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Management of Montezuma Quail in Texas: Barriers to Establishing a Hunting Season

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Montezuma quail (*Cyrtonyx montezumae*) occur throughout the desert southwest, ranging from Vera Cruz, Mexico to southern Arizona, New Mexico, and western Texas. In Mexico, Montezuma quail are a protected species and in New Mexico and Arizona they are a harvested gamebird. The distribution of Montezuma quail has changed significantly during the past century. Currently Montezuma quail are limited in Texas to the Trans-Pecos with remnant populations in the Edwards Plateau. Although Montezuma quail are classified as a gamebird in Texas, seasons are currently closed. Recently, Texas Parks and Wildlife Department has expressed interest in opening the season on Montezuma Quail. In this manuscript I review and chronicle the sociological and biological barriers associated with opening a hunting season for Montezuma quail in Texas. Sociological barriers include landowner competency and trust in state agencies, a growing voice among non-consumptive users in Texas, a localized ecotourism industry centered on Montezuma quail, and other cultural factors. Biological barriers include lack of data on Montezuma quail population distribution, trends, and abundance; lack of scientific data relative to habitat management for Montezuma quail; or studies simulating the effects of harvest on Montezuma quail. Prior to implementing a hunting season on Montezuma quail in Texas, resource agencies will need to address the biological and sociological challenges outlined in the manuscript.

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Key words: barriers, biological, *Cyrtonyx montezumae*, hunting season, Montezuma quail, sociological, Texas, Trans-Pecos

Introduction

Six species of quail occur in the United States: mountain quail (*Oreortyx pictus*), California quail (*Lophortyx californica*), Gambel's quail (*Callipepla gambelii*), scaled quail (*Callipepla squamata*), Montezuma quail (*Cyrtonyx montezumae*), and northern bobwhite (*Colinus virginianus*). The distribution of the latter 4 species occurs in Texas. Montezuma quail are unique among their counterparts in that they are considered habitat and foraging specialist (Harveson et al. 2007). Montezuma quail are strongly associated with pine-oak woodlands and forage almost exclusively on subterranean foods (*Oxalis*, *Cyperus*; Stromberg 2000).

All quail species in Texas are classified as gamebirds, but only Montezuma quail have a closed season. In 2003, Texas Parks and Wildlife Department (TPWD) proposed to open the season on Mon-

tezuma quail. The proposal was subsequently withdrawn after strong opposition from the public. The hunting public and resource agencies will need to address a myriad of sociological and biological barriers before Montezuma quail are to be hunted in Texas. For this paper, my objectives are to identify and discuss various sociological and biological barriers of establishing a hunting season for Montezuma quail.

Background

History of Montezuma quail in Texas

Montezuma quail occur throughout the desert southwest, ranging from Vera Cruz, Mexico to southern Arizona, New Mexico, and western Texas. The distribution of Montezuma quail in Texas has been greatly reduced where they are currently limited to 6 counties in the Trans-Pecos and 4 counties

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in the Edwards' Plateau (Harveson et al. 2007). Primary causes for the reduction of Montezuma quail distribution and population size is range deterioration. Specifically, land-use practices (livestock grazing) eliminated much of the herbaceous cover and foods that Montezuma quail need to survive in the Trans-Pecos and Edwards' Plateau.

Montezuma quail have had a colorful past in Texas. Early naturalists like Louis Fuertes, John Strecker, and A. Sarker Leopold provide some of the earliest literature (Fuertes 1903, Strecker 1930, Leopold and McCabe 1957) on their encounters with Montezuma quail in west Texas and northern Mexico. Following range-wide reduction of Montezuma quail in Texas, several attempts were made to restore their numbers to Big Bend National Park, Guadalupe Mountains National Park, and the Kerr Wildlife Management Area. None of those attempts were considered successful (Harveson et al. 2007).

Hunting in Texas

Although hunting in Texas generates \$3.6 billion annually (Brennan 2007), hunting in Texas is in jeopardy (Brown et al. 2003). Quail hunting has also experienced significant changes in the last 2 decades. Adams and Causey (2000) documented a decline in quail hunters from 250,000 in 1988 to 140,000 in 1999. Brennan (2007) noted that quail hunting leases may range from \$2/ac in the Trans-Pecos to \$12/ac in south Texas. Further, for the first time in Texas, revenue gained from hunting leases has surpassed money generated from cattle leasing (Brennan 2007). Subsequently, quail lessees have opted to have more control over range management conditions of their lease and have purchased grazing leases for their properties.

Proposed open season for Montezuma quail

In January 2003, TPWD proposed to open the season on Montezuma quail with a 2 quail/hunter daily bag limit and a 6 quail/hunter possession limit. Several benefits were anticipated with an open season on Montezuma quail. The first was to minimize incidental take of Montezuma quail by hunters seeking other quails (scaled quail and northern bob-

whites). Second, it was thought that TPWD would be able to market a "Texas Quail Grand Slam" (e.g., hunting trips for northern bobwhites, scaled quail, Gambel's quail, and Montezuma quail during the same year) similar to that offered by the agency for ungulates. The Texas Grand Slam is a successful public hunting program and generates considerable income for the agency. Lastly, in times when hunting opportunities appear to be declining, an open season on Montezuma quail could conceivably increase hunting opportunities and possibly increased revenues for landowners.

As with any proposed regulation change, TPWD accepted public comments on the proposed Montezuma quail hunting season via public forums, email, written letters, and phone calls. Five months after the initial proposal for opening a hunting season for Montezuma quail was posted, TPWD withdrew their proposal. The proposal was withdrawn based on public comment (58 against the proposal and 0 for the proposal) and "limited scientific data." Although the initial proposal was withdrawn from further consideration, the resource managers should evaluate possible barriers to changing the season prior to implementing an open season on Montezuma quail.

Barriers to opening a hunting season on Montezuma quail

Sociological barriers

Landowner trust.-Since Texas lands are 97% privately-owned, cooperation between landowners and resource agencies in the conservation and management of game species is essential. Private landowners can ultimately control hunting game species on their property by setting more conservative regulations than those implemented at the state level. In the Trans-Pecos, where Montezuma quail are more prominent, land use trends are changing. Compared to 50 years ago, traditional cattle ranches are less common, ranches are being bought for recreational uses, absentee landowners are becoming the norm, and average ranch size is decreasing (Harveson 2007). Despite the general trends in land own-

ership and land uses, there is a general distrust of resource agencies in the region. In her essay, Nelson (1991) chronicled the history of distrust which involved issues over the Endangered Species Act, alleged land acquisition, private lands, and a proposed national park. The incidents Nelson (1991) described still affects many landowners today (unpublished data). Further, based on public forums many west Texas landowners are still upset over a season change of mule deer in 1988 and subsequently in 2004.

Non-consumptive users.-As landownership and land-uses in Texas change from agriculture-based to recreation-based (Wilkins et al. 2003), so does its clientele. Nelle (2002) noted that in west Texas, traditional ranches were being bought for recreational purposes (e.g., hunting and non-consumptive uses). One of the primary non-consumptive uses in west Texas is bird watching. In fact the Big Bend region of Texas boasts a diversity second only to the Rio Grande Valley with >500 species of birds documented for the region (Bryan 2002). Montezuma quail sightings are among the top sightings in the region and generally receive much attention by local birding groups.

Ecotourism industry.-Montezuma quail sighting are so coveted that the Davis Mountain State Park has successfully marketed their local population. Marketing strategies used to lure visitors to the park include a Montezuma quail sightings log at the front desk, photographs of Montezuma quail in various restaurants, caps and bumper stickers of Montezuma quail at their gift shop, and several viewing sites to facilitate Montezuma quail watching and photographing. More recently, other agencies and organizations have realized the successful marketing strategies used by the Davis Mountain State Park. In 2005 Big Bend National Park, which receive 500,000 visitors a year, recently rediscovered Montezuma quail on their property. They subsequently provided press releases to local papers which resulted in a flurry of birders to the Park. In fact, the Park Service is currently evaluating their fire management programs to accom-

modate Montezuma quail populations. More recently, the Chihuahuan Desert Research Institute of Ft. Davis is planning a viewing site and an interpretative display for Montezuma quail to capitalize on their Montezuma quail sightings. With such wide notoriety, Montezuma quail have been elevated to a flagship species for the Davis Mountains and other sky islands of the Trans-Pecos of Texas.

Time.-One of the biggest challenges the proposed season change faces is time. Hunting regulations are impacted by local cultures and history. With Montezuma quail being protected for >30 years, they have inadvertently become a nongame bird. Although classified as a game bird with a closed season, any changes to their status will be similar to changing a nongame animal to game status.

Biological Barriers

Population dynamics and trends.-Montezuma quail are the least studied quail species in the United States. Although there is a recent interest in the species in Arizona and Texas, no studies have provided empirical data on population dynamics. The lack of data may be attributed to their limited distribution, the inaccessibility of their habitat, and their unique camouflaging ability (Hernandez et al. 2006a). Further, Montezuma quail are difficult to monitor. Currently, TPWD does not monitor population trends in Texas as they do with other quails. In New Mexico and Arizona, trends are monitored with a combination of hunter-harvest surveys, line transects, and time-constricted field surveys using trained dogs.

The only trend data available on Montezuma quail in Texas comes from 2 sources: Christmas Bird Count database and the documentation of a range-wide loss of habitat since the 1900s. Although Montezuma quail have been accounted for in Christmas Bird Counts for Texas, their detectability is sporadic leading to no apparent trend. In their review, Harveson et al. (2007) provided historic and current distribution maps for Montezuma quail in Texas. Based on those findings, Montezuma quail populations have decreased substantially since their his-

toric times. They are limited to desert islands in 5 counties in the Trans-Pecos and a core population located in 5 counties in the Edwards' Plateau.

Effects of harvest.—Since little data is available on the population dynamics of Montezuma quail, it is difficult to ascertain at what levels (if any) harvest affects populations. Several researchers have suggested hunting mortality is compensatory (Leopold and McCabe 1957, Brown 1979, Heffelfinger and Olding 2000) but Stromberg (2000) considered Montezuma quail to be vulnerable to overharvesting that may result in possible extirpation of localized populations. Most recently, Bristow and Ockenfels (2000) conducted a study on various aspects of Montezuma quail hunters and harvest. They concluded that: (1) hunters were not concentrating to the level to affect localized populations, (2) hunting pressure and success is low on Montezuma quail with only 2 birds/hunter/day reported in the bag, and (3) the reduction in bag limits from 15 birds/day to 8 birds/day had little effect on the number of hunters or the total number of quail harvest during the season.

Further considerations

If Montezuma quail are, indeed, to be hunted in Texas, additional challenges face the hunting public and TPWD. First, how do landowners market a 2-bird bag limit? Although the distribution of Montezuma quail overlaps that of scaled quail in the Trans-Pecos and northern bobwhites in the Edwards' Plateau their habitats are relatively distinct. The ability of marketing a 2-bird daily bag limit without the added benefit of other gamebirds will be a difficult task and may reap few economic rewards for private landowners.

Second, where will TPWD accommodate public hunting for Montezuma quail? To my knowledge, only 2 state-owned properties in the Trans-Pecos have Montezuma quail: Davis Mountain State Park and Elephant Mountain Wildlife Management Area (EMWMA). Although TPWD provides some public hunting opportunities at Davis Mountain State Park, it is limited to a primitive area for javelina

(*Pecari tajacu*) during portions of the archery season. As noted earlier, Davis Mountain State Park has successfully marketed and benefited from viewing of Montezuma quail. Public hunting will likely interfere directly (inability to attract bird to viewing sites) and indirectly (repercussions from non-consumptive users) with viewing Montezuma quail. EMWMA also has a population of Montezuma quail (Hernandez 2004) and allows public hunting of various game animals (scaled quail, dove, javelina, deer, bighorn sheep). However, EMWMA is the primary brood facility for desert bighorn sheep restoration program (Brewer and Harveson 2006). Hernandez et al. (2006b) described Montezuma quail habitat on EMWMA, which coincides with habitat for bighorn sheep (Locke et al. 2005). Thus, it is unlikely that DMSP and EMWMA personnel will be willing to open public hunting for Montezuma quail.

Ultimately, the question to be asked is "Does Texas have harvestable populations of Montezuma quail?" One can not surmise from current knowledge of Texas populations, that Montezuma quail are a renewable resource that can sustain harvest. Lack of data on population status, trends, and basic life history information on Montezuma quail prohibits TPWD from changing their current status. In fact, Cooke (2007) noted that "the hunting seasons on all game animals and game birds in Texas are closed by the Legislature unless data collected by TPWD suggests that a hunt can safely be conducted on a species and this suggestion becomes a finding of fact by TPW Commission."

If Montezuma quail are to be hunted in Texas, research on their ecology will have to be prioritized. Harveson et al. (2007) addressed research needs for Montezuma quail in Texas as: (1) documenting basic biological data (survival, density, habitat use, and movements); (2) establishing and evaluating a monitoring protocol for population trends; (3) using conservation genetics to determine movements and effects of habitat fragmentation on subpopulations; (4) establishing a reintroduction protocol for efforts to restock in formerly extirpated habitats; (5) using population modeling to evaluate the effects of har-

vest on population dynamics; and (6) exploring the human-dimension aspects of opening a season on Montezuma quail (potential consumptive and non-consumptive users).

Conclusion

If Montezuma quail are to be hunted in Texas, the hunting public and TPWD will need to address a variety of sociological and biological issues prior to implementing a hunting season on Montezuma quail. Foremost, biological data is needed to better understand the population dynamics of Montezuma quail and the potential impacts of harvest on population sustainability. Second, since Montezuma quail have not been harvested in Texas for >30 years and they are the focal species for a strong ecotourism industry, it would be difficult to for the general public to accept an open season for Montezuma quail. These sociological perceptions have inadvertently elevated Montezuma quail to “nongame” status.

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