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An ongoing research project on the 3-Bar Wildlife Area near Roosevelt Lake is helping biologists to better understand--and to an extent redefine--the predator-prey relationship.

The study's findings so far indicate that predators may have a more significant impact on deer populations than biologists previously thought. The prevailing biological belief is that habitat conditions are the primary controlling factor for deer populations, not predation. The long-term deer study at the 3-Bar is punching holes in parts of biological theory, and others.

Jim deVos, research chief for the Arizona Game and Fish Department, says the findings have many biologists scratching their heads. **Despite a prolonged drought, biologists are seeing deer densities within the predator-proof enclosures rivaling those in places like the prime whitetail country of the southeastern United States. Yet deer densities outside the 3-Bar enclosure have experienced significant declines during that same period.**

Professor Warren Ballard with Texas Tech, one of the principal researchers on the department's deer study, says, **"Deer numbers inside the enclosure are around 10-times higher than the surrounding country.** One of our challenges is determining all the factors of why that is so."

Professor Paul Krausman, a renowned

wildlife biologist with the University of Arizona, is also involved in the project.

3-Bar is a unique outdoor lab The 602-acre Walnut Canyon Enclosure in the 3-Bar Wildlife Area is located in the Tonto National Forest. The Walnut Canyon Enclosure is a fenced area of almost one-square mile that provides a unique outdoor wildlife laboratory for biologists.

This predator-proof enclosure has been used for more than 30 years to study mule deer declines and for other research as well. Two mule deer declines have been documented in the western United States since the 1960's. The exact reasons for declines are varied and often difficult to pinpoint.

"The original 3-Bar mule deer study in the late 1970's found that fawn survival was 30 percent greater inside the enclosure than outside during a six-year wet period. The current 3-Bar study shows that despite one of the worst droughts in the past 700 to 1,000 years, fawn survival has remained high in this predator-proof enclosure", says deVos.

Outside the enclosure during the drought, fawn survival rates and mule deer populations have plunged to the lowest numbers in the past half-century.

During 2002, which was the driest year in Arizona's recorded history, the fawn-to-doe ratios within the enclosure were 100 fawns per 100 does. Outside the enclosure in Game Management Unit 22 the ratio was 18 fawns per 100 does. "The only significant difference between the two areas is the absence of predators in the 3-Bar enclosure," Ballard says.

Deer Capture helps research efforts

A recent deer capture provided an opportunity to assess deer nutritional condition as part of the process to better understand the interaction between habitat quality, deer nutrition, predation, and fawn

survival.

Eight deer were captured inside the enclosure and seven deer in the habitat outside the enclosure. The captured deer were fitted with radio telemetry collars so biologists can track them and determine their habitat use. The radio collars will also send out a "mortality signal," so that biologists can determine the cause of death.

A student working on his doctoral thesis in wildlife biology at Texas Tech, Rugilio Carrera, is conducting a vegetative analysis to compare vegetation inside and outside the enclosure on a seasonal basis.

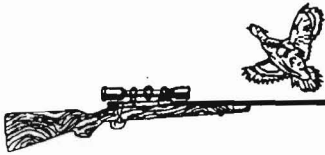
Carrera, an exchange student from Mexico, says one question he is trying to answer is whether the high density of mule deer within the enclosure is negatively impacting the vegetation.

A prevailing wildlife biological belief is that deer numbers can reach a density at which they will negatively impact the vegetation, such as on northern Arizona's Kaibab Plateau during the 1930's. A browse line as tall as a deer can reach and eat standing on its hind legs still can be discerned on the Kaibab today.

DeVos says a nonscientific appraisal of the 3-Bar habitat is that the deer are not impacting the vegetation. "Some of the top wildlife biologists in the field, such as Dave Brown, have looked at the habitat and not readily detected overuse by deer. The threshold of when deer densities impact habitat may be much higher than we ever believed possible, at least in this habitat type."

Portable ultrasound used to assess deer nutrition

Dr. Ole Alcumbrac, a wildlife veterinarian working with the department on the project, used portable ultrasound equipment during the deer capture-and-
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release operation to determine the thickness of each deer's layer of fat. The ultrasound machine also allowed Alcumbrac and Scott Bender, a veterinarian with the Navajo Nation who was helping with the capture effort, to determine whether or not the does captured were pregnant. All but two of the does were pregnant, and most were carrying twins.

"The ultrasound equipment allows us to do a body fat assessment on live animals. In the past, we could collect such information only on dead deer, usually at check stations during the fall hunts. The new technology gives us real-time data on live deer," Alcumbrac says.

Carrera explains that vegetation quality and quantity data are being collected from the 3-Bar study site quarterly. Biologists are measuring vegetation inside and outside the enclosure to observe possible changes in habitat quality on an annual and seasonal basis.

Annual deer drive conducted

"Once a year, we conduct a deer survey where every animal is counted. Therefore, we know exactly how many deer are in the enclosure, including how many fawns, does, and bucks. We even know their ages," deVos says.

Deer are counted during a deer drive each fall using 60-100 Game and Fish Department employees, interns, and volunteers. "We form a long human line across the entire enclosure and walk from one end to the other. Each animal that passes through the line along the way is counted. Believe me, it's not an easy task because most of the enclosure has steep rocky terrain, with dense vegetation, including lots of Cholla cactus," says deVos.

3-Bar study challenges theories

The 3-Bar deer study findings challenge many accepted biological theories.

For instance, de Vos says, biologists have long believed that deer are "density" dependent, which means that once deer density ratios get high, deer experience a reduction in fecundity--the physical ability to reproduce. "That's not happening on the 3-Bar. That tells us that density dependency may not be a valid theory or that the threshold for it is much higher than anyone thought."

Another generally accepted biological theory is that habitat conditions, not predation, control deer numbers. "That theory may be true when weather and habitat conditions are good, such as our study during the 1970's in the 3-Bar.

However, we have had a decade-long drought in 2002--the driest year in recorded history--yet deer numbers, densities, and reproduction have remained as high as during the wet years," de Vos says. "The absence of predation is the only variable that has changed."

Rory K. Aikens is a public information officer in the Arizona Game and Fish Department's Phoenix office.

Bold text added by editor for emphasis.

Editor's Note: This is one of the best studies HUNTER'S ALERT has ever printed. It leaves nothing to doubt about the effect predators have on mule deer. For fourteen years, HUNTER'S ALERT has stated that we have a serious predator problem and that is the main reason for the decline of our deer. For fourteen years, NDOW has used the following excuses for the decline: 1. Drought, 2. Wildfires, 3. Bad winters, 4. Juniper-Pinon pine, 5. Cheat grass, 6. Invasive weeds, 7. Number of high-speed highways, 8. Expansion of decadent shrubs, 9. Urbanization, and finally 10. The most recent, thousands of deer being killed on Nevada highways which is of course, a lie. These excuses now total ten. However, none of them include predators.

For all these years, the ignorant appointees of the governor on the Wildlife

Commission went along with all of NDOW's excuses. We have a nine-member Wildlife Commission of which five are supposed to represent sportsmen. They are not doing this. The leadership in Nevada Department of Wildlife, Terry Crowth and the Wildlife Commissioners who set policy for NDOW should be replaced for their failure to do their job. If they had any sign of a conscience, they would all immediately resign for selling out the sportsmen and our deer herds. Being this uninformed on wildlife issues shows they never should have been appointed in the first place. **It's bad enough to be dumb when you are appointed** but they continue to be ignorant on wildlife issues years after being appointed! This proves a new way of appointing wildlife commissioners should also be in order.