The National Wild Pheasant Conservation Plan

Key Literature:
Effects of predation and predator management 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.

Chesness, R. A., M. M. Nelson, and W. H. Longley. 1968. The effect of predator removal on pheasant reproductive success. Journal of Wildlife Management 32:683-697.

Abstract: Effects of nest predation on pheasant (*Phasianus colchicus*) production were studied on two areas in southern Minnesota during 1960-64. Principal nest predators were striped skunks (*Mephitis mephitis*), spotted skunks (*Spilogale putorius*), raccoons (*Procyon lotor*), and crows (*Corvus brachyrhynchos*). During the nesting seasons of 1960-62, 434 predators were removed from the 2,560-acre Trapped Area; none were removed from the 4,080-acre Untrapped Area. Searches in at least a third of each area's potential nesting cover revealed 460 nests on the Trapped Area and 429 on the Untrapped Area. Nest densities on the two areas were similar each year, but declined during the 3 years. On the Trapped Area, hatching success progressively improved during the study, reaching 36 percent in 1962. On the Untrapped Area, by contrast, hatching success remained consistently low and was only 16 percent in 1962. Predation was highest on poorly concealed nests, especially those located in fencerows. Nest losses from other causes, chiefly haymowing, were comparable between study areas. Clutch size averaged higher on the Trapped Area and chick production per 100 acres was consistently higher than on the Untrapped Area, showing roughly a twofold difference in 1961 and 1962. Dummy nests placed in selected cover types supplemented information obtained from natural nests. Results from the former suggested (1) that predation, especially by crows, was highest early in the nesting season, (2) that predation was highest among poorly concealed nests, and (3) that there were no carry-over benefits one year after predator removal. Late summer pheasant censuses were inconclusive, probably because of inadequate sampling and because ingress and egress obscured population responses on our small study areas. Costs of removing predators averaged $21.00 per predator taken and $4.50 for each chick hatched on the Trapped Area in excess of the number hatched on the Untrapped Area. It was concluded that, using presently available techniques, removal of nest predators would not be economically feasible for improving pheasant hunting on extensive agricultural lands, even if the increase in chicks was directly reflected in the fall population.

Frey, S. N., S. Majors, M. R. Conover, T. A. Messmer, and D. L. Mitchell. 2003. Effect of predator control on ring-necked pheasant populations. Wildlife Society Bulletin 31:727-735.

Abstract: Increased predation by mammalian predators has contributed to declining ring-pheasant (*Phasianus colchicus*) populations in many areas of the United States, including the Intermountain West. To reduce the impacts of predation, managers of upland-management areas usually reduce predator numbers, improve nesting habitat to increase pheasant production, or provide a combination of both techniques. Many of these are 5-20 km^2 in size because they often are former dryland grain farms that have returned to the state or School and Institutional Trust Lands. The purpose of our study was to test whether predator removal in areas of this size could increase pheasant recruitment survival. We analyzed the effects of mammalian predator removal during winter spring on populations of mammalian predators and pheasants, as well as the subsequent effect on pheasant-hunter success in 2 separate sites in Utah. At both sites, we located series of paired plots and then randomly selected one plot of each pair to serve as treated plot (predator removal) and the other as the untreated plot. At site 1, where each plot was 10.4 km^2, there were no differences in mammalian-predator numbers between 6 treated and 6 untreated plots. Additionally, we could find no differences in pheasant numbers or in the success of pheasant hunters between treated and untreated plots. In site 2, where plots were 4 times larger than in site 1, treated plots had more pheasants. Our results indicated that predator removal might not increase pheasant populations when applied only to small areas (10.4 km^2) but might be more successful in larger areas.

Riley, T. Z., and J. H. Schulz. 2001. Predation and ring-necked pheasant population dynamics. Wildlife Society Bulletin 29:33-38.

Abstract: Because ring-necked pheasants (*Phasianus colchicus*) are an important wildlife resource in agricultural ecosystems, we reviewed the role of predators on pheasant population dynamics and suggest management options to ameliorate predation. Predator reduction programs have the potential to increase survival and recruitment, but these parameters decrease once predator control ceases. Extensive application of predator reductions may be ethically questionable, and habitat management directed at moderating the effects of predators at the landscape scale is expensive. An extensive distribution of cover during the nesting and brood-rearing periods can increase pheasant recruitment. Federal agricultural and conservation programs can be used to accomplish many of these landscape habitat improvements, but federal and state agencies must provide the technical assistance to deliver the program options to producers. New federal farm programs aimed at improving avian survival and recruitment must have an evaluation and monitoring component built in to determine their effectiveness.