Attraction of Mourning Doves to Spinning-wing Decoys in Tennessee

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Abstract: Some indices indicate nationwide declines in mourning dove (*Zenaida macroura*) populations, making harvest data important for management. Our goal was assessment of attraction of mourning doves to spinning-wing decoys (SWDs). We simulated dove hunting scenarios in Putnam County, Tennessee, during October 2005 using battery-operated SWDs with traditional decoy setups. We measured and compared number of doves approaching within 40 and 200 m with SWD active and inactive. A greater number of doves approached within 40 m and 200 m with SWD active than with SWD inactive. Mourning doves clearly were attracted to SWD, which may increase dove harvest opportunity. Further research is needed to validate this result under a broader set of conditions and examine extent to which this attraction may translate into increased dove harvest.

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

Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies 60:33–35

Spinning-wing decoys (SWDs) were first developed in the 1990s for waterfowl hunting (Ackerman et al. 2006) and have since gained popularity for other forms of hunting, including mourning dove (*Zenaida macroura*) hunting. Recent studies (Eadie et al. 2002, Humburg et al. 2002, Caswell and Caswell 2004, Szymanksi and Afton 2005, Ackerman et al. 2006) have clearly documented increased vulnerability of ducks to harvest when SWDs are used. Effectiveness of SWDs in attracting waterfowl for harvest has raised conservation concerns regarding their use and ethical issues related to lack of fair chase (Caswell and Caswell 2004, Szymanski 2004, Szymanski and Afton 2005). These issues have led to a complete ban on SWD use for waterfowl hunting in some states (e.g., Oregon, Washington, and Arkansas) and a partial ban in other states (e.g., California and Minnesota; Ackerman et al. 2006).

Mourning doves are popular and economically important game birds, particularly in southeastern states; more mourning doves are harvested annually than all other migratory game birds combined (Baskett and Sayre 1993, Tomlinson et al. 1994). Although conflicting indices of mourning dove populations exist, the nationwide call-count survey of doves heard indicates long-term declines nationwide (Dolton and Rau 2005), raising concerns regarding factors affecting mortality and related population status. Recent large-scale research to document harvest rates of mourning doves across the United States reflects a growing national interest in effects of harvest on overall dove mortality and population dynamics (National Mourning Dove Planning Committee 2003). In 1998, the U.S. Fish and Wildlife Service announced plans to reduce federal harvest framework if population declines continued (National Mourning Dove Planning Committee 2003). Effective regulations to maximize sustainable harvest opportunity requires scientific evaluation of factors affecting harvest. Spinning-wing decoys clearly increase kill rates of waterfowl (Ackerman et al. 2006), but effects of SWDs on mourning dove harvest vulnerability have not been evaluated. Our objective was to test attraction of doves to SWDs in a simulated hunting setting, as a first step in evaluating effects of SWDs on dove harvest.

Methods

We conducted simulated hunting scenarios at the Tennessee Technological University Farm (TTUF) and a privately-owned farm in Putnam County, Tennessee. Both farms consisted of interspersed pasture and woodlands and both offered open fields with exposed bare ground, providing study sites that closely resembled normal mourning dove hunting locations.

We conducted experimental trials during 8–23 October 2005, during the second of three segments of the mourning dove hunting season in Tennessee. Beginning one week prior to our study period, we made wheat available on open ground at each study site, simulating food availability on a prepared dove field. We conducted three trials at each study site, each on a different day, during the 2.5-hour period preceding sunset. At the beginning of each trial, we placed a spinning wing decoy and multiple stationary decoys in the center of the baited area. During each trial, we alternated SWD activity (wings spinning or wings motionless in the horizon-

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tal position) during eight successive 15-minute sampling periods, and we alternated the start SWD activity (spinning or motionless) in successive trials. We recorded numbers of doves approaching within 40 m and 200 m of decoys via a camouflaged observer sitting motionless near the decoys. We used landmarks to estimate distances. We used three-minute buffers between SWD sampling periods to reduce effects of observer disturbance while changing SWD activity modes.

We used the Statistical Analysis System (SAS 1990) and $\alpha = 0.10$ for statistical analyses. We tallied numbers of doves approaching within 40 and 200 m while SWDs were active and inactive for each daily survey. We used daily surveys ($N = 6$) as experimental units, and numbers of doves approaching during active and inactive periods as paired response variables. We conducted separate analyses for the 40-m and 200-m count radii. We used a nonparametric Wilcox signed rank test to compare number of doves approaching during active and inactive SWD periods, because our count data did not meet assumptions necessary for parametric analysis.

Results

We counted 111 doves within 40 m of the decoy sets (90 with SWD active, 21 inactive) and 214 doves within 200 m (135 with SWD active, 79 with SWD inactive) across all surveys. Mean (±SE) number of doves counted/daily survey was 18.5 ± 2.8 within 40 m and 35.7 ± 5.0 within 200 m. More doves approached within 40 m of the decoy set during periods of SWD activity (15.0 ± 1.9 doves/daily survey) than during periods of SWD inactivity (3.5 ± 1.6 doves/daily survey; $S = 10.5$, $P = 0.031$). More doves also approached within 200 m of the decoy set during periods of SWD activity (22.5 ± 3.1 doves/daily survey) than during periods of SWD inactivity (13.2 ± 2.6 doves/daily survey; $S = 9.5$, $P = 0.063$).

Discussion

Our results clearly indicated attraction of mourning doves to SWDs in our simulated hunting situations, which may increase dove harvest opportunity. Although total numbers of doves encountered in our surveys were lower than numbers encountered on many dove fields, numbers of doves approaching within 40 m increased >300% with a SWD active, and numbers of doves approaching within 200 m increased 70%. If these increases represent doves entering our simulated field because of the action of our SWD that otherwise would not have entered, numbers of doves bagged by hunters located at the SWD or elsewhere in the field may well have increased. Studies of waterfowl susceptibility to harvest using SWDs have found similar results (Caswell and Caswell 2004, Szymanksi and Afton 2005, Ackerman et al. 2006). Increased dove harvest opportunity using SWDs may be desirable from a hunter satisfaction standpoint, but may also increase likelihood of harvest effects on overall survival and concomitant negative effects on populations. Effects of various levels of harvest on dove population dynamics remain unknown, and documented harvest rates generally are considered to have little effect on dove populations (National Mourning Dove Planning Committee 2003). However, the threshold compensation model (Errington 1945, Nichols et al. 1984) used as the basis for recent studies of harvest effects on mourning doves (Otis 2002) indicates that harvest rate above a threshold level may increase overall dove mortality rate and negatively affect population levels.

Despite the clear pattern of increased dove use of our simulated hunting field during periods of SWD activity, four factors make our results tentative and highlight the need for future research. First, since no actual hunting took place on our study areas, effect of shooting disturbance and harvest on our sites was removed. It is possible that shooting over SWDs may decrease their effectiveness to some degree. Eadie et al. (2001) documented such a decline in waterfowl SWD effectiveness over the course of the hunting season, although subsequent studies did not (Caswell and Caswell 2004, Szymanksi and Afton 2005). Second, our study occurred during the second segment of Tennessee's three-split dove hunting season, which traditionally is not the time of greatest hunting activity or dove harvest. Most hunting and harvest takes place during the early segment of the season when doves generally are perceived as more abundant. Effects of SWDs on harvest opportunity during the early season, when potential harvest likely is greatest, remain speculative, but attractiveness of SWDs to doves may be more pronounced at that time if more hatching-year doves are present. A recent study found that hatching-year ducks were more susceptible to SWD use than adults (Szymanski and Afton 2005), although a second study found no such difference (Caswell and Caswell 2004). In general, hatching-year mourning doves are known to be more susceptible to harvest than adults (Otis 2002). Third, our study was limited spatially, as well as temporally. We used only two locations, both of which were predominantly pastureland, offering only limited natural foods for doves. Attractiveness of SWDs for doves may be less pronounced in areas where food is more abundant (e.g., crop fields, managed dove fields) if doves rely less on sightings of conspecifics to located food sources in these areas. Fourth, the attraction of doves to SWDs may not translate into increased harvest if SWDs simply redistribute a fixed level of overall harvest in a dove population (Ackerman et al. 2006), allow bag limits to be accomplished more quickly (Ackerman et al. 2006), or reduce crippling rate (Caswell and Caswell 2004). Evidence of the effects of SWDs on crippling rates in waterfowl has, to date, been conflicting (Caswell and Caswell 2004, Szymanski and Afton 2005).

Despite these limitations, our study raises the possibility of increased dove harvest using SWDs, and highlights the need for a comprehensive investigation of SWDs and their relationship to dove harvest rate, especially in light of apparent dove population trends. An additional concern is the possibility that SWDs may generate negative public opinion of dove hunting because of perceived lack of fair chase associated with SWDs (Caswell and Caswell 2004, Szymanski 2004), particularly if they increase dove harvest vulnerability. Clearly, it is premature to suggest that regulations prohibiting use of SWDs for dove hunting are necessary or desirable. However, if population declines continue and future research indicates that SWDs increase overall mourning dove harvest, then such regulations offer an alternative to federal reductions in season length and/or bag limit, particularly if ethical issues related to fair chase become a major concern.

Acknowledgments

We thank Tennessee Tech University and the Stites family for allowing us to use their properties for this research. We also thank M. Olinde and two anonymous referees for helpful comments on an earlier draft of this manuscript.

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