The National Wild Pheasant Conservation Plan

Key Literature:
Pheasant habitat effects on general population dynamics

Last Updated: December 18, 2016

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.

Guthery, F. S., and J. H. Shaw. 2013. Density dependence: applications in wildlife management. Journal of Wildlife Management 77:33-38.

Abstract: Knowledge of density-dependent processes is regarded as important for making decisions on the management of wildlife populations. Using published data on ungulates and upland game birds, we discuss density-dependent effects on population growth, harvest management under the logistic model, and management to increase or decrease survival and production. Empirical data show density-dependent growth for white-tailed deer (*Odocoileus virginianus*), reindeer (*Rangifer tarandus*), ring-necked pheasants (*Phasianus colchicus*), and northern bobwhites (*Colinus virginianus*), although the logistic model provided, at best, an approximation of growth. Managing harvest according to logistic theory is rare for ungulates and upland game; we suspect this owes to scarce data on population growth and complexity in density-dependent processes. Under density dependence, managing to increase production or survival may be self-defeating because an increase in 1 demographic variable entails a decrease in the other for sustaining populations ($\lambda = 1$). The problem can be addressed by providing space for population growth ($\lambda > 1$), at least until growth re-establishes the density-dependent response ($\lambda = 1$).

Jarvis, R. L., and S. G. Simpson. 1978. Habitat, survival, productivity, and abundance of pheasants in western Oregon, 1947-1975. Journal of Wildlife Management 42:866-874.

Abstract: Indices of survival, productivity, and density were derived from annual censuses of ring-necked pheasants (*Phasianus colchicus*) in the Willamette Valley from 1947 to 1975. Abundance of pheasants in spring was moderate and variable in the late 1940's and early 1950's (10-20 birds/40.5 ha), increased in the early 1960's (35-40/40.5 ha), and decreased in the early 1970's (3-8/40.5 ha). Amount of land in soil bank was closely correlated to abundance of pheasants in spring. Reproductive performance remained relatively constant from 1949 to 1975. Survival of adult females during summer and during winter were significantly correlated ($r = 0.89$) to annual percent change in total density of pheasants in spring. About 25 to 30 percent of the pheasant habitat in the Willamette Valley was lost between 1945 and 1970. Survival of adult females was the most important factor affecting long term trends in population size.

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.