

IDAHO DEPARTMENT OF FISH AND GAME

Cal Groen, Director

Project W-160-R-35

Progress Report



UPLAND GAME BIRD ECOLOGY

Study IV: Pheasant Ecology and Management

July 1, 2007 to June 30, 2008

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TABLE OF CONTENTS

PHEASANT ECOLOGY AND MANAGEMENT 1
 ABSTRACT 1
JOB 1. COMPLETE THE 1994-1999 TERRITORIAL MALE PHEASANT DENSITY AND
HABITAT MAPPING PROJECT IN GOODING COUNTY 1
 ABSTRACT 1
 RECOMMENDATIONS 1
 INTRODUCTION 1
 OBJECTIVE 2
 STUDY AREA 2
 METHODS 2
 RESULTS 2
JOB 2. COMPILE HISTORIC PHEASANT RESEARCH PROJECTS AND PUBLISH FOR
THE GENERAL PUBLIC 3
 ABSTRACT 3
 INTRODUCTION 3
 RECOMMENDATIONS 3
 OBJECTIVE 3
 RESULTS 3
LITERATURE CITED 4

LIST OF FIGURES

Figure 1. Introductory webpage for pheasants in Idaho. 5
Figure 2. Introductory and identification webpages for greater sage-grouse in Idaho. 6

**PROGRESS REPORT
STATEWIDE WILDLIFE RESEARCH**

STATE: Idaho **JOB TITLE:** Upland Game Bird Ecology
PROJECT: W-160-R-35
SUBPROJECT: _____ **STUDY NAME:** Pheasant Ecology and
STUDY: IV Management
JOBS: 1-2
PERIOD COVERED: July 1, 2007 to June 30, 2008

PHEASANT ECOLOGY AND MANAGEMENT

Abstract

A project started in 1994 involving the mapping of habitat used by territorial male pheasants is nearing completion. Preparation of the data for analysis has been a difficult process due to changing personnel and the complexity of the data. Compilation of past pheasant research in Idaho is being conducted and a publication is being written to be presented on the Department's webpage for not only pheasants but other upland game birds.

**JOB 1. COMPLETE THE 1994-1999 TERRITORIAL MALE PHEASANT DENSITY
AND HABITAT MAPPING PROJECT IN GOODING COUNTY**

Abstract

Surveys of pheasants (*Phasianus colchicus*) were conducted during the springs of 1994-1999 on 13 1-mile sections of agricultural land in Gooding County, Idaho. Crop reports and aerial photos are being used to determine cover types within the sections throughout the sampling years. The data has been edited and is now being analyzed.

Recommendations

1. Analyze data.
2. Prepare completion report and publish results in a peer reviewed journal.

Introduction

One aspect of pheasant ecology that may be limiting populations is habitat available for territorial males during spring breeding season (Robertson et al. 1993, Robertson 1996). Males display in open areas adjacent to heavier cover. The open cover provides for optimum displaying and attracting mates, while adjacent heavier vegetation provides escape security from predators (Leif 2005). As habitat is limited in agricultural areas, densities of territorial male pheasants may also be limited, reducing availability for mating with females and ultimately reducing the population size. Affects of habitat change can be better understood by examining

pheasant numbers over time as they relate to landscape change. Relating these changes to territorial male densities can provide important information allowing managers to determine factors limiting population levels.

Objective

The objective of this project is to determine habitat cover type characteristics associated with territorial male pheasant densities during breeding season.

Study Area

Pheasant surveys were conducted on square mile sections (259 ha) of agricultural land in northern Gooding County, Idaho. Gooding County is in south-central Idaho within the Snake River Plain and dominant crops include alfalfa, corn, small grain, potatoes, sugar beets, pastures, and beans. Dispersed between the crops are idle areas of annual herbaceous cover, sagebrush (*Artemisia* spp.), irrigation canal banks of grass, riparian and wetland areas, and grass ditch banks along roads. The topography is relatively flat averaging 1,000 m elevations. The mean annual precipitation is 26.7 cm and annual temperatures average 8.7° C.

Methods

Pheasants were counted from the ground according to protocol described by Robertson et al. (1993) and P. Robertson (pers. comm.). Observations were made a half hour before sunrise and 2 hours before sunset. Locations were plotted on aerial photos. An effort was made to observe every portion of the section by moving to strategic positions, observing with spotting scopes and/or binoculars, and listening for crowing and wing-flapping. Counts were conducted 3 times each spring, once during each of the following periods: 15-30 April, 1-14 May, and 15-31 May. Pheasants were classified into 3 groups: females, non-territorial males, and territorial males. Territorial males both crow and wing-flap during display. All males with accompanying females were considered territorial. Males displaying outside the section but within 107 m (320 ft) were also mapped.

Field edges were mapped with hand-held global positioning systems in 1999. These were overlain onto base maps of 1987 orthophoto quadrangle imagery from Idaho Department of Lands using ArcView (ESRI, Redlands CA 92373). Crop types were determined from Farm Services Administration (FSA) databases and field edges corrected for each year from FSA's annual aerial photos. Cover types were also determined 107 m (320 ft) and 214 m (640 ft) outside of the sections to include territories observed outside of the section.

Pheasant locations were transferred from field maps made by observers to global information systems (GIS) maps. P. Robertson (pers. comm.) estimated territories were 3 ha (7 ac) in Nevada. Therefore, we plotted 3 ha circles around each territorial male location so underlying cover can be measured.

Results

Thirteen sections were surveyed for pheasant densities during 1994-1999. Data entry and GIS map editing is complete. Analyzing the 1994-1999 pheasant breeding ecology data will allow a

better understanding of the relationship between pheasant density and cover dynamics. This knowledge will allow wildlife managers to provide information to private landholders and others interested in managing landscapes for pheasants.

JOB 2. COMPILE HISTORIC PHEASANT RESEARCH PROJECTS AND PUBLISH FOR THE GENERAL PUBLIC

Abstract

Ring-necked pheasants are a popular game bird among Idaho hunters. Research conducted in Idaho has not been adequately provided to the general public. Compilation of the work to be presented on the Department's webpage will allow interested publics to learn ecology and management. This will be expanded to include all upland game birds in Idaho.

Introduction

Ring-necked pheasants are a popular game bird among Idaho hunters. Unfortunately, populations have declined throughout the state and some controversy has arisen regarding the reasons. Considerable research has been done to better understand pheasant population dynamics and the influence of various factors on pheasant numbers but has not been adequately presented to the general public explaining the plight of this game bird. Creating a webpage with ecology and management information for each of Idaho's upland game birds will provide the general public and resource professionals with much needed information. This will be an ongoing project with 1-2 species added annually. The first species highlighted will be pheasants, followed by greater sage-grouse (*Centrocercus urophasianus*).

Recommendations

1. Compile results of pheasant research in Idaho.
2. Create webpage for each of Idaho's upland game birds highlighting research conducted in Idaho.

Objective

Compile results of pheasant research in Idaho and publish for the general public.

Results

Results from research projects on pheasants in Idaho, including university studies, is being compiled and a non-technical text is being written for the general public. Information on ecology and management from other literature sources is also being included. A similar product for each upland game bird is being produced and will be published on the Department's webpage and possibly printed as a handout. The introductory page for pheasants is provided in Figure 1. Figure 2 shows the introductory and identification pages for greater sage-grouse. The actual size will fit an 8.5x11 inch page in landscape orientation. The page is formatted to be downloaded and printed with enough space on the top margin to accept a 3-ring binder.

LITERATURE CITED

Leif, A. P. 2005. Spatial ecology and habitat selection of breeding male pheasants. *Wildlife Society Bulletin* 33:130-141.

Robertson, P. A. 1996. Does nesting cover limit abundance of ring-necked pheasants in North America? *Wildlife Society Bulletin* 24:98-106.

Robertson, P. A., M. I. A. Woodburn, W. Neutel, and C. E. Bealey. 1993. Effects of land use on breeding pheasant density. *Journal of Applied Ecology* 30:465-477.

RING-NECKED PHEASANT

PHASIANUS COLCHICUS

Ring-necked pheasants are one of Idaho's most popular game bird by the sport hunting public. Though not native to Idaho or North America, 22 were first released in 1907 near Buhl and the Hagerman Valley of southern Idaho. One thousand from Oregon were released throughout the state in 1909. The first hunting season was in 1916 in response birds damaging crops. The first of two game farms was established in 1924.

Originally from eastern Asia, pheasants adapted to Idaho's landscape and flourished through the 1960's and '70s. During the 1980's, as some of the last remaining idle ground (winter cover), was converted to cropland, pheasant numbers began to decline, especially after hard winters. Many other factors have been attributed to the pheasant decline in Idaho including use of pesticides, cutting of alfalfa (nesting cover) during the nesting season, and changes in types of predators and abundance.

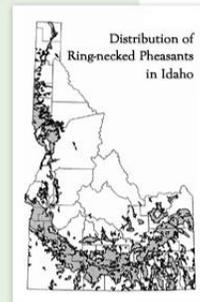
Currently, pheasant populations in Idaho are low but stable. Efforts have been made to increase critical habitat on privately owned land with the help of local Pheasants Forever chapters and the Idaho Department of Fish and Game's Habitat Improvement Program.

CONTENTS	
Identification	2
Reproductive Biology	3
Habitat Use	4
Food Preferences	5
Movements	6
Population Dynamics	7
Management	8
Threats	9
References	10

Core to the health of any game bird population is the quality and quantity of critical habitat such as nesting, brood rearing, and wintering. Without adequate habitat, no game bird, especially ring-neck pheasants, can endure at the levels we desire.

Biology Basics

- Weight ♂ 1.2kg ♀ 0.9kg
- Length ♂ 84cm ♀ 53cm
- Life Span ♂ 1-3 years ♀ 1-3 years
- Annual Survival ♂ 7% ♀ 21-46%
- Nesting Rate > 90%
- Nest Success 40-80%
- Eggs 7-15/clutch 4.5x3.6cm 33g
- Incubation 23 days
- Renesting Rate > 90%
- Home Range 8-135 ha
- Habitat Agriculture/grass/shrub edge
- Origin Native to Asia



Taxonomy

- Kingdom Animalia
- Phylum Chordata
- Class Aves
- Order Galliformes
- Superfamily Phasianoidea
- Family Phasianidae
- Sub-Family Phasianinae
- Genus *Phasianus*
- Species *colchicus*

Figure 1. Introductory webpage for pheasants in Idaho.

GREATER SAGE-GROUSE

CENTROCERCUS UROPHASIANUS

Greater Sage-Grouse is Idaho's largest grouse species and is endemic to the inter-mountain west. No where else in North America or the world is there a species as unique as sage-grouse and no gamebird is so closely tied to a single habitat, shrub-steppe. Therefore, it is also no coincidence sage-grouse share part of their name with sagebrush, the main component in shrub-steppe. Sage-grouse rely on sagebrush year round for both food and cover.

Sage-grouse were first described by the Lewis and Clark expedition in 1805. The population has drastically declined since then due to changes in the landscape both in habitat quality and quantity. Idaho is one of 11 states and 2 Canadian Provinces that have sage-grouse populations. Idaho still supports huntable populations but seasons and bag limits are altered as needed to coincide with the changing numbers.

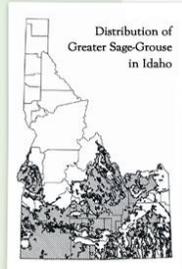
Sage-grouse were recently separated into 2 subspecies, greater and Gunnison sage-grouse, based on genetic examinations. The Gunnison subspecies weighs 1/4 less, their breeding displays and plumage are slightly different, and they are limited in range to portions of western Colorado and eastern Utah.

CONTENTS	
Identification	2
Reproductive Biology	3
Habitat Use	4
Food Preferences	5
Movements	6
Population Dynamics	7
Management	8
Threats	9
References	10

Both greater and Gunnison sage-grouse have not, and likely will not, adapt to land drastically altered by man's encroachment onto the high desert. The first step to safeguard sage-grouse existence is to become educated in the ecology of this icon of the west.

Biology Basics

- Weight ♂ 2.8kg ♀ 1.6kg
- Length ♂ 65-75cm ♀ 50-60cm
- Life Span ♂ 4-5 years ♀ 6-7 years
- Annual Survival ♂ 50% ♀ 55-85%
- Nesting Rate 80%
- Nest Success 45-50%
- Eggs 7-9/clutch 5.5x3.8cm 46g
- Incubation 27 days
- Renesting Rate < 20%
- Home Range 18-45 km²
- Habitat Shrub/Steppe, Sagebrush
- Origin Native to North America



Taxonomy

- Kingdom Animalia
- Phylum Chordata
- Class Aves
- Order Galliformes
- Superfamily Phasianoidae
- Family Phasianidae
- Sub-Family Tetraoninae
- Genus *Centrocercus*
- Species *urophasianus*

Updated 2007

Identification of greater sage-grouse can be done both in the field and with a bird in hand. Telling males from females and young birds from old can be easy if you know a few basic characteristics.

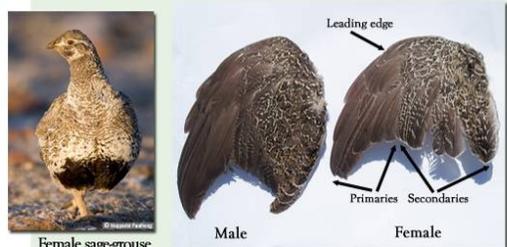
In the field: Greater sage-grouse can be identified from other game birds by their coloration and flight patterns. In general, sage-grouse are mottled grey and white with a black belly. They can be mistaken for sharp-tailed grouse at times, but lack the short, white tail feathers of sharp-tails. Male sage-grouse have a slower wing-beat than females when flushed. Also, females twist their bodies in flight showing their black bellies and tend to "chuckle" as they fly away. Of course, during the spring, males are easily identified by their white breast feathers and courtship behavior. Once they molt their spring plumage, males look very similar to females, except they are about twice as big.

In the hand: Hunters have a unique opportunity to identify birds they have harvested by closely examining the wing feathers. Taking a wing in hand, look at the leading edge near the point where the primary flight feathers attach to the wing. Females have tiny feathers with blotches of cream or white color at the center of the shaft. Males may have buffy white on the outer edges of these feathers but rarely have blotches at the center of the shaft.

Juvenile birds, those in the first year of life, do not molt the outer two primaries until they are almost one year old. After their first year, they molt their wing feathers every summer. Therefore, by fall, adults have new primary feathers that are round on the tips but juveniles are pointed and worn. Adults may still be molting their outer two primaries during the fall, showing small feathers growing out of membrane coverings called "sheaths".

Females that successfully hatch a clutch of eggs will delay molting their primaries. As their primaries are replaced from the body out towards the tips, by mid-October, the molt pattern of a successful hen will have a new, still growing shorter feather, 3-4 places from the tip.

So as you can see, biologists can gain valuable information by collecting wings from hunters in the fall.



Wings of male and female sage-grouse



Leading edge of wings

Sheathing of outer primaries

Primary feathers



Primary feathers are counted from the outer edge in towards the body. Primary 7 is shorter than those surrounding it for this hen harvested in October. Number 7 was still growing after the old feather had molted. If the molting feather is at position 10 or 9 during the fall, the hen is not considered a successful nester.

Updated 2008

Figure 2. Introductory and identification webpages for greater sage-grouse in Idaho.

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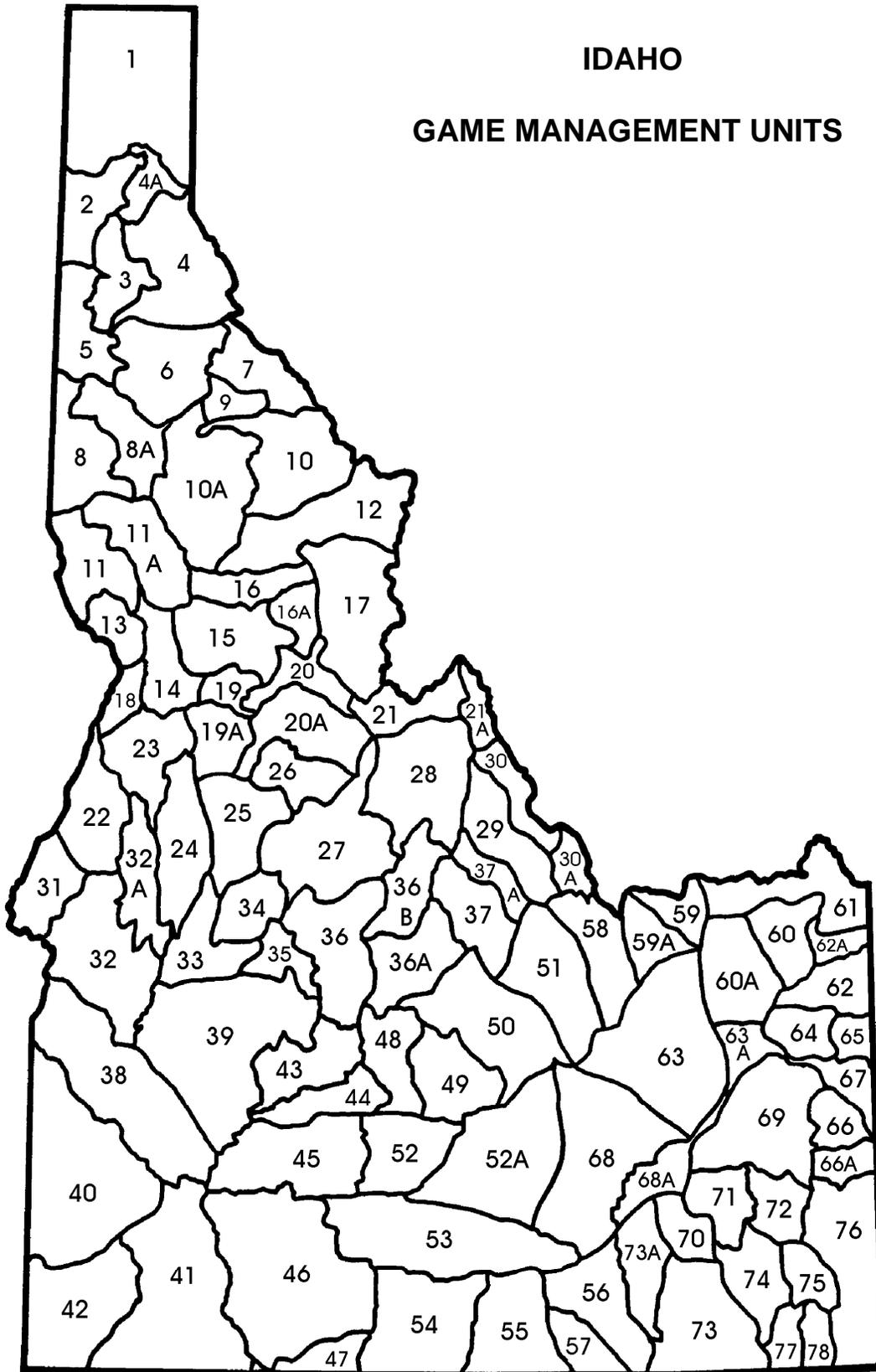
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IDAHO

GAME MANAGEMENT UNITS



FEDERAL AID IN WILDLIFE RESTORATION

The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sale of handguns, sporting rifles, shotguns, ammunition, and archery equipment. The Federal Aid program then allots the funds back to states through a formula based on each state's geographic area and the number of paid hunting license holders in the state. The Idaho Department of Fish and Game uses the funds to help restore, conserve, manage, and enhance wild birds and mammals for the public benefit. These funds are also used to educate hunters to develop the skills, knowledge, and attitudes necessary to be responsible, ethical hunters. Seventy-five percent of the funds for this project are from Federal Aid. The other 25% comes from license-generated funds.

