FEASIBILITY OF USING TRIBROMOETHANOL TO RECAPTURE WILD TURKEYS

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Tribromoethanol (CBr$_3$CH$_2$OH) has a substantial history of use for trapping wild turkeys (Meleagris gallopavo; Austin et al. 1972, Williams et al. 1973, Evans et al. 1975, Bailey et al. 1980) and has many important advantages over other methods. Steep terrain or lack of openings adjacent to turkey concentrations severely limit the use of rocket nets which require relatively level areas and open sites large enough to allow unobstructed deployment of the net. Alpha-chloralose is less effective and requires a longer recovery period than wild turkeys captured with tribromoethanol (TBE; Williams et al. 1973). Turkeys captured with TBE have a lower mortality rate than those captured with rocket nets or alpha-chloralose (Williams et al. 1973, Evans et al. 1975).

However, effectiveness of TBE for recapturing turkeys has not been evaluated. In this paper, we describe reactions of turkeys and trapping success when using TBE to recapture birds previously captured with TBE.

STUDY AREA AND METHODS

Turkeys were studied on the Coweeta Hydrologic Laboratory located in the Blue Ridge province of the Appalachian Highlands physiographic division in southwest North Carolina. Methods were reviewed and approved by the Clemson University Animal Research Committee (Protocol No. 555). Trapping operations began the first week of January and continued through the end of March for 1985-1988 and 1991-1993. Areas were pre-baited with untreated corn and examined daily. An area was determined ready to trap if turkeys visited the site for ≥2 consecutive days. Wild turkeys were captured using TBE at a dosage of 2.5 g/51 g (1/4 cup) of whole shelled corn following the procedures of Williams et al. (1973) and Bailey et al. (1980). Small piles of approximately 51–77 g (one-third to one-half cup) treated corn were placed in a line spaced approximately 1 m apart and covered with leaves. Treat-
ed corn was replaced every 4 hours until birds appeared and removed immediately after turkeys were captured or left the trap site.

During 1985–1988, only hens were trapped in conjunction with a study of nesting and brood ecology (Davis 1992), therefore unless gobblers were with hens, we discouraged gobblers by waving and whistling before they ingested treated corn. From 1991–1993, gobblers and hens were trapped.

All captured turkeys were leg-banded, fitted with radio-transmitters, aged as adult or juvenile (Mosby and Handley 1943), and released at capture sites. We attempted to recapture these birds as well as capture other birds on the study area in subsequent years. Use of rocket nets was limited by the terrain; however, some birds were recaptured using this method. Radio-transmitters were replaced on all recaptured birds. Observers in blinds using binoculars and telemetry receivers identified individual birds previously captured and instrumented. Number of visits and behavior of turkeys previously captured with TBE were noted.

RESULTS AND DISCUSSION

Forty different wild turkeys (22 adult hens, 16 juvenile hens and 2 adult gobblers) were initially captured using corn treated with TBE from January–March, 1985–1988 and 1990–1993 (52 trap days). Eighteen of the 40 birds (45%) subsequently returned to bait sites on at least one occasion. These birds did not appear to associate bait sites or untreated corn with danger as untreated corn was readily taken from pre-baited sites prior to trapping attempts. Twelve of 18 (67%) birds initially captured with TBE were observed at least once at the sites of their initial capture. All 7 did not ingest untreated corn when they returned. Twelve of 18 (67%) birds initially captured with TBE were observed at least once at the sites of their initial capture and 10 of the 18 Turkeys (56%) were recaptured with rocket nets on sites baited with untreated corn. Seven of the 18 turkeys returned to bait sites the year of their initial capture; all 7 did not ingest treated corn when they returned. Only 4 birds, including 1 of these 7, were eventually recaptured using TBE; all were recaptured the year after their initial capture. No turkeys were recaptured ≥2 years after their initial capture.

Two of 4 recaptured hens displayed an aversion to treated bait. One was recaptured after rejecting treated corn on 3 previous trapping attempts. Another was on the site alone for > 45 minutes going from 1 bait pile to the next, finally ingesting enough drug to allow capture. Only in 1 case did an experienced bird feed on treated corn without a recognizable aversion reaction.
In 19 visits by inexperienced birds, the only discernable aversion behavior exhibited was a slight hesitancy after first picking up drugged bait. However, after birds started to feed, none showed any alarm or reluctance to ingest treated corn.

Six mortalities (13.3%) occurred because birds ingested more than the recommended dosage of treated corn. Two of 6 mortalities occurred during the first year (1985) when 4 birds ate a dosage intended for 6 birds; both mortalities were juveniles not previously exposed to drugged corn. Another mortality occurred in 1987 when 6 hens came to a trap site baited for 6 birds. Two of these birds had been previously trapped using TBE, 1 in 1985 and 1 in 1986. Both of these experienced turkeys rejected the treated corn and became alarmed. Despite attempts to drive the 4 remaining juveniles from the site, they ingested all the treated corn resulting in 3 captures and 1 overdose mortality. In 1988 the largest case of mortality occurred when 6 hens came to a site baited for 6 birds. Two birds, one of which had been previously captured with TBE, rejected the treated corn. The remaining 4 birds ate all the treated corn; 1 bird was captured and 3 (1 of which was drug-captured as a juvenile the previous year) overdosed and died. In all but the first case of overdose mortality (1985), number of turkeys matched the dosage level. However, rejection of treated bait by experienced birds increased dosage levels by 33.3% for the remaining birds, resulting in mortalities. These 4 mortalities constituted 66.6% of the mortalities in the study and had they not occurred, the resulting mortality rate of 4.4% would be comparable to rates reported by Williams et al. (1973) and Evans et al. (1975) of 2.4% and 4.4%, respectively. Of the 6 mortalities, 4 were juveniles. Juveniles, with their lower body weights, appeared more susceptible to mortality when dosage levels were exceeded.

TBE rejection can result in experienced birds leaving and inexperienced birds being driven from capture sites in a highly drugged condition. Such semi-drugged birds may be more susceptible to predation. In 1992, one experienced adult hen ingested a small amount of drugged corn before she became alarmed and left the site. She appeared alert but slightly unstable, characteristic of stage 1 narcosis (Williams et al. 1973), and was unapproachable by investigators. This bird had a motion sensitive transmitter and investigators found her 1 hour later about 300 m from the capture site, killed by a bobcat and buried under a log. This hen's reluctance to ingest enough treated bait may have made her more susceptible to predation.

We observed 94 wild turkeys at sites baited with treated corn. Of these, 35 were captured initially with TBE (experienced) and 59 were birds not captured previously with TBE (inexperienced; Table 1). Probability of capture by TBE of experienced birds was less than inexperienced birds ($\chi^2 = 29.81$, 1 df, $P < 0.005$) with only 4 of 35 (11%) experienced birds being recaptured compared to 41 of 59 (69%) inexperienced birds. Flocks containing both experienced and inexperienced birds came to treated bait sites 14 times (Table 1). Of the 68 birds observed, 31 were captured. Experienced birds were less likely to be trapped than inexperienced birds ($\chi^2 = 23.51$, 1 df, $P < 0.005$), with only 3 of 28 experienced birds (11%) trapped compared to 28 of 40 inexperienced birds (70%). On 6 occasions only experienced birds came to treated bait sites, and on 5 occasions only inexperienced birds came to treated bait sites (Table 1). A comparison of captures between the 2 groups again indicated that experienced birds were less likely to be captured than inexperienced birds ($\chi^2 = 6.06$, 1 df, $P < 0.05$). Only 1 of 7 experienced birds (14%) were captured compared to 13 of 19 inexperienced birds (68%).

Forty-seven (50%) of 94 turkeys that visited bait sites were not captured or died of overdose
Table 1. Comparisons of number of wild turkeys, visits, and captures of birds previously captured with tribromoethanol (experienced) versus birds not previously captured with that drug (inexperienced), southwest North Carolina, 1985–1988 and 1991–1993.

<table>
<thead>
<tr>
<th>Groups with only experienced or inexperienced birds</th>
<th>Groups with both experienced and inexperienced birds</th>
<th>Total number of experienced and inexperienced birds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experienced</td>
<td>Inexperienced</td>
<td>Experienced</td>
</tr>
<tr>
<td>Number of birds</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Number of visits</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Number captured</td>
<td>1</td>
<td>13</td>
</tr>
</tbody>
</table>

as a result of rejection of treated bait by experienced birds. All bait rejection involved 31 experienced birds. Twelve inexperienced birds were not captured because of interference by experienced birds. Four birds died when overdosed because experienced birds rejected their portion of bait.

Eighteen turkeys, 14 of the 18 experienced birds and 4 mortalities, were either untrappable or died from overdose after rejection of TBE treated corn by experienced birds. Because inexperienced birds were not radiotagged, individual birds could not be readily identified; however, based on trap site location, flock composition and timing, at least 8 individual inexperienced birds were determined to have been untrappable due to interference by experienced birds. If experienced birds had been removed from this area, as in turkey restoration programs, or if these turkeys had not developed an aversion to TBE resulting in the disruption of trapping operations, an additional 20 or more birds may have been trapped successfully on this area.

**MANAGEMENT IMPLICATIONS**

Use of TBE to recapture wild turkeys previously captured with this drug has not been well documented. However, its usefulness for recapturing experienced birds may be limited. Two problems were evident in this study: (1) experienced birds were difficult to recapture and disrupted trapping of other birds in their company; and (2) refusal by experienced birds to ingest treated corn may have contributed to overdose mortalities in accompanying inexperienced birds. Therefore, we do not recommend TBE for recapturing previously exposed birds. If turkeys are being trapped for restoration purposes, managers should remove all birds captured and refrain from releasing experienced birds on the capture site where they may cause difficulties in future trapping efforts. Alternative trapping methods may be required where researchers plan prolonged trapping efforts in a study area.

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**LITERATURE CITED**


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