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- The Rugged ringneck of Minnesota.



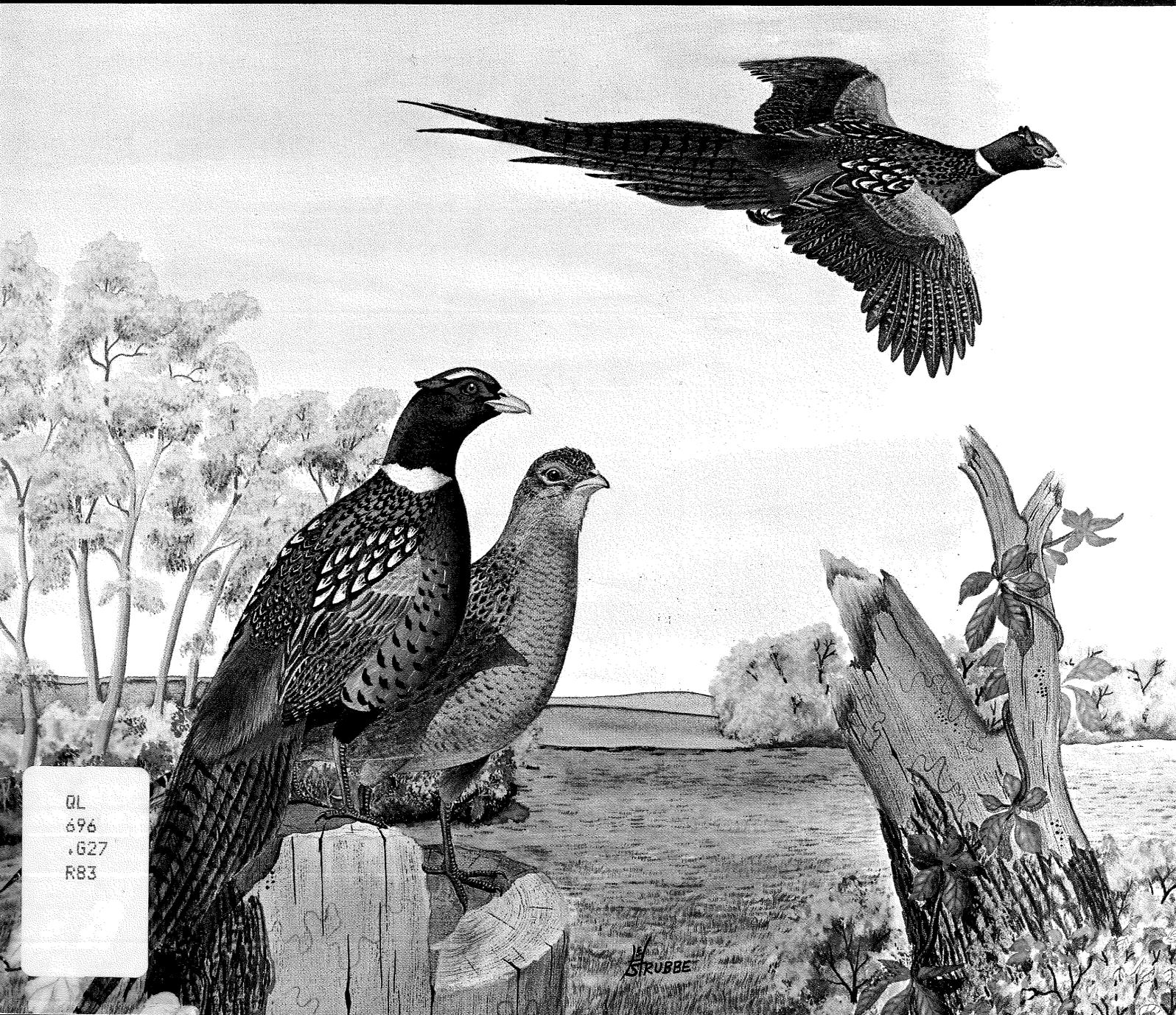
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Minnesota Department of Conservation

Division of Game and Fish

St. Paul

RINGNECK



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STATE OF MINNESOTA
DEPARTMENT OF CONSERVATION
ST. PAUL, MINNESOTA 55101

June, 1969

The great demand for the first printing of "Rugged Ringneck" has shown its excellence in the field of wildlife publications. So much so, that its continued availability is extremely important.

The work on its content by staff members of the Department is gratefully acknowledged. At the same time, it is a particular satisfaction to pay respect to the pioneering efforts of Mr. Frank D. Blair (deceased) for his work in establishing the pheasant as a Minnesota game bird as far back as the early 1900's. Warm personal memories of him still exist in the Department.

The rugged ringneck and its habitat are vital parts of Minnesota's "Quality of Life"

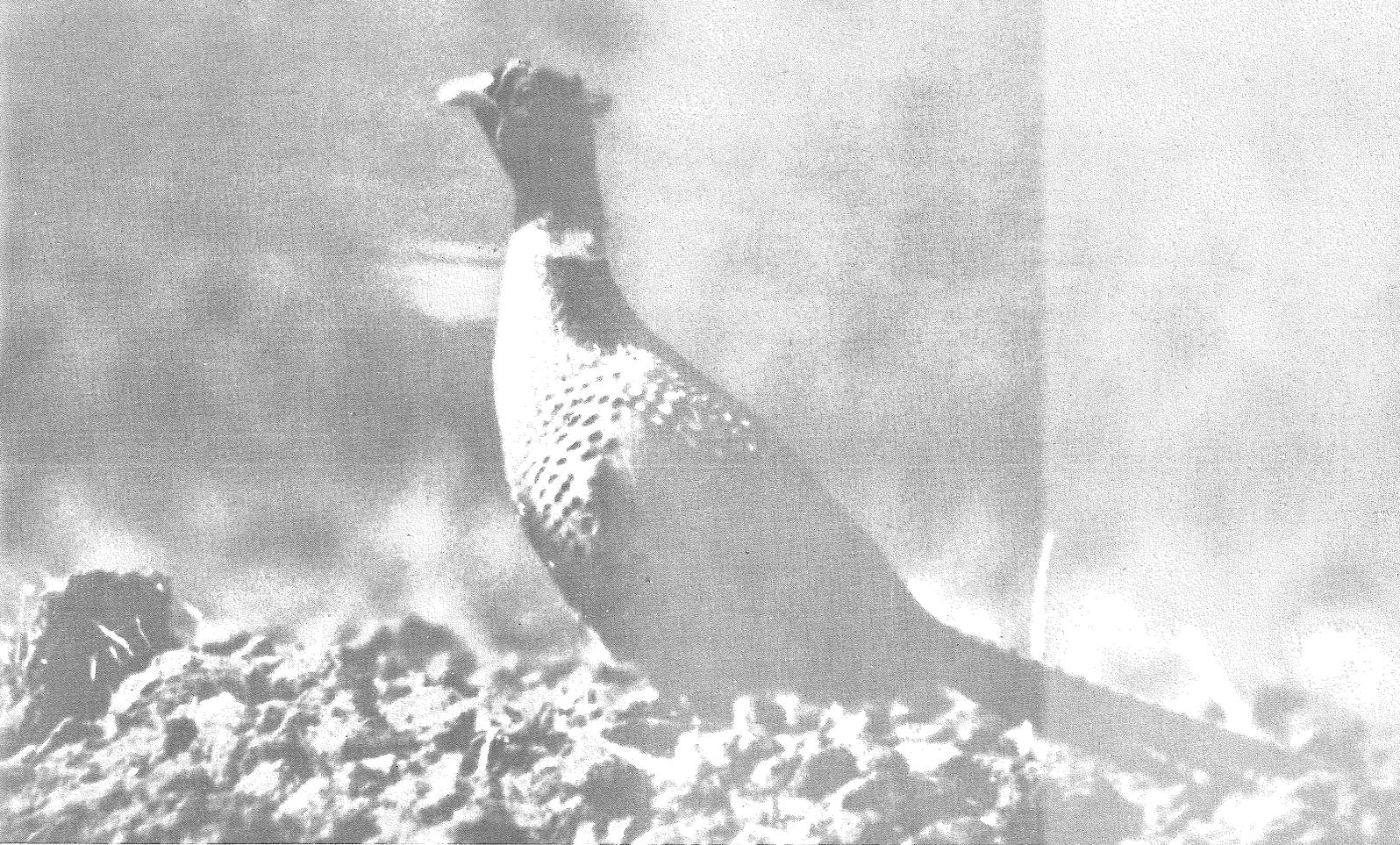
The farmer, the hunter, the administrator, the bird-watcher, the outdoorsmen, all of us, have a stake in our heritage of rich natural resources.

Conservation is truly everybody's business.

Commissioner of Conservation

First printing - June, 1967

Art: Cover painting by Ernest Strubbe, Alberta, Minnesota.
Other illustrations by Ken Haag, St. Paul, Minnesota.



Challenge—A Place to Live

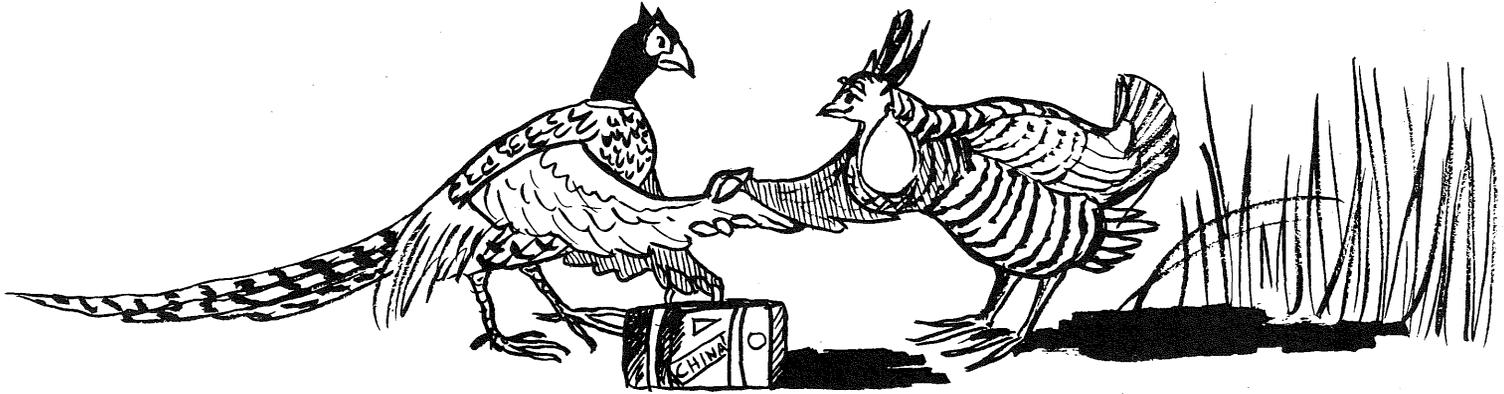
This is the story of a magnificent game bird—a bird as beautiful as it is rugged. The tale of the ringneck pheasant is one of constant struggle for survival for he must dodge power mowers, predators, cars and the skill of over 200,000 Minnesota pheasant hunters. It is a story of ruggedness and resourcefulness for he must survive raging winter blizzards, sleet, summer storms and floods. It is a story of our most adaptable bird who sank his roots deep in the agricultural region of our state while the prairie chicken vanished silently before the cow and the plow. Yet, this is a bird whose life is also complicated by habitat deterioration and drastic changes in farming practices. Like the prairie chicken who preceded him, his is also a challenge to find shelter, food and a place to raise a new generation. We've learned a lot about this bird, but we've a long way to go.

This is a fascinating story pieced together over many years by researchers and game managers in Minnesota and elsewhere. Like pieces of a jig-saw puzzle, the parts fit together to tell the story of Minnesota's King of Game Birds—the Rugged Ringneck.

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NATURALIZING THE IMMIGRANT



Minnesota's rugged ringneck is an immigrant who, like so many citizens of the great American "melting pot", comes from a smelter of ancestry. He's now a full-fledged U.S. citizen who has adapted to our intensively farmed regions better than any native game bird.

He's mainly a Chinese ringneck, but his vintage likely includes a little Mongolian, Korean, Japanese green pheasant and a smattering of western Asian blackneck pheasant. In his native Asia, the ringneck is more widely distributed in surroundings dominated by man than any other variety of pheasant.

Our ringneck belongs to an Order of birds known as "Galliformes" which means he's "chicken-like". This identifies him as a first cousin of the peacock, wild turkey, grouse, quail and even the domestic barnyard chicken.

His ancestors arrived on the western shores of the United States late in the 19th century. It all began in a public market in 1882. Judge Owen N. Denny, then Consul-General at Shanghai, sat cross-legged in a Chinese seaport and bargained for eight birds—four gaudy males and four females to ship to his brother's farm in Oregon. Eastern China's climate was like Oregon's, so why wouldn't they work?

These first pheasants died without ever seeing their destination. But Denny tried again and finally 21 survived the voyage and found a new home in a foreign land. These stout-hearted immigrants soon produced offspring which spread through the entire Willamette Valley of Oregon, 40 miles wide and 180 miles long.

Little did Denny realize these birds in years to come would supply countless happy hunting hours to literally thousands of American hunters.

They arrived to fill a niche which had previously been filled by the prairie chicken. The prairie chicken had been the nation's most important resident upland game bird, but living with the plow was unacceptable to its way of life and, unfortunately, there was no native game bird suited to the vast expanding farmland.

The imported ringneck made its debut in Minnesota in 1905 when the Game and Fish Department received 70 pairs from Wisconsin and Illinois. Then in 1915, a game farm was established on Big Island in Lake Minnetonka by the Game Protective League and in 1917, the Legislature made its first appropriation for game propagation. Thus, the coronation of the ringneck pheasant as King of Minnesota's Game Birds began to take shape.

A GAUDY WARRIOR

Sire Ringneck is a symphony of colors—a gaudy warrior. Much of his body is rich brown with bars and scales of white merging into delicate powder-blue exemplified by russet and copper with flecks of green, white and black. Vivid crimson patches about his eyes are set off by black head feathers shot with violets and greens by the autumn sun. His distinctive white collar or "ring neck" is the most distinguishing part of his anatomy and experienced hunters use this to their advantage. A magnificent, two-foot tail with cross bars of black and brown brings up the rear. By contrast, his lady is drab and demure. Her tail is much shorter and her subdued brown and black markings render a perfect camouflage.



Unlike his first cousin, the barnyard chicken, pheasants are independent cusses who have defied domestication even though they have lived around man for centuries.

RINGNECK TERRITORY . . .

45,000 Square Miles of It

Don't look for ringnecks in the wilderness—they're a corn country product that never wanders far from cash-grain fields. They reach their greatest abundance in the midwestern states of Minnesota, Iowa, the Dakotas, Nebraska, Michigan, Ohio, Pennsylvania, Wisconsin, Illinois and Indiana.

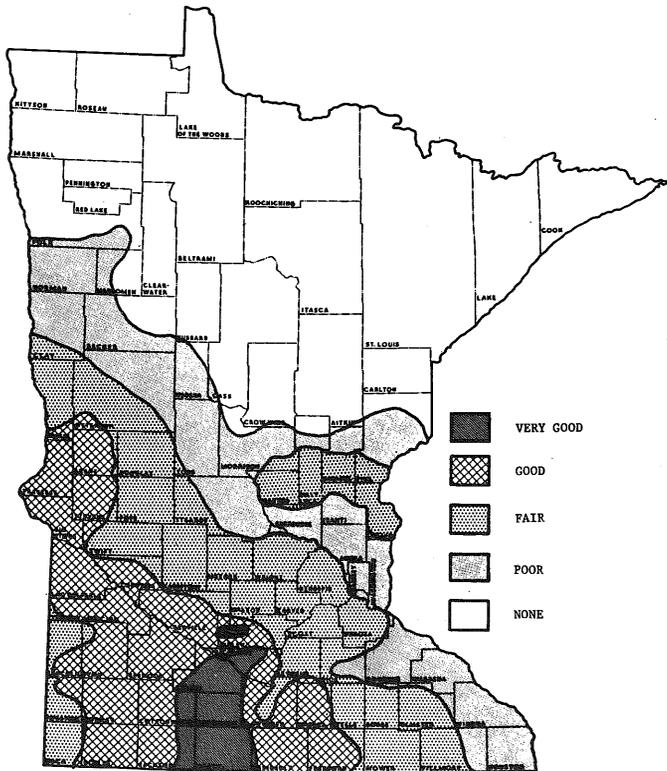
In Minnesota, pheasants are most plentiful in the fertile south central and southwestern counties. The only large areas completely devoid of pheasants are the forests of the north and northeast. Throughout the Midwest, the best pheasant country is generally too far north for the bob-white quail and too heavily cultivated for prairie chickens and sharp-tails.

HOW MANY ARE THERE?

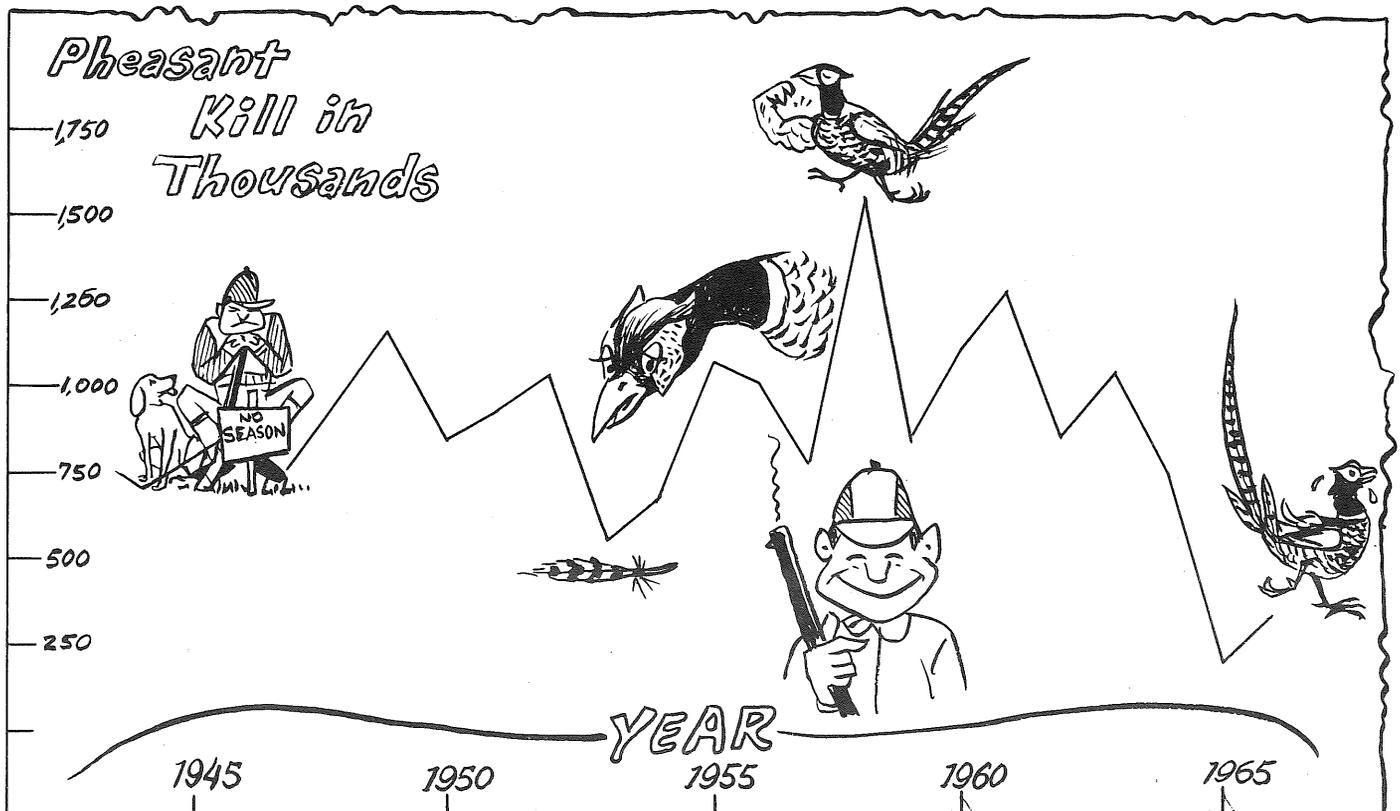
Their total number varies from year to year and depends greatly on such things as winter survival and spring nesting success. The variation in numbers is most noticeable on the farmlands outside the main pheasant range.

About 5,000 birds were stocked annually in the early years, yet wild populations multiplied and expanded their range at a very rapid rate. The first hunting season on pheasants was in 1924 when Hennepin and Carver counties were opened to shooting and an estimated 300 cocks were harvested. Only seven years after the first season, 49 counties were opened to hunting and over 1,000,000 cocks were harvested. The best year for a cock-only season was in 1958 when 1,562,000 roosters were harvested.

Cocks make up somewhat less than half of the fall population and about 65 per cent of them are bagged in an average year. Thus, our fall populations, (both sexes) have ranged from over 5,000,000 pheasants in good years to a low of about 1,000,000 in poor years.



MINNESOTA'S PHEASANT RANGE



FAMILY AFFAIRS

How is a pheasant able to take care of himself and survive in Minnesota's rigorous climate with its ambush blizzards, driving sleet and floods? How does he survive despite deadly power farm machinery, predatory animals, automobiles and the skill of hunters in the fall? All of these hazards are encountered at one time or another in his short life.

Some of the answers to his existence lie in the way he conducts his personal life. Let's take a look.



Roosters are Don Juans; vigorous combatants take from 3 to 8 females into their "harems".

It's spring and the alfalfa fields are beginning to turn green. John Ringneck's thoughts have turned to staking a claim where he will stand with neck stretched, wings flapping and fill the cornland with the ring of his harsh, strident voice. This is *his* territory, a patch of land where he entices hens to his harem and which he defends against rival roosters.

In his "kingdom" he stands erect and announces his challenge to the world by crowing. He grips a solid object to anchor himself, squalls and rapidly beats his wings with a fluttering, low, booming sound. He crows most enthusiastically on clear, quiet days just after sunrise and just before sunset. The vociferous crowing of John Ringneck can be heard over a half mile on a still spring morning and the show lasts about two hours.

All hens are welcome to his domain, but he tolerates no other males. If beaten off by a rival, he may drift around the territories of other males hoping to steal their hens. When a hen is lured into his territory, ol' John displays before her with a proud, gallant fuss, chest blazing and eyes constantly alert. Although the hen may appear indifferent and seemingly comes and goes at will, the rooster is a gallant escort. He cultivates her affection with regal splendor and may even offer her a choice morsel of food as a token of his affection.

His courtship display is somewhat one-sided; he extends one wing downward on the side toward her and spreads his tail, tilting it in her direction. To add to his luster, he bows his neck, lowers his head and ruffles his neck feathers. The ear tufts and wattles on the side of his head become vivid, blazing scarlet. He struts before her, walking with a bobbing motion, turning in all directions and may even prance around her in short quick steps.

Early in the mating season, the hen can afford to shop around a bit and gives him a critical eye. If his tail has been pulled out, or is missing a few feathers, the hen may give him the cold shoulder and shop in someone else's territory as his tail is one of his biggest attractions!

The Hen and Her Nest

The hen mates the spring following hatching with one of these crowing Beau Brummels. Nearly all nests are on the ground close to the crowing area. But one Minnesota pheasant's nest was atop a haystack, another on a fodder stack and one in an abandoned crow's nest in a mulberry tree, 20 feet off the ground. The nests are carelessly lined with almost anything available.

The early nesting hens usually locate in old dry grasses and sedges from the previous fall, or at a marsh edge where they have wintered. Later in the spring and as soon as new plant growth is about six to eight inches high, most hens are located in alfalfa fields, roadside ditches, grain fields, pastures, or other grassy type cover.

When the hen first begins to lay eggs, she is unsure about the responsibilities of family life and often lays single eggs here and there for no apparent reason. Often "dump" nests are started and then abandoned by one or more hens.

When she finally settles down in late April or early May, she will lay about 12 eggs in a single nest.



Housekeeping is hen's work; she gets no help from her Lord and Master.

YOUNG UPSTARTS

When all the eggs are laid, incubation begins. During incubation, the eggs are kept in close contact with a bare "brood" patch on her breast. This spot is nearly devoid of feathers which were shed several days before laying. It has a generous supply of blood vessels which carry warmth to the developing eggs. When the eggs are being incubated, the hen sticks tight to her nest and in the mowing season she may be killed by a haymower rather than fly to safety.

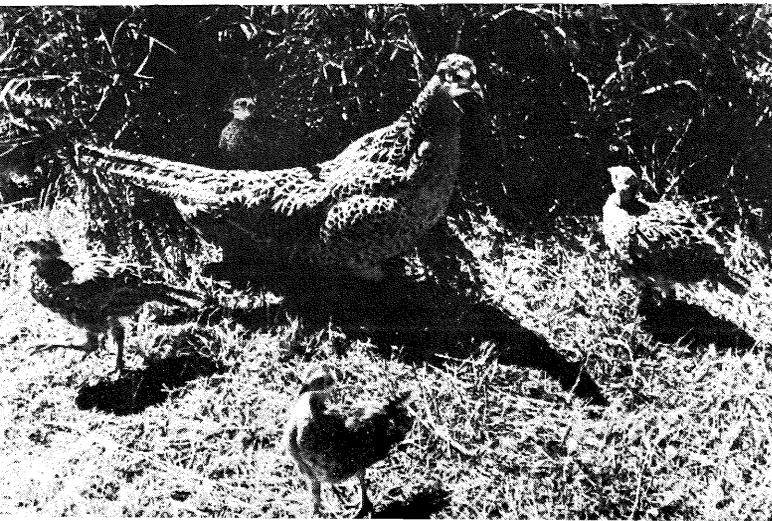
In about 23 days, the chicks pip the shell and get their first view of the green world; perhaps one or two eggs do not hatch. Hatching is completed within about 24 hours and the brood leaves the nest shortly after. The young upstarts are fully clothed with down when they hatch and can walk as soon as they are dry. Within a few days they start developing wing feathers and begin making short, "grasshopper" flights.

This is what happens if the nest is not destroyed by farming operations, or if no skunk, crow or other predator fills its stomach with tasty pheasant chicks or eggs. If the nest or eggs are destroyed, the hen will nest again and again as long as strength remains. But only one brood is brought off by a hen each summer.

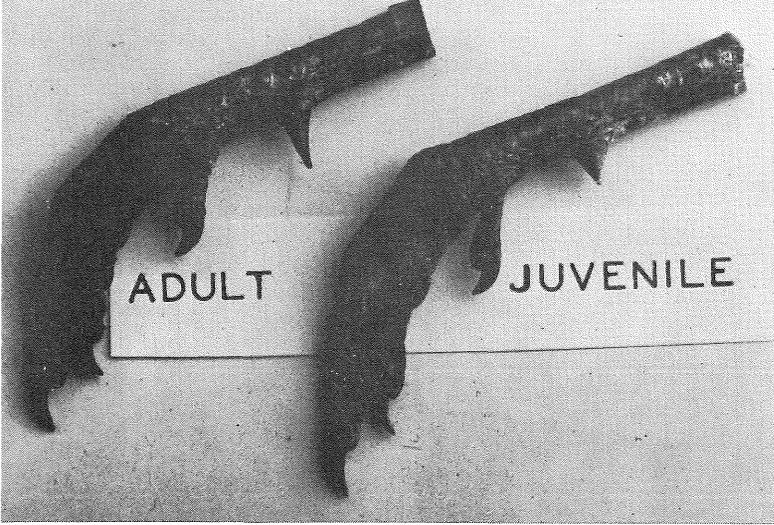
The hen stays with her brood until the chicks are at least eight weeks old. Yet, in spite of her constant care, there's a staggering death rate among young pheasants. Much mortality strikes early in life and on the average, three chicks in every brood may be lost between hatching and seven weeks of age. In Minnesota, broods in August usually average six chicks.



Chicks "pip" the shell in about 23 days.

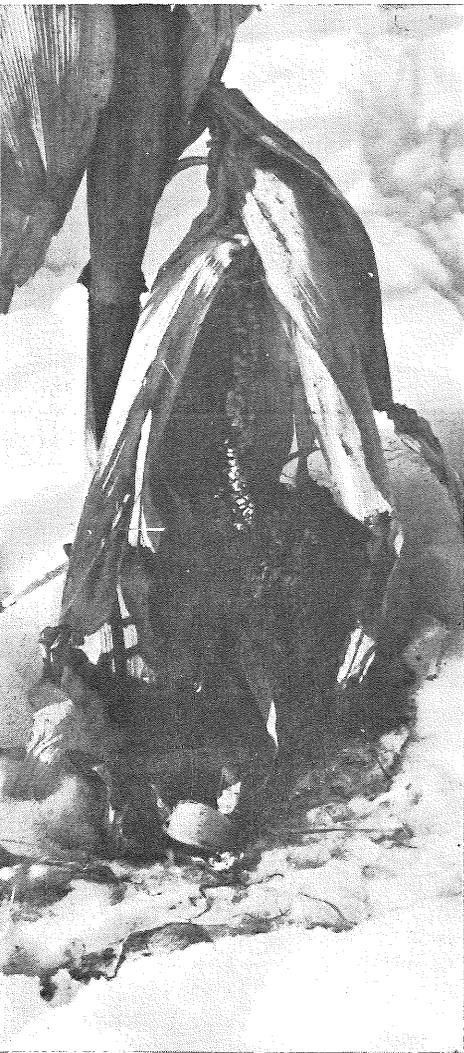


The faithful mother hen stays with her brood for at least eight weeks.



SPURRED CAVALRYMEN

Just a few weeks after hatching, the young male develops rough projections (spurs) on the backs of his lower legs just above the feet. These are dull and make poor weapons during his first year. When he reaches his second autumn, *he's spurred for battle!* The spurs by this time are hard, sharp, very glossy and curved like a miniature horn. You can be about 95 per cent sure the bird is a year or more old if the spurs meet these standards.



Minnesota pheasants are known to feast on 515 different kinds of food. But the favorite is corn.

Favorite Food

Sire Ringneck's attachment to the farmer is most apparent when it comes to his daily menu. Like his domestic cousins, he's "granivorous" (a seed-eater) and makes no bones about it. Domestic grains are the mainstay of his menu and he simply does not thrive in areas where they are not readily available.

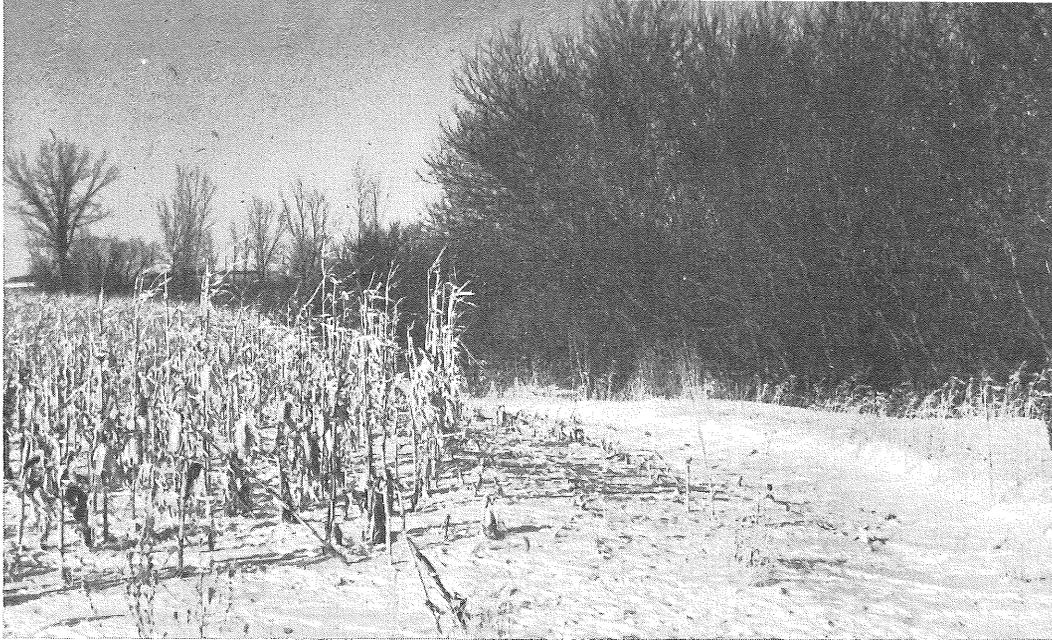
Although he may spruce up his daily fare with a variety of seeds, fruits and insects, and may even get "looped" from frost-fermented grapes, domestic grains are his bread and butter. Corn, soybeans, oats, and other grains make up 50 to 75 per cent of his food from spring to fall and up to 90 per cent in the winter. Weed seeds provide a nutritious supplement, but seldom account for more than 20 per cent of his menu. By comparison, insects and grit each usually account for five per cent or less of his food.

Dame Ringneck is an exception to the rule. During the laying season she regularly seeks out snails and grit high in calcium which is necessary for producing egg shells. Chicks, too, have their special tastes and live almost exclusively on insects. Grasshoppers and other insects are an excellent source of the proteins and other nutrients needed by the fast-growing youngsters. At least 50 per cent of the chick's diet during the first few weeks is typically from this source.

Living Quarters

Pheasants like the good things in life and this means the best farmlands. Just as the richest soils produce the best crops of wheat, corn and potatoes, they also produce the best pheasant crops, if cover is available. Good farmlands with soils rich in phosphorus, nitrogen and all other elements that grow big cash crops are their most productive range. Attempts to get them started in marginal farmlands and in non-agricultural areas have been disappointing. In the best range, croplands are associated with about 25 per cent wasteland (wooded, brushy, ungrazed grasslands) where pheasants can nest and find winter cover.

Although they will roam widely to fulfill their many life needs, pheasants spend most of their time on about a square mile or less, if the area provides food, winter cover, loafing cover, travel lanes and nesting and roosting cover. In the fall, they'll move around a bit more as cover becomes scantier, farming activities step-up and the hunting season stirs everything.



Prime winter quarters—standing corn for food and trees for shelter.

Then comes winter when survival itself is a day-to-day challenge. At this time, their movements hinge directly on weather, cover and food supplies. When winter descends in all severity, they drift toward denser cover and may congregate near farm windbreaks, or in large marshes. They prefer marshes for cover, but as these fill with drifted and blown snow, they retreat to woodlots, farm groves, brushy bottomlands and other heavy cover. Even then, they seldom move more than three miles from their summer haunts. Wintering pheasants tend to flock, sometimes by the hundreds, and occasionally segregate by sex. This segregation often prompts casual observers to believe that the roosters far outnumber the hens, or vice-versa.

THEY DON'T LAST LONG

In spite of the ringneck's ruggedness and resistance to the elements he doesn't last long. In fact, the ringneck clan is always a young one for about 60 to 70 per cent of the fall birds are typically young of the year. Only about one in ten will reach its second birthday and it's a wise old bird that survives for four years.

Nature created ringnecks with a built-in reproductive capacity that permits them to multiply rapidly under favorable conditions. This inherent capacity is also tied in with a rapid population turnover—they live fast and die young. Thus, each year's crop of cockerels must be harvested during annual hunting seasons, if they are not to be wasted.

FATAL FOURSOME

Living as they do and where they do, few pheasants escape without a bout with one or all of nature's fatal factors.



A winter storm without cover, a sure killer. St. Pat's Day blizzard, 1965, half of Minnesota's pheasants perished.



Cats and dogs can be serious predators, especially during the nesting season. Keeping pets well-fed and at home, is a good conservation practice.

NUMBER ONE KILLER—WEATHER

A ringneck can resist disease and short periods of starvation, but a winter storm without shelter is the most vicious killer of all. The most feared is the blizzard with sub-zero temperatures when exposure is lethal. Sleet storms can also be devastating as they can seal off food supplies and lead to extensive starvation.

Sleet and blizzards, followed or accompanied by plunging temperatures, are seasonal savagery to pheasants. Ambush storms can catch them off-guard and in the open without cover. A tough winter with poor cover can literally beat the birds to death and slash the population to the bone.

Such was the case when the 1965 St. Patrick's Day blizzard paralyzed the state and wiped out over one-half the entire pheasant population in a matter of two days. The ambush blizzard piled snow 19 inches deep on the level and up to 14 feet in drifts and was followed by severe, brutal sub-zero temperatures. Driving snow froze in the beaks of exposed ringnecks and many succumbed to suffocation. But the loss to exposure was most severe. High winds drove snow under their wind-ruffled plumage and it compacted between their feathers, quickly draining all body heat.

Another severe storm slashed into Minnesota in May, 1945, and struck 1,000 square miles of pheasant range with a surprise hailstorm. In the center of this area, about three-fourths of the adult birds in 130 square miles were killed by the icefall. As many as 10,000 ringnecks may have perished under the hail in the Albert Lea area alone.

In such savage storms, winds may blind the birds and many crash into fences, wires and trees. Birds are frequently found with broken wings, legs, necks and severe body bruises after such sudden storms. Even those that aren't killed outright may be stunned and die of exposure.

If the pheasant makes it through the winter, a warm, dry spring may produce a good hatch, but then the opposite may happen if the weather is wet and cold.

PREDATOR—FACT OR FALLACY

Every wild creature is either the hunter or the hunted. Unfortunately for him, the ringneck falls into the latter group. And we can't sell the predators short. No proper predator will miss an opportunity to fatten up on rabbits, mice and other small animals including the ringneck.

Most predators are not large or strong enough to take healthy adult birds, but well over a dozen relish pheasant eggs. Crows and skunks are especially adept at finding nests in early summer when cover is sparse and when nests are located along natural travel lanes such as fence-rows. The great horned owl, however, is the only winged predator of much significance to grown pheasants. They'll take pheasant to feed their nestlings in late winter and early spring. Although most of the large hawks will take pheasants occasionally, the big gamey pheasant is usually more than they can handle and ringnecks may not even take cover when a hawk is nearby. Weasels, too, can destroy eggs and kill young chicks, but they fear the brooding hen and avoid the nest when she is around.

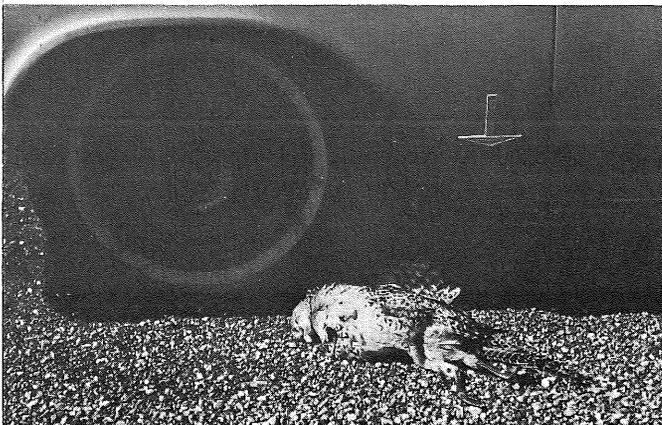
The fox is a specialist at hunting mice and cottontail rabbits, but no study has yet shown that foxes are capable of killing enough pheasants to harm a healthy, established bird population in good range.

Pheasant bones are often found around fox dens, resulting in swift, angry conclusions. The question arises, however, as to whether these birds were killed by foxes, or merely eaten by foxes. Some of the birds may have died from mowers, been struck by cars, or were cripples lost during the hunting season and carried to the den. No self-respecting fox would pass up a pheasant dinner even if he didn't have the pleasure of making the kill.

Minnesota is one of only three states which paid fox bounties in 1965. From 1944 through July, 1965, Minnesota paid out \$1,683,000 for fox bounties. Counties in Minnesota paid approximately an equivalent amount. Yet, despite this expenditure of over \$3 million, the fox population was at a high in 1965. There was no evidence that the money caused any reduction in fox numbers, or was of any significant benefit to wildlife. If the money, now gone forever from the Game and Fish fund, had been used to create better living conditions for the pheasant and his clan, the population could be substantially higher today. Minnesota quit paying bounties on July 1, 1965.

Although it's easier to blame a fox than a long, rugged winter, *wild predation on pheasants is a normal thing*, just as it is on all other game animals.

ACCIDENT-PRONE



In Pheasant Land, the smart driver takes it easy.

Living around man with his high-speed machinery, power mowers and automobiles, the ringneck is more accident-prone than most game birds.

Each year thousands of hens succumb to modern mowers while nesting. If broken nests and smashed eggs were the only losses, it wouldn't be so bad since hens will renest. But mama hen is very reluctant to leave her nest, particularly when incubating. Thus, she dies under mower blades, or is mortally wounded as high-speed machinery harvests the nation's hayland. The total effect? The loss of hens through mechanized farm power during the nesting season is about 25 per cent of the number of cocks harvested during the hunting season.

But that isn't all. Another machine harvest occurs on our roads and highways, especially in the early morning and late evening. Pheasants wander along the roads at daybreak until the dew evaporates from their cover then go inland to feed. In late evening they drift back across the roads enroute to roosts. Grains spilled from trucks, and unpaved roads that offer grit, also lure them to the roads. A big rooster can put a mighty big dent in the grill of a speeding car. The smart driver will take it easy in pheasant country, particularly in the spring and early summer.

STARVATION AND DISEASE

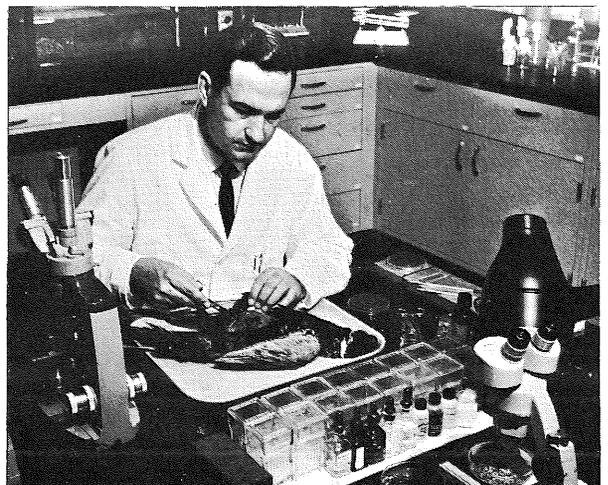
Our naturalized Chinaman has five essentials in his favor to help him resist starvation—he's *big, strong, bold, independent and smart*. When he's in good range, starvation is rarely a problem.

Since they're big, their energy reserve is greater than smaller game birds and they can fast longer in cold weather and swiftly regain weight lost when food is again available. In fact, at ten degrees below the zero mark, a healthy pheasant can fast for two weeks and even more. At ten above, he has been known to survive for a solid month without nourishment. However, cover is an important consideration and where it is lacking, they begin dying in 7 to 10 days if sub-zero temperatures persist and food is not readily available.

He's strong and bold. With beak and claw, the rugged bird can dig through nearly two feet of crusted snow to find grain or pick scattered kernels of corn partly embedded in the frozen earth. But field feeding usually becomes difficult or drops off drastically after deep snow has compacted by drifting.

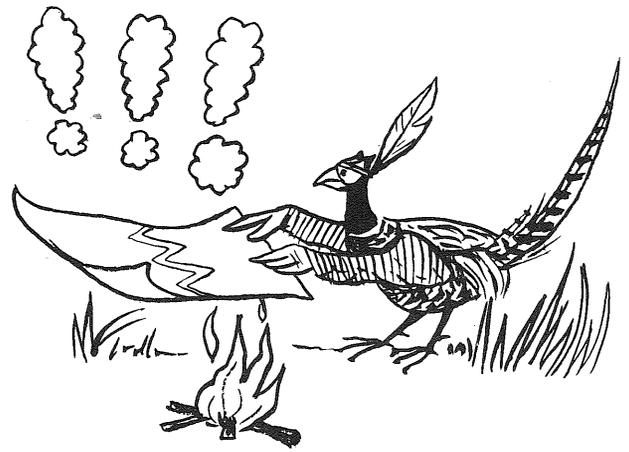
If all of his normal abilities fail in a severe winter, he takes another course. He joins hogs at their troughs, chickens in the barnyards or cattle at their bunkers until the weather lets up. Few ringnecks starve. Even during the severe winter of 1961-62, most losses resulted from lack of cover and the direct onslaught of severe storms.

Plus all this he's a healthy critter. There is no disease that seriously hampers ringnecks in the wild. The disease to which pheasants are the most susceptible is *pullorium*, which is easily spread and is highly fatal to young birds in captivity. Fortunately, it is not very important to wild birds. The low disease rate of wild birds is matched by low parasite occurrence.



Biologists check the health of road-killed birds.

help



DISTRESS SIGNALS

Safe nesting cover is rapidly disappearing and this poses the most serious threat to our pheasant's future. Not only has this resulted in fewer chicks being reared to adulthood, but nesting birds are more vulnerable to predation as they are forced to use skimpy cover.

DECLINE IN HATCHING—TROUBLE AHEAD

A decline in hatching success means trouble's a-brewing. This is the case today.

Today, eggs laid in hayfields have less than five per cent chance of hatching. Twenty years ago, the success was closer to 30 per cent. Why? For one thing, hay mowing starts at a much earlier date now and fewer eggs have time to hatch. In addition, small grain fields in the main pheasant range have declined to only a third of their former acreage. And this is where 40 to 45 per cent of our pheasant crop was produced just a few years back. Fencelines are now absent or reduced to narrow slivers of cover. Plus this, odd corners of undisturbed, idle land have all but disappeared on today's modern farms.

To illustrate, let's compare the results of two studies made of pheasant nests, one from 1939 to 1941 and another from 1958 to 1962 in southern Minnesota's pheasant country. In all types of cover, over 700 pheasant nests were located in each study. In the 1939-41 study, an average of 29 per cent of all nests produced chicks. But in the later study, the figure was slashed to 17 per cent. Even after repeated nesting attempts, only 35 to 50 per cent of the hens raised broods, compared to 60 to 70 per cent in 1939-41. The result—fewer birds to hunt in the fall.

Pheasants have the ability to recover quickly from nature's adversities *if* they have safe nesting cover such as in small grain fields, along slough margins, grassy swales, and weed patches. Their reproductive capacity has not declined, but safe nesting cover has been, and is, a chronic problem.

LACK OF COVER, HIGHER STORM MORTALITY

The needs of agriculture also have a striking effect on the availability of winter cover. *Winter losses are serious and often devastating when pheasants lack protective cover.*

The 60's have been hard on our rugged ringneck. Winter storms and starvation in 1961-62 took about 45 per cent of the population. The March 17-18, 1965 storm raged into Minnesota taking over 50 per cent of our ringnecks. Recovery from these devastations has been slow.

In contrast, the pheasants quickly recovered from storm losses of the late 1930's and early 1940's. This was most dramatically demonstrated following the Armistice Day storm of 1940 and the severe blizzard of a few months later. During each of the next two falls, 1¾ million birds were bagged—the highest harvest in Minnesota's pheasant hunting history.



Roadside ditch, good nesting cover.

Along comes the grader.

And there goes nesting cover.

LACK OF COVER

PREDATION

STORM MORTALITY



What's wrong with our modern-day pheasants? Are they getting soft, or maybe winters are rougher now than way back when? It's not likely that they're getting soft as each generation must face the test of natural selection of the fittest. Nor is it likely that today's winters are worse; many a farmer can recall the raging storms and severe temperatures of the 1930's and 1940's. The truth is that *habitat losses are literally leaving them out in the cold* and slowing their rate of recovery.

The 1965 storm demonstrated the need for an expanded program to maintain and improve high quality winter cover. It illustrated the inadequacy of winter cover throughout much of the pheasant range in Minnesota. The intensity of this storm was so severe that heavy pheasant losses occurred in many cover tracts which normally provide adequate protection. Although we cannot expect to completely eliminate winter storm mortality, the need for an expanded program to maintain and improve high quality winter cover is obvious. Such cover is declining throughout virtually all the main pheasant range.

Protective woody cover provided by farm groves and field woodlots is being drastically reduced; the number of farms is declining and the land absorbed into larger holdings. In so doing, groves and hedges are being eliminated to facilitate intensive and large scale agriculture. Larger cattail marshes, patches of ragweed and sandbar willow of the good old days have slipped away until today entire townships are left without a single marsh. The result? *Pheasants depend more and more on farmstead windbreaks for winter protection.*

LACK OF COVER—MORE PREDATION

Over the past 25 years, predation on pheasants has increased and now many more nests are lost to predators. The reason, at least in part, is believed to be the limited amount of safe nesting cover which leaves nests more vulnerable to predators.

The question comes to mind, how many pheasants would we have if predators were eliminated? The pheasant-predator relationship is not as simple as many would like to believe. In some places there would probably be more pheasants, but in others the difference wouldn't be noticed. A three-year experimental predator control program was recently completed in south central Minnesota and involved predator control far beyond that provided by the bounty. Up to 25 predators per square mile were removed each spring and summer. This ruthless removal of all species of wild predators during the nesting season *did* result in less nests being destroyed by predators. But, surprisingly enough, it *did not* increase the number of chicks recorded on roadside counts made late in the summer, or the number of roosters bagged by hunters.

Some increases in pheasant numbers undoubtedly resulted from these control efforts, but the cost far exceeded the benefits. Since pheasants can withstand predation where their cover requirements are met, using monies available to improve habitat is still a more practical and economical approach.



A farm grove is buried to make way for agriculture.



PHEASANTS *and* LAND USE



Pheasant Country, 1967.

Pheasants are farmland birds, but what is good for farming may or may not be good for Sir Ringneck. Agriculture can and frequently does become too intensive for the best welfare of the pheasant. This is to be expected—after all, farming is the farmer's business and livelihood. Pheasants are extras, but most farmers like to have them around.

Pheasants can be produced in greatest numbers on the best, most fertile lands. These are the very lands in greatest demand for other uses—uses which can destroy what the pheasant needs most. And this is where the bottleneck lies, the real cause of low pheasant numbers.

There's been a lot of research done on the relationship of land management to pheasants and on the land use patterns most suitable to pheasants. It can safely be said that more pheasants *can* be raised around the farm, if practices beneficial to both farmer and pheasant are applied.

Let's take a few examples. If roadside ditches and odd grassy areas were left unmowed and if good windbreaks were planted around farmsteads, the pheasant would have a better chance. Fortunately for the ringneck, the practice of burning roadsides, fencelines and idle grassland is now generally recognized as poor land management. Burning destroys humus and wooden fence posts, rusts wire, reduces soil nitrogen and creates seedbeds for weeds. These and other factors will be considered as we follow the story of the pheasant in modern-day Minnesota.



LAND RECLAMATION

The greatest problem faced by the ringneck is lack of grassy-type cover. The shift in farm cropping practices and land reclamation have resulted in losses of grassy cover in fields, along fencelines, marsh borders and odd corners. Marsh edges provide pheasants with good cover and nesting sites, but marshes are being drained to make way for more crops and with them goes the pheasant cover. Farm animals graze the woodlots or worse yet, they are cut down and burned, leaving the pheasant without winter cover.

MOWING MORTALITY

About 25 per cent of the hens nest in alfalfa, but the contribution is almost nil in terms of birds hatched. One-third of the hens that nest in alfalfa are killed or severely maimed, and all of the nests destroyed. Alfalfa is attractive because it's an early cover crop that offers concealment for the hen early in May when small grains are just sprouting. Early mowing of alfalfa makes nutritious hay, but plays havoc with hens and nests.

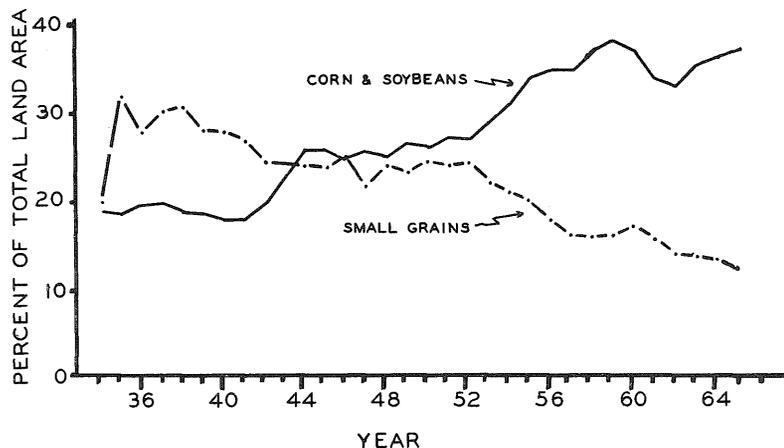
A ROW CROP ECONOMY

Row crops are gradually replacing small grains. Since 1940, the amount of land devoted to corn and soybeans in Minnesota has doubled. In contrast, small grain acreages have been cut in half in central and west central Minnesota. In south central and southwestern Minnesota, the conversion from small grains to row crops is even greater. Unfortunately for Sir Ringneck and his clan, the trend shows no sign of abatement with the result that many sections presently are devoted to row crops and offer virtually no safe nesting cover.

Row crops provide an essential food source for pheasants, but, ironically, the amount of food these crops provide is less today than it was 25 years ago. This is due to the emphasis on fall plowing, a practice which improves soil texture and productivity, but leaves little food for wintering pheasants.



Early farmland mowing plays havoc with hens and nests.



Trends in Agricultural Land Use, Primary Pheasant Range.



And More Problems

A marsh goes up in smoke, so does roosting and nesting cover for wildlife. Early spring burning destroys potential nest cover. Fall burning destroys both roosting and nesting cover, especially in marshes.

SPRAYING

Then there's the increased use of insecticides and herbicides, the long range effect of which can only mean reduced food and cover for pheasants. Herbicides like 2, 4-D effectively destroy weeds in farm crops, but they also eliminate weed seeds which have been an important food for pheasants in the past. In the future, there will be increased use of herbicides in corn management. A combination of two herbicides is already being developed which, when applied to a corn field in the spring, will eliminate virtually all weeds for the year.

Although insecticides can be detrimental to all forms of life, it's encouraging to note that their use by agriculture has rarely been associated with cases of pheasant deaths in the Midwest. Analysis of pheasant tissues for pesticide residues have invariably shown only small amounts present and suspected areas of poisoning are rare.

Insecticides are commonly applied with herbicides to control corn rootworms and other soil pests. Fortunately, they are put below the soil's surface around the roots where they are not readily available to wildlife.

PEOPLE PRESSURE

Pheasants cannot get along without people, but they often find it hard to get along with them. Pheasants need *living space*, and they often find themselves in competition with people for this very thing. Minnesota's human population is growing by leaps and bounds. A most outstanding example is the Twin Cities area where in 1966 there were 1.7 million people. By the year 2000, the Twin Cities area is expected to have *four million people*. Suburbia and the pressures that go with it are expected to swallow up tens of thousands of acres in Hennepin and the six surrounding counties.

Although the impact of growing human numbers is most striking in the metropolitan area, the rural counties also are affected. Communities expand and airports, golf courses, roads and many other developments continue to spring up. Approximately 85,000 acres have been withdrawn from agriculture during the past ten years in the rural areas as a result of such developments.

HOW ABOUT HUNTING?

PHEASANTS DOWN—CLOSE THE SEASON!

What about this? If figures show the pheasant population is down, way down, shouldn't the hunting season be closed?

Research and experience in Minnesota and other states has shown that hunting has little effect on pheasant abundance the following year, if regulations prohibit hen shooting. We know there are still plenty of roosters to perpetuate the population after the season closes and intensive nest studies have never demonstrated a problem of infertile clutches of eggs. *There has never been a proven shortage of cocks*, either after an open season, or a bad winter, or a combination of both. Winter mortality has no bearing on sex ratios as both sexes are equally vulnerable.

In 1946, the population took a nose-dive and there was no season in 1947. Yet, when the hunters took to the field in 1948, the harvest was below that of 1946 even though hunters "laid off" for a year. The population declined in 1947 because of a poor hatch; protection from

hunting in the fall did not increase the hunter's bag the following year.

A reasonable goal for the annual pheasant harvest in Minnesota is about one million cocks and this requires a fall population of about 3,500,000 birds.

These are prolific, short-lived birds and most roosters would die of natural causes if we did not have annual hunting seasons. Even where there is no hunting, only about 35 per cent of the birds live from one year to the next. *The birds cannot be stockpiled.*

WHY NOT HAVE A LONGER SEASON?

In view of these facts, all midwestern states have been providing more liberal seasons and many have been harvesting a higher percentage of their roosters than has Minnesota.

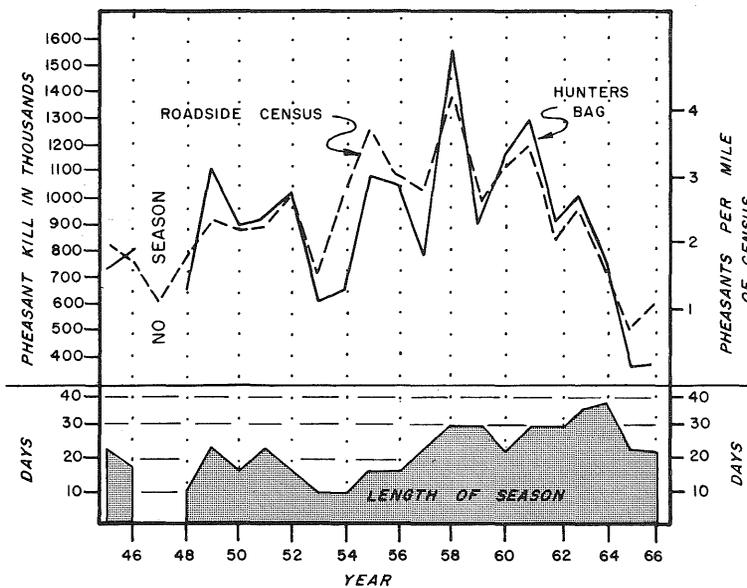
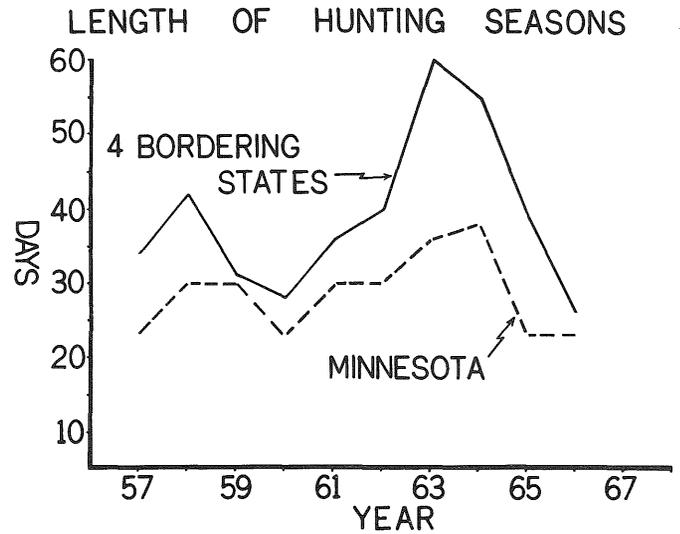
Spring breeding populations in Minnesota typically consist of one cock for every three hens. Heavier hunting in some states leaves one cock to six or eight hens, yet egg fertility there is as high as it is in Minnesota.

Pheasant hunters to a large extent regulate their own hunting. The number of hunters afield declines rapidly after the barrage of opening weekend. In fact, about 50 per cent of the roosters taken by hunters during a 30-day season are shot on opening weekend and 85 per cent of the entire harvest is taken by the time the season is half over. If the season were shorter, even more of the hunters would do all of their hunting early.

After several weeks of hunting, the cocks that succeed in dodging hunters become extremely wary and are not easy targets. During the last week of a 30-day season, the cocks taken comprise only about five per cent of the total bag for the season.

Although longer seasons do not greatly increase the total take of pheasants, they do provide hunting under more relaxing conditions by those active sportsmen who enjoy a brisk fall outing after others have put their shot-guns away. They also give the farmer a better chance since he may be too busy harvesting his crops early in the season.

Thirty years of information has proven that liberal rooster seasons are to the hunter's and farmer's benefit without being harmful to the birds.



Summer brood census do a good job of forecasting the harvest of roosters. The size of the annual crop of young ring-necks has a much greater effect on the number harvested than does the length of the season.

What About Illegal Hen Shooting?

The only potential danger to pheasants from an extended hunt is that too many hens might be shot even though they are protected by law. This is the concern of most of us, but fortunately, studies since 1954 are reassuring. It's true, hens are killed during the regular season, but only about 6 to 11 per cent of the total hen population is shot accidentally or otherwise during a 30-day hunting season when about 65 per cent of the roosters are shot. When hunting pressure is low, as it has been in recent years, the percentage is even less. The hen kill accounts for only a fraction of the total death toll throughout the year.

Like most upland game birds, pheasants have a high rate of turnover, and the mortality of adults from year to year is about 65 per cent. Some hens are always shot despite the best intentions of sportsmen and game officials. This loss of mama pheasant during an open season is a minor loss insofar as next year's population is concerned.

If hunting did have a controlling effect on pheasants, we would be experiencing a drastic change in sex ratios since we shoot 65 per cent of the roosters and only 6 to 11 per cent of the hens. Sex ratios have remained almost constant for years, however. Each spring there are two or three hens per rooster and by fall the ratio is nearly one to one again.

If Most Hens Succumb to Natural Causes, Why Aren't They Permitted in the Hunter's Bag?

During the breeding season, hens are more vulnerable than cocks to non-hunting fatalities; from 10 to 15 per cent of the breeding hens die under hay mower blades.

Some hens could legally be harvested during some years without hurting the brood stock. However, legalizing hen shooting might result in over-shooting unless very carefully regulated and even then would be permissible only in years of high population.

It's the females we need to save for they must survive many hazards before bringing off next year's broods. The success of the hunt is primarily dependent on the success of the hatch, not on the number of old cocks brought through the winter.



A cripple that didn't get away.

CRIPPLE LOSSES

Sire Ringneck is as tough as he's crafty and it takes a solid charge of Number 6's to bring him down for keeps. Snap shots through brush or tall corn, and shots taken beyond 40 yards, are invitations to trouble. A ringneck that hits the ground without several pellets in the vital organs, or in the head or neck is a lost bird without a good retriever or some fast legwork on the part of the hunter. Cripples hit the ground with their running gear poised for action and can give the best athlete a run for his money. Furthermore, they can literally "melt" into the soil where cover is scarce.

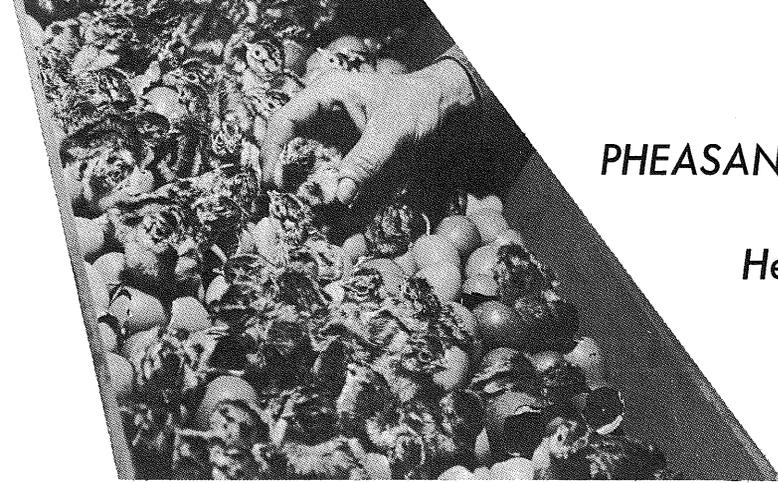
The result is that about one cock is lost as a cripple for every four bagged. This loss can be cut almost to zero with a good retriever.

MINNESOTA PHEASANT HUNTING REGULATIONS, 1924-1966

Year	Days of Hunting Permitted	Shooting Hours	Bag Limit Daily Possession		Year	Days of Hunting Permitted	Shooting Hours	Bag Limit Daily Possession	
1924	4	?	3	3	1951	23	Noon - Sunset	3	6
1925	No Season				1952	17	Noon - Sunset	3	6
1926	17	?	3	12	1953	9	Noon - Sunset	2	4
1927	No Season				1954	9	Noon - Sunset	3	6
1928	18	"Daytime"	3	12	1955	16	Noon - Sunset	3	6
1929	No Season				1956	16	Noon - Sunset	3	6
1930	5-18	Sunrise - Sunset	3**	12**	1957	16-23	10 o'clock - Sunset*	3	6
1931	10	Sunrise - Sunset*	3	12	1958	30	10 o'clock - Sunset*	3	6
1932	4-10	Sunrise - Sunset*	3	6	1959	30	10 o'clock - Sunset*	3	6
1933	4-16	Sunrise - Sunset*	3**	6**	1960	23	10 o'clock - Sunset*	3	6
1934	9-16	Noon - Sunset	3	6	1961	30	10 o'clock - Sunset*	3	6
1935	9-20	Noon - Sunset	3**	6***	1962	30	10 o'clock - Sunset*	3	6
1936	9-21	Noon - Sunset	3**	6***	1963	36	10 o'clock - Sunset*	3	6
1937	9	Noon - 5:00 P.M.	3**	5**	1964	38	10 o'clock - Sunset*	3	6
1938	16	7:00 A.M. - 4:00 P.M.*	3	5	1965	23	10 o'clock - Sunset*	2	4
1939	17	7:00 A.M. - 4:00 P.M.	3	6	1966	23	10 o'clock - Sunset*	2	4
1940	23	Sunrise - Sunset	3	6					
1941	17	7:00 A.M. - 4:00 P.M.	3**	6**					
1942	23	Sunrise - Sunset	3**	6**					
1943	23	½ hr. before Sunrise - Sunset	4**	8**					
1944	23	½ hr. before Sunrise - Sunset	3	6					
1945	9-23	Noon - Sunset	3	6					
1946	9-17	Noon - Sunset	3	6					
1947	No Season								
1948	9	Noon - Sunset	2	4					
1949	17	Sunrise - ½ hr. before Sunset	3	6					
1950	16	Noon - Sunset	3	6					

Note: Where two figures are shown for one year under "Days of Hunting Permitted" it indicates zoning of the pheasant range. Longest seasons were typically in the southwestern counties. Most counties containing significant pheasant numbers were open to hunting each year. Hunting has been permitted state-wide since 1951.

*starting at noon on opening day
 **one hen was permitted in the daily bag
 ***two hens were permitted in the possession limit



50,000 chicks raised annually at Carlos Avery.

PHEASANT FACTORY . . .

Help or Hoax?



Pheasant release, a feeling of pride to participants.

Stocking pheasants raised in game farm pheasant factories is a popular means of providing hunting the same season of release. And why shouldn't it be? *It works!* The release of a dozen or more young has a good chance of producing one or more in the bag. Furthermore, pheasant chicks, like babies of all kinds, have a universal appeal and it is inherent to mankind to want to nurture them.

Pen-reared pheasants released into the wild, from all outward appearances, are identical to our highly-prized wild stock and generate a feeling of pride among the participants. It is a practice that virtually anyone can share in, even if he doesn't own land and the costs at a glance seem reasonable.

Yes, pheasant stocking can provide additional hunting opportunities. *But* it must be looked at carefully to determine its proper place. On hunting preserves, it is possible to provide put-and-take hunting for \$5 to \$7.50 per bird. Trying to provide this type of hunting throughout Minnesota's vast pheasant country on a three dollar small game hunting license is another matter.

Stocking pheasants served a valuable purpose up to the time pheasants became self-maintaining and began to expand their range on their own in the early twenties. This was because our main range was a habitat largely devoid of a resident game bird. After the initial stocking, artificial pheasant placement cost the state as much as \$171,362 in a single year. Aggregate costs over the years have run into *millions of dollars*. But artificial stocking has had no appreciable effect on the brood stock since the late 1930's.

Besides being expensive, pen-reared birds do not do well in the wild. Even in good pheasant range, seldom as many as one-third of the released cocks are bagged by hunters and state-wide, the average is only one for each five cocks released. Only about one per cent show up in the bag by the second fall after release.

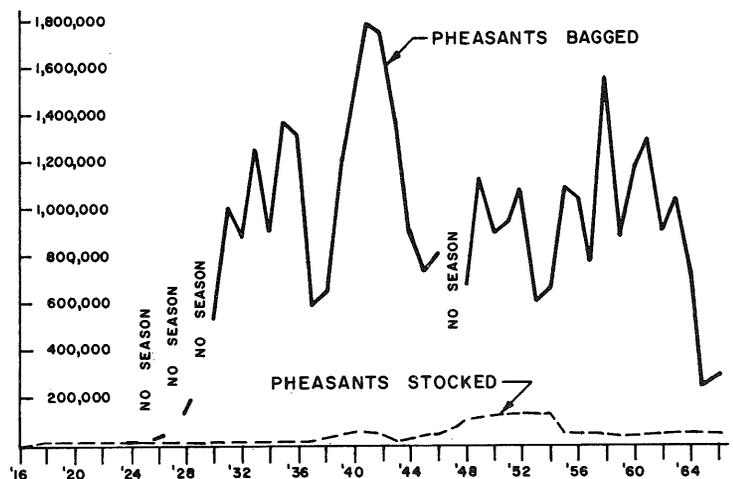
Let's consider another point. In 1958, 1.5 million cocks were taken, a record high for recent years, yet very few birds were planted in 1958 or during several previous years.

It's true that our wild flocks originally came from game farm birds, but there is no evidence that stocking after pheasants were established has produced any long-term benefits. These conclusions are not based on Minnesota's experience alone, other states have found the same to be true.

Another point to consider is that the longer the time between stocking and hunting, the fewer stocked birds taken. Even when full-grown pheasants are released immediately before the hunting season on private hunting preserves, only about two-thirds of the birds are taken.

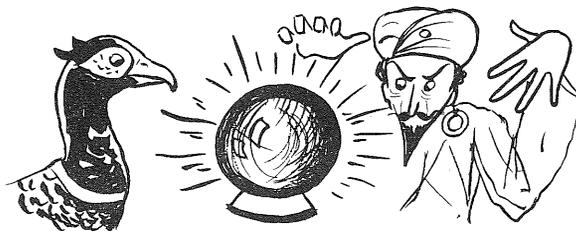
It's true that pheasants are less numerous than they were in peak years, say 1939-1943. This causes many to conclude that stocking pen-reared birds is needed to bolster wild populations. There is no significant relationship between the number of birds stocked and the size of the population.

The pheasant is now firmly established and with reasonable hunting regulations, it can take care of itself—if it has a suitable place to live. The release of additional stock cannot substitute for deficiencies in habitat. Lasting increases in pheasant numbers are only possible if habitat conditions improve. *The money spent to aid pheasant hunting is now better invested in acquiring and developing wetlands and other cover where pheasants can winter and nest than it is on raising and stocking more birds.*



Stocked birds make up a very small part of our pheasant population and the harvest by hunters.

The CRYSTAL BALL And The JOB AHEAD



Improvements in agriculture continue, and why not—there are more of us to feed every day. But how are we going to provide a place for the pheasant and for the enjoyment of hunting in this age of intensive farming? There are several approaches.



Preserving key wildlife tracts — Minnesota's Wetlands Program.



Sir Ringneck depends on the farmer. Over 50 per cent of Minnesota's pheasants use farm windbreaks for winter safety in the main range.



Farmer-sportsman Cooperation . . . A good sportsman shows his appreciation.

THE EDUCATED CONSERVATIONIST

The first and foremost approach is public education. The educated conservationist first of all is a good sportsman who respects the landowner's rights and shows his appreciation for the privilege of hunting on his land. He is well-informed on wildlife conservation and is concerned with basic conservation problems. He's a person who realizes that there are no easy solutions and that methods and programs that had popular appeal back in the 30's and 40's may be of little or no value today.

In addition to learning all he possibly can about pheasants and their management, the well-informed conservationist supports sound habitat improvement programs. He may also have an opportunity to participate in measures to directly help the pheasant population such as assisting friends on the farm plant good farmstead windbreaks or wildlife cover plots.

PRESERVING KEY WILDLIFE TRACTS

The brightest spot in the pheasant's future provided by the Conservation Department is the wetlands acquisition program. This program began in 1951 primarily as a measure for water conservation and waterfowl production and coincided with the acceleration of wetland drainage. So far, a total of 152,000 acres of these invaluable areas have been acquired. Minnesota now has 630 Wildlife Management Areas (wetlands), two-thirds of which are in the pheasant range.

Besides being top waterfowl production areas, wetland projects in the main pheasant range provide excellent protective cover for the ringneck.

Waterfowl and pheasants aren't the only wildlife that benefit from the wetlands program. In northwestern Minnesota, prairie chickens and sharp-tailed grouse use them. Wetlands and their associated uplands also provide fine living quarters for deer, song birds, aquatic furbearers and even moose.

Pheasants living on wetland areas are now frequently the only flocks of any consequence in some areas. Wetlands are planted by Game and Fish personnel to food plots and dense shrubs and evergreens for winter cover. Additional food and cover were provided on these management lands in 1966 through 440 sharecrop leases with nearby farmers.

In some areas wetlands have little value for waterfowl but are being acquired primarily for pheasants. When developed with the pheasant in mind, one of these natural pheasant factories can safely carry a winter population of at least 200 birds. The combination of several areas in a township can mean a population of at least 1,000 birds. Pheasant populations maintained on these lands spread out to nest and live on private lands when there is adequate cover. These lands, together with wetland projects, provide additional hunting to thousands of deserving sportsmen and farmers.

In addition to the wetlands and adjoining uplands, banks of streams can be added. These may have little potential for agricultural uses, but provide vital elements necessary for game. Then there are the many shallow lakes in southern Minnesota which are now of little value either for fish or game, but have good potential. A question yet to be resolved, however, is the right of the state to manage lake beds. Presently, the adjacent landowners control the land to the water's edge.

What about areas where wetlands have been eliminated? In these areas, the state could purchase four or more small areas suitable for woody cover plantings in each township. These could serve as key wintering areas for pheasants and other farm game. A few such plots properly spaced would require just a small fraction of one per cent of the available land in each township.

WORKING WITH THE FARMER

Now for other hopeful signs in Sire Pheasant's future—the federal Feed Grain Program, the Cropland Adjustment Program (CAP) and the Agricultural Conservation Program (ACP)—all administered by the Agricultural Stabilization and Conservation Service (ASCS) of the U.S. Department of Agriculture. Minnesotans can point with pride to the fact that we lead the nation in the amount of wildlife habitat created under these programs through the cooperation of the ASCS, the Conservation Department and dedicated conservation clubs such as the Minnesota Conservation Federation.

In addition, the federal Soil Conservation Service (SCS) provides valuable engineering services and guidance to farmers interested in promoting wildlife on their lands.

Pheasants, ducks, grouse and other wild animals are the beneficiaries of these federal farm programs designed to retire cropland from agricultural production and to stimulate conservation practices.

FEED GRAIN PROGRAM—This is an annual program started by the federal Department of Agriculture in 1961 to encourage farmers to retire land from the production of surplus crops such as corn. About 60 per cent of Minnesota's farmers have retired cropland under this program each year. Although retirement of these acreages for only one year at a time has often limited their value to wildlife, great improvements were made during the past three years. In 1967, over two million acres were withheld from production of cash crops, largely in pheasant country. Close cooperation of the Conservation Department and the ASCS resulted in nearly one-half million acres of improved cover and food plots on these acreages.

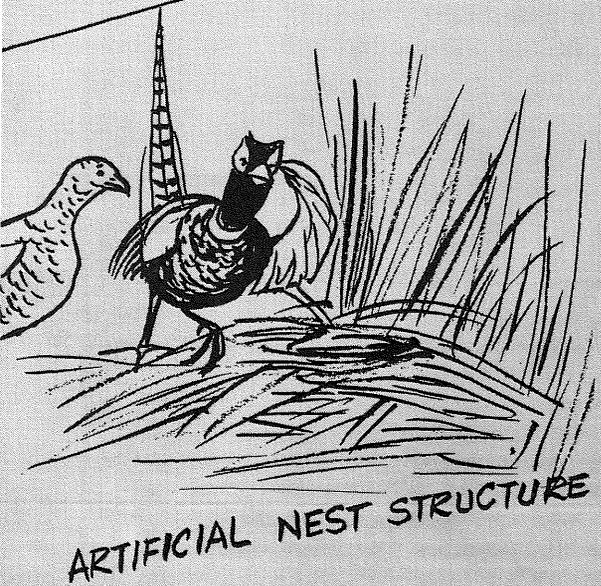
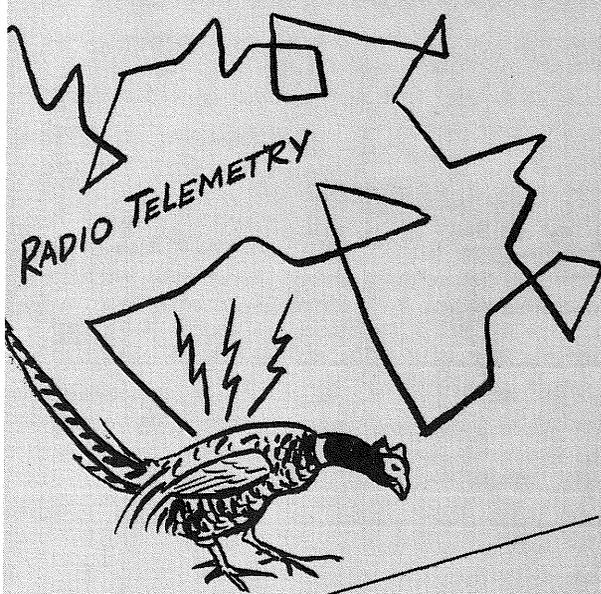
CROPLAND ADJUSTMENT PROGRAM (CAP)—This is a long-term program whereby land is retired from agriculture for 5 to 10 years. Since its beginning in 1966, about 300 thousand acres have been retired. Although less than half of this acreage is in the main pheasant range, this program has tremendous potential for pheasants and other farm game. CAP acres typically produce excellent nesting cover and are logical areas for other wildlife habitat developments as well.

AGRICULTURAL CONSERVATION PROGRAM (ACP)—Through this program, the federal government shares the cost of conservation practices which are beneficial to both the soil and to wildlife. In one year, nearly one million dollars was paid to farmers for wildlife habitat projects ranging from wildlife food plots to fish ponds. Sire Ringneck got the lion's share of the total, however, including over 150,000 acres seeded for nesting cover and nearly 2,000 food plots. A few rows of standing corn near good winter cover will do more to bring pheasants and other game through the winter than any artificial feeding program.

Conservation Department game managers report that most concentrations of pheasants are near food sources such as food plots on state Wildlife Management Areas or near those established under the ACP. In Stevens County alone, records from the ASCS office show that there were 81 corn, 22 flax and 13 millet or buckwheat food plots planted in 1966 under this program. Such food plots are becoming increasingly important since fall plowing now covers much of the crop residue which previously provided abundant winter food for wildlife.

Good woody cover is becoming increasingly important for wintering pheasants and other farm game especially in the southwestern, west central and south central regions of Minnesota. Hopefully, a newly developed ACP practice providing additional cost-sharing for establishing effective farmstead windbreaks will help fulfill this need.

Farm windbreaks not only benefit pheasants and other wildlife; they benefit farm families, livestock, protect the soil and add to the natural beauty of the countryside.



OTHER POSITIVE APPROACHES

The 1967 Legislature gave its stamp of approval to still another program aimed at helping Sire Ringneck and his clan—the new program of Private Lands Development. As a consequence, funds were set aside to encourage habitat development on private lands. This program is especially applicable to pheasant management. Meshed with ACP practices of the federal Department of Agriculture, this program permits the Division of Game and Fish to cost-share wildlife practices with the farmer. This is a much-needed stimulus if the ringneck is to survive in our fertile agricultural region.

Progress has also been made through the state and county highway departments in delaying mowing so that most roadsides are mowed after July 1, preferably, July 15. Extension of similar agreements to township governments is a further goal offering substantial benefits since nearly 25 per cent of our young ringnecks hatch in roadside ditches.

ADDING UP THE SCORE

How do we know if the population is up or down? Each August, Conservation Department personnel add the score along about 4,000 miles of pheasant country in 66 counties. This roadside census is the most reliable way to forecast the size of the population, the hatching success and what the harvest of cocks by hunters will be. Then, after the pheasant season closes, hunters send in report cards and the Department's biologists tally the harvest. There's also a winter sex ratio survey to estimate the ratio of hens to cocks and from this, the per cent of cocks harvested is calculated.

Then in mid-May, another roadside count is made. On clear, calm mornings when there's dew on the grass, the birds come out along the roadsides and field borders to enjoy the warmth of the morning sun and to escape the wet grass. Counts are made along two 25 mile routes in each of the 66 counties by game managers, biologists and game wardens. The counts tell the size of the breeding population, the survival rate over the winter and the per cent of population change from the previous year.

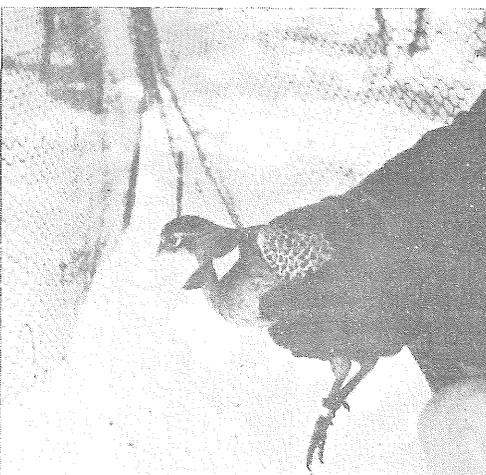
NEEDED . . . More Facts!

Agricultural authorities, in speaking of changes in farming, refer to the revolution in agriculture. These changes have been equally revolutionary to the pheasant. But can he adjust to this rapid-fire change in his environment? Will the farms of 1980 or 2000 continue to play host to pheasants if this trend continues?

Judging from present trends, John Ringneck and his tribe are going to need all the help they can get. Researchers must continue to keep in tune with agricultural changes and their impact on the pheasant—whether good or bad.

It will be necessary to learn more about the good things in life as seen through the eyes of a pheasant, if we are going to get the most out of habitat dollars. And the approach must be imaginative and bold.

The persistent decline in safe nesting cover seems to be an insurmountable obstacle. But what about the possibility of developing a pheasant that is "imprinted" to nesting in predator-proof nest structures placed along field borders, windbreaks, and other non-crop-land? A waste of time and money? Maybe not. After all, the pheasant's close relative, the domestic chicken, readily nests in artificial nest boxes and free-flying Canada geese have been imprinted to nesting in wash tubs set on stilts over the water.

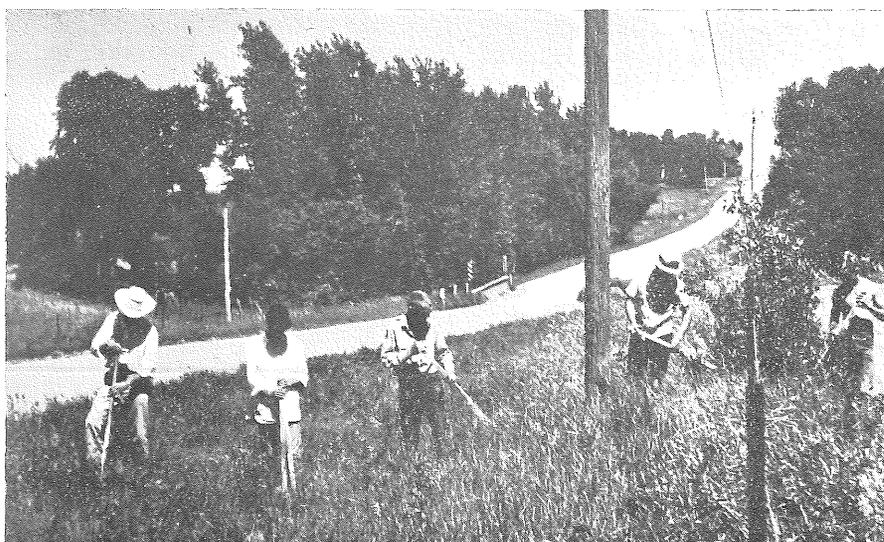


Nets are used to capture pheasants for experimental purposes.

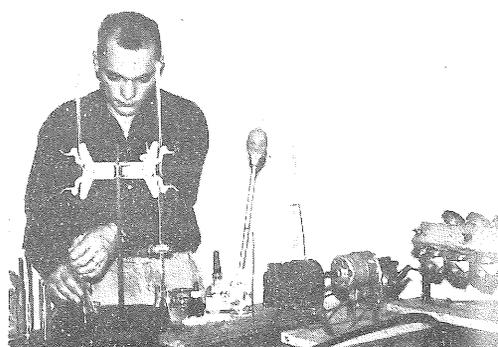
Marked birds reveal the secrets of their tribe.



Detailed records of each nest found provide a basis for measuring nesting success.



Thousands of hours of nest searching—for an intimate look into the life and times of Dame Ringneck.



Analyzing grit from hen pheasants has refuted the theory that pheasants are less numerous in some places because of a scarcity of calcium-bearing grit.

Also, how about the *causes* of annual mortality and the rather sudden declines in our pheasant populations from time to time? What is the actual affect of predators on birds in an average winter? Are birds in both good and poor cover affected alike by the high annual rate of population turnover? The relatively new technique of radio telemetry offers exciting possibilities to study these and many other field problems. Wild-trapped birds carrying thumb-sized radios reveal their movements and locations to biologists at distances of one-half mile or more.

Looking at our land-use and pheasant census figures, it looks like pheasants in the northern fringe area have different problems than those in the main range. A general scarcity of waste grains and exposure to severe temperatures seem to be more serious cover problems in the fringe regions. We have circumstantial evidence of this, but more facts are needed in order to put the sportsmen's money to work for the best results.

Pheasants often come through severe winters at below normal weights. Does this affect the onset of egg laying, the persistence of the hen to renest if her early efforts fail, or her survival through the reproductive season?

These are only a few of the questions that biologists must face in the years ahead. They are easy questions to ask but hard ones to resolve. They'll require the cooperative efforts of dedicated men with the latest in scientific equipment and know-how at their disposal. *And, most of all, we will need you, the public, behind us.*

HUNTING THE GAUDY WARRIOR

It's 11:50 A.M. on the last Saturday in October. The scene is the cornbelt of southern Minnesota where small, scattered groups of men, boys, and dogs mill restlessly along field borders, weedy draws, and marshes. The attire of the huntsmen ranges from L. L. Bean's best to bib overalls; the guns from the English Purdey to rusty old single shots. Social status and the business world have been forgotten. Sire Ringneck is the target for the day and he recognizes no peers. Corporation executive or farm hand, Labrador or mongrel, he challenges them all.

At the stroke of noon, nearly a quarter million huntsmen melt into the countryside. Another pheasant season has opened and, if success is up to par, about 300,000 ring-necks will bite the dust before sunset.

HUNTING TIPS AND TECHNIQUES

How much preparation does it take to hunt pheasants? Not much, really. A small game hunting license, a scatter gun and access to pheasant country are all it takes to get started. A hunting jacket to carry your shells and game is a good investment, but it's not necessary.

Once you've got the bug, though, you'll probably want a good dog for locating birds and retrieving cripples. It's no exaggeration to say that a good dog will double the satisfaction of the hunt and put more birds in your bag as well. Retrievers such as the big Labrador are excellent for working heavy cover. Others favor springer spaniels for their close-working characteristics. Brittany spaniels and German shorthairs have grown in popularity in recent years; both are good at pointing and retrieving birds. But don't get too carried away by pedigrees for some of the best pheasant dogs are mongrels. The trainer is still the most important element in developing a good dog.

Now, what about guns? A three pound ringneck quartering away with a good tail wind takes a solid punch to put down for keeps, and few hunters will dispute the supremacy of the 12-gauge with high base *Number Six shot*. The brand and type action you select in your gun is largely a matter of personal preference. A full-choked gun is fine for the far-out shots, but modified or improved cylinder barrels usually offer the best all-around combination.



And now, how about hunting techniques? With the adaptable ringneck, this isn't a topic that can be covered in a nutshell. *The best way to learn is to do it.* Join several friends who have the "feel of it" and you will soon appreciate the unpredictable nature of the ringneck.

Early in the season the birds will be scattered as singles or in small flocks. On mild days they will probably spend most of their time in standing corn if it's available and will roost in hayfields or grain stubble. Grassy swales, idle acres, and the edge of wetlands are also attractive to pheasants, and are especially worth checking late in the day when the birds go to roost. As the season progresses, the birds seek out the heavier cover and a quiet approach can sometimes put the hunter in the midst of a sizable flock on the lee side of a heavy marsh, willow thicket, woodlot, and other such area.

Don't try to beat pheasants out of the cover. They will either go out a block or more ahead of you, or they will sit tight and let you pass by. Late season roosters spook easily and either have to be approached "on the sly" or driven to hunters stationed inconspicuously at the end of the cover.

Most hunters prefer to hunt in teams of two to five. Others are loners who prefer to work small patches with their dog, and then there are the groups of ten to 20 who like to work the big cornfields. Whatever your preference, give our Rugged Ringneck a chance this fall. If you are not already a pheasant hunter, we'll wager you get hooked!

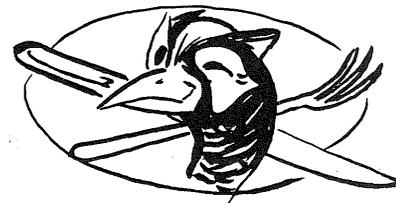


Bringing home the bacon.

Field to Frying Pan



The pheasant's flesh is lean with few fat deposits and the meat dries while being cooked, but with a few pointers, this can be avoided. Most folks skin the birds. To reduce the loss of moisture from skinned birds, cover with cooking oil or strips of bacon before baking.



PHEASANT IN MUSHROOM SAUCE

Cut the skinned pheasant into serving-size pieces and season with salt and pepper. Brown in butter or cooking oil; add one cup of half milk and half cream and one can of mushrooms. (Add dry sherry wine to the milk and mushrooms, if desired.) Cover the pan and simmer until tender.

SMOKED PHEASANT

Pheasants are very good smoked, but care must be taken to prevent the meat from drying. Pheasants for smoking are plucked, not skinned, and salted in 18 per cent brine (1½ lbs. salt per gallon water) for six hours. The color of the smoked bird can be improved by adding one tbs. saltpeter for every 2 pounds of salt in the brine.

After brining, wash the pheasant well, dry and hang in the smoke house (see *Conservation Volunteer*, March-April 1967, for a plan of a smoke house). Build a smokey fire in the fire pit with wood chips, saw dust or corn cobs.

Regulate the heat in the smoking chamber to 90 degrees F. and smoke pheasant in a thin smoke for 4 to 6 hours. Baste with peanut oil and increase the smoke content.

Smoke birds for 4 to 5 days, 90 degrees F. Baste to prevent drying. Rotate birds periodically for uniform smoking.

EXOTIC PHEASANT

Cut two pheasants into serving-size pieces; season with salt and pepper and sprinkle with flour. Heat one cup of peanut oil or melted butter in a large skillet, season with powdered garlic.

Brown pheasant on all sides. Remove and drain off the excess oil or butter. Take four tablespoons of oil or butter from the skillet and place in a casserole. Arrange pheasant in the casserole and sprinkle with ½ tsp. basil. Add two minced shallots (minced green onions can be used), one cup button mushrooms, and one tomato sliced thin. Season to taste with salt and freshly ground pepper. Add one cup of dry white wine and one cup of dry red wine. Cover casserole and cook in a 350 degree oven for 1½ hours. Uncover and cook for another 20 minutes. Add one cup of sour cream, cover again and cook in the oven for another five minutes.

Serve with white rice fried in butter and cooked in broth in a double broiler until tender.



The story of the pheasant in Minnesota is truly one of drastic changes in man's use of rural lands. It is a story with chapters still to be written of our constant search for solutions to a critical challenge; a challenge of providing habitat for a game bird that has provided countless hours of outdoor recreation to hundreds of thousands of admirers.

