RESEARCH PROJECT SUMMARY

Project Title: Spent shot availability, distribution, ingestion, and survival by ring-necked pheasants in South Dakota.

Need: Lead is a non-specific toxin to all vertebrate species (Eisler, 1988, Murray et al. 2004) and spent lead shot is a common source of environmental lead deposition in hunted landscapes. Much research has been conducted on waterfowl and wetland habitats due to their relative high susceptibility to lead poisoning (Mateo et al 1997; Sanderson and Bellrose 1986; Bellrose 1959) but limited knowledge is known on its effects or availability towards upland game species, such as ring-necked pheasants (*Phasianus colchicus*). It was estimated by Bellrose (1959) that 2% of North American waterfowl were succumbing to lead poisoning while lead was still widely used for waterfowl hunting; however no estimate has occurred for upland game species. It is also known that lead can persist on the landscape for many years (Rocke et al. 1997, Flint 1998). Since the ban of toxic shot for waterfowl hunting, duck and goose lead poisoning rates have declined.

Research has found that game birds found in South Dakota such as mourning doves (*Zenaida macroura*) (Shultz et al. 2002, 2006), ring necked pheasant (Hunter and Rosen 1965, Butler et al. 2005), and wild turkey (*Meleagris gallopavo*) (Stone and Butkas 1972) do ingest lead pellets and are susceptible to both lethal and sub lethal effects from lead poisoning. Lead shot ingestion by ring-necked pheasants has been studied on a private shooting estate in Europe (Butler et al. 2005), but cases in the United States have been strictly opportunistic (Hunter and Rosen 1965). With an estimated 130 million pheasants harvested in SD since 1930, a substantial amount of lead shot has undoubtedly been deposited across the landscape. Research is needed to determine the availability and ingestion of spent lead shot by wild ring-necked pheasants in SD. Furthermore, research is needed to determine survival of ring-necked pheasants after ingesting lead pellet(s).

Objectives:

1. Determine availability of spent lead shot to ring-necked pheasants within an area of high shooting intensity in Central South Dakota..
2. Determine distribution of available spent lead shot within an area of high shooting intensity in Central South Dakota

3. Determine prevalence rates of spent lead shot in gizzards of hunter-harvested wild ring-necked pheasants within an area of high shooting intensity in Central South Dakota.

4. Determine lead concentration in livers of hunter-harvested wild ring-necked pheasants with ingested lead shot from an area of high shooting intensity in South Dakota.

5. Determine prevalence rate of ingested lead pellets in hunter-harvested wild ring-necked pheasants from across their primary range in South Dakota.

6. Determine retention rate of force fed lead shot in gizzards of pen-raised ring-necked pheasants.

7. Determine the survival of pen-raised ring-necked pheasants hens after force fed lead shot.

8. Determine if pen-raised female ring-necked pheasant body weight is influenced by lead pellet ingestion over an 8 week period.

Study Location: Lyman County, South Dakota and Statewide

Expected Completion: June 2014

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Funding: Federal Aid to Wildlife Restoration, Study No. 7554, administered through South Dakota Department of Game, Fish and Parks.