A two year study of pheasant stocking in the Gallatin Valley, Montana
by Edwin F Roby

A THESIS Submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of Master of Science in Wildlife Management
Montana State University

Abstract:
A carefully planned small scale study was conducted in Gallatin County, Montana to secure survival data on game farm pheasants. The, area selected for the study is an agricultural area northwest of Bozeman. Land use practices and natural topography make the area. well suited for pheasants. Five hundred and fourteen 10 week old birds were used in the experiment. In 1948, 96 birds were released.

In 1949, 375 birds were released. Approximately one-half of each-release group was released by the gentle method and one-half by the violent method. Four release sites were used. All birds were marked and banded to permit field observations and identification of birds killed by hunters. In 1948 band returns were voluntary but in 1949 checking stations were also used to collect necessary information. During the winter of 1950 trapping operations were carried on to collect further data.

Dispersal from release sites suggested that the gentle release birds dispersed at a slower rate than the violents. In 1948; 11 bands (,12.8 per cent of the total cocks released) were returned by hunters.

In 1949; 42 banded birds (14.5 per cent of the total cocks released) .were killed by hunters or trapped during the winter. These figures suggest that returns from both years were about the same. Data obtained were compared with those, obtained in other states. In 1949 band returns were analysed on the basis of method and place of release. No marked difference in survival was found for the two release methods. Little information was obtained, when survival and habitat were compared. Checking station data showed that only per cent of the hunter kill were game farm pheasants. Sixty-seven per cent of the birds taken were wild birds of the year. The movement of 48 banded birds taken by hunters and trapping showed that 41.7 per cent moved less than one mile, SO per cent moved from one to three miles, 2.1 per cent moved from four to five miles, and 6.2 per cent moved from nine to fourteen miles. Data indicate that more gentle release birds settled within one mile of release sites than did violents. More violents moved from one to three miles than gentles, and violents were in majority in movements from four to fourteen miles.

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at

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ABSTRACT

A carefully planned small scale study was conducted in Gallatin County, Montana to secure survival data on game farm pheasants. The area selected for the study is an agricultural area northwest of Bozeman. Land use practices and natural topography make the area well suited for pheasants. Five hundred and fourteen 10 week old birds were used in the experiment. In 1948, 96 birds were released. In 1949, 375 birds were released. Approximately one-half of each release group was released by the gentle method and one-half by the violent method. Four release sites were used. All birds were marked and banded to permit field observations and identification of birds killed by hunters. In 1948 band returns were voluntary but in 1949 checking stations were also used to collect necessary information. During the winter of 1950 trapping operations were carried on to collect further data.

Dispersal from release sites suggested that the gentle release birds dispersed at a slower rate than the violents. In 1948, 11 bands (12.8 per cent of the total cocks released) were returned by hunters. In 1949, 42 banded birds (14.5 per cent of the total cocks released) were killed by hunters or trapped during the winter. These figures suggest that returns from both years were about the same. Data obtained were compared with those obtained in other states. In 1949, band returns were analysed on the basis of method and place of release. No marked difference in survival was found for the two release methods. Little information was obtained when survival and habitat were compared. Checking station data showed that only 4.5 per cent of the hunter kill were game farm pheasants. Sixty-seven per cent of the birds taken were wild birds of the year. The movement of 48 banded birds taken by hunters and trapping showed that 41.7 per cent moved less than one mile, 50 per cent moved from one to three miles, 2.1 per cent moved from four to five miles, and 6.2 per cent moved from nine to fourteen miles. Data indicate that more gentle release birds settled within one mile of release sites than did violents. More violents moved from one to three miles than gentles, and violents were in majority in movements from four to fourteen miles.

INTRODUCTION

The annual stocking of game farm pheasants has long been practiced in Montana. Findings in other states (Gerstell 1936, Buss 1946, Ginn 1947, Pushee 1948, McNamara 1949) cast considerable doubt on the advisability of this practice when the results are analysed on the basis of "returns" in the hunter's bag. A detailed small scale study was conducted in Gallatin County to secure survival data on game farm pheasants released in that area. These data are evaluated on the basis of methods of release, habitat where released, and the relative importance of "returns" in the hunter's bag when compared with birds produced naturally in the field.

It is impractical to list all who aided in the study but the writer wishes to extend his appreciation to the following: Don C. Quimby for advice and guidance during the field work and preparation of the manuscript; Clifford V. Davis for suggesting the problem and aid on many occasions; the Montana State Fish and Game Department for financial assistance, materials, and the advice of their technical staff, especially W. K. Thompson and W. H. Bergeson; my father, George W. Roby, for helping with the construction of release pens; W. D. Brandt, H. S. Hecox, Arthur Buckley, and H. B. Manley for permitting me to conduct investigations on their property.

THE STUDY AREA

The area selected for the study is an agricultural area northwest of Bozeman in the Gallatin valley (Fig. 1). General land use practices and the natural topography make the area well suited for pheasants. Much of the land is used for the production of cereal grains providing a food supply (see Hiatt 1947). Excellent cover, well interspersed with grain fields, is found along the banks of the many streams, roadsides and numerous small swampy areas. Willow (Salix sp.), chokecherry (Prunus melanocarpa), rose (Rosa fendleri), cat-tail (Typha latifolia), and hawthorn (Crataegus sp.) are found along roadsides and stream banks. The many fence rows contain Canadian thistle (Cirsium arvense), gooseberry (Ribes sp.), rose (Rosa fendleri), and tall grasses. In some of the more open areas much sweet clover and alfalfa are found.

Four release sites were selected as follows: release site 1 is in an abandoned farm yard and pasture, 200 by 800 feet, located in the northeast corner of the study area about 5.75 miles northwest of site 2, 3 miles northeast of site 3 and 3 miles east of site 4 (see Fig. 1). The vegetation includes quack grass (Agropyron repens), bluegrass (Poa pratensis), needle and thread (Stipa comata), western wheatgrass (Agropyron smithii), wavy leaved thistle (Cirsium undulatum), yarrow (Achillea millefolium), and fanweed (Thlaspi arvense). In the farm yard itself and around the buildings there are cottonwood (Populus angustifolia), apple (Malus sp.), rose (Rosa fendleri), loco

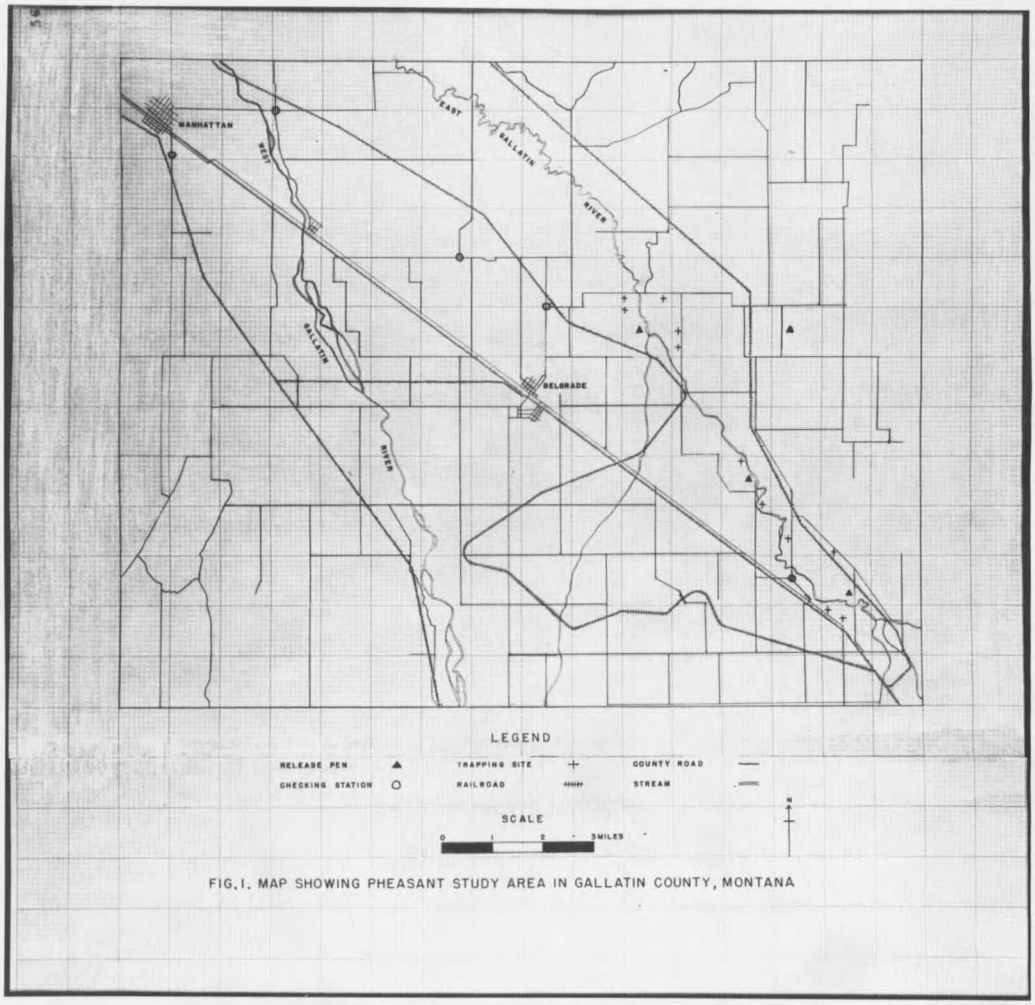


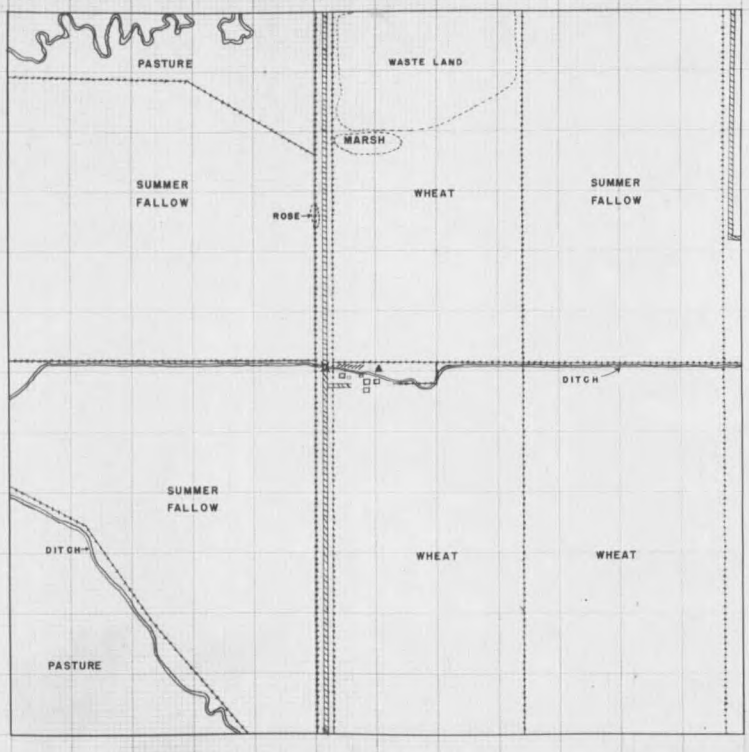
FIG. 1. MAP SHOWING PHEASANT STUDY AREA IN GALLATIN COUNTY, MONTANA

(Oxytropis lambertii), and wild licorice (Glycyrrhiza lepidota). Vegetational types, irrigation ditches and other general features of the immediate vicinity are shown in Figs. 2 and 3.

Release site 2 is in a pasture 5.75 miles southeast of site 1, 3 miles east of site 3 and 7.5 miles southeast of site 4. The vegetation includes willow (Salix sp.), Canadian thistle (Cirsium arvense), rose (Rosa fendleri), yarrow (Achillea millefolium), aspen (Populus tremuloides), chokecherry (Prunus melanocarpa), snowberry (Symphoricarpos occidentalis), downy chess (Bromus tectorum), mountain brome (Bromus marginatus), timothy (Phleum pratense), western wheatgrass (Agropyron smithii) and Poa sp. (Figs. 4 and 5).

Release site 3 is also in a pasture situated 3 miles south of site 1, 3 miles west of site 2 and 4.2 miles southeast of site 4. The area contains the following plants: Canadian thistle (Cirsium arvense), yarrow (Achillea millefolium), sweet clover (Melilotus alba), iris (Iris missouriensis), bluegrass (Poa pratensis), western wheatgrass (Agropyron smithii), downy chess (Bromus tectorum), snowberry (Symphoricarpos occidentalis), willow (Salix sp.), cottonwood (Populus angustifolia), rose (Rosa fendleri) and poison hemlock (Conium maculatum) (Figs. 6 and 7).

Release site 4 is 3 miles west of site 1, 7.5 miles southwest of site 2 and 4.2 miles north of site 3. The vegetation in the area includes cat-tail (Typha latifolia), sedge (Carex sp.), poison



LEGEND

RELEASE PEN ▲ BUILDING □ STREAM

FENCE COUNTY ROAD ORCHARD

SCALE

0 400' 800' 1200'

N

FIG. 2. MAP OF IMMEDIATE AREA SURROUNDING PHEASANT RELEASE SITE I

Fig. 3. Release site 1 showing the gentle release pen.

LEGEND

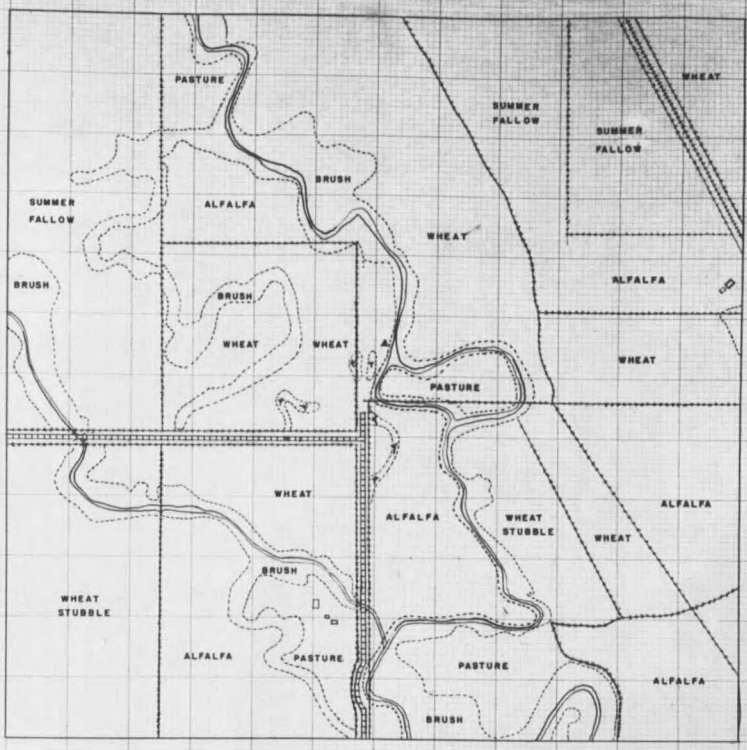
ASPEN	AS	COTTONWOOD	CTN	STREAM	
RELEASE PEN	▲	BUILDING	□	FENCE	
		COUNTY ROAD			
		RAILROAD			

SCALE
0 400' 800' 1200'

N

FIG. 4. MAP OF IMMEDIATE AREA SURROUNDING PHEASANT RELEASE SITE 2

Fig. 5. Release site 2 showing the gentle release pen.



LEGEND

WILLOW FENCE		RELEASE PEN		BUILDING	
		COUNTY ROAD		RAILROAD	
		STREAM			

SCALE

0 400' 800' 1200'

FIG.6. MAP OF IMMEDIATE AREA SURROUNDING PHEASANT RELEASE SITE 3

Fig. 7. Release site 3 showing the gentle release pen.

hemlock (Conium maculatum), rose (Rosa fendleri), thistles (Cirsium arvense) and (Cirsium undulatum), willow (Salix sp.), cottonwood (Populus angustifolia), snowberry (Symphoricarpos occidentalis), gooseberry (Ribes setosum), orchard grass (Dactylis glomerata), timothy (Phleum pratense) and foxtail (Hordeum jubatum) (Figs. 8 and 9).

A release pen 50 by 25 by 4 feet similar to those described by Kozlik (1948) was constructed at each release site. The sides consisted of 2 inch mesh wire; the top of camouflage netting which provided shade. For protection against predators, an additional strip of 1 inch mesh wire was placed around the bottom to a height of about 18 inches. A single electrically charged wire was also placed at this height on two of the pens. A shelter was constructed in each to provide protection from inclement weather.

METHODS

Five hundred and fourteen 10 week old birds were used in the experiment. On August 16, 1948, 96 birds were released at release site 1; 45 ♂♂ by violent release method (no pre-release treatment) and 41 ♂♂ and 10 ♀♀ by the gentle release method (Kozlik 1948). In this method the pheasants were confined in release pens for two weeks where they were fed and watered regularly. Then the sides of the pen were elevated to allow the pheasants to escape gradually into the wild. In 1949, 418 birds were used in the study but only 375 (289 ♂♂) were actually released into the wild. Forty-