

## SMALL GAME HUNTER ATTITUDES TOWARD NONTOXIC SHOT, AND CRIPPLING RATES WITH NONTOXIC SHOT

JOHN H. SCHULZ<sup>1</sup>, RONALD A. REITZ<sup>1</sup>, STEVEN L. SHERIFF<sup>1</sup>,  
JOSHUA J. MILLSPAUGH<sup>2</sup>, AND PAUL I. PADDING<sup>3</sup>

<sup>1</sup>Missouri Department of Conservation, Resource Science Center,  
1110 South College Avenue, Columbia, MO 65201, USA.

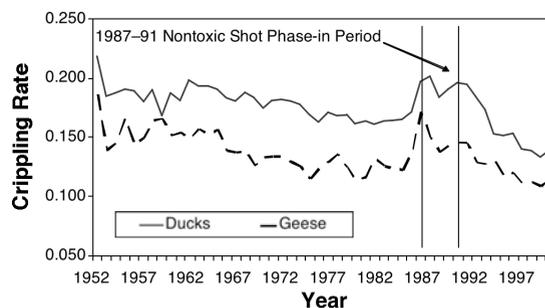
<sup>2</sup>Department of Fisheries and Wildlife Sciences, University of Missouri,  
302 Anheuser-Busch Natural Resources Building, Columbia, MO 65211, USA.

<sup>3</sup>U.S. Fish and Wildlife Service, Laurel, MD 20708-4028, USA.

EXTENDED ABSTRACT.—In response to declining resident upland game bird populations wildlife managers are increasing managed Mourning Dove (*Zenaida macroura*) hunting opportunities (Schulz et al. 2003), and stakeholders are becoming concerned that this practice may increase avian exposure to spent lead shot. These concerns will likely progress toward nontoxic shot policy discussions that involve debates about whether nontoxic shot requirements will be acceptable to bird hunters and/or result in increased crippling loss of Mourning Doves by the use of nontoxic shot.

Our first objective was to assess the attitudes of small game hunters in Missouri, USA, toward a nontoxic shot regulation for small game hunting, specifically for Mourning Doves (Schulz et al. 2007). Most hunters (71.7–84.8%) opposed additional nontoxic shot regulations. Hunters from rural areas, hunters with a rural background, hunters who hunt doves, hunters who currently hunt waterfowl, hunters who primarily use private lands, and current upland game hunters were more likely to oppose new regulations. For Mourning Dove hunting, most small game hunters (81.1%) opposed further nontoxic shot restrictions; however, many non-dove hunters (57.1%) expressed no opinion.

We also evaluated reported waterfowl crippling rates in the United States prior to, during, and after implementation of nontoxic shot regulations for



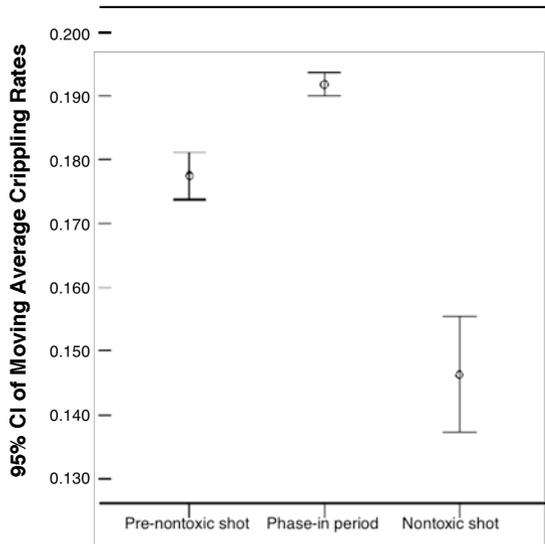
**Figure 1.** Duck and goose reported crippling rates from the United States Fish and Wildlife Service (USFWS) Waterfowl Harvest Survey, 1952–2001.

waterfowl hunting (Figure 1, Schulz et al. 2006). We used this information to make inferences about Mourning Dove crippling rates if nontoxic shot regulations are enacted. We found differences in moving average crippling rates among the three treatment periods for ducks ( $F = 23.232$ ,  $P < 0.001$ ,  $n = 49$ ). Pre-nontoxic shot period crippling rates were lower than 5-year phase-in period crippling rates ( $P = 0.043$ ) but higher ( $P < 0.001$ ) than nontoxic shot-period crippling rates (Figure 2).

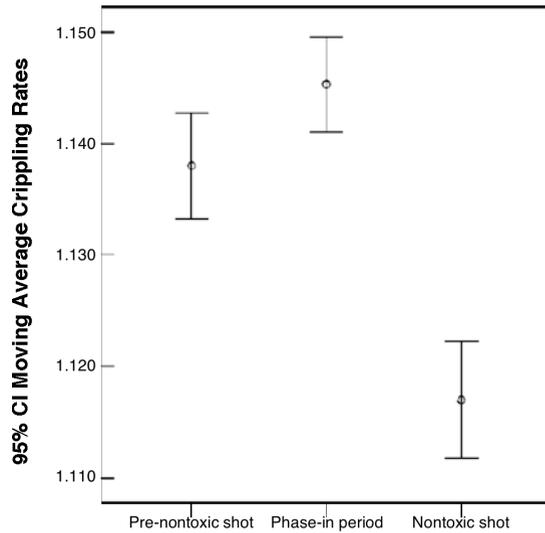
Similarly, we observed differences in moving average reported crippling rates among the three treatment periods for geese (Figure 3,  $F = 9.385$ ,  $P < 0.001$ ,  $n = 49$ ). Pre-nontoxic shot and 5-year phase-in period crippling rates were both greater than ( $P < 0.001$ ) nontoxic shot-period crippling rates

but did not differ from one another ( $P = 0.299$ ). Regardless of why the observed increases occurred in reported waterfowl crippling rates during the phase-in period, we believe the decline that followed full implementation of the nontoxic shot regulation is of ultimate importance when inferring the impacts of lead shot restrictions for Mourning Doves.

We argue that long-term Mourning Dove crippling rates might not increase as evidenced from historical waterfowl data. Also, because our human dimensions results show most Missouri small game hunters and dove hunters are decidedly against further nontoxic shot regulations, any informational and educational programs developed to accompany future policy changes must address these concerns. Received 15 May 2008, accepted 14 August 2008.



**Figure 2.** The 95% confidence intervals of untransformed moving average reported crippling rate values for ducks during pre-nontoxic shot (1952-1986), phase-in (1987-1991) and nontoxic shot (1992-2001) periods.



**Figure 3.** The 95% confidence intervals of untransformed moving average reported crippling rate values for geese during pre-nontoxic shot (1952-1986), phase-in (1987-1991) and nontoxic shot (1992-2001) periods.

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Key words: Attitude survey, crippling rate, game, human dimensions, hunter, lead poisoning, nontoxic shot.

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