

The Bobwhite Post

By Dr. Fidel Hernandez and
Dr. Lenny Brennan

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Richard M. Kleberg, Jr. Center for Quail Research
Caesar Kleberg Wildlife Research Institute
Texas A&M University-Kingsville

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Graduate Student Spotlight: Steve DeMaso

By Dr. Fidel Hernandez

We are pleased to announce that Steve DeMaso has recently joined our quail research team as a Ph.D. student. However, Steve is no spring chicken in quaildom. In 1992, he received his M.S. Degree in Range and Wildlife Management at Texas A&I University under the supervision of Dr. Fred Guthery. He also helped supervise the Packsaddle Quail Research Project in Oklahoma for several years. Steve currently serves as the Upland Game Program Leader for Texas Parks and Wildlife Department.

For his doctoral research, Steve will analyze the radiotelemetry data that we have been collecting for the South Texas Quail Research Project. Steve will develop a model depict-

ing population dynamics for bobwhites in South Texas based on weather, survival, predator abundance, usable space, and other important factors. Welcome aboard Steve!

Calvin Quail Perfume

By Dr. Fidel Hernandez

The week of January 19, 1999 will always be a memorable week in my graduate education. I was in my graduate ed-
nary Exams Week and squirm. Preliminary exams (often called) are often called) than a exhaustive your cerebral cap graduate committee. This is quite exhaustive. Just completing the written portion of the exams represents a writing bout of about 5 straight days, writing around the clock, 8 to 5, with only quick lunch or rest room breaks. And on January 19, 1999, I found myself in the middle of my doctoral examination. There I was, staring thoughtlessly into the last question of Exam 3, without the slightest idea of how to produce a credible answer.....
"Physiologically speaking, what is the origin of scent of a quail?".....

If we are ever able to produce banner quail populations year after year, I suspect that the next big question in quail hunting would be, "How can we improve scenting con-

ditions?" The passing of each successive hunting season always manages to resurrect intriguing discussions that all revolve around quail scent. How many coveys are my bird dogs missing?...what hunting pattern will result in more covey finds?...how are bobwhites outwitting my bird dogs?

Jason Hardin, a graduate student under the supervision of Dr. [redacted], has begun to investigate these questions. This hunting season, Jason began collecting information by placing GPS collars on bird dogs, which would delineate the exact route for each bird dog. In collaboration with the South Texas Quail Research Project (STxQRP), he then would follow behind the hunting party, GPSing the hunting route itself while monitoring any radio-colored coveys in the vicinity. This



Photo by Jason Hardin

During the 2001-02 hunting season, graduate student Jason Hardin began documenting bird dog productivity. He fitted bird dogs with GPS collars to document bird dog pace, ranging distance, and area covered.

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setup allowed us to spatially evaluate the hunting route and the bird dogs' paths in relation to radio-collared coveys. From this information, we can assess the dynamics of the hunter-covey system and begin to document specific information on bird dog performance. Jason will be able to calculate an average ranging distance, coverage area, and pace of bird dogs.

During the 2001-02 hunting season, we were able to monitor over 30 hunts. Preliminary results suggest that bird dogs traveled at an average speed of 6 mph. In order to calculate area covered, we had to estimate the distance from which a bird dog would be able to detect a covey. Relying on the knowledge of experienced hunters, we estimated that bird dogs were able to detect quail scent at a maximum radius of about 10 yards. Therefore, bird dogs were covering an average of about 21 acres/hour. The average ranging distance from the hunting party was about 30 yards.

Jason was able to replicate his study at another site northwest of the STxQRP study area. An interesting note is that there are habitat differences between these 2 sites. The STxQRP study area may be characterized as open rangeland with scattered brush mottes. The second study area has a more uniform distribution and greater coverage of brush. This raises the question, "How does brush coverage and distribution affect bird dog performance?" It is intuitive to speculate that a greater coverage of woody cover could possibly slow down a bird dog's pace. However, despite these habitat differences between the 2 areas, Jason documented that bird dog performance was similar. Bird dogs at the second study area also travelled at an average speed of 6 mph, covered 21 acres/hr, and ranged about 30 yards from the hunting

party. Both sites hunted from quail trucks and used primarily pointers. Perhaps in Jason's study, the speed of the hunting party and the hunting style characteristic of pointers exerted a greater influence on bird dog performance than brush coverage.

The productivity of bird dogs as the season progresses also is a subject of much interest to quail hunters, especially in south Texas. In this region, green vegetation can be relatively abundant in November and December. Many hunters suspect that scenting conditions improve after the first "killing" frosts in January. If this is true, then we would expect the number of covey finds to increase after the first freezes arrive in south Texas.

We compared number of covey finds/hr between pre-frost (Nov-Dec) and post-frost (Jan-Feb) months. At the STxQRP study area, we documented that covey finds increased from 1.29 coveys/hr during Nov-Dec to 2.42 coveys/hr during Jan-Feb. However, at our second study area, covey finds/hr remained constant at 1.65 coveys/hr. We should keep in mind that other factors besides habitat also change as the season progresses, such as bobwhite behavior in response to hunting. Improved scenting conditions may be counteracted by quail becoming "bird dog savvy" later in the season.

.... "Physiologically speaking, what is the origin of scent of a

quail?" I came to my senses after about 3 minutes of mindless staring. My only thought was to make a wise crack about quail scent and a Calvin Quail Perfume. However, I knew that humor wasn't going to get me out of this predicament. I seemed to recall that Herbert Stoddard had written some thoughts on quail scent in his 1931 book, relating the phenomenon of quail scent to a "trail of smoke" following quail. When quail were in motion, a "trail of smoke" would temporarily trace their path. When quail "froze" in response to danger, the "smoke trail" would disappear. In 1990, Dr. Kevin Gutzwiller from Baylor University proposed a more scientific hypothesis. Dr. Gutzwiller speculated that quail scent originated when bacteria metabolized dead cells and the body residues and secretions present on them. Unfortunately, I was unaware of Dr. Gutzwiller's hypothesis at the time. So in my response, I proposed the secretions of the avian preen gland as a possible answer. Birds apply these secretions to their feathers using their bill, primarily for feather maintenance. However, I also mentioned Stoddard's "trail of smoke." What did my committee member grading the exam think? He was willing to consider the preen gland hypothesis. However, in regards to Stoddard's idea, he questioned whether I really knew the answer, or if I was just blowing smoke!



On Point



... and Counterpoint

The Importance of Insects for Quail

By Dr. Lenny Brennan

Consider the following data from a classic bobwhite quail diet study published in 1910 by Margaret Nice. Based on trials where foods were fed experimentally to bobwhites, on average, quail were calculated to eat, during the course of a year, the following: Male bobwhites: 56,430 insects, 5,379,168 weed seeds; Female bobwhites: 74,475 insects, 5,063,520 weed seeds, Bobwhite chicks: 65,001 insects, 4,926,520 weed seeds. Although this study was conducted >90 years ago, it has important implications for quail management today.

Under the right conditions, a pair of quail can raise from 12 to 25 chicks per year, and in good habitat can attain densities between 0.5 to 5 acres per bird. Thus, quail have the potential to consume millions of insects (including pests) and tens of millions of weed seeds when these numbers are extrapolated to the landscape.

Quail eat insects because they need protein. Of the two sources of protein available to them (insects and plant material) it is easier to convert insect protein into quail muscle, feathers, etc. than it is to convert plant material into quail protein. This is especially important for young quail, and hens.

Young quail eat insects exclusively for at least the first two weeks of their life. They are growing so fast there is no way that plant seeds and

greens can provide the protein they need to grow. Gradually, they switch over to a diet dominated by seeds and greens, but only after they have reached adult size, usually by 12-15 weeks.

Hen quail eat 500% more insects than male quail during the breeding season, even though they both have similar diets during the fall and winter. Why? Well, one reason is that when a hen quail lays a clutch of eggs, she is processing a volume of protein into those eggs that is nearly equal to her entire body weight. It is much more efficient to convert insect protein into egg protein than it is to convert seeds and greens into egg protein. Thus, hen quail eat an enormous number of insects, especially in the breeding season.

There are several management strategies that can be used to develop a buffet of bugs for quail. We do this by manipulating vegetation, typically with fire, or perhaps with mechanical means such as disking. When vegetation grows back after being burned or disked, the young succulent shoots are tender and have few chemical defenses against insects. Thus, the flush of vegetation after fire or disking also contains a

flush of insects. The combination of young vegetation, abundant insects, and patches of bare ground (which has not yet been completely covered by the regrowing vegetation) provides an ideal setting for quail to consume insects. This is why quail numbers typically respond so well to management disturbance actions such as fire and disking, especially if followed by good rainfall. Not only is there good, new cover to where the birds can move to and hide from predators, there is also a cornucopia of insects, on or near the ground, where the quail can get them.

While we know that insects are critically important for quail, as wildlife researchers, we want to know the best ways to provide these food resources. For example, is it better to disk during early winter, or late winter? When is the best time to apply fire and get the best response from both vegetation and insects. How does cattle grazing influence quail habitat and insect abundance? These, and many other related questions, will be addressed by the quail research program at the Caesar Kleberg Wildlife Research Institute over the next years. Stay tuned!



Selected Classic Reference

Nice, M.M. 1910. Food of the bobwhite. *Journal of Economic Entomology* 3:295-213.

Quail Quips:
*Interesting findings in
quail research*

Habitat Management for Bobwhites: A Necessary Evil?

By Dr. Fidel Hernandez

At a quail management gathering last year, I heard a presenter state that the answer to maintaining quail on your property was.....HABITAT, HABITAT, HABITAT. Following this opening statement, he provided an overview of the various management practices aimed at creating or maintaining quail habitat. His discourse left no room for doubt that habitat management was the key to a quail hunter's paradise. However, could this panacea also result in harmful side effects?

The red imported fire ant has caused much controversy for quail biologists. The debate concerning fire ants and the quail decline continues, at least on a regional scale. And now there may be more fuel for the fire. Ironically, habitat management for quail may also be habitat enhancement for fire ants.

Studies have reported a positive correlation between fire ant density and habitats maintained by disturbances. Thus, while disking and burning may improve habitat con-

ditions for bobwhites, they may also make habitat more suitable for fire ants.

Andrew Forbes from Texas Tech University and others addressed this concern in a recent study in Refugio County, Texas. Their study consisted of monitoring fire ant densities prior to disking and burning, as well as approximately 3 months and 1 year after disturbance. They reported no difference in fire ant densities between treatments. They speculated that one explanation for the lack of positive response of fire ants to disturbance related to whether the ant mounds were single queen or multiple queen mounds.

Single queen mounds are territorial, which limits their density in a given area. However, multiple queen mounds lose their territoriality and can therefore reach higher

densities than single queen colonies. It is estimated that multiple queen mounds occur at a rate of about 54% in Texas. However, Forbes et al. found that about 32% of their mounds were multiple queen. Because their pretreatment densities were high (about 70 mounds/ac) and already close to the maximum density for single queen colonies, they speculated that fire ant density consequently did not increase following disturbance. Other studies which did document an increase in fire ant densities following disturbance were conducted in areas with relatively low mound densities (e.g., 4 mounds/ac).

Although disturbances may increase fire ant densities, I still believe the benefits of habitat management outweigh the risks. Until next time... *Fidel Hernandez*

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