Effect of Spinning-Wing Decoys on Mourning Dove Harvest Vulnerability in Tennessee

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Abstract: Effective harvest management for mourning doves (*Zenaida macroura*) requires information regarding factors affecting harvest. We tested the effects of spinning-wing decoys (SWDs) on mourning dove harvest vulnerability on dove fields in central Tennessee during opening weekend of hunting 2007 and 2008. Use of a SWD did not affect numbers of shots fired, doves harvested, doves missed, or doves crippled. Heavy hunting pressure may have limited SWD effects on dove harvest by hunters using them. Use of SWDs does not seem to increase overall harvest in mourning dove populations, so regulations prohibiting these decoys for mourning dove hunting seem unnecessary.

Key words: harvest, mourning dove, spinning-wing decoy, Tennessee, *Zenaida macroura*

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Spinning-wing decoys (SWDs) were first developed for waterfowl hunting in California in the 1990s and have since become popular for use on other species. Several studies have documented that SWDs increase susceptibility of waterfowl to harvest (Caswell and Caswell 2004, Szymanksi and Afton 2005, Ackerman et al. 2006, Miller 2012), raising conservation concerns regarding effects of SWD use on waterfowl harvest rates and ethical issues related to fair chase (Szymanski and Afton 2005). Some states (e.g., Oregon, Washington, and Arkansas) have banned the use of SWDs for waterfowl hunting (Ackerman et al. 2006). Mourning doves (*Zenaida macroura*, hereafter 'doves') are popular and economically important game birds in the southeastern United States and elsewhere (Baskett and Sayre 1993). Recent efforts to develop science-based dove harvest management strategies (U.S. Fish and Wildlife Service 2005, 2015) underscore the need to understand factors affecting harvest. A recent study conducted in Tennessee documented attraction of mourning doves to SWDs in a simulated hunting setting (Simmons et al. 2006), but the actual effect(s) of SWD use on harvest rates remain unknown. The objective of this study was to determine effects of SWDs on dove harvest-related parameters, including harvest, crippling loss, and shooting success by mourning dove hunters in Tennessee.

Methods

Experimental hunts were conducted on fields managed for dove hunting by the Tennessee Wildlife Resources Agency (TWRA) and/or private landowners in central and eastern Tennessee on 1 September 2007 and 2008. Fifteen fields were used in 2007 and 17 fields (5 new and 12 from 2007) were used in 2008. Fields were harvested corn (*Zea mays*) fields or were managed for doves using mowed sunflower (*Helianthus* sp.) patches or top-sown wheat (*Triticum* sp.). Field size ranged from 4 ha to 101 ha ($\bar{x} = 20.7$ ha). Fields managed by TWRA were otherwise open to the public, and an unquantified number of other hunters usually were present on each field. Stationary decoy or SWD use by other hunters on these fields was not documented.

A single volunteer hunter conducted an experimental hunt at a randomly-located position in each field, 10–30 m from a single battery-powered SWD. Each experimental hunt was conducted during the first three hours of the hunting season each year, from 1200–1500. Volunteer hunters were experienced dove hunters, and were instructed to hunt as they normally would. Activity of the SWD (ON versus OFF) was alternated during successive 15-minute periods during each hunt; start activity was determined randomly, and equal numbers of ON versus OFF periods occurred during each hunt. A volunteer observer positioned near the hunter operated the SWD, retrieved downed doves, and recorded the following information for each 15-minute period: SWD activity mode (ON versus OFF), shots fired, doves killed, doves crippled but not recovered, and doves missed. For analyses, the latter four parameters were summed by SWD activity mode for each hunt. Each of these dependent variables was compared between SWD activity modes (ON versus OFF) in a pairwise fashion using nonparametric Wilcoxon signed-rank tests and hunts as experimental units, pooled across years. We used $\alpha = 0.05$ for these analyses. Means hereafter are presented ± standard errors.

Results

We found no difference in any harvest-related parameter between SWD activity modes. Number of shots fired was similar during 2007 (ON: 18.7 ± 4.4, OFF: 16.7 ± 5.0; $n = 15$; $P = 0.350$), 2008 (ON: 17.4 ± 4.4, OFF: 18.9 ± 3.5; $n = 17$; $P = 0.292$), and pooled across

years (ON: 18.0 ± 3.1, OFF: 17.9 ± 2.9; $n = 32$; $P = 0.977$). Likewise, doves harvested was similar between modes during 2007 (ON: 2.9 ± 0.7, OFF: 2.9 ± 0.7; $n = 15$; $P = 1.000$), 2008 (ON: 2.8 ± 0.8, OFF: 2.7 ± 0.7; $n = 17$; $P = 1.000$), and pooled across years (ON: 2.8 ± 0.5, OFF: 2.8 ± 0.5; $n = 32$; $P = 0.906$). Doves missed was similar between modes during 2007 (ON: 9.3 ± 3.4, OFF: 8.3 ± 3.8; $n = 15$; $P = 0.492$), 2008 (ON: 13.4 ± 3.6, OFF: 14.4 ± 3.2; $n = 17$; $P = 0.245$), and pooled across years (ON: 11.4 ± 2.5, OFF: 11.5 ± 2.5; $n = 32$; $P = 0.703$). Likewise, doves crippled was similar between modes during 2007 (ON: 0.5 ± 0.3, OFF: 0.5 ± 0.3; $n = 15$; $P = 1.000$), 2008 (ON: 0.5 ± 0.2, OFF: 1.0 ± 0.4; $n = 17$; $P = 0.156$), and pooled across years (ON: 0.5 ± 0.2, OFF: 0.8 ± 0.2; $n = 32$; $P = 0.213$).

Discussion

In our study, use of a single mourning dove SWD did not increase harvest opportunity for, or actual numbers of doves harvested by, the hunter using it despite earlier evidence of attraction of doves to SWDs (Simmons et al. 2006). High levels of hunting pressure on public dove fields during the opening weekend of dove season may have limited the degree to which SWDs increased dove harvest opportunity and/or harvest in our study. The public mourning dove hunting fields used in our study were relatively large (≥10 ha, with two exceptions) and experienced relatively heavy hunting pressure from many hunters in close proximity. Doves flying into such a field were fired upon by multiple hunters and often were killed, crippled, or driven from the area by shooting before they flew within range of the hunter using the SWD. Simmons et al. (2006) conducted their study in a small pasture with no history of dove food management/availability and no hunting pressure or disturbance (i.e., shooting). Additionally, the Simmons et al. (2006) study was conducted during the second segment (October) of the three-part Tennessee dove hunting season, during which migrant doves with limited foraging experience in the area may have been more reliant on the presence of conspecifics to locate foraging areas and more attracted to SWDs. Finally, the Simmons et al. (2006) study was conducted later in the day (within 2.5 h of sunset) than our study, and more doves may have been flying to feeding sites (and attracted to SWDs) during these later hours.

One of the anticipated effects of SWD use for dove hunting was a reduction in crippling loss if doves approach closer to a hunter using a SWD than they would have otherwise, but use of a SWD did not reduce crippling loss in our study. Other hypothesized effects of SWD use are redistribution of a fixed level of harvest in a hunted population or quicker achievement of that level (Ackerman et al. 2006). Thus, overall harvest in a hunted population would remain unchanged, despite increased harvest rates and faster achievement of bag limits among hunters using SWDs. This did not seem to be the case in our study; average number of doves harvested by hunters in our experimental hunts did not increase with SWD use and was well below the daily bag limit (15) in Tennessee. Based on these results, it seems that, under normal dove hunting scenarios, SWDs have little overall impact on dove harvest, and likely little overall effect on dove harvest-related mortality in hunted populations. Thus, it appears that regulations limiting or prohibiting use of SWDs for mourning dove hunting are unnecessary. However, heavy hunting pressure on our study fields and the timing of our study may have limited effects of SWDs on dove harvest. Further study is needed to determine effects of dove SWDs in a broader range of hunting situations, including fields with less hunting pressure, later hours of the day, and later in the hunting season.

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