The National Wild Pheasant Conservation Plan

Key Literature:
Hunting-related effects on pheasant abundance and demographics

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Note: The literature cited below represents a subset of the information used when making pheasant management decisions related to this topic. It is intended to provide a general sense of the primary research available on the subject, but is not comprehensive. Other information on the topic may also be available in books and technical bulletins that do not lend themselves well to this form of summarization. The list will be periodically updated upon request by National Wild Pheasant Technical Committee members.

Butler, D. A., R. B. Sage, R. A. H. Draycott, J. P. Carroll, and D. Potts. 2005. Lead exposure in ring-necked pheasants on shooting estates in Great Britain. Wildlife Society Bulletin 33:583-589.

Abstract: Although a few isolated incidences of lead shot ingestion have been reported in ring-necked pheasants (*Phasianus colchicus*) in Great Britain, no studies have investigated the prevalence of shot ingestion in this species. In this study we investigated the extent of lead exposure in ring-necked pheasants on shooting estates in Great Britain from the ingestion of shot and other sources through gizzard examinations and analysis of wing bones. We examined 437 ring-necked pheasant gizzards collected from birds shot on 32 shooting estates during spring 1996 and 1997 and during the hunting seasons of 1999-2000 and 2001-2002. We determined wing-bone-lead concentrations in 98 female birds collected in 1997. Gizzard examinations showed an overall ingestion incidence rate of 3.0%. We found no differences in ingestion rates among years, seasons, and sexes. Female pheasants had bone-lead levels ranging from 7-445 ppm ($\bar{x}$ = 48.8 $\pm$ 8.8) dry weight. The birds that had lead in their gizzards in 1997 also had high concentrations of lead in their bones. Female pheasant body condition did not decline with the amount of lead in the wing bones. Our data suggest that game managers on shooting estates should be aware that pheasants are vulnerable to shot ingestion and may need to consider measures to reduce this problem in areas where prevalence is high.

Chesness, R. A., and M. M. Nelson. 1964. Illegal kill of hen pheasants in Minnesota. Journal of Wildlife Management 28:249-253.

Abstract: Calculations based on information obtained by interviewing hunters suggest that in recent years 3-6 percent of the preseason hen pheasant (*Phasianus colchicus*) population has been killed in Minnesota during cock-only hunting seasons. Calculations based on X-ray examination to determine incidence of lead shot in birds dying after the hunting season indicate a hen kill of 11 percent, a figure similar to that in adjacent states. There are biases connected with both methods; however, the X-ray method probably provides the most accurate measure of illegal hen kill.

Dale, F. H. 1951. The refuge in pheasant management. Journal of Wildlife Management 15:337-346.

Abstract: 1. Cock pheasants in favorable habitats have demonstrated ability to withstand hunting pressures up to 300 gun hours per hundred acres and maintain a satisfactory remnant for breeding purposes. 2. Sex ratios of 10 or more hens per cock are adequate for the production of fertile eggs, and there is evidence that much wider ratios could be tolerated without loss of fertility. 3. Sex ratios divergent enough to reduce egg fertility have not been reported, even in areas of high hunter concentration. 4. Since other pheasant management goals can be attained without protection from hunting, the refuge, per se, must be judged solely on results of a reduced hunting season kill. 5. Even with unusually effective refuges, the reduction in statewide hen kill attributable to refuges is not likely to amount to more than 2 percent of the hen population. This would be accompanied by a larger reduction in harvest of cocks. 6. Since the usable pheasant population is measured by the harvest, any unnecessary reduction in cock kill must be considered a waste of the game crop and contrary to good management. 7. Legal protection and educational programs designed to save hen pheasants are more selective and probably more effective than refuges in pheasant management. 8. Pheasant populations are products of habitat. Improvement of the entire range within economic limitations and the full utilization of annual population surpluses wherever practicable appear to be reasonable goals of management.

George, R. R., J. B. Wooley, Jr., J. M. Kienzler, A. L. Farris, and A. H. Berner. 1980. Effect of hunting season length on ring-necked pheasant populations. Wildlife Society Bulletin 8:279-283.

Abstract: Comparison of ring-necked pheasant (*Phasianus colchicus*) spring roadside census data from the northern 2 tiers of counties in Iowa and the southern 2 tiers of counties in Minnesota over a 14-year period (1964-77) revealed no significant differences ($t = 0.45$, $P > 0.50$) in population trends despite consistently longer hunting seasons in Iowa. Both Minnesota and Iowa spring and summer pheasant indexes decreased exponentially from 1964 through 1977, due to habitat loss resulting from land-use changes and intensive farming.

Lyon, L. J. 1961. Evaluation of the influences of woody cover on pheasant hunting success. Journal of Wildlife Management 25:421-428.

Abstract: Hunting-season data collected on 23 nine- section (5,760 a.) study areas in 1955 and 1957 are analyzed to determine the influence of woody windbreak plantings on hunter success. After adjustment for differences in hunting effort and pheasant populations among areas, it is shown that more birds are killed with less effort where woody plantings are present. Over a 20-yr. period, the additional birds taken from an underharvested pheasant population are harvested for approximately $1 apiece in habitat development funds.

Runia, T. J, and A. J. Solem. 2016. Spent lead shot availability and ingestion by ring-necked pheasants in South Dakota. Wildlife Society Bulletin 40:477–486.

Abstract: Lead is toxic to all vertebrate species and ingestion of lead ammunition has been reported in >130 avian species. Research has primarily focused on the effects and exposure of spent lead shot on

waterfowl with little information about effects on upland game species, such as ring-necked pheasant (*Phasianus colchicus*). We collected 1,450 soil samples to estimate the availability of lead shot on 2 licensed shooting preserves in South Dakota, USA, 2012–2013. We concurrently collected gizzards from 660 hunter-harvested wild male pheasants from the shooting preserves and compared lead ingestion rates with those of 1,301 gizzards collected from nonpreserve areas. Spatial modeling showed the distribution of spent lead shot was associated with the systematic hunting pattern of each study site and, to a lesser extent, land-use type. Prevalence of ingested lead shot was 4.9 times greater for birds harvested on shooting preserves (3.9%, 95% CI = 2.7–5.7%) when compared with nonpreserve areas (0.8%, 95% CI = 0.4–1.4%) where lead shot availability was presumed less. Wild pheasants inhabiting areas of artificially high hunting intensity and lead deposition are at elevated risk of lead exposure and poisoning, although the consequences of lead ingestion in wild pheasants are unknown.

Smith, J. L. D., A. H. Berner, F. J. Cuthbert, and J. A. Kitts. 1992. Interest in fee hunting by Minnesota small-game hunters. Wildlife Society Bulletin 20:20-26.

Abstract: We conducted a telephone survey to determine the willingness of Minnesota small-game hunters to pay for high-quality hunting where the fee is based on wild pheasant populations. Although 66% of interviewees rated pheasants as 1 of their top 3 choices to hunt, 52% actually hunted pheasants during the period 1982-1986 and only 24% hunted pheasants in 1986. Over half the interviewees found it "difficult" or "very difficult" to find a good place to hunt pheasants in Minnesota. These results indicate that demand for quality pheasant hunting is greater than its availability. Seventy-four percent of the hunters listed "obtaining a place to hunt" and "lack of interference from other hunters" as the most important factors defining a high-quality hunt, and a significant portion of small-game hunters in Minnesota demonstrated interest in a system that would pay landowners for quality hunting experiences. Almost half of the interviewees expressed willingness to pay $250/season for access to a site where they could expect to flush 41-70 birds/morning, and approximately 25% were willing to pay $500 for the same opportunity.

Stokes, A. W. 1968. An eight-year study of a northern Utah pheasant population. Journal of Wildlife Management 32:867-874.

Abstract: Total hunting pressure on a 9,300-acre pheasant (*Phasianus colchicus*) hunting unit was very closely correlated with the number of hunters on the unit and only to a limited degree with fall pheasant density. Mean number of hours in the field per hunter was inverse to pheasant density, perhaps a result of the low daily bag limit and the presence of many persons who hunted only on the first 2 days of the season. In the 8 years of the study, the harvest of cocks ranged between 76 and 88 percent of the fall population. The percent of cocks shot was not related to pheasant density. Age ratios of cocks based on bursal measurement varied from 4.6 to 11.1 juveniles per adult. Calculated age ratios for hens varied from 1.7 to 4.6. Factors affecting annual productivity and fluctuations were studied. The fall density was not related to the population of the previous fall. Mean spring temperature April 20-May 10 may have influenced productivity; the higher the temperature, the higher the productivity. Annual productivity was inverse to the spring breeding population. In addition, the higher the productivity, the greater the percent change of the fall population from one year to the next. Change in productivity with breeding density appears to be an important means of maintaining balance in the population. Deviations from mean spring temperatures and mean spring breeding density were suggested as means to predict changes in the fall pheasant density in the forthcoming hunting season.

Whiteside, R. W., and F. S. Guthery. 1983. Effects of hunting on ring-necked pheasants in northwest Texas. Wildlife Society Bulletin 11:250-252.

Abstract: Increasing the length of the hunting season beyond 1-2 weeks has had little effect on the survival of ring-necked pheasant (*Phasianus colchicus*) cocks in most portions of their range. The purpose of this research was to determine if these principles are applicable to pheasants in northwest Texas. Pheasants were censused on playa basins (9.6-28.5 ha) during pre- (November) and post-hunt (February- March) periods of 1979-1980 (*n* = 25 playas), 1980- 1981 (*n* = 31 playas), and 1981-1982 (*n* = 29 playas). The December hunting seasons were 16 days during 1978 (the year preceding the study), 1980, and 1981, and 30 days in 1979. Survival rates of both cocks and hens and post-hunt populations of cocks were lower ($P < 0.05$) during the longer than during the shorter season. Habitat deficiencies and hunting tactics, exclusive of hunting pressure, may explain the negative relationship between season length and cock survival. Our data indicate fall populations after the 30-day season were similar to those after 16-day seasons in 1978 and 1981. Thus, the 30-day season seems acceptable in northwest Texas, but longer seasons could result in excessively distorted sex ratios and low productivity.