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Vulture-Cattle Interactions at a Central Florida Ranch

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ABSTRACT: Black vulture depredations to newborn livestock, poultry, and other captive animals have been reported from at least 15 states, and during the 1990s, reports of depredations increased annually by an average of 18%. In response to this issue, we initiated a study at Buck Island Ranch of the MacArthur Agro-Ecology Research Center in central Florida to examine interactions between cattle and vultures. Based on previous reports, we hypothesized that vulture predation selectively targets calves of young, inexperienced cows. To document vulture activity, we conducted point counts of vultures in pastures throughout the ranch from January 2000 to March 2001. During point counts, turkey vultures accounted for 78% of the observations compared to 22% for black vultures. We noted that vultures used certain pastures preferentially, with over 70% of the vultures in 3 pastures where heifers were calving and the remainder spread among 7 pastures containing yearling heifers only or cows and calves. Turkey and black vultures were often present during the 19 calving events we observed, but usually neither species exhibited threatening behavior toward calves or calving heifers. Instead, the birds seemed intent on gaining access to the afterbirth. On one occasion, however, we observed an attempted depredation by black vultures on a calf as it was being born. The cow was able to chase the birds off, however, and the birth proceeded successfully. We conclude that predation by black vultures occurs when the birds identify and then exploit vulnerable animals, although there is still much to be learned regarding the circumstances that promote such activity. Current management recommendations include dispersing nearby black vulture roosts and providing careful oversight to protect inexperienced cows that are first-time breeders.

KEY WORDS: bird damage, black vulture, *Cathartes aura*, cattle, *Coragyps atratus*, livestock, predation, turkey vulture

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INTRODUCTION

Although they are predominantly scavengers, black vultures (*Coragyps atratus*) also prey on live animals (e.g., Baynard 1909, McIhenny 1939, Mrosovsky 1971, Dickerson 1983). Their propensity to include domestic animals among the live prey items has been known for years (e.g. Baynard 1909, Roads 1936, Sprunt 1946, Lovell 1947). There is, however, little information on the frequency and extent of such occurrences. Data compiled from reports to USDA Wildlife Services personnel (USDA 2002) indicate that numbers of cows and calves lost to black vultures have increased in recent years (Figure 1). It is hard to interpret such data, however, because not every instance of depredation is reported so the data might represent minimal estimates of the extent of the vulture damage problem. Alternatively, these data might overestimate actual vulture-caused mortality because it is possible that not all of the reported instances were actually caused by black vultures. In Virginia, 115 incidents of black vulture interactions with 1,037 livestock animals were recorded during 1990-1996 (Lowney 1999). Vultures disabled young lambs and calves by first pecking out their eyes and then attacking vulnerable soft parts (rectum, genitals, nose). Cows giving birth were attacked in a similar manner.

During 1997 - 2002, reports of depredations on domestic animals by black vultures were received from 18 states. Virginia, Florida, Texas, South Carolina, and Tennessee accounted for 84% of the reported incidents (Avery and Cummings 2004). Depredations to cattle were reported from each of the 18 states, and overall more than half of the livestock depredation reports involved cattle. Overwhelmingly, black vulture damage to livestock was to young animals (Avery and Cummings 2004).

In January 2000, we initiated a study to examine more closely the interactions between vultures and livestock. Our goals were to quantify the use by vultures of cattle pastures during the calving season and to document the behavior of vultures in the cattle pastures, including attacks on cows or calves.

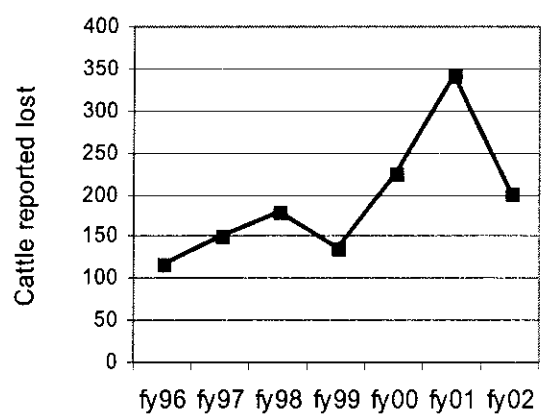

Figure 1. Losses of cows and calves to black vultures reported to Wildlife Services personnel throughout the United States (USDA 2002).

METHODS

The MacArthur Agro-Ecology Research Center (MAERC) at Buck Island Ranch is part of the Archbold Biological Station, near Lake Placid in south-central Florida. This 4,170-ha facility is a full-scale working ranch and citrus operation dedicated to conducting long-

term research on the relationships among cattle ranching, citrus production, and the native ecological systems of central Florida. The ranch typically has around 2,800 head of brood cows.

At MAERC, we established a regular route that encompassed 10 - 15 pastures used by herds having a variety of heifer (first-time breeders), cow, and calf combinations. Along this route, we conducted point counts on 34 days during January - March 2000 and on 40 days during October 2000 - March 2001 to quantify vulture use of pastures. At each stop, the observer watched for 5 minutes and recorded the number of vultures and their activity. In addition to point counts, we made observations of vulture behavior on 58 occasions totaling 60 hours when birds were seen in pastures with calves. To document behavior of individual birds, we used a baited walk-in trap to capture black vultures and then attached numbered patagial tags (Humphrey et al. 2000).

RESULTS

Vulture Use of Ranch

The total number of vultures observed during point counts, and the relative abundances of the two vulture species were consistent between years (Figure 2). Throughout the study, turkey vultures (*Cathartes aura*) were 3 - 4 times more numerous than black vultures. Both species of vulture used pastures where calving was occurring preferentially over those where no calving took place (Figure 3). Most (92%) observations were of vultures loafing >15 m from any cow or calf and we judged these birds to be no immediate threat to the livestock. Surprisingly, 3.5% of the vultures were feeding on manure, and it appeared that turkey vultures especially preferred droppings from calves. Molasses bins placed in the pastures for cattle feed also provided vultures with feeding opportunities. We observed black vultures picking at molasses-soiled grass beneath the bins, running their beaks along the edges of the blue bucket-style bins, and standing upon the rims to access the molasses solution inside.

Source of Vultures

Neither species roosts in any significant number at Buck Island Ranch. Small groups (3 - 8 individuals) of turkey vultures occasionally roost on the west side of the property in sabal palms (*Sabal palmettto*). Most birds, however, arrive daily from the south where they roost on neighboring ranch property. Small numbers of vultures begin to arrive shortly after sunrise and larger groups arrive 1 - 2 hours later as favorable convective wind currents become available. It is common to see turkey vultures arrive singly and black vultures in groups. Some birds settle into the pastures while others commute over the ranch and continue north. Whether the same individuals or groups regularly utilize the ranch and certain pastures is unknown. During the study, we trapped and marked with patagial tags 103 black vultures to learn more about the movements and behavior of individual birds. Despite hundreds of hours in the field, however, we resighted just 3 of the marked birds.

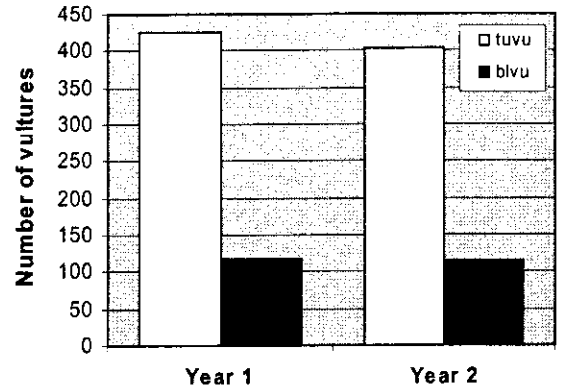

Figure 2. Numbers of turkey vultures and black vultures recorded during point count observations at the Buck Island Ranch, Lake Placid, Florida during January - March 2000 (Year 1) and October 2000 - April 2001 (Year 2).

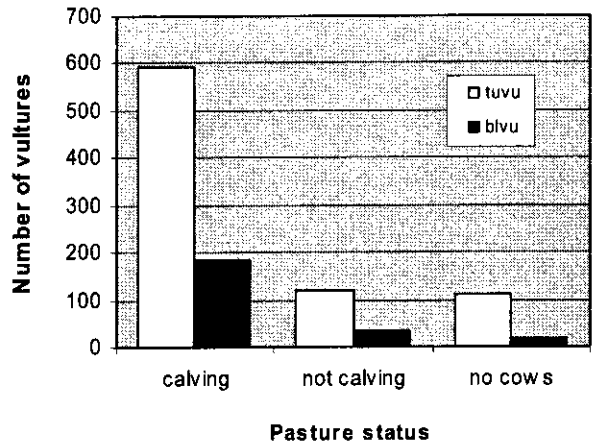

Figure 3. Turkey vultures and black vultures recorded in pastures with on-going calving activity, with cows and older calves, or with no cattle at Buck Island Ranch, Lake Placid, Florida.

Vulture Interactions with Cattle

Based on our observations in the field, not on official ranch records, mortality of livestock during the study period totaled 5 cows, 1 heifer, 2 mature calves, and 10 young calves. Many of these carcasses were left in the pastures while others were taken to the ranch dump site. None of the carcasses was buried, which created substantial scavenging opportunities that probably contributed to the vultures' presence at the ranch. Vultures were not implicated in any of the deaths. Ranch personnel attributed most losses to disease or calving complications.

Black vultures frequently appeared when there was an opportunity for scavenging either at a carcass or on the afterbirth following a calving event. In the latter case, black vultures typically descended rapidly and often in numbers greater than we thought to be present. They frequently crowded the heifer or cow and newborn calf, presumably to consume any available afterbirth. This behavior had the appearance of being aggressive, and the

heifer or cow sometimes chased the vultures to restore a comfortable distance between the vultures and the newborn calf.

We observed 42 heifers either in the process of calving (19) or with newly-born calves (23). Two heifers, each with a stillborn calf, were in such poor condition that they had to be euthanized by ranch personnel. Each of these heifers had been attacked by black vultures, but the extent to which the vulture attacks contributed to the demise of the heifers is not known. Turkey and black vultures were often present during the 19 calving events we observed. In one case, 3 black vultures approached the prostrate heifer and one began to peck at the gelatinous membrane surrounding the emerging calf. The heifer got up and chased the birds away. She then moved to another area in the pasture where the vultures did not follow, and the birth proceeded without event. In the other cases, vultures did not exhibit threatening behavior toward calves or heifers. Instead, the birds seemed intent on gaining access to the afterbirth.

Interactions Among Birds

To assess vulture interactions and feeding behavior, we placed an intact calf, dead less than a day, in the middle of an empty pasture in plain view of soaring birds. Both turkey and black vultures flew over the pasture, but over a period of 6 hours only a handful of turkey vultures landed in the pasture and none came within 30 m of the calf. We moved the calf to a pasture containing a heifer herd and placed it atop a mound of earth visible to soaring birds but close to trees used for perching. The following day, the carcass attracted 2 crested caracaras (*Polyborus plancus*). Within 10 minutes, several turkey vultures arrived and began to feed. Soon, 7 black vultures descended, and within 10 min, 22 black vultures had assembled. As black vultures arrived, turkey vultures left the carcass. Caracaras fed at will and black vultures deferred to them. Among black vultures, aggressive altercations were common, with some individuals being excluded and chased off the carcass. When black vultures and caracaras abandoned the carcass, turkey vultures returned to pick over the remains. At cow carcasses, progress was slower due to the thicker, stronger hide of the cow, and black vultures often abandoned these for better opportunities. Turkey vultures could then feed without interference, but they too would often show little interest until days later when decomposition had softened the carcass.

DISCUSSION

Extended periods of observation revealed different patterns of behavior between vulture species. The turkey vulture was the more common species. The approximately 3:1 ratio of turkey vultures to black vultures recorded in our study matches closely the overall relative abundances of these 2 species throughout Florida as determined by Christmas Bird Count observations (Avery 2004). Turkey vultures most often utilized pastures with cows or heifers and newborn calves, and many individuals loafed in pastures for hours, often in close proximity to the livestock. The turkey vultures' primary interest appeared to be the availability of yellow, pasty manure from newborn calves. We speculate that this manure from young nursing calves may be rich in partially digested proteins or fats. Black vultures were much less common and seemed to arrive most frequently to exploit a scavenging opportunity at a carcass or to feed on afterbirth from a recent calving.

One potentially useful means for reducing black vulture use of ranches is roost dispersal (Tillman et al. 2002). If the source of the problem birds can be identified then it might be possible to reduce the depredation potential by causing the birds to roost elsewhere. We were unable to apply this method at Buck Island, however, because the birds did not roost on the ranch. Instead, the vultures occupied roosts on adjacent ranch properties and we were not allowed access to those sites for this study.

It is clear from our observations that black vultures will occasionally prey on newborn livestock, as observed by Lowney (1999). Although we did not witness a predation event, we did see black vultures pecking at a calf as it was being born, and only the vigorous action of the cow prevented the birds from causing damage to the calf. An ill or weakened cow might not have been strong enough to mount the necessary defense. Our study did not find that black vulture predation is a serious or frequent problem at this ranch.

Only additional, intensive investigation at other sites will reveal the significance of black vultures as a predator on livestock. Development of effective management strategies for black vultures will likely involve an integrated approach incorporating improved livestock husbandry practices, limited lethal control of problem individual vultures, and aggressive roost dispersal, taking into account the propensity of individual birds to use multiple roost sites (Rabenold 1987, Coleman and Fraser 1989).

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