

# AGRICULTURAL GUIDE

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## Ruffed grouse in Missouri: Its ecology and management

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The ruffed grouse, *Bonasa umbellus*, belongs to the same group of birds as the turkey, pheasant, quail and prairie chicken. It is the most important gamebird in many northern states, but recently it has been relatively scarce in Missouri. It is only found in extensively forested areas where habitat is suitable.

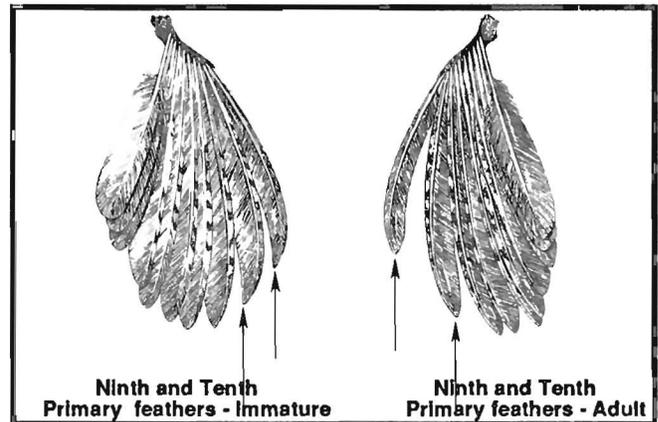
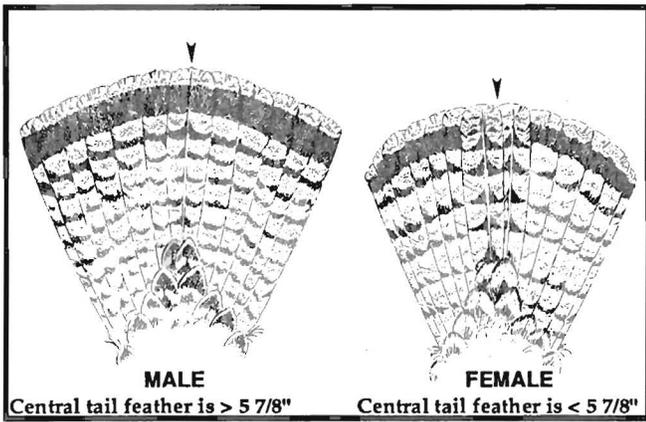
Ruffed grouse grow to 16 to 19 inches in length and weigh between 1 and 1 1/2 pounds. Grouse exhibit different color phases as do snow geese and screech owls. Their overall color may be reddish-brown to gray. Most grouse in the southern part of their range, including Missouri, are red phase, while gray phase birds are more common in the northern United States and Canada. Both sexes have a characteristic crest on the tops of their heads, a dark brown or black ruff around their necks and a terminal tail band.

### Aging and Sexing

Male and female ruffed grouse are similar in appearance. A reliable way to distinguish the sexes is to pluck one of the two central tail feathers and measure it. If it is longer than 5 7/8 inches, it is probably a male.

Other characteristics found in some males are red pigmented skin above the eye, an unbroken tail band (see Figure 1) and two white spots rather than one on the rump feathers just above the tail.

Adult birds can be distinguished from immature birds (less than 1 1/2 years old) by comparing their ninth and tenth primary feathers with their seventh and eighth primary feathers. The primaries are the outer large wing feathers and are numbered in descending order, with the outermost numbered 10. If the tip of the ninth and tenth primaries are more pointed, narrow and



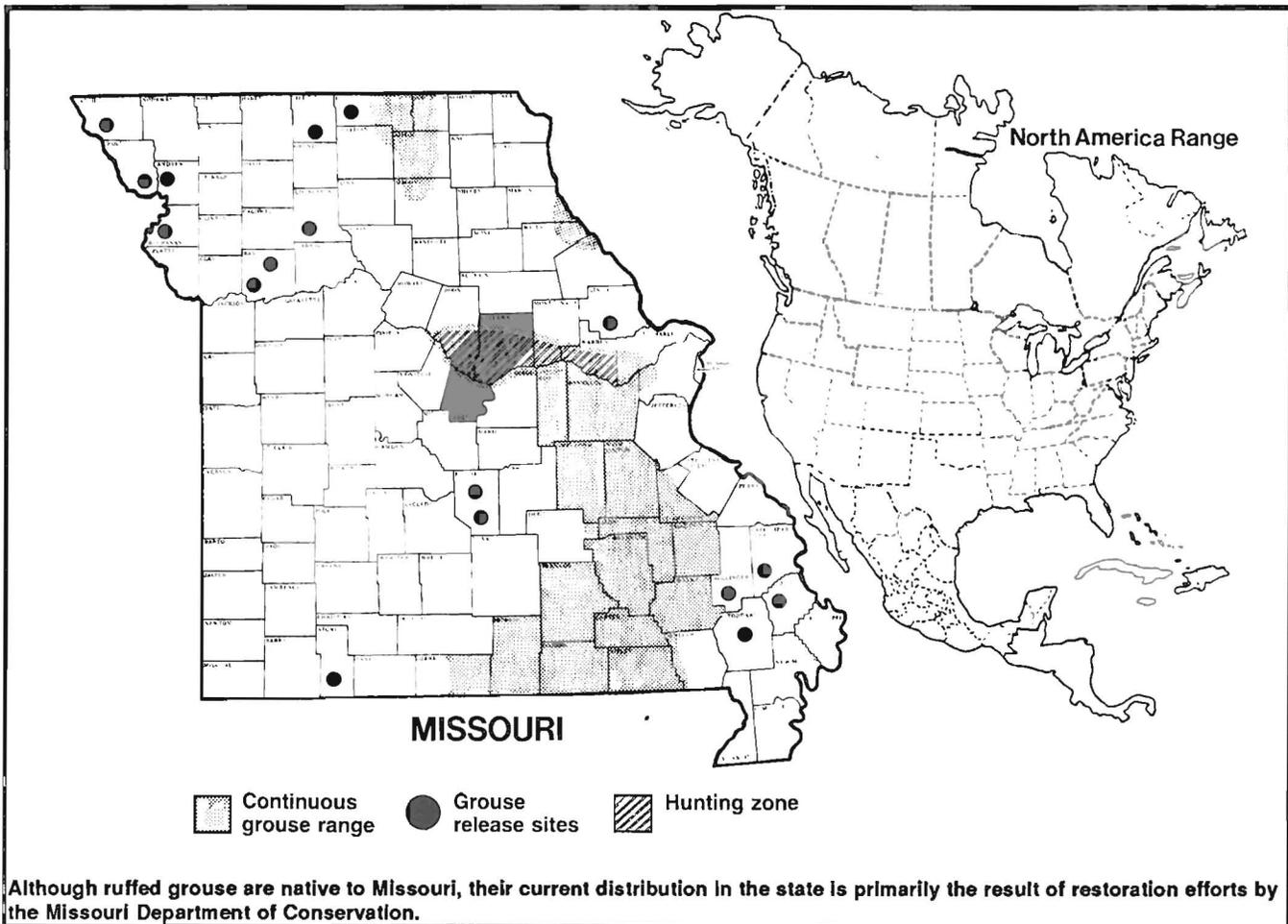
worn than the seventh and eighth primaries, it is probably an immature grouse. This is because young grouse do not molt their ninth and tenth primaries until the end of their second summer. Adult grouse molt these feathers annually during the summer.

The ruffed grouse is primarily a bird of northern woodlands. Grouse inhabit 38 states and 13 Canadian provinces but are most abundant in aspen forests of the Great Lakes Region and Canada. Missouri is on the southern edge of the grouse's range. Although grouse are native here, the current distribution is the result of reintroduction efforts by the Missouri Department of Conservation.

## History in Missouri

Ruffed grouse prefer young forests with many small trees or brush. Before settlement by Europeans, ruffed grouse probably inhabited forest edges and young forests created by natural disturbances such as lightning fires and tornadoes. Following settlement, grouse became more abundant as forests were cleared for homesteads and then later abandoned to regrow into young forests.

Shortly after the turn of the century, about half of Missouri's 32 million acres of forested land had been cleared. Frequent burning and grazing of woodlands



caused a decline in habitat for ruffed grouse, deer and wild turkeys. This clearing, coupled with uncontrolled shooting, may have also contributed to the decline of grouse in Missouri

By the late 1950s, grouse were almost completely gone from the state, yet ruffed grouse habitat in many regions had recovered from earlier abuse. Unfortunately, few native birds were available to recolonize these areas.

The Missouri Department of Conservation began restoration efforts in 1959 and recently expanded these efforts. The department obtains wild-trapped birds from other states and releases them into suitable habitat throughout Missouri, with the hope that they will breed and expand into surrounding areas.

## Life history and habitat use

The abundance of Missouri's ruffed grouse is largely dependent on the proper management of our forests. Many private landowners have shown an interest in encouraging ruffed grouse and other forest wildlife to use their land.

To manage your land for ruffed grouse, you need to understand its life history and habitat requirements. These aspects of grouse ecology are closely tied to the changing seasons and each season brings about different food and cover requirements needed to ensure high grouse populations.

**Spring.** Each spring, male ruffed grouse begin their mating ritual. In the early morning during March and April, you may hear a hollow-sounding thumping coming from the woods. Male ruffed grouse create the thump or drum by beating their wings, which creates an implosion as air rushes into a vacuum between the grouse's wings and body.

The thump starts slowly at first and gets more rapid. Grouse may drum all year, but males don't start in earnest until mid-March and peak in early April when they advertise their territory to other males and attempt to attract females for breeding.



Male grouse start drumming in mid-March and peak in April.

A male grouse chooses a drumming site that has certain key characteristics. The most obvious is a drumming stage — usually a large log — that allows him to

get above the forest floor for a good view. Drumming sites are usually located in the thick cover of many small, sapling-size hardwoods. In Missouri's oak-hickory forests, this cover may be provided in 10- to 25-year-old stands of timber, such as those created by recent clearcuts. In the absence of clearcuts, drummers prefer old fields with many red cedars, hardwood saplings and shrubs, or older forests with a thick shrub layer. This cover provides good visibility at ground level and overhead protection from predators such as great horned owls.

A male ruffed grouse may mate with several females during the spring, but then his reproductive responsibilities end. Hens incubate their eggs and raise the chicks on their own. They lay between nine and 14 whitish to buffy-brown eggs. The average clutch contains 11 eggs and takes about 17 days to lay.

To make a nest, grouse construct a simple depression in leaf litter. Hens usually nest in open woodlands that have mature trees and a sparse understory. They place a premium on visibility.

The eggs usually hatch during the third week in May. Within a few hours after hatching her eggs, the hen leads her chicks away in search of good brood cover.

**Summer.** Hens search for cover that will provide food for their rapidly growing chicks and protection from predators. During their first six weeks the chicks feed mainly on insects to meet their high protein and energy requirements. If a predator threatens her brood, the hen will feign injury and attempt to lure the predator away.



Brood cover provides food (insects) and cover.

Broods are found in habitats that provide good visibility at ground level, overhead cover to protect them from avian predators and an abundance of insects to forage on. Forest openings or clearcuts from 5 to 15 years old provide good habitat, but in their absence, broods will use old fields and older forests with a dense understory. In Missouri, grouse seem to prefer low slopes and creek bottoms, possibly because they are cooler and moister than the uplands.

By August, the chicks closely resemble adults. A brood of 11 chicks in May probably consists of fewer than six in August because cold, rainy weather, preda-

tors and accidents have taken their toll.

**Fall.** During September, the brood breaks apart more often and individuals or small groups may go off on their own for a short time. In October, broods break up and individuals disperse and move into new areas. Grouse move an average of 1 or 2 miles and then settle down in an area where they are likely to spend the rest of their lives.

When dispersing, young grouse may end up in unsuitable areas. Losses due to accidents and predation are high during this period. Grouse are hit by cars or fly into house windows at this time because the birds move more than they usually do. By late fall, most birds settle into an area that will be their new home. Young males occasionally drum in an attempt to set up a territory for the following spring.

**Winter.** In Missouri, when winter settles in, the grouses' habitat is substantially different from their summer brood areas. During winter, grouse use cover like that used by drumming males in the spring. Grouse show a strong preference for roosting in red cedars, or, if enough snow is present, they burrow into it for protection from winter winds. Winter can be a period of high mortality because of bad weather, predation and food shortages. As few as 25 percent of the birds alive in October may live to March.

Grouse continue to feed on wild fruit and acorns when available, but the catkins of hophornbeam trees become a winter staple. As milder weather comes with the beginning of March, the ruffed grouse begins its annual cycle again.

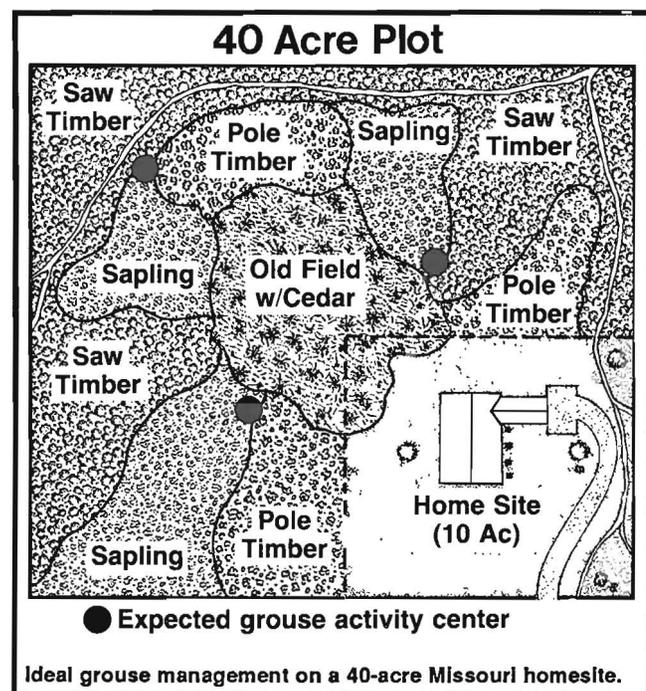
## Habitat management

To maximize grouse densities, you should provide all of the ruffed grouses' annual habitat need within as small an area as possible. This includes 10- to 25-year-old forest stands for winter and for drumming cover; 5- to 15-year-old forest stands for brood cover; mature forest stands for nesting and mast production (acorns); and old fields with an abundance of wild fruits and cedars for fall and winter feeding and roosting.

Each of these blocks should be at least a half-acre in size, but two to five acres is better. This mix is best

achieved through a series of small clearcuts made for firewood or commercial timber harvest. Contact your Missouri Department of Conservation district forester or your local extension office for more information about even-aged timber management or firewood management and harvest.

If you meet all these habitat requirements within a 10- to 20-acre area, a minimum of one breeding pair of ruffed grouse should be able to reside on the area and rear a brood. If you own a large tract of forested land that you wish to manage for ruffed grouse, you should consider it as a collection of 10-acre blocks and try to provide proper habitats within each block. This type of forest management also benefits deer, wild turkey, woodcock and other wildlife that require a diversity of different-age forest habitats.



*\*The Ruffed Grouse Society, a nonprofit corporation dedicated to improving the environment for ruffed grouse, woodcock and other forest wildlife, contributed to the production of this publication. The society is located at 1400 Lee Drive, Coraopolis, PA 15106.*

*Illustrations by Doug Ross*