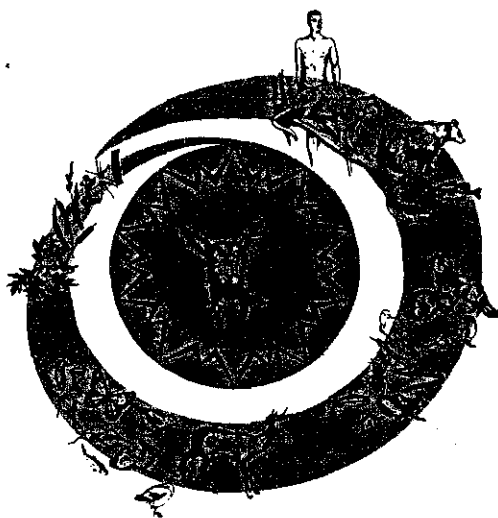


# NEW YORK'S WILDLIFE RESOURCES

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## Ring-necked Pheasant (*Phasianus colchicus*)

### Description

The spectacular coloration of the male ring-necked pheasant is unsurpassed by any other bird in New York. The cock's beautiful plumage is in sharp contrast to the dull, nondescript plumage of the hen. There are many other differences between the sexes of this popular game bird.

The cock's dark green head has iridescent shades of green and violet, and vivid scarlet patches around the eyes. The characteristic white ring around the neck contrasts sharply with the dark head and the deep, lustrous, russet hues of the chest. White, tear-drop markings trimmed in black occur throughout the varying shades of brown on the upper back. The tan-colored sides are flecked with black-tipped feathers. The feet and lower legs are bare, but the upper legs and adjacent underside are covered with black feathers. Tail coverts and portions of the wing coverts are blue-gray. Transverse black bars at 1.3-cm (0.5-in) intervals occur the entire length of the brown tail feathers.

Some average physical dimensions of wild adult cocks in western New York are: fall weight, 1.1 to 1.6 kg (2.4 to 3.5 lb); standing height, 33 cm (13 in); length from beak to tip of tail, 90 cm (36 in); length of tail, 57 cm (22.5 in); wingspan, 81 cm (32 in).

Wild hens in western New York average 0.8 to 1.1 kg (1.8 to 2.4 lb) and measure 58 cm (23 in) from beak to tip of tail. Their plumage (feathers) is an almost uniform dusky brown, flecked with brown and black

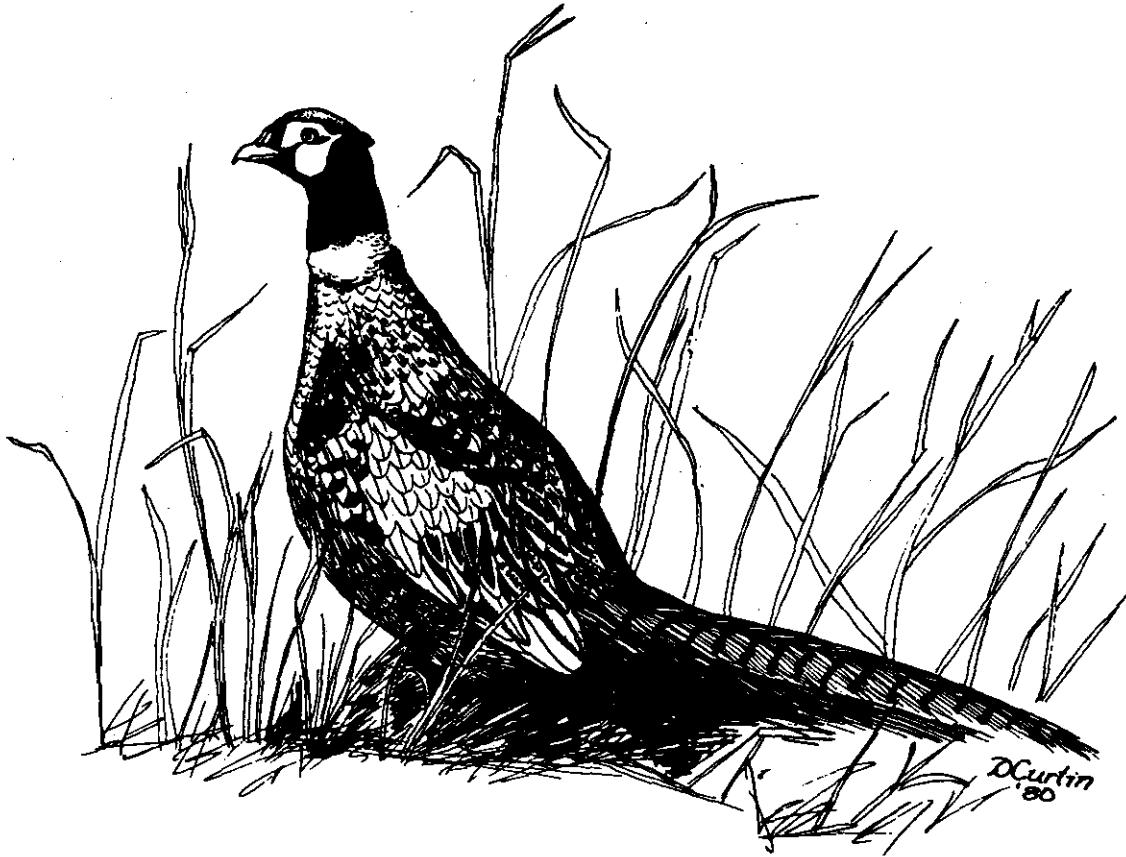
feathers often tipped with beige. Hen pheasants might be confused with ruffed grouse, but the former are heavier than grouse by about 450 g (1 lb), are about 23 cm (9 in) longer and have a much longer, narrower, pointed tail without the grouse's characteristic wide black terminal band.

No single criterion can be used to distinguish adult and young-of-the-year cocks taken in the fall, but several identifying characteristics can be used with a fair degree of certainty. Young cocks are generally lighter than adults, 1.1 kg (2.5 lb) vs.  $\geq 1.4$  kg ( $\geq 3$  lb). The spurs (located on the lower leg just above the foot) of adult cocks commonly are longer, darker, harder, and more pointed than those of males less than one year old. When pressed with one finger, the tip of the breast bone in young birds bends easily, whereas in adults it is rigid. Similarly, jaws of older birds are stronger than those of young birds and usually will not break when a dead bird is held only by the lower beak and gently shaken. Several of these traits should be checked before deciding upon the likely age of a pheasant. During recent fall hunting seasons in western New York from 72-93% of the cocks have been young-of-the-year.

## Distribution and Abundance

The ring-necked pheasant belongs to the order Galliformes, as do quail, grouse, turkey, and domestic chickens. Pheasants of the genus Phasianus (the true pheasants) are native only in portions of the Middle East, through Central Asia, to China and Japan. At least three species (P. colchicus or black-neck, P. torquatus or Chinese, and P. versicolor or green) and 29 subspecies are recognized through the pheasant's native range.

The English have long cherished the pheasant as a game bird and several futile attempts were made during colonial times to introduce to North America the blackhead variety, which was then well established in England. The first truly successful stocking of the pheasant in the U.S. was in the Willamette Valley of Oregon in 1881. New York State's first significant introduction occurred on Gardiner's Island near Long Island in 1892. Pheasants were next released in the Genesee Valley in New York from 1897 to 1904. These areas apparently contained an ideal habitat mix at that time and populations boomed. Another factor which probably helped



make this effort a success was the manner in which the birds were propagated. In those days pheasant eggs were incubated and hatched by bantam hens. The chicks were then reared by the hens in large rearing yards. Pheasants propagated under these conditions, which more nearly duplicate wild conditions, were probably better able to survive in the wild than are birds incubated, hatched, and reared under modern poultry rearing conditions.

New York's first pheasant hunting season was opened in the Lake Plains region in 1908. Pheasants were hailed as superb upland game birds and as of 1946, seven State game farms were in operation raising the birds for stocking. This kind of effort was duplicated in states all across the northern U.S. and parts of southern Canada. At some time, releases were made of each of the previously mentioned species. Today's wild bird is a hybrid that most frequently resembles the Chinese ring-necked pheasant, but is scientifically classified as P. colchicus.

New York's primary pheasant range currently consists of the Finger Lakes Region and the Great Lakes Plain Region from about Syracuse west to Lockport. Much of the Hudson, western Mohawk, and Oneida River valleys, as well as major river valleys of the Appalachian Plateau are considered secondary range. The remainder of the state is marginal range except for the Tug Hill Plateau and the Adirondack and Catskill Mountains, where virtually no pheasants exist.

During typical years, fall pheasant populations average about 8 or more pheasants per 40 ha (100 A) in primary range, 4 to 8 pheasants per 40 ha in secondary range, and less than 4 pheasants per 40 ha in marginal range. Pheasant populations were well below potential densities on the better range throughout the late 1970's due primarily to a series of abnormally severe winters, wet springs, and the reduction of fallow "soil bank" acreage. Soil fertility, weather, and farming practices greatly influence pheasant population densities, as will be discussed later.

### **Life History**

Pheasants begin breeding in mid-March to early April and if some hens experience repeated nest failure nesting may extend even into August. Cocks become very aggressive during the breeding season. Within their home ranges, approximately 1.3 km<sup>2</sup> (0.5 mi<sup>2</sup>), dominant cocks select several places from which they crow and display in attempts to lure receptive hens and to discourage rival cocks. The distinctive, booming two-syllable "cawk-awk" call is given most frequently in early morning and late afternoon on calm, clear days. Hens seek roosters for mating and a rooster may acquire a harem of up to a dozen hens. Home ranges commonly overlap, but dominant cocks will not tolerate the presence of intruding cocks near their harem or at their crowing sites. When rival cocks fight it is an all out struggle, with beaks and spurs being used in deadly earnest.

Hens may wander freely from harem to harem and drop a few eggs randomly (even in other hen's nests) before attempting to establish their own nest. Typical first nests in western New York are located in the residual cover found in old (fallow) fields overgrown with a mixture of grasses and goldenrod, asters, etc. Second and later nests can also be found in hayfields, wheat, hedgerows and other strip cover. Nests are

simple depressions in the ground, lined with residual debris and a few body feathers. The eggs are a buff to pale olive green color and measure about 3.3 by 4.3 cm (1.3 by 1.7 in). An average clutch in Western New York is 13 eggs (range from 7 to 16), laid over a 16-day period. If clutches are destroyed or if the hens are overly disturbed they may attempt to renest up to four times, laying fewer eggs on each successive try. Incubation takes 23 days. Peak of hatch is during June, but clutches may hatch from early May to early September depending upon time of breeding and success of initial nesting attempts. A few hens may abandon or become separated from their 3-4 week old chicks and renest to hatch a second brood; this has been documented in New York and Wisconsin.

As with other gallinaceous birds, the chicks are precocial; that is they are able to run and eat within a few hours of hatching. Hen pheasants are attentive mothers. Until chicks are about 3 weeks of age they are brooded or covered by the hen for protection against cold, damp weather. During their first three weeks of life, the brood usually remains within about 100 meters (330 ft) of the successful nest site, if they are not disturbed. Young chicks are not capable of long flights at this age and hide rather than fleeing from potential predators. The inability to flee predators during this segment of the pheasant's life cycle further points out the need for secure nesting cover. Secure nesting cover has to be an area virtually free of disturbance for 54 to 64 days.

When danger threatens, the hen gives a low warning call to her nearby chicks, causing them to freeze in their tracks. While the young rely on their light brown plumage streaked with darker brown as camouflage, the hen may try to lure an intruder away with a "broken wing act" or slip away unnoticed. Older chicks usually streak off in all directions upon detecting danger and reassemble after the threat has passed.

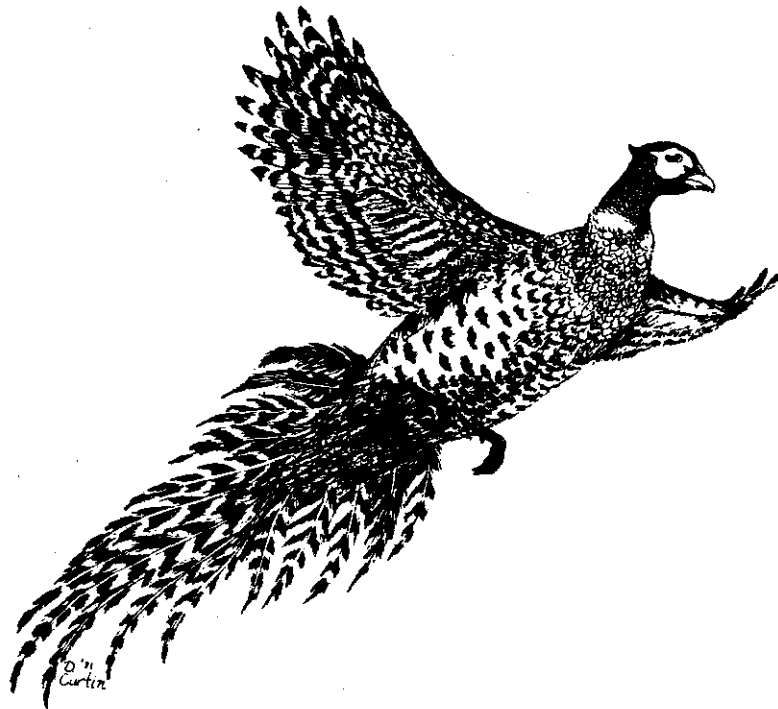
Adult plumage begins to develop at 6 weeks. By the arrival of the fall hunting season most young-of-the-year are 3 months old and can only be distinguished from adults by the subtle characteristics mentioned earlier. Cocks and hens are sexually mature at the end of their first year.

As the brood grows it becomes more mobile. More areas become suitable for the young birds as more crops are planted and start to mature. Crops such as wheat, oats, and corn will provide adequate cover throughout the

summer, into the fall, and even after harvest. Thus many pheasants are found in agricultural fields during the hunting season, not for food value alone but also because the birds have lived there most of their lives and probably feel secure there.

As fall progresses, pheasants tend to leave their summer range and congregate in adjacent protective wetland or upland cover. In a Minnesota study, young cocks dispersed an average distance of 1.0 km (0.6 mi) from the range they used as chicks, while juvenile hens dispersed a bit farther. Adult hens and cocks moved an average of 0.8 km (0.5 mi) and 0.5 km (0.3 mi), respectively, to fall cover. Under normal winter conditions fall cover is used only temporarily, but the pheasants will remain within these areas as long as snow does not substantially reduce the protection this cover provides. Normally pheasants abandon fall cover by December or January in favor of better, traditional winter lowland cover. The distance an individual pheasant may travel from fall to winter cover may be up to 5 km (3 mi).

Large numbers of hens may congregate in suitable dense, lowland habitat through the winter, whereas cocks prefer to winter individually or



in flocks of just a few males. Winter home range for either sex depends greatly upon the proximity of suitable cover to adequate food supplies. Pheasants may travel up to about 0.8 km (0.5 mi) from winter cover to feeding areas, but their daily movements are generally less than 0.5 km (0.3 mi). Should winter cover become drifted over with snow, pheasants will abandon the area in preference of an area with better cover, even if adjacent food resources are poorer. While deep snows may drive birds from winter cover, extreme cold usually makes the birds very sedentary. Radio equipped hens have been known to remain at the same location for several days if temperatures dip below 10°F for long periods.

Cocks are the first to leave the winter concentration areas, with both adults and juveniles dispersing about 0.8 km (0.5 mi). They establish their breeding territories in March and early April and are followed by the older hens, then the young hens 1 to 2 weeks later. Adult hens usually return to their previous summer range, whereas young hens tend to wander about before settling down. As young hens disperse from winter cover to new and unfamiliar nesting areas, they are subject to a great deal of predation. Hens are not territorial at any time of the year; several hens may nest within a few meters of each other and share the same 0.6 km<sup>2</sup> (0.3 mi<sup>2</sup>) home range through spring and summer. Hens do have distinct home ranges during the breeding season and during fall and winter.

For the first few weeks of their life, chicks primarily eat insects, which are high in protein and promote rapid growth. Adults also eat large numbers of grasshoppers, beetles, caterpillars and grubs throughout the summer and fall, but the majority of their diet consists of weed seeds, grains, wild fruits and berries. The most common winter food is waste grain corn, with weed seeds and wild fruits, particularly grapes, usually of secondary importance. Young shoots or leaves of plants such as corn, wheat, and skunk cabbage are important spring foods.

Pheasant eggs, chicks and adults are subject continuously to predation and other mortality factors. Nesting success is variable from year to year. In a recent study in western New York, success of all nests (including renests) varied from 30% to 58%, for an average of 44%, over a three-year period. In the same study, 78% of hens radio tracked through the nesting season successfully hatched at least one brood. Success may be lower during years when the population is higher.

Crows, raccoons, weasels, skunks, and opossums are common nest raiders. Nests may be flooded by spring rains or broken up by farm machinery. From an average clutch of 13 eggs about two-thirds of the chicks may die during their first three weeks, possibly due to predation but the cause of this loss is largely unknown. In hayfields, nests may be destroyed and incubating hens and their broods killed during hay cutting. Hunting is a major fall mortality factor of cocks (and hens in some areas). Hawks, owls, mink, and red and gray foxes frequently prey upon adult birds which are particularly vulnerable in winter. Severe winter weather with deep snow and ice storms results in high losses to predation. Hens are particularly vulnerable to predation during early spring, the period between snow melt and growth of green vegetation. In recent years, annual mortality of hens has varied from 63% to 79% (western New York). The same study revealed that toxins were not a major cause of mortality; eggs and pheasant tissues examined had little if any toxins present. However, in some local situations toxins probably affected egg fertility and contributed to the deaths of hens and their broods.

Wild pheasant populations are normally quite disease and parasite free. Poor sanitation and overcrowding have caused outbreaks of diseases such as blackhead, pullorum, coccidiosis, avian tuberculosis, and botulism in penned populations. Lice, ticks, and mites are occasional external parasites. Cestodes (tapeworms), trematodes (flukes), and nematodes (round-worms) can be serious internal parasites in some instances. Average annual mortality rates from all causes may be extremely high for cocks (up to 95%) and moderately high for hens (over 60%). Pheasants have a potential life span of about 8 years, but the average life span for cocks and hens in the wild is about 10 and 20 months, respectively.

Wild pheasants are wiley and elusive birds. Their keen eyesight and hearing make approaching them for close observation extremely difficult. An adult pheasant can slip away silently and undetected in as little as 15 cm (6 in) of ground cover, by lowering its head and pressing its body to the ground. Their long, powerful legs make them superb sprinters, easily capable of outrunning a person.

If cornered or hard pressed by a person or dog, pheasants will noisily take to the air, with cocks emitting a series of loud cackles. Pheasants



have relatively small wings compared to their body size and must beat their wings furiously when taking flight. Once in flight, at a speed that may approach 75 kph (47 mph), they usually glide a few hundred meters to safety.

Winter is probably the best time to go afield in search of pheasants. They congregate in dense, brushy cover commonly associated with river bottomland or the edges of cattail marshes. On a fresh snow their three-toed tracks, about 6 cm (3.3 in) long, are quite distinctive. During this season, pheasants usually leave protective cover to feed in nearby corn or other grain fields during the day, therefore it is a little easier to observe them during these feeding forays.

Another good opportunity for observing pheasants is in the spring when territorial cocks are strutting and crowing. Cocks do most of their courting early in the morning and may crow once every 5 minutes as they slowly move with their respective harems of hens. A displaying cock fluffs out his plumage and drags his cupped wings along the ground as he struts about before his hens in a grand show of feathered finery. If challenged by another cock, both become almost oblivious of their surroundings during the ensuing struggle for dominance.

### **Habitat**

A variety of habitats are used by pheasants through the seasons of the year. As pheasants spend about 40% of their lives roosting, they require secure protective cover types. Depending on their availability, uncultivated fields of grasses and perennials, hayfields and stubble fields provide most of spring, summer and fall roosting areas. Uncultivated fields, brushy areas and wetlands are suitable habitat during the winter. Although uncultivated fields are used for roosting when snow cover is light, the more snow on the ground the thicker the cover needed to protect the bird from the elements and predators. Old fields of goldenrod and aster provide little value for roosting due to the density of the cover provided.

Nesting and brood-rearing habitat varies with the growth of vegetation and the age of the birds. The majority of first nest attempts will be found in uncultivated fallow fields of grasses, and perennial and grass mixtures. These areas provide residual cover from the past year's growth

and are sought out by the hen as no new growth has started when the nest is initiated. Later nesting attempts can be found in agricultural types as well as uncultivated fields and brush areas. Nests established in oats or wheat usually will be successful but nests in hay cover types are doomed to failure due to the timing and short interval between mowings. Hedgerows and strip cover such as ditches and roadsides are used to a much lesser extent for nesting and brood rearing. Hedgerows and strip cover are important as travel lanes to roosting and feeding areas during all times of the year.

As the summer progresses more acreage grows into suitable cover for pheasants and thus birds' home ranges increase in size until late fall. As fall draws to a close and winter presses on, most agricultural crops are harvested and agricultural areas are then used to a much lesser extent. As birds move toward wintering areas, their home ranges shrink in size. Usually wintering areas are an association of the dense vegetation (dogwood, conifers, alder, canary grass, cattails, etc.) of uncultivated fields in close proximity to grain fields, especially corn. Generally, during early spring and winters when deep snow accumulates are times of minimum cover acreages for pheasant due to agricultural activities and snow, respectively. Mid-summer into fall are easy times for pheasants because cover acreage is at its maximum.

## **Ecological Role**

Over a period of thousands of years, gallinaceous birds such as the prairie chicken evolved as part of the natural wildlife community of our Great Plains. No such gallinaceous bird had time to evolve during the rapid creation of the humanmade "plains" of the Northeast. Consequently, the pheasant was introduced to an area where it had no natural competition and has proven to be well adapted for the climate and land-use practices of the more fertile farmlands of New York. As human uses of the land intensify (e.g., agriculture and urbanization), the ability of the pheasant to survive in New York will change, too.

Probably the most important ecological role the pheasant plays in New York is that of a prey species for a multitude of predators. In general, an animal community becomes more stable (has fewer drastic population

changes) as the number of different species interacting within a community increases. The inclusion of the pheasant into New York's wildlife community added yet another prey component and while the ecological consequences of its introduction have not been thoroughly studied, it probably benefits both native prey and predator populations.

The successful, nearly nationwide introduction of the ring-necked pheasant stands out as an extremely rare experience in our history of attempted introductions of birds and mammals into areas not originally inhabited by those species. English sparrows and starlings are examples of highly successful nonnative wildlife but they are generally considered a nuisance throughout their range in the U.S. Many introductions were doomed to failure because of the species' inability to adapt to the different climate or habitat of the new area. Examples of this are attempted stockings of bobwhite quail and other pheasant varieties (such as the green pheasant) in New York. Only the introduction of the chukar and gray partridges (two successful exotics in portions of the U.S.), approach the degree of success and popularity experienced by the ring-necked pheasant.

## **Management**

In most instances, land management for pheasants in agricultural areas should center around the maintenance or creation of undisturbed nesting cover, roosting areas, and good winter cover near food supplies. Uncultivated old fields that have grass as a predominant cover is the single most important nesting and roosting cover. Such areas should be allowed to "go wild" and remain undisturbed until at least early July; by then most broods have hatched.

Research in Wisconsin and New York indicated that pheasants tend to travel a maximum of approximately 3 km (1.5 to 1.8 mi) to traditional winter cover in the late fall and to disperse from the cover about the same distance in the spring. Adequate winter cover over large expanses of pheasant range can be provided by the existence of 8 to 12 ha (20-30 A), dense, brushy areas of cover spaced a maximum of 6 km (3.6 mi) apart. Several areas of winter cover 2 to 4 ha (5 to 10 A) in size could be substituted for one large unit. The remainder of the range might ideally consist of: 65-80% cultivated land in grain crops; 15-30% in hay or

rotation pastures; 5-10% in brush and woods; and 3% or more in permanently protected grassy cover.<sup>1</sup> This latter cover should be in blocks at least several hectares in size, preferably 2 to 4 ha (5-10 A). The amount of edge may not be important; hens will nest and brood throughout these fields, not just along the perimeter. Based on recent New York and Wisconsin study findings, they have greater success hatching and rearing broods in these larger fields than in strip type cover. Such intermixing of cultivated land with cover habitat generally results in higher densities of pheasants throughout the range.

Up to 90% of the fall population of cock birds can be harvested by hunters without reducing the reproductive potential of the population the following spring. The polygamous breeding habit of the remaining cocks insures that all receptive hens are bred. It takes extremely intensive hunting pressure over a long season to reach such a high harvest percentage. As hunting success drops after the first few days of the season, the vast majority of hunters become discouraged and do little hunting the remainder of the season. The recent pheasant population decline has resulted in extremely light hunting pressure in recent years; for example less than 16% of the fall cock population was harvested in 1978. An average of only one cock in five ever reach their second year, regardless of normal hunting pressure. Therefore, cocks that are not harvested by hunters are lost because of other mortality factors.

Many hunters are distraught over regulations permitting the shooting of hens. Such regulations apply only in marginal range where sizable fall pheasant populations cannot be maintained naturally. Since stocked birds are released in a ratio of 50:50 cocks and hens, hunters are given the opportunity to gain full benefit of their stocking dollars by harvesting hens that are virtually doomed to winter mortality or nesting failure.

Each year thousands of pen-reared pheasants are released prior to the fall hunting season. These birds are raised on State Game Farms or by 4-H youth and sportsman clubs which receive day old chicks from the game farms. Game farm operations are funded primarily by small game license sales. The stocking of pen-reared pheasants has limitations and should not be emphasized to the detriment of other management practices. Stocking is

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<sup>1</sup>As suggested by Whlig, 1967 (see selected references).

not justifiable as a means of establishing pheasant populations on potentially good ranges or as a means of replenishing populations that have been depleted by abnormally high mortality rates unless wild trapped and transferred birds are used. Releasing pen-reared pheasants into a range that is already fully stocked with wild birds is analogous to pouring water into a full bucket. Creating an artificial surplus of pheasants by stocking does supply increased hunting opportunity. Depending on the stocking scheme, up to 70% of the birds released may be harvested (within-season releases and high hunting pressure), but normally a much lower return to bag can be expected.

During periodic slumps in pheasant populations some hunters clamor for a predator control program. A study conducted in New York from 1947 to 1949 showed that even after a local fox population was reduced by 80% "no appreciable gain in terms of pheasant abundance could be demonstrated". Predators do take a significant number of pheasants when available, but they do not constitute a major threat to a wild pheasant population on good range. Habitat manipulation programs in the mid-west show promise and are more cost effective practices than predator control. Because of their large clutch size, pheasants can withstand what might appear to be heavy losses to predation, while still maintaining sufficient breeding stock to keep their population at the range carrying capacity. Released birds are particularly susceptible to predation. While pen-reared pheasants retain their "wildness" better than do turkeys or grouse, they are not as wary as wild pheasants. Released pheasants are generally the first to be preyed upon, especially where they are merely "surplus" birds in a fully stocked range.

Winter feeding is another management practice often suggested by pheasant enthusiasts. Wildlife biologists consider winter feeding a "stopgap" measure that at best helps a few birds survive at an inordinate expense. Money allocated for winter feeding programs or annual restocking generally would bring better returns if spent on habitat improvement. Farmers can provide winter food at a relatively low expense by leaving a few rows of unharvested corn, sunflowers, beans, or other sturdy grain crops adjacent to permanent winter cover.

## Economic and Social Values

Many farmers value their local pheasant populations almost as much as they do their small flocks of domestic ducks, chickens or geese. Farmers and others who work close to the land in prime pheasant range frequently develop an affinity for the bird. One manner by which State wildlife biologists monitor pheasant populations is via a farmer questionnaire survey. Wild pheasants are colorful, spirited, wary and hardy birds that have earned the respect of nearly all who get to know their habits.

Hunters in particular treasure pheasants for their sporting value. Wild birds in good cover are extremely difficult to flush into the air for a wing-shot. The use of bird dogs helps, but it takes a well trained dog to point or flush a cock within shotgun range of a hunter. The flavor of roasted pheasant is almost legendary.

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