POLICY CONSIDERATIONS FOR A MOURNING DOVE NONTOXIC SHOT REGULATION

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EXTENDED ABSTRACT.—The use of lead in sport hunting is quickly becoming a priority conservation policy issue as demonstrated by this symposium. Within the context of making policy, decision makers must balance the relative importance of multiple data streams, and simultaneously assign relative certainty to the available knowledge (Reitz et al. 2007). As previously demonstrated, we know with certainty (1) that lead is a well established broad-spectrum ecological poison (Sanderson and Bellrose 1986, Eisler 1988, Kendall et al. 1996), (2) hunters can deposit relatively large amounts of lead shot on areas that are popular Mourning Dove (*Zenaida macroura*) feeding sites (Lewis and Legler 1968, Best et al. 1992, Schulz et al. 2002), (3) a certain proportion of the dove population feed on these sites and ingest lead pellets (Otis et al. 2008, Franson et al. 2009, this volume), and (4) virtually all doves that ingest pellets succumb to the direct or indirect effects of lead poisoning (Schulz et al. 2006, Schulz et al. 2007). Conversely, there is considerable uncertainty about the (1) relationship between lead pellet availability and pellet ingestion on areas with different levels of hunter and bird use, (2) uncertainty about the actual proportion of the population impacted by lead poisoning and whether that proportion is significant, (3) uncertainty about the impacts of other surface-feeding seed-eating songbirds and upland game-birds, (4) uncertainty about the eventual fate of doves dying of lead poisoning (e.g., consumption by scavengers), and (5) uncertainty about how the increased cost of nontoxic shot ammunition may negatively influence future small-game hunter participation rates. Given this information, natural resource policy makers face two types of risk; the risk of taking an unnecessary action (Type I Error), and the risk of failing to enact a needed action (Type II Error; Lee 1993). Our professional culture has a strong tradition of avoiding Type I policy errors as demonstrated by the length of time required to enact nontoxic shot regulations for waterfowl hunting (i.e., more research was needed to ensure the action being taken as necessary). However, the risks associated with Type II policy errors cannot be overlooked while potential harm to the resource may be occurring; this concept is often viewed as the precautionary principle.

Economic considerations, especially short-term economic goals, often conflict with effort to achieve ecological sustainability, and these differences become a source of social strife and conflict in the policy-making process. In other words, policy decisions are affected by application of the risk paradigm (i.e., risk analysis) and/or the ecological paradigm (i.e., the precautionary principle). The risk paradigm views environmental hazards as manageable and uses risk management as its primary scientific and policy-making tool. In comparison, the ecological paradigm is based upon the precautionary principle and begins from the view that scientific knowledge of complex systems is incomplete and imprecise, and precautionary measures are warranted (Raffensperger and Tickner 1999, Tickner 2003). This suggests that substances that can be reasonably and scientifically judged to have the potential to cause widespread long-term, and severe forms of environmental damage (e.g., extensive use of lead-based ammunition for sport

hunting) should be replaced, whenever feasible, with safer alternatives rather than continued use with acceptable amounts of environmental risk.

Given these challenges, suggested actions for policy makers include (1) an explicit recognition of all stakeholders, (2) a long-term vision among the stakeholders that identifies an ultimate desired future condition that transcends immediate concerns and issues (e.g., spent lead-based ammunition is an environmental poison with several available alternatives), (3) a continued emphasis on research to reduce key uncertainties related to *a priori* policy decisions (compared to research aimed at determining the legitimacy of the problem), and (4) an explicit recognition that sufficient reliable information currently exists to suggest some preliminary and/or incremental policy decisions can be immediately contemplated. *Received 30 April 2008, accepted 14 August 2008.*

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