



Department of Natural Resources
 Section of Wildlife
 500 Lafayette Road
 St. Paul, MN 55155-4040

MANAGING YOUR WOODLAND FOR

Ruffed Grouse



Photo: Roland Jordahl

Managing your Woodland for Ruffed Grouse



If you enjoy the thrill of a ruffed grouse flushing, or listening to its familiar springtime drumming display, then take steps to manage your woodland for ruffed grouse. A bird of early successional deciduous forests, the ruffed grouse or “partridge,” is known for its drumming in the spring and its explosive take-off when surprised. Minnesota is a premiere state for ruffed grouse hunting. The annual hunter harvest in Minnesota is unsurpassed by any other state. Ruffed grouse populations and habitat are strong in Minnesota, and the future of grouse in the state is bright.

Ruffed grouse are associated with deciduous and mixed deciduous-coniferous forests in northern and central Minnesota, and mixed northern hardwood forests dominated by oaks in southeastern Minnesota. Even though ruffed grouse occur in forests where aspen is not the dominant tree, and in regions where aspen is sparse or nonexistent, they reach their highest densities in aspen forests.

The young deciduous forests favored by ruffed grouse were historically created by natural disturbances, such as wind, fire, and insects and diseases. Today commercial timber harvests have replaced natural disturbance as the dominant method for creating early succession forest. The best ruffed grouse habitat provides a combination of food and cover (young and old aspen stands) within a small area. Managing forests for ruffed grouse also provides habitat for other wildlife species associated with early successional forests, including deer, bear and woodcock.

Life History

The ruffed grouse is native to Minnesota and is most common in the forested portions of the state (See map: “Range and Habitat Distribution in MN”). Grouse don’t migrate and usually spend their entire adult life in an area less than 40 acres. They have a maximum life expectancy of approximately six years, with the average life span of less than two years. Adult males establish territories as small as five to six acres and hens establish territories of five to 25 acres that range over two to six male territories during the winter. Adult ruffed grouse are basically solitary.

Ruffed grouse populations are cyclic, with a population peak occurring approximately every 10 years. Increases or decreases in grouse numbers occur independently of the presence of good habitat conditions, but optimum habitat will support more birds (up to four to five times higher) regardless of the overall population trend.

A brown or red phase ruffed grouse. Two color phases-- brown and gray-- are recognized by biologists Both sexes have a ruff around their neck. A blackish or dark ruff is the most common.



Photo: Roland Jordahl

Population Cycle
Minnesota Range-wide Drumming Trend, 1949-2009

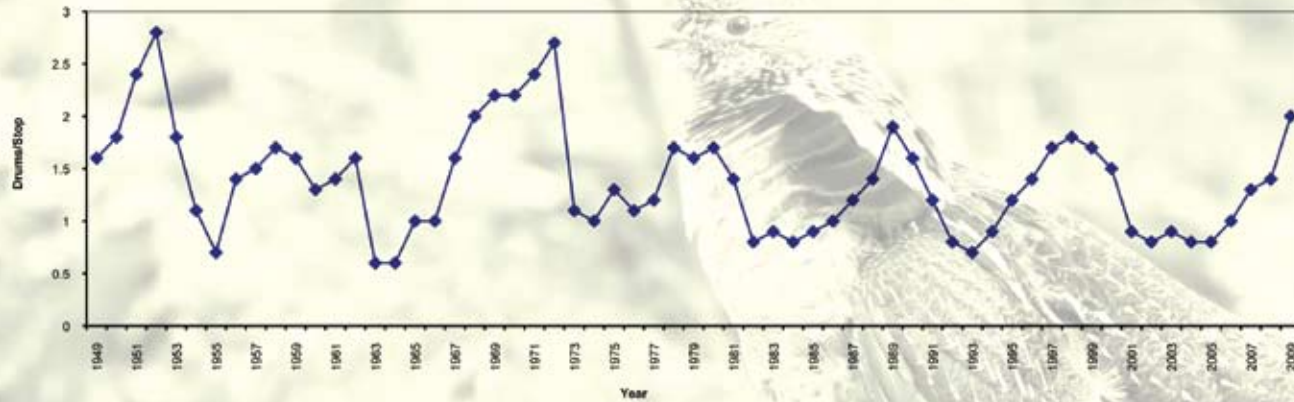


Figure: Minnesota Ruffed Grouse Population Cycle, 1949-2009

Food

The summer diet of adults consists of succulent plant materials, fruits, and insects. Chicks feed almost exclusively on insects. During the winter, ruffed grouse feed primarily on the buds, twigs, and catkins of trees of aspen, birch, ironwood, hazel, and cherry. Aspen trees provide the most important year-around sources of food for ruffed grouse.

Cover

Protective cover is important as a means of avoiding predators, especially when nesting, raising broods, and surviving Minnesota winters. For protection from predators, grouse favor medium to high densities of slender woody stems of aspen. Overstory conifers aid in predator avoidance. Ruffed grouse snow-roost when snow cover is deeper than 10 inches and of a light, powdery consistency. Dense hardwood saplings, young oaks that retain leaves, and spruce and balsam fir are used as cover during the winter. Conifers are considered essential winter habitat where snow depths typically preclude snow roosts.



Photo: Rocky Gutierrez, University of Minnesota

Deciduous saplings, especially aspen, and tall shrubs, provide vertical stems that create cover and physical barrier from predators for ruffed grouse.

For more information

Through the Division of Forestry's or the Division of Fish & Wildlife's Private Lands Programs, the Department of Natural Resources can help you take an inventory of your property and develop a plan for multiple use management, including wildlife habitat, timber stand improvement, timber harvesting and recreation. DNR specialists can provide technical advice for landowner participants. Contact a DNR Private Lands Wildlife Specialist for technical assistance, a DNR Forester, or a private consulting forester to have a Woodland Stewardship Plan prepared for your forestland.

Contact your DNR Private Lands Wildlife Specialist today for technical assistance:

www.mndnr.gov/privatelandsprogram

Contact a DNR Private Forest Management Forester to have a Woodland Stewardship Plan prepared for you forestland:

www.mndnr.gov/grants/forestmgmt/stewardship

For information and materials on natural resources, or DNR facilities, services, and regulations, contact:

DNR Information Center

500 Lafayette Road
St. Paul, MN 55155-4040
651-296-6157

info@dnr.state.mn.us

Toll free in Minnesota, 1-888-MINNDNR (646-6367)
TTY/Telecommunication Device for the Deaf, 651-296-5484 or toll free: TTY: 1-800-657-3929.

mndnr.gov

Additional DNR Publications:

- Helping Landowners Help Wildlife
- Lakescaping for Wildlife and Water Quality
- Landscaping for Wildlife
- Managing Your Land for Brushland
- Managing Your Land for Woodcock
- Managing Your Woodland for White-tailed Deer
- Managing Your Woodland for Wild Turkey
- The Benefits of Prescribed Burning on Private Land
- Woodlands and Nongame Wildlife

S. Caron, editor



©2009
State of Minnesota Department of Natural Resources

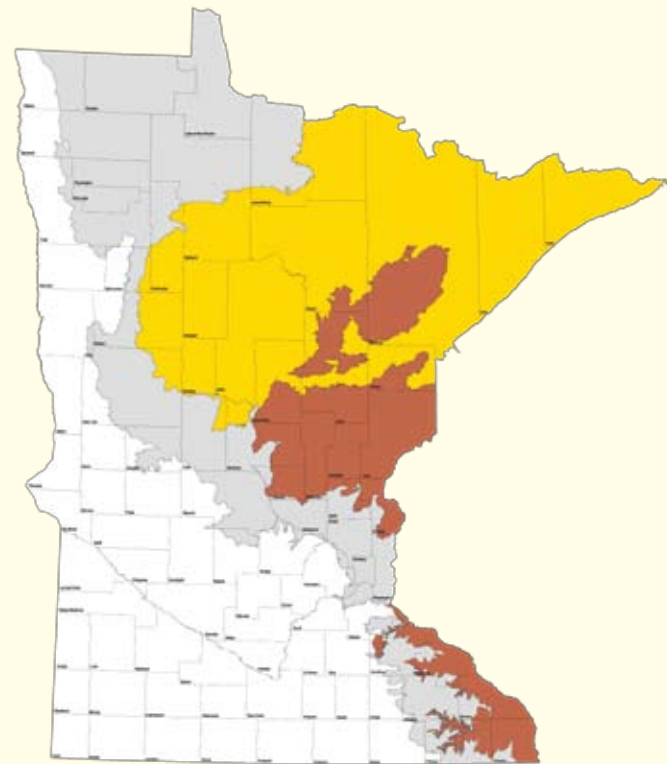
Equal opportunity to participate in and benefit from programs of the Minnesota Department of Natural Resources is available to all individuals regardless of race, color, creed, religion, national origin, sex, marital status, status with regard to public assistance, age, sexual orientation, membership or activity in a local commission, or disability.

Discrimination inquiries should be sent to MN-DNR, 500 Lafayette Road, St. Paul, MN 55155-4031; or the Equal Opportunity Office, Department of the Interior, Washington, DC 20240.

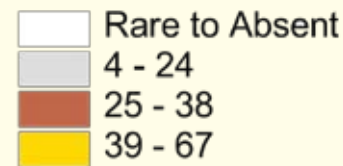
Printed on 30% recycled paper



Range and Habitat Distribution In Minnesota



Range & Percent of Landscape in Ruffed Grouse Habitat



Seasonal Habits and Habitat



Drumming

The sound of drumming fills the air each spring. The drumming log is considered a component of breeding habitat, offering the male grouse both an opportunity to advertise his presence to females and competitors, and maximum security from predators while doing so. Drumming activity peaks in April to early May and usually begins each day before daylight and continues through the morning. Male ruffed grouse may drum all year, but they don't start in earnest until mid-March. A male ruffed grouse may mate with several females during the spring.

Drumming sites occur in a variety of forested habitats, although the highest densities of drumming males occur in young aspen stands. Mixed hardwood-conifer forest and mature spruce/fir forest are also used as drumming habitat. Drumming logs are not considered a factor that limits habitat suitability and are typically greater than 8 inches in diameter and more than 70 inches in length. Other elevated objects are also used for drumming.

Nesting And Brood Rearing

Nesting sites usually have relatively open understories with dense overstory cover. Hens usually nest in pole-sized hardwood stands, with aspen being of particular importance.

A typical ruffed grouse nest is an unlined bowl of leaves on the forest floor near the base of a tree, stump, log or rock. Hens prefer to nest where they can see well over a 50 to 60 foot radius, presumably to prevent approach by a mammalian predator. Nesting sites typically have relatively open understories with dense overstory cover.

Ruffed grouse typically lay 10-12 eggs over 14-17 days, followed by 23-25 days of incubation. When eggs hatch in June, the brood begins to forage for insects. The decomposing aspen leaves on the forest floor support insect populations that are food for the young grouse during their first month of life. Within a few days after hatching, the hen will herd her brood toward a stand of young sapling aspens for food and protective cover. Normally, no more than 3 or 4 chicks from an individual brood survive the summer.



Photo: Stephen Maxson

Male ruffed grouse make a hollow thumping or drumming sound to attract females and stake their breeding territory. Drumming starts out slowly and ends like a drum roll. The sound is made by the wings beating against the air.

Summer

Summer is a season for growth and renewal. Plant cover, especially young aspen stands, provides the greatest security for grouse. A variety of fruits are produced throughout the summer that grouse use as food. Many adult males continue to use their drumming logs while hens are busy rearing their young.

Grouse hens with broods favor aspen habitat, but tall shrubs, especially hazel and alder, are also important components of brood habitat. When the chicks are 4 or 5 weeks old, they begin to feed on green seeds of grasses and various fruits. High vertical stem densities are important as they provide cover from predators. In the absence of aspen, mixed hardwoods of birch, maple, ash, elm and tamarack are used by hens and broods. Natural forest openings less than 100 feet wide are also used by broods.

Fall

When young grouse disperse during the fall, a period known as the “fall shuffle,” a wide variety of forested habitats are used. Young birds go in different directions to seek out their own territories. This annual movement often leaves young birds in poor habitat and vulnerable to predation. As days grow shorter, young grouse disperse, moving an average of 1- 2 miles to settle in an area where they are likely to spend the rest of their lives. Young hens usually travel 3-4 times farther than their brothers. Young males often choose a drumming log by the time they are 20 weeks old—becoming firmly settled in their lifelong territory before the snow flies. Adult hens usually return to the winter range they occupied the previous year.

Winter

With the coming of winter, a series of comb-like projections grow on the sides of grouses’ toes. These provide better support on snow and ice-covered branches while feeding on buds.

Ruffed grouse have adapted to survive winter in a wide range of habitats. Grouse prefer to feed on buds in the upper canopy of mature male aspen trees in the winter. Good winter habitat includes dense hardwood saplings, young oaks that retain leaves, and/or conifers within 100 feet of mature aspen.

Ruffed grouse use snow roosts when conditions allow. Snow roosting conditions are optimal when depths are greater than 10 inches and the snow consistency is light and powdery. Conditions inside a “snow roost” can be as much as 50 degrees F. warmer than outside temperatures.

If unable to burrow in snow, grouse will use dense hardwood saplings, young oaks that retain leaves and conifers as cover during the winter. Conifers are considered essential winter habitat in regions where snow depths typically preclude snow roosts.

In southeastern Minnesota, south and southwest facing slopes are preferred wintering areas for grouse, and sumac, hazel, and red cedar provides food and cover. The sun’s direct rays melt snow on these slopes allowing grouse to forage on the ground for seeds and acorns.



Photo: George-Ann Maxson

Female ruffed grouse typically lay 10-12 eggs in their nest over 14-17 days, followed by 23-25 days of incubation. No more than three to four chicks from a brood survive the summer.

Ruffed Grouse Management Recommendations



Aspen Forest

- Maintain 3-4 age classes or growth stages of aspen in close association
 - (1) Young aspen (6 to 25 years old) to provide nesting cover and supply summer and fall foods.
 - (2) Mature aspen (more than 25 years old) with an under-story of hazel or ironwood that provides additional nesting habitat as well as food in fall, winter, and spring.
 - (3) Dense sapling aspen (4 to 15 years old) to provide brood cover.
- Harvest aspen preferably in small units (patches) that are 10 acres or less in size.
- Maintain clumps of shrubs, conifers, or mature aspen in larger cutover areas.
- Reserve strips of mature aspen along bog and marsh edges, or other areas with shrubs.
- Leave 2-6 scattered individual snag trees (standing, dead or dying hardwoods) or patches of trees for ruffed grouse drumming and use by other wildlife.
- In aspen forest tracts that are uniformly in the sapling stage (10-20 years old), consider providing age class diversity by cutting strips or patches in one third of the area.
- **Aspen Forest Thinning:** Not recommended in tracts less than 25 years old being managed for ruffed grouse. Commercial thinning performed in tracts older than 25 years should include aspen reserve areas that are not thinned.

Oak-Hardwood Forest

- If oak regeneration (seedlings) is not present, perform shelterwood harvest.
- If oak regeneration is present, perform small patch clear cuts in mature forest.
- Implement timber harvest in oak following good acorn production.

- In mixed oak-aspen tracts reserve mature aspen clumps in oak clear cuts.
- In mixed aspen-oak tracts perform small patch clear-cuts and reserve oaks.
- Improve acorn production by performing selective tree removal around good acorn producing oaks.
- Plant acorns or oak seedlings in open growing hardwoods or old fields.

General Forest

- **Biomass Harvest:** Considerations are site dependent. Utilize tops and slash that accumulate at log landings. Do not utilize large downed coarse woody slash, debris, logs or snags and reserve trees in harvest areas for biomass.
- **Conifer under-planting:** Planting seedlings at standard densities to eventually convert a tract of aspen forest to long-lived coniferous forest (e.g. white pine) may be compatible with white-tailed deer management, but is not recommended in forests being managed for ruffed grouse. However conifer seedling under-planting at lower densities and in small blocks in forest tracts managed as a mixed aspen-conifer should maintain fair ruffed grouse habitat.
- Consult and follow Minnesota’s “Voluntary Site-Level Forest Management Guidelines.”

Shelterwood Cuts – oak seedlings absent

Where oak seedlings are absent, a series of partial cuttings or thinning is applied to the woodland to open the canopy and allow acorn germination. Remove up to 40 percent of the canopy to encourage seedling growth. When saplings are established, in about 5 years, remove the remaining canopy to expose emerging seedlings to the sunlight they need.

Clear cuts – oak saplings are present

If oak saplings are present, clear cut 10-15 percent of the mature trees every 5-10 years, in small scattered cutting blocks. Reserve 3-6 oak trees per acre in a cutting block for acorn production. Clumps of oak or aspen saplings more than 3 feet tall should be left standing in clear-cuts.

Competition with other trees may cause oak regeneration failure. This makes regenerating oak difficult. If unmanaged, oak stands may succeed to another forest type of less value to ruffed grouse and other wildlife. Always consult a professional forester when planning a timber harvest in oak.

Since most oak forests are dependent on fire, you should consider conducting prescribed or controlled burns as part of your long-term oak management plans. Correct application of fire will improve long-term sustainability and regeneration of your oak woodland. Consult a natural resources professional for advice.

Mixed Conifer Forest

Coniferous forests, especially upland spruce, balsam fir, and jack pine can produce ruffed grouse, but not at the population levels or densities of an aspen forest. Maintain some clumps or areas of aspen or other hardwoods within pine plantations and in naturally regenerating pine stands.

In pine plantations, if ruffed grouse production is a management objective, when performing “thinning” harvest, “over-thin” a portion to promote hardwoods. Avoid broadcast herbicide “release” of regenerating conifers. Instead, mechanically release or remove woody competition where needed within the plantation.



Photo: Emily Hutchins

Managing Your Woodland for Ruffed Grouse



Recommendations in this brochure are intended to assist landowners in meeting goals to improve their forest habitat for ruffed grouse. However, every forest landowner should consider the larger context of the forest landscape where their land is located and an array of management considerations. There are trade-offs to every forest management action (including no management).

Ruffed grouse thrive in a dynamic forest landscape subject to periodic disturbance. Good ruffed grouse habitat provides a combination of food and cover within a small area. This juxtaposition allows individual grouse to access their daily and seasonal habitat needs within close proximity. Patches of young trees with high densities of vertical woody stems provide cover for avoiding predators, whereas patches of older trees provide more food in the form of aspen flower buds, buds and fruits of understory shrubs, and insects near the ground. Conifers, brush, and oaks that retain leaves provide thermal cover.

Invasion of European buckthorn into oak and other hardwood woodlands is common throughout Minnesota. It out-competes and eliminates native under-story plants and degrades woodlands. Efforts should be taken to monitor your woodland for this invasive and exotic species. If found, implement aggressive control measures. If European buckthorn is present and unmanaged, it has the potential to dominate a woodland over time, which will reduce its attractiveness to ruffed grouse and other forest-dependent wildlife.

If forests are unmanaged they may eventually succeed or change to another forest type that will likely be of less value as ruffed grouse habitat. Active management to perpetuate the aspen or oak, and to create the proper mixture of habitat components, will achieve the highest quality habitat—and the highest long-term ruffed grouse population.

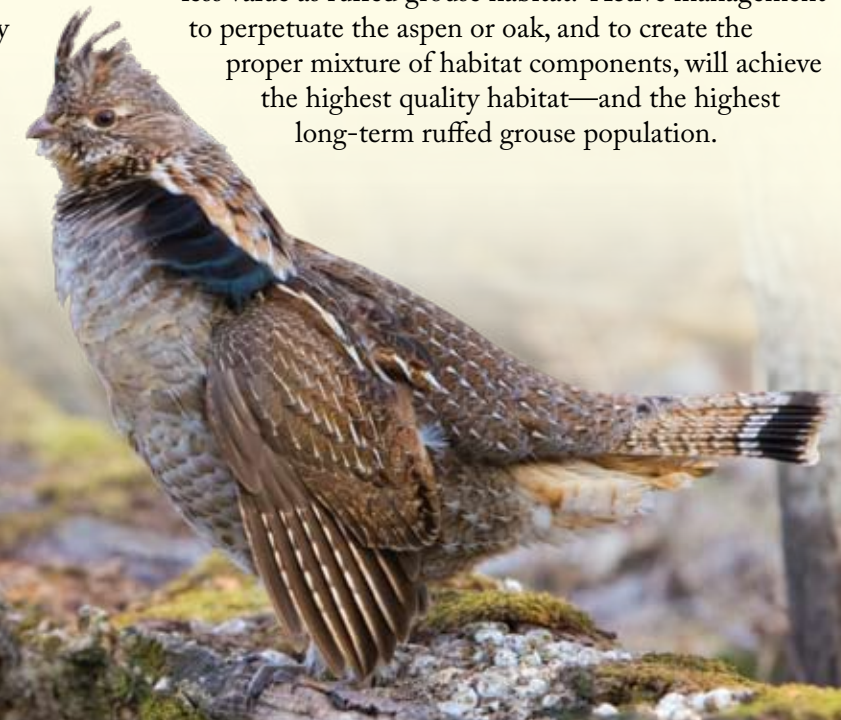


Photo: Stephen Maxson



Drumming Ruffed Grouse. Proper management can result in three to four drummers for every forty acres of aspen forest.

Photo: Blane Klemek

Aspen Management

An appropriate mix of habitat components is best achieved by managing for 3-4 age classes of aspen (ideally 10 years apart). Desirable ruffed grouse habitat includes several habitat management components. Within managed areas, create or maintain pockets of dense shrubs and/or conifers for cover. Also consider maintaining clumps of mature aspen in younger (especially those 10 ac or larger in size) areas as good feeding sites. Attempt to leave 1-2 logs (at least 8 inches in diameter and 70 inches in length) on the ground for every acre managed. A guard tree for the drumming male is also desirable: leave one standing tree or snag within 10 feet of the log.

Various aspen age classes or growth phases are typically created through a series of small clear-cuts by commercial timber harvest or firewood cutting (historically, fire created much of this diversity). Maximum aspen regeneration is obtained by exposing the ground to sunlight, which stimulates suckering from the roots of cut trees. Harvesting during the winter usually provides the highest density of aspen seedling/sapling regeneration. If these habitat components are met within a 10 acre area, one ruffed grouse breeding territory will potentially be established.

Consider the natural boundaries between forest cover types based on plant species and age. If you own a 40 acre or larger tract of forested land, you may be able to manage for the proper mix of habitat components within your tract. If your land is less than 40 acres of aspen, birch, or oak, cooperate with your neighbors (including adjacent public forest land foresters) to work out a plan to improve grouse habitat.

Aspen is considered mature at about 50 to 70 years of age, depending on the site. If unmanaged, (not harvested or disturbed), aspen may succeed to another forest type that may be of less value as ruffed grouse habitat.

Oak-Hardwood Management

Oaks and other hardwood species are more predominant than aspen in the hardwood forests of southeastern Minnesota. These mixed oak-hickory woodlands have a high potential for improving habitat for grouse. The goal is to maintain or perpetuate the oak or mixed oak woodlands by active management. These forest types can be difficult to manage. Challenges include disease outbreaks, excessive deer browsing of seedlings, and hardwood regeneration failure. Consult a resource professional to manage oak and other hardwoods in your woodland.

Oak management is influenced by the quality, condition and age of the trees present. The proportion of oak reproduction (saplings) will be determined by other trees or shrubs that are present; soil type and woodland size, and current oak distribution of your oak woodland and (oaks scattered throughout the stand or growing in clumps). A mosaic of small (about 10 acre) regenerating cuts dominated by 5-15 foot tall oaks will allow adequate oak regeneration.

Harvest strategies need to focus on reserving three to six large mast producing trees per acre to supply the important seed source for oak regeneration. Some middle-aged oak and hickory trees should be reserved from harvest to provide future mast crops. Combined with a proper regeneration strategy, this will provide a perpetual supply of mast.

Smaller cuts or harvest areas also stimulate under-story vegetation such as fruit and berry producing shrubs, and forest forbs (herbaceous plants) which provide additional wildlife foods. Dense areas of younger trees can sometimes be thinned to promote acorn production and tree growth. Thinning the canopy near forest edges can promote under-story growth.

There are two methods that will produce young saplings to provide the mix of food and cover required by ruffed grouse. The option you use depends on whether there already is oak regeneration (small oak trees) in the forest, and the age and condition of the trees. Do not harvest oaks without professional advice. To do so invites regeneration failure.



Photo: Emily Hutchins