



Photo by Fidel Hernandez

FROM THE FIELD: La Codorniz Pinta: How do you monitor an elusive quail you may not see or hear?



Photo by Froylan Hernandez

The Lone Star state is blessed with a high diversity of quail. Of the 6 quail species found in North America, Texas has four: northern bobwhite, scaled quail, Gambel's quail, and Montezuma quail. Montezuma quail is probably the one species that the average Texan has never seen in the wild. Its cryptic plumage and defensive mechanism make this quail extremely hard to observe. Their unique appearance and strange behavior have caused

them to become known by a variety of names including Harlequin quail, fool's quail, and Cordorniz pinta (Spanish for mottled quail).

The distribution of Montezuma quail occurs primarily in Mexico, with limited occurrence in Arizona, New Mexico, and Texas. Montezuma quail are a hunted game bird in all of the US states where they occur except Texas, where it is listed as a game bird but does not have an open

season. Males are slightly larger than females and have a distinct black-and-white harlequin face. Males also have a maroon-colored chest and wings with a black-and-white checkered pattern. Females are a much duller color, which helps in camouflaging, and are mainly brown and tan with some white.

Montezuma quail begin pairing as early as February and March. Their nesting, however, occurs later in the year and coincides with the summer monsoon rains. Nests are found at the bases of bunchgrasses. Females incubate eggs for a period of 24–26 days. Both males and females share the parental responsibilities.

Montezuma quail are quite different compared to other Texas quail. For example, their habitat occurs at higher elevations (>2,000 ft) in pine-oak woodlands. In addition, although they do eat seeds and insects like other quail, a large portion of their diet consists of bulbs and tubers. They use their large feet with long nails to dig up roots. Montezuma quail also have a unique defense mechanism. Instead of escaping danger by running or flushing, they generally "freeze" and crouch in an attempt to camouflage with their surroundings. They

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RICHARD M. KLEBERG, JR.
CENTER FOR QUAIL RESEARCH

RESEARCH SCIENTISTS

ENDOWED PROFESSOR OF QUAIL RESEARCH, *Leonard A. Brennan*

ALFRED C. GLASSSELL, JR.
ENDOWED PROFESSOR OF QUAIL RESEARCH, *Fidel Hernandez*

DIRECTOR OF UPLAND GAME BIRD RESEARCH, *Stephen J. DeMaso*

ENDOWED FELLOWSHIPS

ALICE GERTRUDIS KING KLEBERG REYNOLDS FELLOWSHIP IN QUAIL RESEARCH (*Search pending*)

ELLIOT B. & ADELLE BOTTOM FELLOWSHIP IN QUAIL RESEARCH, *Damon Williford*

SAM WALTON FELLOWSHIP IN QUAIL RESEARCH, *Drew Larson*

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usually do not flush until practically stepped on. This defense mechanism of Montezuma quail is an effective strategy for evading predators. Unfortunately, it is also effective for evading researchers.

The elusive behavior of Montezuma quail has made them extremely difficult to study. Consequently, very little is known about the basic ecology of Montezuma quail. The current status and distribution of

the species remain largely unknown. In addition, no data exist on current densities and population trends. An effective survey strategy has yet to be developed, and no monitoring program exists to date.

Developing an effective monitoring program for Montezuma quail is challenging because it requires a survey technique that 1) accounts for the low detectability of the species, and 2) is practical for surveying extensive landscapes. However, recent advancements in presence-absence surveys can provide a practical solution for monitoring elusive or rare species over large areas. Research indicates that data from repeat site visits to record the presence or absence of a species can be used to estimate occupancy (the proportion of sites occupied by a species) which, in a monitoring context, can be used as a surrogate for population size.

We currently have a collaborative research project with Sul Ross State University and Texas Parks and Wildlife Department to evaluate a presence-absence approach to survey Montezuma quail in west Texas. The method involves using play-back surveys to estimate occupancy, detection probability, and abundance of Montezuma quail at Elephant Mountain Wildlife Management Area (WMA) and the Davis Mountain Preserve of The Nature Conservancy.

We evaluated the method by establishing 30 monitoring sites per study area and visited each monitoring site 5 times throughout

the summer. The visits were spaced at about 7-day intervals and occurred randomly during either morning (0700–1100 hrs) or evening (1500–1900 hrs). During each visit, we played a recording of a Montezuma-quail call for a duration of 10 minutes to invoke a call-back response. We then recorded the number of calling individuals and total number of calls during each survey.

Our first year results (2007) indicated high occupancy rates at both Elephant Mountain WMA (98–100%) and the Davis Mountains Preserve (94–100%). However, the probability of detection during an individual survey was low (30–53%). These results implied that surveys for Montezuma quail would have to be repeated at least 3 times in order to ensure detection of the species at a point given it was present.

Data collection recently has been completed for the 2008 field season, and analyses are underway. We will use these data to estimate abundance of Montezuma quail and to develop a predictive distribution map based on correlations between habitat characteristics and probability of occupancy. It may be possible that in the near future we will have monitoring protocol for the elusive Codorniz pinta. – *Cristela Gonzalez and Fidel Hernandez*

Cristela, a native of Eagle Pass, Texas, is a M.S. student with the Caesar Kleberg wildlife Research Institute at Texas A&M University-Kingsville. Her research attempts to develop a survey method for Montezuma quail in west Texas.



THE 2008 QUAIL NESTING SEASON: A DISASTER AVERTED?

One of the most important things that we have learned about quail during the past decade is how nesting bobwhite hens respond to rainfall. Of course, we have known for years that there is a direct link between abundant rainfall and good quail production. Until recently, however, the timing of the precise factors that triggered good quail production during wet years was poorly known.

The long-term South Texas Quail Research Project at San Tomas Hunting Camp on the Encino Division of King Ranch that has been conducted by Dr. Fidel Hernandez along with his students and associates has provided some important clues to the quail production- rainfall puzzle. Dr. Hernandez and his crew have followed more than several hundred radiomarked bobwhite hens for nearly a decade. What they found was that during periods of drought about only half or even sometimes well less than half of the hens attempted to nest. In contrast, during wet summers, nearly 100% of the hens attempted to nest. This difference in the proportion of nesting hens during wet versus dry years often ends up being a major factor that determines how many birds will be available for hunting in the fall and winter.

In the beginning, the 2008 nesting season did not bode well. We readily recall the recent winter, spring, and early summer drought that wildlife



Photo by Fidel Hernandez

endured in South Texas. Thankfully, we got a reprieve from this extended dry period. Sometime around the first of July, scattered rain showers began falling around South Texas, and these initially scattered and fragmented rain events developed into widespread and often steady rain for more than a week. This event, which was then followed by 8-12 inches of rain that spun off from Hurricane Dolly, was good for bobwhites in South Texas. By 31 July we marveled at green, lush South Texas rangelands that only a month earlier were crisp and desiccated.

We started the 2008 nesting season with a relatively large sample (>100) of radiomarked bobwhite hens on three different studies. These projects were initially designed to provide information on how factors such as tanglehead grass, guineagrass, and supplemental protein feed influence bobwhite breeding ecology.

Fortunately, these projects also yielded other valuable information. Some of this information is related to helping all of us understand how bobwhite hens respond to rainfall.

We began trapping bobwhites this past March, and by late May and early June, we collectively had 108 bobwhite hens radiomarked for our research projects. The months of April, May and June, were, as you know, a hot dry period with virtually no rain. During the three months of April through June, only about 20% of our radiomarked hens attempted to nest. After it started raining in July, the average percentage of hens nesting quickly jumped to more than 80% in about a three week period.

Bobwhites in Texas are obviously adapted to respond rapidly to rainfall if and/or when it finally arrives in the breeding season. Until it rains, most of the birds essentially exist in

ON POINT...

a wait-and-see holding pattern. The coveys have broken into pairs, and a few pairs make nests and a few hens try to lay eggs. However, most of the birds hedge their bets and wait for rain. By doing this they maximize their chance to have the greatest amount of annual production.

So, then, what does this mean for the quail hunter and manger later in the year after breeding concludes and hunting begins? The main thing it means, in as year like this, is that there will be a late hatch. We expect this year to be similar to 2006, another year where we did not get any spring or summer rain until early July. We expect to see small, half-grown flight-stage quail well into November or early December. We know this because the timing of bobwhite nesting events is predictable. The birds are essentially hard-wired to go through a series of nesting events that are known to take a relatively precise number of days.

Let's do the math on the timing of bobwhite nesting events. It takes at

least 17 days to lay a clutch of eggs, and then about 23 days to incubate them after the last egg in a clutch is laid, which sums to about 40 days. This means that hens that started to lay eggs in mid-July will probably produce their first broods around 15-20 August at the earliest. It then takes about 15 weeks for a quail chick to reach full adult size. This means that these juvenile birds will be full grown around the first couple of weeks in December!

Now then, consider that about half of the nesting hens will be hit by predators sometime during their laying or incubation period. We know from our video tapes of nesting events that most (about 90% or more) of the nest losses are actually only egg losses where the incubating adult bird escaped depredation. This leaves many hens the opportunity to nest again elsewhere. However, this disruption by predators will set back the hatch for some birds by several weeks or more. Could we see half grown "squealers" in early or mid December? Quite possibly. Does this mean we should wait until the

first of January to hunt quail? Not necessarily. It does mean, however, that quail hunters in December will need to have a keen eye and make split second decisions about whether to shoot or not to shoot because we do not want to kill half-grown birds, even if they can fly. We can expect that there will be widespread numbers of small partially grown flight-stage bobwhites, much like we saw at the beginning of the 2006 hunting season. Thus, with a little bit of patience, and keeping a keen eye for small birds, the 2008-2009 hunting season will probably get off to a slow start, but will ultimately—at least in places where good habitat is being maintained—be an above average year.

With our best wishes for many covey rises this quail season, we thank you for your support.

- Lenny Brennan, Fidel Hernandez, Steve DeMaso, Fred Bryant, and Tim Fulbright

Graduate Students: Cletus Buelow, Sarah Moore, and Andy Tri



Caesar Kleberg Wildlife Research Institute
Texas A&M University-Kingsville
700 University Blvd, MSC 218
Kingsville, Texas 78363-8202

Editor: Fidel Hernandez

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