



# **RING-NECKED PHEASANT** (*Phasianus colchicus*)

## **Fish and Wildlife Habitat Management Guide Sheet**

Natural Resources Conservation Service (NRCS) – Minnesota

January 2002



### **GENERAL INFORMATION**

The primary pheasant range coincides with the southern two-thirds of Minnesota, and occupies all or parts of 68 counties (Figure 1). Habitat changes made to the historic tallgrass prairie between the late 19th and early 20th century as the result of agriculture, provided favorable conditions for pheasants by the time this exotic was successfully introduced in 1916.

Original habitat features of the primary pheasant range consisted of favorably distributed combinations of relatively small-sized corn and small grain fields, bordered by grassy field borders and fencerows. Idle cropland and odd or poorly drained acreage of grass-legume mixtures and weeds, ungrazed shelterbelts, and other undisturbed wetland and grassland types rounded out the habitat that provided an adequate abundance and interspersed of all basic food and cover requirements.

Present population levels are the result of a drastic decline that began in the early 1960's. With improved agricultural technology and intensified agricultural land use, and farming practices that increased field size, reduced plant diversity, eliminated nesting, brood rearing and winter habitats, the pheasant has become increasingly hard pressed to find suitable shelter, food and nesting cover.

### **ANNUAL LIFE CYCLE**

The home range of the pheasant is normally within 1 mile or less, surrounding or adjacent to their hatching site. Daily range seldom exceeds ½ mile. The critical periods within the pheasant life cycle are reproduction, brood-rearing, and overwintering. The reproduction period consists of the breeding, nesting and hatching activities. The brood rearing period concerns juvenile pheasant development and the overwintering period pertains to pheasant survival during the winter season.

#### **Breeding Period**

The main pheasant breeding season normally extends from early April through May. Progress of the breeding season is marked by an increase in cock crowing intensity. The crowing territory is somewhat indefinite, and the male stakes out and claims the territory to be defended against all other males. The general sex ratio is one male for every two to three females and the males will mate with any receptive female that enters his territory.

#### **Nesting and Incubation Period**

Throughout the nesting season, hens search out grassy cover in roadsides, drainage ditches, grassed waterways, shelterbelts, woodlots, herbaceous wetlands, and the margins of small lakes. The time for the beginning of nesting and incubation normally starts in mid April and attains peak activity throughout May. Nest construction starts with a shallow depression scratched in the ground. It then is lined with grass and leaves.

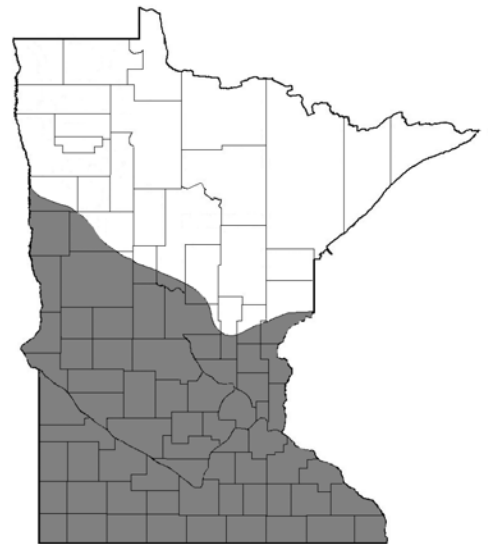


Fig. 1 Pheasant range in Minnesota

The incubation period is about 23 days and start after all eggs have been laid. The hen remains on her nest, leaving only briefly each day to feed. The average size of April clutches is 10-12 eggs, but there is a decline with each re-nesting attempt to a July average of about 6. Pheasant production is supplemented by one to four attempts at nesting. If the first nest is destroyed, the hen will repeatedly nest until she is successful in hatching a clutch. Only one brood is hatched in a reproductive season. Because of this strong tendency to re-nest, from 40%-70% of hens successfully hatch their eggs. The major hatching period in Minnesota is in June, and the reproductive season is over by the end of July with the exception of a few unusually late re-nesting attempts.

### Brood Rearing Period

Twenty-three days after the start of incubation, the chicks pip the shell. Hatching is complete within about 24 hours. The hen leads her chicks away from the nest as soon as their fine down is dry. Most hens take their broods to fields of small grain, alfalfa, or hay where the chicks can move about easily and feed on insects. Insects such as grasshoppers, ants, and crickets are an excellent source of protein. Insects make up 90% of the chicks diet in its first week, and up to 50% during the first five weeks. During the first three weeks, hens and their chicks remain within a 10-20 acre area around the nest. Roosters, hens, and broods gradually expand their home range to about 80 acres, when the chicks reach 8 weeks old. On the average, three chicks in every brood are lost between hatching and 8 weeks of age.



### Overwintering Period

The important feature of the overwintering period is survival. The severity of the winter season to a large extent determines the proportion of the autumn population that survives to participate in the breeding season. The pheasant is well equipped to survive the harsh winter environment. Its large size and strong muscles enable it to move freely over all but deep, and fluffy snow. Its plumage is thicker than at any time of the year and layers of fat insulate its body, while providing a source of energy.

## HABITAT REQUIREMENTS

### Food

Pheasants are omnivorous feeders and have a versatile diet. Adult diets typically comprise 95% plant matter and 5% insects. Food shortages are most common during the winter months in the intensive agricultural areas of



Minnesota where fall tillage and snow has buried waste grain from the fall harvest. With good cover and a source of food within  $\frac{1}{4}$  mile, pheasants can survive extremely cold temperatures. During the winter, pheasants frequent wind blown crop fields where waste grain has been exposed, corn cribs, grain bins and feed lots. They also feed on fleshy fruits, weed seeds and other parts of wild plants when the snow gets deep. With good cover and a source of food within one fourth of a mile, pheasants can survive even severe winters.

Juveniles generally utilize greater amounts of insects than adults. Juvenile diets typically comprise 70% plant matter (predominantly farm crops) and 30% insects. Chicks live almost exclusively on insects during their first few weeks. Therefore, discourage the use of insecticides, which may limit the amount, and diversity of insect food sources.

There are a number of ways to increase food availability for pheasants. Encourage the use of conservation tillage systems such as no-till, ridge-till and mulch-till, or delay moldboard plowing until the spring. These practices leave waste grain and stubble on the soil surface over winter and reduce down-wind drifting into critical winter cover.

Because waste grain is buried by snow during severe winters, establish food plots to concentrate pheasants near quality winter cover such as woodlots, woody cover plantings and emergent wetlands. Food plots should be located within  $\frac{1}{4}$  mile of quality winter cover and a minimum of  $\frac{1}{4}$  acre in size. However, food plots 2-5 acres in size provide multiple benefits of food and winter cover. Severe winters occur about every 3-7 years in Minnesota, the only way to be ready for the bad years is to provide adequate food and cover every year.

## **Nesting Cover**

Pheasants nest in grassy cover. The value of protective cover for nesting depends on the time it is available to nesting hens, and the length of the period it remains undisturbed. Throughout the initial one third of the nesting season, nesting cover consists entirely of residual, or old, plant vegetation remaining from the previous year. This cover is generally confined to CRP, fencerows, roadsides, ditch banks, shelterbelts, emergent wetland edges, lightly grazed pastures, and other odd areas. Sufficient nesting cover during this period is especially important since broods from first clutches are significantly larger than those from re-nesting attempts. Optimum height of residual growth or new growth at nest initiation (April-May) is 12"-16".

The first sizeable amount of new vegetation occurs on alfalfa hayland where the rapid growth provides attractive cover by mid to late May. The increase in cover due to alfalfa precedes the annual peak abundance of cover in early to mid June when new vegetation of all cover types, including small grain fields, affords protective cover.

The June period of peak cover abundance is typically short lived. Alfalfa mowing begins by or shortly after the first week in June, which is typically prior to the peak pheasant hatch. For nests established in alfalfa hayland, the period between nest establishment and June mowing is too short for most hens to complete incubation of all but the earliest egg clutches. At least 37 days are required for a hen to lay, incubate, and hatch a clutch of 10 eggs. Mowing in combination with livestock grazing, untimely burning, and fall moldboard plowing contribute to reduced cover availability at the beginning or the next nesting season. Small grain fields provide excellent nesting cover from early June, to the end of July. Small grain fields are particularly valuable for re-nesting attempts.



Where more nesting cover is determined to be needed, establish a mix of native grasses such as switchgrass, big bluestem and indiangrass. These tall grasses have rigid stems that tend to stand up in snow. Native grasses require less long term maintenance. Introduced cool season grass legume mixtures, also known as Dense Nesting Cover, provides excellent nesting and brood rearing cover. Recommended species include, grasses such as orchardgrass, timothy, tall wheatgrass, intermediate wheatgrass and legumes such as alfalfa and sweet clover. Research has shown that cover plantings less than 10 acres have limited value. 20 acre blocks were shown to be optimum for nesting densities. However, this fact should not discourage larger acreage.

Nesting cover should be protected throughout the nesting season (April 10-August 1) from mowing, unmanaged grazing and unplanned fire. If weed control is necessary, spot spraying is preferred. Spot mowing should be delayed until August 1. For optimum pheasant densities, nesting cover should comprise 10-50% of the surrounding landscape (3 miles x 3 miles).

## **Brood Rearing Cover**

Brood rearing areas center around hatching sites and generally range from 10-30 acres in size through the initial three weeks it takes before chicks are capable of strong flight. During the early portion of the brood-rearing season in June and July, chicks use the same cover types that were important to nesting; small grain fields, grassland, hayland/pastureland, edges of emergent wetlands, shelterbelts, roadsides, and fencerows.

Daily activities of broods take them to roads and open spots within and along field edges in the early morning, to relatively short open cover for feeding, to taller, cover for midday loafing, and to undisturbed cover for nighttime roosting. Broods may utilize woody cover for shade on hot summer days, usually beneath small trees and shrubs rather than tall trees. Row crops such as corn and soybeans are not used extensively by broods until August when small grains and hay have been harvested. Row crop use continues through September and October, when nearly all of the broods have broken up.

### **Loafing/Roosting Cover**

The main function of loafing cover is to provide comparatively safe places where pheasants can spend idle time resting and preening between feeding periods. Loafing sites generally include dusting sites, and may be used for sunning or shade. During spring and summer, pheasants loaf in vegetation suitable for nesting and other life needs including; grassland, cropland, shelterbelts, and edges of emergent wetlands. With the elimination of row crops in the fall, loafing cover is narrowed down to typical winter cover types.

Cattail marshes and woody vegetation are the preferred cover types for loafing in the winter. Pheasants prefer sites with overhead protection such as under branches of shrubs. Common sites include shelterbelts, shrub thickets, stream borders, and emergent wetland vegetation. Fruiting shrubs such as wild plum, chokecherry, silver buffalo berry and highbush cranberry are excellent natives that provide travel and escape cover. Pheasants prefer to roost year round in herbaceous vegetation such as grasses, weed patches and grain stubble. However, when snow depth limits available cover, dense wetland vegetation is highly favored. Roosting in trees is uncommon unless emergent wetlands are scarce or snow depth is excessive.

### **Winter Cover**

Winter season is when habitat and range carrying capacity is lowest. With most vegetation in croplands gone, pheasants become extremely dependent upon cover provided by emergent wetlands. The dense, tall stands of vegetation in undisturbed emergent wetlands provide excellent cover throughout most winters. Exceptions are winters when wetlands become completely filled with snow. Available winter cover then consists of woody cover such as wood lots, and farmstead shelterbelts.



Unfortunately, not all woodlots and shelterbelts provide adequate winter cover. To provide adequate shelter, a shelterbelt must be a minimum 150' wide, contain an understory of low branches, a row of shrubs on the windward side, and four or more rows of conifers, preferably Eastern red cedar, on the leeward side. High proportions lack a good understory due to age and livestock grazing.

Wintering pheasants usually select cover with a food source such as corn nearby. Wintering pheasants seldom move farther than 1/2 mile from quality cover to food sources. Pheasants who venture beyond this limit become vulnerable to predation. Optimum winter cover comprises <5% of the home range. However, because most pheasants move less than 1.5 miles from summer to winter cover, at least 1 food/cover complex should be available per 1/4 township (3 miles x 3 miles).

### **Habitat Interspersion**

All living needs must be satisfied on a year round basis within the birds home range. Pheasants require vegetative cover suitable for nesting, brooding, roosting, escape and winter protection along with readily available sources of food, water and grit. The optimum habitat within a 3 mile x 3 mile landscape includes 5%-80% cultivated crops (ideally 40-50% should be in small grains), 10%-50% grassy cover and 1-3 food/cover complexes. The optimum distance from winter cover to available winter food is less than 1/4 mile and less than 1 1/2 mile from nesting cover to quality winter cover.

## LIMITING FACTORS

For planning purposes, inventory the site to determine the availability of each of the basic habitat components. Habitat components that are absent or rated low are limiting the value of the habitat for ring-necked pheasants.

<i>Habitat Component</i>	<i>Availability/Quality</i>			
	High	Medium	Low	Absent
<b>Food</b>				
<b>Nesting Cover</b>				
<b>Winter Cover</b>				
<b>Habitat Interspersion</b>				

## MANAGEMENT RECOMMENDATIONS

Management treatment should address the habitat components that are determined to be limiting pheasant habitat potential. For evaluation purposes, select among the possible actions listed below to improve habitat quality or availability of each habitat component determined to be limiting.

<i>Habitat Component</i>	<i>Management options for increasing habitat quality or availability</i>
<b>Food</b>	<ul style="list-style-type: none"> <li>• Encourage use of conservation tillage systems, which leave waste grain on the soil surface over winter.</li> <li>• Retain standing row crops and small grain over winter adjacent to, or within ¼ mile of winter cover.</li> <li>• If needed, establish annual food plots of at least ¼ acre in size adjacent to winter cover.</li> <li>• The use of pesticides near nesting and brood rearing cover should be discouraged as it reduces plant diversity and insect abundance.</li> </ul>
<b>Nesting Cover</b>	<ul style="list-style-type: none"> <li>• Establish blocks of quality native grassland 10 – 30 acres in size. Avoid narrow grassland blocks &lt; 100' wide.</li> <li>• Manage grassland areas through periodic mowing or burning after August 1.</li> <li>• Avoid season long grazing of pastures. Manage pastures according to a proper grazing system.</li> <li>• Delay cutting of alfalfa or small grains by one week or longer. Nest success is greatly increased by just a one week delay.</li> <li>• Maintain/establish fence rows between cropland fields. Grass and shrubs provide travel corridors, nesting and escape cover.</li> </ul>
<b>Winter Cover</b>	<ul style="list-style-type: none"> <li>• Develop new farmstead shelterbelts or woody cover plantings at least 10 rows wide, and renovate existing shelterbelts. Utilize a minimum 4 rows of conifers on the down wind side.</li> <li>• Domestic livestock must not graze shelterbelts and woody cover plantings.</li> </ul>
<b>Habitat Interspersion</b>	<ul style="list-style-type: none"> <li>• Use a greater variety of agricultural crops and rotations. Crop diversity is more likely to provide for basic needs.</li> <li>• Optimum habitat within a 3 mile x 3 mile landscape comprises 10-50% grass, 1-3 winter areas, and the balance in crops.</li> <li>• Available winter food should be within 1/4 mile of winter cover.</li> <li>• Nesting cover should be within 1½ mile of winter cover.</li> </ul>

## Pheasants Forever



Founded in 1982 in response to the continuing decline in ring-necked pheasant populations, Pheasants Forever (PF) is a non-profit organization dedicated to the conservation and enhancement of pheasants and other wildlife populations. Through habitat improvement, improving land use policies, public awareness and education, PF's 95,000 members and 550 chapters across the country are making a difference for wildlife. Since inception, over 1.5 million acres of wildlife habitat have been enhanced or restored by the hands and actions of PF members and chapters.

PF is a leader in advocating for quality federal and state conservation programs. PF knows that farmers and landowners are faced with tough land use decisions every day. It is our belief that through quality conservation programs (e.g. USDA's Conservation Reserve Program), a win-win partnership is created for farmers and wildlife alike.

Minnesota is home to over 50 Pheasants Forever Chapters working hand in hand with landowners to restore and enhance pheasant habitat. Whether it is a tree planting, nesting cover, wetland restoration or food plot, PF chapters assist private

landowners in the planning and implementation of habitat projects. Minnesota's PF volunteers are extremely dedicated to improving pheasant habitat conditions in their local areas, so contact your local Pheasants Forever Chapter when you begin planning your next habitat project.

For more information on improving the habitat on your land for pheasants or to get in touch with your local PF Chapter, please contact Pheasants Forever, 1783 Buerkle Circle, St. Paul, MN 55110, (651)773-2000, <http://www.pheasantsforever.org>, [pf@pheasantsforever.org](mailto:pf@pheasantsforever.org).

### References:

Gates, J.M. and J.B. Hale. 1974. Seasonal movement, winter habitat use, and population distribution of an east central Wisconsin pheasant population. Tech. Bull. 76. Wisconsin Department of Natural Resources.

Minnesota Department of Natural Resources. 1985. The Pheasant in Minnesota.

Minnesota Department of Natural Resources. 2001. Winterizing Minnesota's Landscape for Wildlife

Trautman, C.G. 1982. History, Ecology and Management of the Ring-necked Pheasant in South Dakota. Wildlife research Bulletin No. 7 South Dakota Department of Game, Fish and Parks.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large Print, audiotope, etc.) should contact USDA's Target Center at (202)-720-2600 (voice and TDD).

To file a complaint of discrimination, write the USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14<sup>th</sup> and Independence Ave. SW. Washington D.C., 20250-9410, or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

