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From the Field

Suspending vulture effigies from roosts to reduce bird strikes

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TURKEY VULTURES (*Cathartes aura*) are large, scavenging birds commonly found in North America. With a wing span of 173–183 cm, turkey vultures can weigh as much as 1.4 kg and can pose a safety hazard at airports. From 1990 to 2007, the Federal Aviation Administration (FAA) reported 571 vulture strikes to civil aircraft. Of those, 313 incidents were damaging strikes causing >45,000 hours of down time for planes and costing >\$13 million. Conflicts between vultures and commercial and military aircraft at the U.S. Marine Corps Air Station (MCAS), Cherry Point, North Carolina, are ongoing; occasionally a bird–aircraft collision occurs. The most recent one was on a clear day on October 29, 2007. In this incident, a C-130J Hercules aircraft had landed and was slowing to taxi speed when a juvenile turkey vulture tried a low-speed pass over the right wing. The bird was caught in the plane’s propeller and was killed.

The MCAS Cherry Point airfield is located alongside a major river system and bordered on 2 sides by large creeks. The North Carolina coastal plain, where the air station is located, is level, sandy ground consisting of mixed pine and hardwood trees with a relatively flat forest canopy topping out at about 21 m in height. Turkey vultures seek out man-made towers here, including water towers, cellular phone towers, and other communication and electrical towers. The towers can be anywhere from 20 m to >91 m in height, penetrating the canopy and providing the birds with a panoramic view of the landscape. The water towers provided an added advantage for vultures in winter because the structures blocked the wind and also reflected the sun in the morning. Birds standing



Figure 1. Vulture effigy hangs from tower near U.S. Marine Corps Air Station, Cherry Point, North Carolina.

on the tower’s platform railing shuffled to the sunny side of the tank with wings spread, absorbing the heat. The towers were frequented in mid-day, too, as the soaring birds came down to rest before going aloft again. Additionally, the towers’ height above the forest canopy provided a strategic visual advantage for scavenging birds.

Numerous studies have examined the use of effigies to disperse vultures (Avery et al. 2002, 2006; Teague 2002; Tillman et al. 2002; Seamans 2004). The City of Havelock, which owns the water tower nearest U.S. Marine Corps Air Station, Cherry Point, gave permission to deploy vulture effigies. I hung 2 effigies at the Havelock water tower, which is within the birds’ view of the airfield and was a popular vulture roost site, in the method described by Avery et al. (2002; Figure 1).



Figure 2. Newly mounted effigies of turkey and black vultures. Note the imitation effigy, extreme left; such imitations are cheap, but less effective and quickly disintegrate.

The carcasses of turkey vultures were given to me free of charge by the Carolina Raptor Center in Charlotte, North Carolina. Raptor or wildlife rehabilitation centers often get vultures that are sick or beyond rehabilitation and have to be destroyed. They were shipped to me frozen solid. I paid a taxidermist to mount the birds at a cost of about \$200 each (Figure 2). The effigy heads are made from turkey decoy heads and were painted the proper colors and wired to the body by the taxidermist. Real heads tend to disintegrate and shrivel, while fake decoy heads keep their color and open eyes, thus adding to the overall scaring effect. If the heads come off, the effigies are still effective.

Within 2 days of the deployment of the effigies, 30 vultures dispersed from this site and joined a larger roost roughly 8 km northwest of the airfield, bringing the tally there to 63 individuals. The effigies seem to be equally effective if hung inverted with wings fully opened, partially closed, or fully closed. After hanging an effigy at the second roost, I observed that the number of vultures on the airfield dropped dramatically. Thinking that the problem of vultures invading airfield space was solved, I took down the effigies after 2 weeks, attempting to conserve them. Few vultures were seen on the airfield for about 2 additional weeks after the effigies' removal. After the fourth week, however, vultures began to return in greater numbers and swarmed over the Cherry Point airfield. In response, I

redeployed the effigies, and, again, the vultures moved away temporarily, returning after a brief absence of effigies. It became clear that the effigies at both roost sites needed to stay up indefinitely, and they were restored to the towers permanently. I started by hanging 2 effigies at each water tower, but I found that 1 effigy per structure worked just as well. On a 30-m cell phone tower, hanging the effigy at the bottom, below 30 m in height, seemed almost as effective as hanging it at the top. Few vultures visited the site, and those that did, lingered no longer than a few hours.

I observed very few vultures over the airfield after deploying the effigies, and vultures were completely absent most days. Hanging vulture effigies seemed to be effective in pushing the vultures farther away by denying them their observation point looking over the Coastal Plain near the airfield. This meant that their forage center point had been relocated far enough from the airfield that few individuals extended their range as far as the airport.

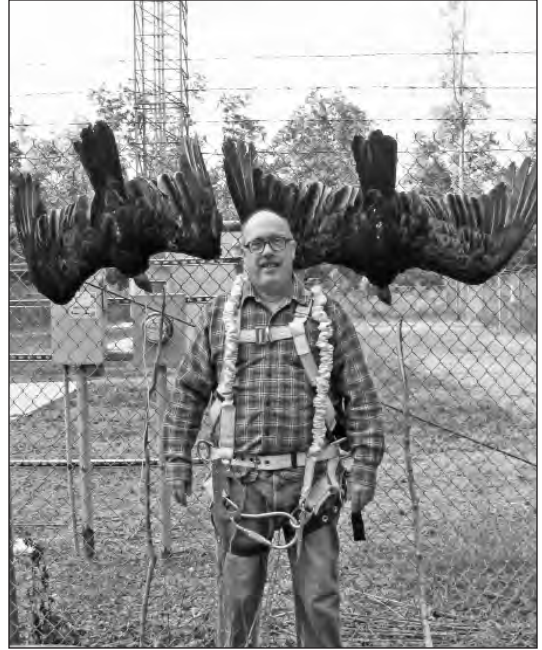
Although hanging effigies on towers near the airfield seems to be a successful method of keeping vultures at a safe distance from aircraft, many questions about the birds' behavior remain unanswered. First, there are 4 other water towers and several cellular towers within a 8-km radius of Cherry Point. Why do the birds stay off of those towers? Is it because they were painted the traditional red-and-white checked? The ones vultures chose were pastel green or blue colors. Second, why is it that they do not habituate to the effigies the way gulls do? Third, as turkey vultures age, they collect more crusty, bumpy tissue on the face. Might there be followers and leaders in vulture society, thus ensuring better food distribution and survival for all? Do the sage birds know where the best roost sites are? Lastly, 8 vultures continue to use the cellular phone tower near the 8-km radius of the base. I am in the process of an agreement to hang a third effigy there. Once that effigy is set in place, where will these 8 birds go? Are they the very birds I still observe over the airfield from time-to-time? Will the numbers diminish even more, or will a roost sprout up closer to Cherry Point along the river, creating new issues? More research needs to be conducted to answer these questions.

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