# RING-NECKED PHEASANT MANAGEMENT FOR MONTANA LANDOWNERS

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The male ring-necked pheasant (*Phasianus colchicus*) needs no description, since his brilliant plumage, long tail and scarlet eye patch makes him very recognizable. But the beautiful plumage does not prevent the rooster from disappearing in even minimal cover. Pheasants of both sexes are noted for their ability to blend into a clump of vegetation that seems too small or sparse to hide even a mouse. The hen is a drab tan. The hen can be distinguished from similar game birds by the presence of her relatively long tail, although not long (12 inches) compared to a rooster. Roosters weigh a little less than three pounds, hens a little more than two. The average home range of a ring-necked pheasant is 1.5 miles. Landowners with only a few acres can manage for pheasants if nearby lands help provide the types of habitat lacking on their own property. Mortality from various causes is high in pheasants. During most years, 72 percent of all pheasants die. Few survive three years. Because of their high reproductive rate, they are able to offset the incredibly high percentage of birds that die each year.

## LIFE HISTORY

Spring is a very important time for pheasants. In March, roosters crow, display and fight each other. They also claim breeding areas, usually openings on high points that are close to escape cover. Receptive hens come to this territory where the rooster fans his tail, drops a wing, erects his ear tufts and struts around the hen. She will generally crouch at his side and then mating occurs. The hen only needs to breed once each time she nests, as one breeding provides enough semen to fertilize eggs for 22 days. Roosters mate up to eight hens per year. Hen pheasants frequently use “dump nests.” These are nests that are used by several hens and may contain up to 50 eggs. They are used prior to the time the hen selects a nest site. They are simply a place for the hen to lay eggs that are ready before she has a nest site. Because they are not incubated, they never hatch. Nesting starts in mid-April or May. Choice nest sites are in fields near the borders. A Colorado study revealed that 70 percent of pheasant nests were in cover within 50 feet of field edges. Because new growth is just beginning at this time of year, suitable sites with cover 10 inches high are usually scarce. Because most residual cover, or cover left over from the year before, is along fencerows, irrigation ditches or roadsides, predators locate nests easily.

Therefore, it is common for the first nest to be destroyed, forcing hens to rebreed and renest. Accommodating roosters are always available, but clutch size and brood survival declines with the second, third and even fourth nesting attempt. Hens lay an average of 12 eggs when they begin nesting. One egg is laid almost every one-and-one-half days, and the 21- to 23- day incubation period begins after the final egg is laid. The nest is a shallow depression scratched out in the ground. It is lined with grass and leaves, and the hen usually adds breast feathers during incubation. The brood remains near the nest site for one to two days after hatching. When pheasant chicks hatch, they are feathered, mobile and able to eat. The young chicks' diet is made up almost exclusively of insects for the first three weeks of life. The greatest mortality occurs during these first weeks, and it is not unusual for more than half of the chicks to die in the first three months. Although a hen will remate and renest if she loses a nest, she will not do this if she loses her complete brood after they have hatched. Because of the time required for egg laying, incubation and brood rearing, hens have only one brood per year. By late summer the pheasants are in small loosely knit groups. The young are almost full grown by 16 weeks of age. Time is spent feeding, loafing and hiding. Pheasants form flocks as winter approaches. They seek out areas with cover that are close to food sources. They are capable of scratching through several inches of snow to obtain food. Pheasants are very capable of surviving severe winters if food and cover are available. They can go two weeks without food if they enter winter in good condition. Pheasants will certainly starve, however, when heavy ice or deep snows cover food sources for prolonged periods. Sleet and driving winds can suffocate pheasants by allowing ice to freeze over their beaks or in their mouths.

**LIMITING FACTORS**

Pheasants are not native to the Rocky Mountain West. They evolved in Asia, where some conditions were similar to the West, but most were very different. Pheasants as a species are constantly being tested by environmental conditions. Those that pass stay around and pass on their characteristics to future generations. Those that fail do not have the opportunity to contribute to future gene pools. This selection process results in severe mortality to pheasant populations, but it allows for rapid development of a population of birds that have the right capabilities to survive in the world the pheasant occupies. The "testing" process contains a variety of mortality factors, which often serve to limit the population. It is important to remember that there is seldom only one factor that limits a pheasant population. In the same way, one factor seldom works independently of other factors. Winter storms, for example, usually only limit a population if winter cover is insufficient. Predators can do the most damage when habitat characteristics make it possible for them to find nests or birds. Mortality of pheasants is very high, but reproduction potential is also very high. Although only half of a brood of 12 chicks may survive to the end of summer, these six still represent a 300 percent increase over the original hen and rooster. So, although annual mortality of all pheasants averages 72 percent, the remaining birds have the reproductive potential to increase the population rapidly.

**Habitat Cover**

The most important limiting factor for pheasants throughout most of the West is lack of cover. Two particular types of cover, suitable nesting cover and winter cover close to winter food supplies, are lacking in many areas. Nesting cover is made up of wide patches of grasses, legumes and shrubs. It is important that nesting cover be wide enough to prevent predators from easily finding the nest. For example, fencerows make poor nesting cover because they are narrow and predators can easily search them. Grasses and legumes provide good hiding cover and conditions for insects the brood will need after hatching. Taller cover, such as shrubs or tall, stiff grasses, provide shelter and safety from avian predators. When good nesting conditions are not available, hens still nest, but they will be more exposed to predators. Because the first nesting period happens before new spring vegetation growth really begins, pheasants normally must nest in vegetation left from the previous growing season. Because roadside ditches, fencelines and irrigation ditches are often the only places where residual cover over 10 inches high can be found, pheasants are often forced to use these areas for nesting. Unfortunately, these areas are susceptible to predation, and sometimes burning, so nests in these locations are not usually very successful. The failure of these nests results in renesting. By the time pheasants renest, alfalfa has grown enough to provide attractive nesting sites, but the late date results in hatching dates near alfalfa cutting times. It is critical for pheasants to have winter cover close to food. Pheasants are quite wary and will dart into cover to escape predators. When they are forced to venture far from cover to get waste grain from large grain fields, they are much more vulnerable to predators, especially avian predators such as hawks and eagles. Rather than take such risks, they will often stay closer to cover, and the inability to find sufficient food causes poor body condition or starvation. Pheasants depend on winter cover to survive blizzards and snow storms. Pheasants position themselves to face the oncoming elements. If they were to face away from the weather, wind and blowing snow would get under their feathers. Because they face the elements, ice condensing from moisture in their breath sometimes freezes over their beaks and nares (nose) and they suffocate. If they breathe through their mouths, ice balls form from condensation, and suffocate the birds. However, if the pheasants have dense cover in which to take shelter during these severe weather events, the wind is broken and the pheasants are quite effective at surviving the extreme conditions. Winter food is seldom a problem for pheasants. In most farm country, there is an ample food supply. Waste grain and natural seeds provide plenty of energy to get pheasants through winter. However, to be of use, the food must be available. If food is located more than one quarter of a mile from winter cover, pheasants will seldom use it. Obviously, if the food is plowed under or stubble is burned, it will not be available to pheasants.

**Predators**

Predators are often a concern when managing pheasants. Nest predators, especially skunks, coyotes, raccoons and foxes, destroy many nests. House cats are a major predator on chicks in some areas. Predation on adult pheasants has never been shown to eliminate a population, although one study in Wisconsin reported that predators killed 80.8 percent of radio-tagged hens. Predator control

will result in some nests or pheasants being saved, but creating conditions that make it harder for predators to be successful will save many more pheasants. It is not hard to understand that a predator walking a narrow fenceline is likely to detect a nest or pheasant in this limited area. If the same predator is walking a 10-acre square patch of nest cover, it is much less likely a nest would be found. There are also many more avenues of escape from the predator in a large patch than in a narrow strip.

**Weather**

Although a landowner can do nothing about it, the weather can also limit the pheasant population size. Even with the best winter cover and habitat, unusual storms may cause icing or snow depths severe enough that even the best cover is not enough. Quality cover lessens the impact of these storms, but the ability of pheasants to reproduce may be the primary means of population recovery. In addition, wet spring weather can sometimes flood nests in low areas and impact nest success or brood survival. If chicks are wet for extended periods, their survival rate will be low. Wet weather, however, will increase insects and delay alfalfa mowing, both factors that increase chick survival.

**Disease**

Disease and parasites are not likely to affect pheasant populations. Individual birds are susceptible to encephalitis, or sleeping sickness, in years of high mosquito populations. Intestinal worms, such as cecal worms, tapeworm and nematode are common in pheasants but do not contribute to significant losses of wild birds. Mites and lice are found on pheasants but are relatively unimportant mortality factors.

**Other Mortality**

***Alfalfa Nesting***–When hens nest in alfalfa fields, significant mortality can occur during mowing. The closer the eggs are to hatching, the more reluctant the hen is to be flushed from her nest. She crouches into the nest and flushes only at the last second, often losing her feet or legs. Because an uninjured hen will readily renest, the loss of the nest is not as critical as the loss of the hen. Studies have shown that in some areas, mower mortality exceeds hunter kill. Even if the chicks have hatched, they are not safe from mowers. They can be killed by blades, tires or by predators in the cut field. Alfalfa and hay fields are very attractive nesting and brooding areas, and if it were not for mowing mortality, these fields would provide excellent late spring nesting habitat. Even when alternative sites are available, some hens will select hayfields for nesting. Some mortality is expected and acceptable, but you can implement the following practices to minimize mowing mortality.

• One alternative, mentioned here even though it is usually not practical, is to delay mowing until July when chicks have hatched. This is usually not done since, by July, the nutrient content of the hay has dropped and the plants become stemmy. No matter how concerned about pheasants you may be, you are not likely to want to sacrifice the quality of your hay for birds.

• Some landowners raise alfalfa for seed on some fields, and this eliminates the need for early mowing.

• Because most pheasants nest within 50 feet of the field's edge, one option is to mow all but the outside 50 feet until July. Hens can raise broods and most of the field can be cut when it is at its highest quality. Predation on nests may increase in these strips, but more nests will survive than if they were in a mowed alfalfa field.
• Most landowners watch for hens and leave a small island of uncut alfalfa around the nest. If the nest is close to hatching this may be successful, but these small islands of vegetation are easy for predators to find.
• The pattern used to mow a field can save hens and chicks. When mowing the traditional way, beginning at the outside edges and going around the field into a smaller and smaller area, the pheasants become concentrated in the center. A better alternative is to start in the center and mow in an increasingly larger pattern. This encourages the pheasants to move toward the outside. They are more willing to do this, especially when the adjacent areas provide some cover.
• The use of a flushing bar is another option. This is a metal bar with suspended chains that sweep the ground before the blades pass. The flushing bar is attached to the front of the swather or mowing blades. Unless the equipment is moving fast, the flushing bar will encourage the hen to flush or the chicks to run. The flushing bar will not save all the birds, but it has been shown to be effective. The flushing bar, used in conjunction with a mowing pattern starting in the center of the field, is the most logical way for most landowners to minimize mowing mortality. It should be emphasized that the best way to reduce mowing mortality is to provide nesting cover consisting entirely of residual plant vegetation remaining from the previous year. Hens that successfully nest in residual cover will not use alfalfa. Remember, during early nesting season, alfalfa has not usually grown tall enough (10 inches) to provide attractive nest cover. It is renesting hens that usually nest in alfalfa fields.

***Insectides–***Insecticides have been blamed for mortalities and adverse effects upon pheasants, although there is not much evidence of this under natural field conditions. In controlled experiments, insecticides do increase pheasant mortality, reduce reproduction rates and result in defective chicks. It is also reasonable to expect additional pheasant losses as a result of insecticide use since insecticides reduce the number of insects, a critical component of chick survival.

***Habitat loss–***Pheasants are very adaptable and other land uses do not usually affect an entire population negatively. Pheasants use cattle feedlots, follow manure spreaders, and thrive in windbreaks near homes. In fact, pheasants depend on agriculture. They thrive in areas where grains are produced and sufficient cover is available. As urban areas replace agriculture acreage, pheasants decline. In addition, when cover is removed for more efficient farming, pheasant numbers decline.

**PHEASANT NUTRITION**

The search for nutritious food is a major activity for pheasants. Understanding the nutritional requirements of pheasants at different ages and at different times of the year is knowledge you must have before providing pheasant habitat. Pheasants are omnivorous feeders and use a variety of plant, animal and mineral

foods. Adult pheasants are primarily seedeaters, and the presence of year-round seed sources is a mandatory component of pheasant habitat. Wheat and other cereal grains, where available, make up 82 percent of the pheasant diet. Wild seeds comprise seven percent of the diet, and insects and plant foliage make up another five percent each. Mineral material is only one percent but is very important. Daily food consumption for an adult pheasant is about three-and-one-half ounces divided between two major feeding periods.

**Calcium**

During egg-laying periods, hens seek out snail shells and grit, which are high in calcium. Interestingly, hens are able to select grit that contains calcium over grit that does not. Where pheasants are found, you can be sure calcium-bearing grit is available. One study showed that even though land uses and features were similar in two areas, pheasants were abundant on the area with calcium-rich soil, but almost nonexistent in areas where the soils were high in granite. In another study, hens using limestone (a source of calcium) grit produced ten times as many eggs as did hens on an identical diet but with granite grit. **Protein**

The importance of protein-rich insects in the diet of chicks cannot be overstated. During the first few weeks, chicks live almost exclusively on insects. The ability of the rapidly growing young birds to withstand cold wet weather, develop juvenal feathers, avoid predators and enter the life's less perilous stages is totally dependent on an ample supply of grasshoppers, crickets, ants, spiders, beetles and other invertebrates. As the young birds grow, their food habits gradually change and by fall are similar to adult birds. At this time, the pheasants are building up deposits of reserve energy (fat) for winter, and important foods include waste grain, wild seeds, berries, succulent vegetation and insects. During winter, the pheasants' food choices depend on what is available. But studies have shown that pheasant winter diets contain a large portion of highenergy grains. Plant foliage use is fairly high during winter when green leafy material can be found. Availability of permanent open water is not critical to pheasants, but they are attracted to and will drink from ponds, seeps, streams and other sources. Pheasants obtain water during spring, summer and fall from dew, fruits, vegetation and insects. Frost and snow are sufficient in the winter.

**HABITAT NEEDS**

Pheasants are dependent on agriculture. Without grain fields, pheasants will not be found in any significant numbers. Over the years as agriculture has changed, the value of agricultural land as pheasant habitat has also changed. Some of these changes have been positive, others negative. To understand how habitat is supplying the requirements of a pheasant population, we must know what they need at various times of the year. Pheasants normally live and die within a two-square mile area or less. Therefore, this area must supply water, grit, food and cover.

**Water**

As previously mentioned, although pheasants are attracted to and will use open water sources such as seeps, streams and ponds, they can get the moisture they need from dew, fruits, insects and succulent foliage.

**Grit**

Grit and calcium must be available within the pheasants' range. Grit is the abrasive material found in the gizzard, which grinds food into particles small enough for digestion in the intestine. Crushed rock, sand, bone fragments and woody seeds are common components of grit. Some sources of grit are also vital sources of calcium, magnesium and other mineral elements. Gravel roads can be sources of grit, but in most areas there is enough particle material mixed in the soil to allow pheasants to select grit.

**Food**

Cover and food are closely linked for pheasants. Food sources that are not near cover will not be used. Likewise, the best cover is of little use if food is not nearby. The types of food used by pheasants at various times of the year were discussed in the section on Pheasant Nutrition. Various practices to supplement the pheasant food supply will be discussed under Habitat Enhancement.

**Cover**

Early nesting habitat is the most critical component in terms of having a population of birds that can be hunted in the fall. **Seventy percent of the fall pheasants will have been hatched that spring.** This means that the autumn population is dependent on the reproductive success of hens just a few months before. Because hens begin nesting before new vegetation has had time to grow, nesting habitat for first nests must be the residual vegetation that grew the previous year and was able to stand up under snow. The more limited these areas are, the more likely that predators will be able to key in on the nesting areas. Again, hens will renest if the first nest fails. Second nest sites are more likely to be in alfalfa because these sites become more attractive as the season progresses. Unfortunately, having more nests in alfalfa means that more pheasants die as a result of mowing. Additionally, renests have 38 percent fewer eggs. This means that the more successful first nests are, the more pheasants will exist. **The greater the availability of *early* nesting habitat, the greater the number of pheasants available for fall hunting.** The best nesting cover is dense vegetation that is at least 10 inches high. Nest cover consists of undisturbed grass-legume mixtures found at sites such as roadsides, ditches, abandoned homesteads and railroad rights of way.

A South Dakota study found that 48 percent of successful nests were in idle farmland or roadsides even though these areas made up only 14 percent of the total land. Fencerows provide a deadly attraction in areas where nesting sites are limited. Fencerows usually have ample residual vegetation, but their narrow width makes it easy for predators to locate nests. In the South Dakota study, 87 percent of nests in fencerows were destroyed. Brood-rearing areas are near hatching sites and are 10 to 30 acres in size. During the first month after hatching, chicks use the same cover that was important for nesting. Broods use open spots along field edges early in the morning. They use taller, heavier cover for loafing during the day. Broods use thick grasses or weedy areas for nighttime roosting. During hot weather, they use woody cover for shade. Cut grain or hay fields are common feeding places, although chicks feed continually wherever they are.

Loafing cover is where pheasants spend time between roosting and feeding. They usually have spots where they wallow in the dust and locations for sunning or shade, depending on the season. Brush thickets, shrub rows and tall weed patches are used for loafing in summer. Woods and marshland are used during cooler weather. Cornfields are excellent loafing sites in late summer and fall. Winter loafing sites include shrub rows, weedy cropland, conifer thickets, and cattail, bulrush and brush-willow thickets in low areas. Roosting cover for adult pheasants is made up of relatively open vegetation, such as grasses, hedges and weedy crop areas, including tall grain stubble. During winter, roosting sites are found in sweet clover, tall dense stands of cattail and other marsh vegetation. Roosting sites are usually lower than the surrounding area, but they are not wet. The downwind side of hills and shelterbelts are often used for protection. The importance of winter cover depends on the distance to food. One study determined that pheasants would not travel more than a quarter of a mile for food. The importance of this cannot be overstated: winter cover must be close to food. Landowners will benefit from understanding these points about winter cover.

- Unharvested corn and grain fields are winter cover havens for pheasants.
- Shelterbelts and farm groves along stubble fields are valuable until snow covers the waste grain.
- Wetland vegetation can provide excellent winter cover. If the vegetation is thick and tall, it can provide excellent escape, loafing and roosting cover during winter.
- Shelterbelts should be at least 200 feet wide, contain good understory and have two rows of dense shrubs on the outside.
- Dense patches of seed producing plants, grass cover and heavy stemmed grasses can provide good winter cover if they are not covered by snow.

## HABITAT ENHANCEMENT

Probably no game animal can benefit more from landowner habitat enhancement than the ring-necked pheasant. Pheasants are totally dependent on habitat provided by humans. The species cannot survive in wilderness areas or places where it cannot capitalize on the benefits we provide. Ironically, much can be done to improve pheasant habitat simply by doing nothing! For example, leaving roadside ditches un-mowed would provide thousands of acres of pheasant habitat. Idle farmland, land which is poorly accessible, corners where center pivots come together, irrigation ditches and access trails can provide excellent areas for pheasants if the vegetation is left undisturbed. In some cases it is possible to spot spray or spot mow undesirable weeds if they are a problem. In some instances these areas could be tilled, treated for weeds and planted to perennials to provide permanent pheasant habitat. Consider burning ditches and roadsides on a five-year (or more) rotation. This not only reduces labor, but it is normally sufficient to eliminate undesirable weeds. Some farmers have found that the presence of a good grass stand is effective weed control by itself.

### Nesting and Brood Habitat

A landowner who currently has a pheasant population can usually enhance the population best by creating additional nesting/brood habitat. It is worth

reemphasizing that, because of the high mortality rate of pheasants, annual populations are dependent on successful nesting by surviving hens. To develop nesting/brood habitat, plant a stand of western wheatgrass and basin wildrye mixed with yellow sweet clover and alfalfa. This provides excellent nesting security, which means that nesting hens will be attracted to it. Most importantly, it will be available early in the spring, making it likely hens will have successful nests on their first attempt. Successful first nests produce larger clutches and eliminate the temptation for hens to nest in alfalfa. Nest habitat plots should be scattered, but they should be at least one to five acres in size. Fields that are 10 to 20 acres have the most nests per acre. Square nesting plots are better than long ones because they are more difficult for predators to effectively search. Another way to increase nesting habitat is to establish wider nesting areas along fencerows, irrigation ditches, shelterbelts and access roads by not farming a strip next to these areas. Making them wider prevents predators from easily locating the nests. Odd field corners and corners where center pivot irrigation fields come together can be planted for nesting cover and will provide excellent benefits to your pheasant population. Planting these areas will also prevent them from becoming sites for noxious weed infestations. Some of these areas will have to be periodically burned, mowed, grazed or even plowed to remove old vegetation and stimulate forb production and more vigorous plant growth. This will have to be done in early spring or late fall every five to 10 years, so establish a rotation of treating a small portion each year. This will insure some cover remains available and will produce a mosaic of uneven stands of vegetation, which provides a more diverse habitat for pheasants. In areas being grazed by cattle, an important technique to develop nesting/ brood habitat is to develop riparian nesting areas. This is done by fencing off sections of the riparian area to allow ground vegetation to become dense. It generally takes only one season of rest before hens begin using these areas. It will often benefit this habitat to graze it every few years to stimulate the vegetation. Be sure to rotate the areas being stimulated by grazing so there is always ample nesting habitat available. Electric fencing is usually sufficient to keep cattle out of these nesting/brood areas. You must consider winter cover for pheasants if you intend to develop nesting cover. If pheasants cannot survive the winter on your or nearby land, you will have few nesting hens to use your nesting cover. Nesting cover should be adjacent to winter cover.

**Winter Habitat**

Windbreaks can sometimes be developed to provide winter cover for pheasants. They do little good, however, if they drift full of snow. They should be at least 200 feet wide or use a snow trap strip located 50 feet windward of the windbreak. Winter cover can often be the same habitat developed as nesting and brood cover, but it must be near a winter food source. Since the insects associated with legumes are not available during winter, pheasants need access to seeds. The seeds produced by wheatgrass or wildrye will sometimes persist during winter, but other seed is desirable. If the winter cover is adjacent to grain fields, the waste grain will provide food until it becomes snow covered. Leaving several rows of standing grain in a strip alongside winter cover can be a valuable winter

food source for pheasants. If you are planting a food plot alongside winter cover, you should select a species that will stand up in snow. Corn or a mixture of corn and sorghum are good choices. Allowing grass and other vegetation to grow with the food mixture will provide cover and an additional food source. Safflower and yellow sweet clover are other good choices because they are very attractive to pheasants and provide cover to feeding birds.

**Hunting Cover**

Landowners sometimes like to plant food plots that will attract pheasants during the hunting season. Long strips 25 to 50 yards wide will allow hunters to effectively cover an area and will still be large enough to attract pheasants. Interrupting the strip by mowing across it every 100 yards will discourage the birds from running. Allow the plots to get grassy or "weedy." In this sense, weedy means thick, uncultivated and encouraging a mixture of non-noxious seed-producing plants. This holds the birds and makes it much easier to work with dogs. Planting orchard grass will provide a weedy feature the first year. These plots should be planted with corn, milo, millet, sorghum, yellow sweet clover or even safflower. (Be warned: safflower is very attractive to pheasants, but it is very difficult for hunters to walk through!) Although these are annual crops, they will remain standing to the next year and some will reseed themselves, making the plot attractive for two or even three years. Always check with your county extension agent or a local seed dealer to see which varieties of crops grow best in your area. Remember, they do not have to grow well enough to produce an economically acceptable crop; they just need to produce a seed head. Leaving several rows of a commercially grown crop is an easy way to provide food for pheasants. If the rows are left next to winter cover, they will provide the greatest benefit.

**POPULATION MANAGEMENT**

Managing ring-necked pheasant populations is rather uncomplicated. Because of their high reproduction rate and because only males are hunted, over-harvest of pheasants by hunters is not a problem. Several research projects have experimented with trying to kill roosters to the point that there would not be enough to fertilize hens the next spring. In every case it was impossible to harvest more than 75 percent of the roosters, no matter how intensively they hunted. In most of the studies, it was impossible to take even half of the roosters. The birds become very wary when heavily hunted and sport hunters become discouraged and stop pursuing them well before a critical mortality point can be reached. Some managers have considered artificial feeding as a way to prevent population crashes during severe winters. Artificial feeding cannot be justified even in starvation situations. Artificial feeding causes birds to become concentrated, which increases their exposure to predation, disease and other mortality factors. Stocking has been suggested as a way to increase pheasant numbers. Stocking can work when wild birds are transplanted to suitable habitat that is not already being used by pheasants. If wild pheasants are already in the area, then restocking is a waste of time. If the existing birds are not thriving, then the habitat needs to be improved. Transplanted birds will do no better than local birds. Pen-reared birds may provide additional birds to harvest the year they are

planted but restocking pen-reared birds is not a reasonable way to increase the size of wild populations. Studies in Montana have shown that 50 to 100 percent of planted poults die within the first week. It is very unlikely any survivors would add to reproductive success. When restocking dollars are put into habitat enhancement, the return is very worthwhile. Predator control is often considered as a way to increase the pheasant population. When nesting habitat is limited or when nesting habitat is narrow and easily hunted by predators, predation can be significant. In one Wisconsin study, predators killed 80.8 percent of radio-tagged hen pheasants. Predator control in early spring can be effective for reducing nest and bird losses. Landowners need to understand that predator control is a short-term solution to predation and must be practiced continually to have lasting benefits. Good quality nesting habitat will provide many of the same population benefits provided by predator control, but on a more permanent basis. Aerial predators, such as eagles and hawks, are fully protected by law, so landowners must only consider ground predators. Controlling skunks, raccoons, fox, coyotes and feral cats will reduce nest losses, but these control programs will be much more effective if they combined with habitat enhancement efforts.