Animal Welfare-based Modification of the Rio Grande Wild Turkey Funnel Trap

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Abstract: The funnel trap has proven a safe (for handlers), efficient, low-manpower method of capturing Rio Grande turkeys *(Meleagris gallopavo intermedia).* Field biologists in Texas maintain that private ranchers accept this technique more readily than alternatives because it is passive and only requires one person. The impact of the technique on animal welfare, however, has not been addressed. In 2002, in the first year of an ongoing population ecology study, we trapped 46 turkeys using a standard walk in trap, and 40 more where a tarpaulin was slipped over the trap prior to removing birds. Using this modification, trap-related mortalities dropped from 4 to 1, serious injuries fell from 11 to 1, and minor abrasions declined from 5 to 4. Funnel traps were easily modified to minimize turkey injuries and relieve landowner concerns about injury rates. We suggest biologists consider how physical trauma to wildlife caused by capture devices influences animal welfare, trap efficiency, and public perception of wildlife management activities.

Key words: traps, wild turkey, trap improvement, capture technique

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Expansion of Rio Grande turkey restoration efforts in the late 1960s was accompanied by an expansion of live-trapping techniques. Decreasing size of landholdings and an influx of urbanites into rural areas within Rio Grande turkey habitat in Texas

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(Wilkins et al. 2003) requires wildlife managers to reconsider how the public perceives wild turkey capture techniques. As people with urban temperaments encroach on turkey habitat, sympathy for activities that kill or harm wildlife decreases (Dizard 2003). Davis (1994) suggested efficiency, human safety, and fewer handlers as criteria for ascertaining landowner acceptance of capture techniques. While important, these standards are insufficient; many landowners and most of the public view wildlife from an individualistic perspective (Petersone et al. 2003). From this viewpoint, harm to individual animals must be considered a critical factor as well.

Animal welfare considerations have rarely been addressed in descriptions of live-capture techniques (Schemnitz 1996). While describing walk-in traps for Rio Grande turkeys, Davis (1994:115) acknowledged that birds "repeatedly hit the top of the trap with considerable force . . . but they tire rather quickly" and "some damaged their heads." He noted no capture-related mortality, but did not monitor the birds post release. As part of an ongoing Rio Grande wild turkey population ecology study, we addressed animal welfare concerns for walk-in funnel traps by cataloging injuries and their severity as well as capture-related mortality for the funnel trap as described by Davis (1994) and for an inexpensive modification designed to reduce turkey injuries.

Methods

We trapped 46 Rio Grande wild turkeys in the southern Edwards Plateau of Texas (Bandera and Kerr counties) using walk-in funnel traps as described by Davis (1994; original trial). Three handlers were on site prior to sunrise (as opposed to one handler checking traps at frequent intervals), and all turkeys were weighed, banded, blood sampled, fitted with back-pack radio-transmitters, and promptly released. We then trapped 40 Rio Grande turkeys in the same manner, but immediately on approaching the trap, two handlers clipped a tarpaulin (3×3.7-m reinforced rip-stop polyethylene) over it (modification trial). A carabiner (>13 mm gate open clearance) affixed to each of the tarpaulin's four corners was used to clip it to the trap.

Handlers approached the side of the trap where turkeys would be removed, slipped the leading edge of the tarpaulin over the trap, pulled it across the top of the trap, and clipped the corners they were holding at least 20 cm below the top of the trap. Because the traps are 2.4×3 m on top (Davis 1994), the tarp could cover the top 0.3 m of each side. It was not necessary to affix the tarp to the side of the trap adjacent to the handler removing turkeys because they crowded to the opposite side of the trap. The two clips on the end of the tarp adjacent to the handler were only used in windy conditions.

In both trials, turkeys were removed from the trap using a 1-m hook (Davis 1994) and placed in a $1.25 \times 1.25 \times 0.75$-m wooden box with 25 holes 7 cm in diameter drilled into the top. The box was mounted in the back of pick-up truck for mobility. Turkeys were physically restrained immediately upon removal from the box. We recorded the number of abrasions (skin not completely severed), number of injuries (skin completely severed), and the kinds of observed destructive behavior (i.e., if turkeys hit the top of the trap with "considerable force" [Davis 1994:115]). We esti-

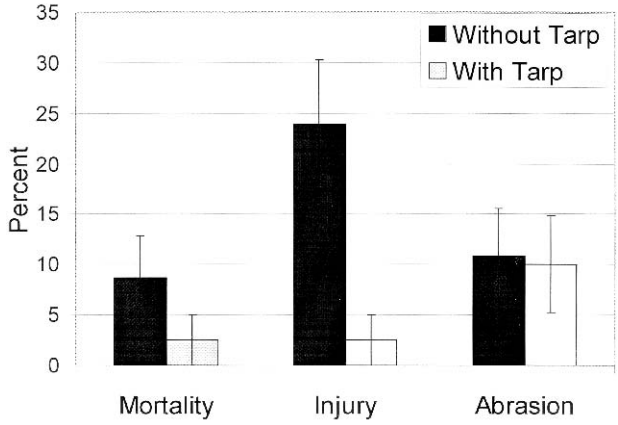

Figure 1. Comparison of mortality, injury (skin lacerated), and abrasion rates for Rio Grande wild turkeys captured without and with a tarpaulin being placed over the funnel trap when initially approached with error bars (1 SE above and below the mean).

mated cause-specific mortality by locating turkeys 6 times per week for 2 weeks after capture. Turkeys released with slight injuries and found dead within two weeks were evaluated for trap-related death. We compared trap-related mortality, injury, and abrasion by method using a Chi-square test for independence (Ott 1993). Statistical significance was accepted at $P < 0.05$.

Results

The original trial (no modification) resulted in 4 mortalities, 11 injuries, and 5 abrasions. One of the turkeys that died had a severe laceration exposing tendons and severing muscles in its neck, while another had a laceration on its head that exposed the cranium. The other two individuals had no noticeable injuries or abrasions when released. Of the 11 injuries, 2 were severe enough that muscles were severed and the subcutaneous area exposed was > 5 cm, while the rest were smaller head lacerations exposing the skull. All five abrasions were on the leading edge of wings but did not noticeably affect flight upon release.

The modification trial resulted in one death, one injury, and four abrasions. The individual dying within two weeks of capture had no noticeable injuries or abrasions when released. The single injury was a head laceration that did not expose the skull, and the four abrasions were similar to those sustained by turkeys captured in the original trial.

Injury rates were lower when the tarpaulin was used to cover traps ($\chi^2 = 8.17$, $df = 1$, $P < 0.01$; Fig. 1). We did not find significant differences in mortality rates ($\chi^2 = 1.5$, $df = 1$, $P = 0.22$) or abrasion rates ($\chi^2 = 0.02$, $df = 1$, $P = 0.89$). Small sample sizes might have contributed to this result (Fig. 1). Although small sample size precludes reliable statistical tests of equal age and sex distribution between trials, a potential male bias was possible in the modification trial (Table 1). This potential bias,

Table 1. Age and sex distribution for Rio Grande wild turkeys captured without and with a tarpaulin being placed over the funnel trap when initially approached.

	Without tarp	With tarp
Adult female	38	27
Adult male	2	5
Juvenile female	3	2
Juvenile male	3	6

however, supports the efficacy of the modification trial. Adult males had disproportionately higher injury rates (100%) and juvenile males had disproportionately higher abrasion rates (33%) than females in the original trial, but no males were injured or abraded in the modification trial.

In the original trial, turkeys jumped about and attempted to fly through the top of the trap. This behavior caused all injuries in both trials. Once the tarpaulin was affixed to the trap, turkeys did not attempt to fly. The tarpaulin could not be quickly slipped over the top of the trap by one person, so this modification required at least two handlers. Although turkeys sometimes placed their heads through the side of the trap in both trials, they did not hit the wire with their head or move with as much force as when attempting to fly through the top of the trap.

Discussion

Davis (1994) thought turkeys experienced less feather loss when captured with funnel traps than with drop and rocket nets. They did, however, still sustain serious injuries due to hitting the top of the trap. Covering the top of the trap with a tarpaulin prevented most injuries, but required two handlers. Although some landowners might prefer having only one trapper on their property, most probably would accept a second trapper to reduce the incidence of serious injuries to birds. Further, when trapping is conducted by organizations (e.g., university) requiring animal welfare approval, justification of higher injury and mortality rates in order to facilitate access would be difficult.

Further reductions in mortality may be achieved by replacing the wire top of the traps with mesh netting. We attempted this approach with 0.6-cm diameter cotton rope netting (10-cm mesh openings), but turkeys would not enter this trap possibly due to movements in the netting. Reducing the diameter of netting or tightening it may ameliorate this problem, but both practices may make injuries from the netting more likely. Future research should evaluate the potential for covering the trap with a tarpaulin prior to trapping. This approach may further reduce injuries if turkeys will enter the modified trap.

Our modification of the Rio Grande wild turkey walk-in trap (Davis 1994) reduced injury rates. These lower injury rates combined with the passive and silent attributes of the original trap render this trapping method nearly ideal in today's more urbanized Rio Grande wild turkey habitat (Dizard 2003, Wilkins et al. 2003). Animal welfare may play an ever increasing role in wildlife research, and may affect our access to private property in the future.

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