

TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE
PORTLAND, OREGON

NATURAL RESOURCES CONSERVATION SERVICE
July 1998

BIOLOGY TECHNICAL NOTE NO. 31

WOODLAND FISH AND WILDLIFE: MANAGING SMALL WOODLANDS FOR GROUSE

The attached Technical Note is one of series produced by the Woodland Fish and Wildlife Project, a cooperative effort including NRCS and other related agencies and interest groups in Washington and Oregon. This is a replacement for Technical Note 30, dated November 1989, WOODLAND FISH AND WILDLIFE: Managing Small Woodlands for Ruffed Grouse.



Woodland Fish and Wildlife

Managing Small Woodlands For Grouse

The Northwest has six of the ten species of North American grouse. Three of the species are found in forested areas and may be impacted by operations on small woodlands.

Forest grouse of the Northwest include the ruffed grouse (*Bonasa umbellus*), the blue grouse (*Dendragapus obscurus*) and the Franklin's or spruce grouse (*Dendragapus canadensis*). The spruce grouse range is the most northerly of the three. Spruce grouse occur mostly in Canada and Alaska.

In contrast, the blue grouse inhabits forested mountainous areas from southeastern Alaska through Washington and Oregon south to Arizona and New Mexico. Several subspecies of blue grouse are identified



Ruffed Grouse

mainly by the habitat in which they live. The ruffed grouse occurs widely in both states. Though biologists list several different subspecies, this is of little importance to the casual observer.

Perhaps the greatest impact the ruffed grouse has on humans is when it flushes from underfoot with a flurry of wings. This is sure to increase a person's heartbeat manifold. Though ruffed grouse occur in most of the forested areas of Oregon and Washington, these dwellers of mixed woodlands and riparian areas are seldom found in flocks or large numbers in one place.

Across North America, ruffed grouse live mainly in the northern forests and are the most widespread of all of the non-migratory game birds.

As the name suggests, a prominent feature of this bird is the ruff of dark feathers around the neck. Overall coloration is mottled brown or gray and white with gray or rusty red color on the tail. The heavily barred tail has a very apparent dark band when it is spread.

Both gray and brownish color phases may occur in the



Ruffed Grouse drumming

same brood. Birds east of the Cascades are generally slightly lighter colored than their west-side relatives.

Ruffed Grouse

A large ruffed grouse will weigh a pound and one half, but the average bird is about the size of a small chicken. The ruffed grouse is about two-thirds the size of the blue grouse and generally lighter colored.

Life History

In Oregon and Washington, ruffed grouse populations vary mainly because of weather conditions during the year and availability of proper habitat. As is the case with most birds, population turnover each year is considerable. Legal hunting normally does not limit population size if the birds have proper habitat.

In the fall, males establish territories which are defended most of the year. During the spring, the males use "drumming" sites to display and advertise for females. Essential features of such a site are a level stage or platform for drumming displays and a position above the ground that provides good visibility. Though the actual site may be slightly open or on an old log, dense stems and canopy surrounding the area are essential. When performing, the males make a drumming sound by beating their wings against the air.

Nesting starts in April and hatching extends from May to early July. Average number of eggs per nest is 11, but the brood may end up considerably

smaller. Nesting females do not tolerate disturbances well and may abandon the nest if bothered. Although eggs and young are taken by various predators, cold and wet weather are probably the worst enemies of the chicks for the first few weeks. By autumn 60 to 80 percent of the chicks may have died. By September, the young birds have adult plumage and the broods start to break up.

Food

Adult ruffed grouse eat mainly plant matter, but the young need the protein furnished by insects. The diet of the chicks may be as much as 75 percent animal matter. By the time the birds reach maturity only three to seven percent of the diet is such items as ants, beetles, caterpillars and other insects.

Preferred plant foods vary by area, but usually are related species and the plant parts eaten are much the same in all areas. Aspen flower buds provide important fall and winter food and alder buds, catkins, leaves and seeds are used widely. Other items in the

ruffed grouse diet include the leaves and fruit of huckleberry, salal, clover, blackberry, gooseberry, wild strawberry, chokecherry and hazelnut. Cottonwood flower buds and wild buttercup are important foods in western Oregon and Washington in the winter. The birds eat a wide variety of parts of many plants, but must have a good year-round supply to survive.

Cover

The ruffed grouse is associated with mixed growth including deciduous plants. Best grouse habitat contains open areas, brush, hardwoods and conifers. Ruffed grouse cover must include areas for foraging, reproduction, roosting and escape from predators. Cover for reproduction includes habitat for drumming, nesting and brood rearing. A variety of cutover areas, maturing conifers, overgrown brushy land, mixed deciduous stands, and open lands intermixed provides optimum habitat. Undisturbed riparian areas are highly valuable ruffed grouse habitat.



Life History

In Oregon and Washington, ruffed grouse populations vary mainly because of weather conditions during the year and availability of proper habitat. As is the case with most birds, population turnover each year is considerable. Legal hunting normally does not limit population size if the birds have proper habitat.

In the fall, males establish territories which are defended most of the year. During the spring, the males use "drumming" sites to display and advertise for females. Essential features of such a site are a level stage or platform for drumming displays and a position above the ground that provides good visibility. Though the actual site may be slightly open or on an old log, dense stems and canopy surrounding the area are essential. When performing, the males make a drumming sound by beating their wings against the air.

Nesting starts in April and hatching extends from May to early July. Average number of eggs per nest is 11, but the brood may end up considerably

smaller. Nesting females do not tolerate disturbances well and may abandon the nest if bothered. Although eggs and young are taken by various predators, cold and wet weather are probably the worst enemies of the chicks for the first few weeks. By autumn 60 to 80 percent of the chicks may have died. By September, the young birds have adult plumage and the broods start to break up.

Food

Adult ruffed grouse eat mainly plant matter, but the young need the protein furnished by insects. The diet of the chicks may be as much as 75 percent animal matter. By the time the birds reach maturity only three to seven percent of the diet is such items as ants, beetles, caterpillars and other insects.

Preferred plant foods vary by area, but usually are related species and the plant parts eaten are much the same in all areas. Aspen flower buds provide important fall and winter food and alder buds, catkins, leaves and seeds are used widely. Other items in the

ruffed grouse diet include the leaves and fruit of huckleberry, salal, clover, blackberry, gooseberry, wild strawberry, chokecherry and hazelnut. Cottonwood flower buds and wild buttercup are important foods in western Oregon and Washington in the winter. The birds eat a wide variety of parts of many plants, but must have a good year-round supply to survive.

Cover

The ruffed grouse is associated with mixed growth including deciduous plants. Best grouse habitat contains open areas, brush, hardwoods and conifers. Ruffed grouse cover must include areas for foraging, reproduction, roosting and escape from predators. Cover for reproduction includes habitat for drumming, nesting and brood rearing. A variety of cutover areas, maturing conifers, overgrown brushy land, mixed deciduous stands, and open lands intermixed provides optimum habitat. Undisturbed riparian areas are highly valuable ruffed grouse habitat.



Nests are usually depressions in the ground often at the base of a tree, rock or stump located within 100 feet of the edge of a stand of deciduous, coniferous or mixed woodlands. Various hardwoods such as cascara, maple and other non-conifers are valuable nesting habitats.

For roosting and protection from the weather and predators, grouse will use heavy Douglas-fir, spruce and hemlock thickets. Lacking good roosting cover, the birds may burrow into the snow in the winter.

Grouse get water from streams, ponds, succulent plants and dew. Nests often are located near bodies of water.

Generally, variety is the key

to good grouse habitat. Scattered medium-sized clearcuts or heavy selective cuts mixed with mature stands of timber provide more living space than do large blocks of single-age timber.

Management

The ruffed grouse depends on several early and mid-stages of forest succession. Large blocks of mature timber are least productive. The birds will inhabit areas ranging from woodlots surrounded by agricultural lands to extensive forests with openings. One of the most important management activities is the creation of "edges" where different types of cover meet.

Common practices such as cutting, planting, burning and grazing can create grouse habitat. However, if grouse are present, the best management is to leave the habitat alone.

Extensive timber cutting of areas of more than 40 acres or total protection of large areas from cutting are both detrimental to ruffed grouse. Timber cutting that creates brushy cover is helpful. "Cool" burning that encourages growth of small plants also improves habitat. However, both grazing and burning should be used in moderation to produce a variety of successional stages in plant growth. Practices that produce hazel thickets and alder stands and reduce or eliminate large, solid areas of salal are useful west of the Cascades.

Providing a variety of sizes in the trees in an area is important in maintaining good habitat. Some plantings may provide elements of cover that are lacking. Brushy areas may be created with plantings of hazelnut, cherry, hawthorn, wild rose and grapes. Retention of old orchards and the introduction of Oregon crabapple provide important food. Seeding of old roads and landings with grass and clover will provide good foraging areas, especially if the areas are left undisturbed.

As is the case with all wildlife management, creation of proper habitat for one species will benefit some and harm others. Good ruffed grouse habitat varies both in plant species and sizes. Many forms

Checklist for Grouse Management		
<i>Use this checklist to decide whether an area has all of the components of good grouse habitat.</i>		
	YES	NO
Male Drumming Sites	___	___
Plant Food Available	___	___
Cover Available		
Foraging	___	___
Reproduction	___	___
Roosting	___	___
Management possibilities		
"Edge" creation	___	___
Timber harvesting	___	___
Controlled burning/grazing	___	___
Successional stages	___	___
Forage planting	___	___

of wildlife find this desirable, but such a pattern does not suit all. More details on ruffed grouse management may be found in the references listed below.

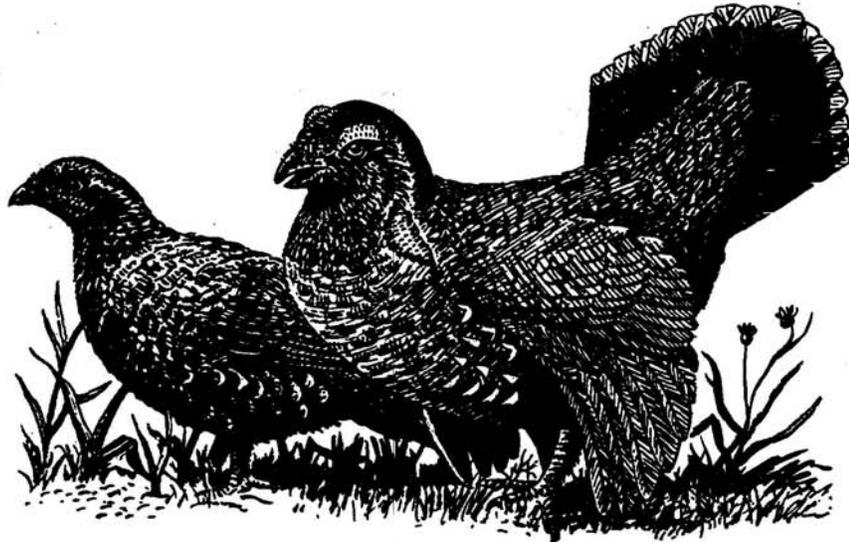
Blue Grouse

Blue grouse are the largest of the native forest grouse with a length up to 20 inches. As the name suggests the males are dark blue-gray on the upper parts. The males have mottled brown wings and the females are brownish and mottled overall with some blue-gray on the chest. The darkness of the color varies depending somewhat on the area where the birds live. Some blue grouse have a dark tail banded along the outer edge with light gray.

The tail band in the male becomes most apparent when he is strutting during the mating season, spreading the tail much as a turkey does. During this time of the year, the males inflate brightly colored neck sacks and produce a "hooting" sound while lowering their wings and displaying bright patches of comb above the eyes.

Life History

Populations of blue grouse in Oregon and Washington depend on the availability of suitable habitat. Blue grouse inhabit mostly coniferous forest areas, while ruffed grouse occur mostly in hardwood areas or mixed hardwoods and conifers. Weather conditions during the



Blue Grouse

nesting and winter season influence bird numbers, but with proper habitat adequate numbers of the birds come through these periods of stress. As a result, population numbers of the blue grouse are quite stable in areas where necessary living conditions exist.

As with other game birds, autumn hunting has little overall effect on total population numbers since the harvest takes only a portion of the birds that will normally succumb during the winter "pinch" period.

Detailed studies done in certain areas give some idea as to grouse needs. Gaps exist in our knowledge of the birds, especially regarding forest management and its effects on their life history.

As might be expected, considering the wide range of the birds, habitat varies greatly. The heavy timber west of the

Cascades presents a much different situation from the mixed conifers and timbered stringers and ponderosa pine parklands of the east side. However, there are certain habitats of both areas that the birds use.

Food

As is the case with many game birds, a large portion of the diet of the blue grouse chicks consists of insects. Spraying insecticides in the spring can be very detrimental to the youngsters because insects may make up more than three-fourths of their diet until they are six weeks old. As the birds mature during the summer, their diet shifts to 90 percent vegetable matter.

Though plant foods differ according to availability, it is generally agreed that conifer needles, berries and seeds of various species all are utilized by blue grouse. The needles are



Blue Grouse

especially important during the winter months. Though all kinds of conifer needles are used, those of Douglas-fir and Ponderosa pine are the most important.

Cover

Blue grouse prefer to live in open, parkland type areas with nearby heavier timber patches. Grass and forbs are important sources of food and cover when the broods are developing. Solid stands of closed canopy or large, thick brushy areas are not to their liking, even though the birds are quite adaptable.

Habitat requirements change seasonally. While considerable use of natural parkland habitats is common during the spring and summer in the eastern part of Washington and Oregon, creation of openings in the thick western areas is necessary to create new growth of grasses

and forbs. In some areas a migration from low to higher elevations takes place during the winter and the birds often feed and roost in large Douglas-fir on ridges.

Strict fire prevention in certain areas allowing thick undergrowth to come in under pines has worked to the detriment of these grouse. In the western part of the states, Douglas-fir areas seldom produce parkland habitat. To encourage grouse, opening up thick forested areas with limited area clear cuts can be beneficial.

Nesting takes place from April through June, with nests being constructed in a variety of places. The female may decide to create her nest under an old downed log, beneath a thick shrub or in a grassy area. Incubation of the 6 to 10 eggs takes about 24 days.

Water normally is not a

problem because of the succulence of vegetation in the diet of the birds, but they will utilize free water if it is available.

Management

Logging and controlled burning can help establish and maintain parkland areas with forest floors that are not covered with regrowth. Conversely, heavy grazing on lower or open areas can destroy grasses and forbs needed during the brooding season. Such plant communities need to be up to a foot tall to be of maximum benefit to the grouse.

If openings such as clearcuts are made in thickly forested areas they should not exceed 40 acres or extend more than 300 yards across.

Winter roosting and feeding trees are important. Several researchers have suggested leaving mature, mistletoe laden Douglas-fir along the higher ridges for this purpose. Where the birds migrate to the higher ground during the winter, such trees are extremely important to their survival. Also limited size heavy thickets of conifers are important for winter shelter and food on the west side of the Cascades.

Though water is normally not a problem, springs with fencing to protect them from livestock attract grouse and many other birds. Such developments provide not only ready water, but also various food plants.

Franklin's or Spruce Grouse

These grouse are much smaller than blue grouse and females generally are darker in color. Their main range is in Canada and Alaska though they do extend into the north Cascades in Washington and into the mountains of eastern Washington and northeastern Oregon.

As with the blue grouse, these birds vary considerably in



Spruce Grouse

Desirable Food Plants For Grouse

Most conifers are used for food and cover

Large "wolfy" trees with mistletoe for winter roosting

Food Plants:

balsamroot
buckwheat
dandelion
manzanita
huckleberry
pussy toe
elderberry
dock
starwort
lupine
willow
Oregon grape
blackberry
salal
bearberry
clovers
wild lettuce
serviceberry

coloration over their range. In our area male birds have white accents on their black chests and black tails.

These grouse, normally quite unwary, have acquired the name "fool hen" in some areas. It was thought they would sit on a limb and let a person kill them with a stick.

The males strut and hoot during the mating season in a manner similar to that of the blue grouse.

Management

Because they are relatively scarce in our area, spruce grouse have been the object of few management studies. Generally, they require much

the same type of food, water and cover as do the blue grouse and will benefit from any habitat improvement work carried on for the blues. In our area as well as other parts of



their western range, spruce grouse are limited to lodgepole pine habitat.

If blue or spruce grouse are currently found in an area, obviously it is providing proper habitat. Managing the area to continue the distribution, makeup and mixture of species that exist is the best way to ensure the future of grouse in the area.



REFERENCES

Crawford, John A., July 1986. RUFFED GROUSE (*Bonasa umbellus*) Section 4.1.1, US Army Corps of Engineers Wildlife Resource Management Manual. Department of the Army, US Army Corps of Engineers, Washington, D.C. 39 pp.

Brewer, Larry W. 1980. The Ruffed Grouse in Western Washington. Washington State Department of Game. Biological Bulletin No. 16. 101 pp.

Durbin, Ken. 1979. The Forest Drummer. Oregon Wildlife Magazine, September, 1979. Oregon Department of Fish and Wildlife. p. 3-7.

Heacox, Cecil E. 1980. The Gallant Grouse. David McKay Co. Inc. NY 182 pp.

The Ruffed Grouse Society, 1400 Lee Drive, Corapolis, PA 15108
(A wide variety of materials on habitat and improvement is available from the Ruffed Grouse Society free or for a slight charge. Write for their publication list.)

Johnsgard, Paul A. 1973 Grouse and Quails of North America. University of Nebraska Press, Lincoln. 533 pp.

Oregon Department of Fish and Wildlife P.O. Box 59, Portland, OR 97207

Washington Department of Fish and Wildlife 600 N. Capitol Way Olympia, WA 98504

Game Bird Research Program Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR 97331

Titles available in this series:

Is There a Place for Fish and Wildlife in your Woodland?	MISC0132
Riparian Areas: Fish and Wildlife Havens	MISC0133
Managing Small Woodlands for Ruffed Grouse	MISC0141
Wood Ducks on Small Woodlands	MISC0142
Managing Ponderosa Pine Woodlands for Fish and Wildlife	MISC0158
Managing Small Woodlands for Cavity-Nesting Birds	MISC0160
Trout in Small Woodlands	MISC0161
Managing Small Woodlands for Elk	MISC0164
Coastal Douglas-fir Forests and Wildlife	MISC0168
Hawk, Eagle and Osprey Management on Small Woodlands	MISC0169
Wetlands as Varied as our Region	MISC0179
Wildlife on White Oak Woodlands	MISC0180
Quail on Small Woodlands	MISC0187
Managing Deer on Small Woodlands	MISC0189
Beaver, Muskrat, and Nutria on Small Woodlands	MISC0196
Managing Forest Habitats for Migrant Songbirds	MISC0198

Publications may be ordered from Washington State University Cooperative Extension (800) 723-1763. You also may download copies from the Internet.

URL: <http://www.dfw.state.or.us/woodland.html>

A Woodland Fish and Wildlife Project Publication

By Ron Shay, with technical review by Dr. John Crawford, Department of Fisheries and Wildlife, Oregon State University; Ken Durbin, Oregon Department of Fish and Wildlife; and Jim Bottorff, Washington Department of Natural Resources. Publications in this series provide practical information on fish and wildlife management to private woodland owners and managers.

Cooperating agencies and organizations for the Woodland Fish and Wildlife Project include: Western Forestry & Conservation Association, World Forestry Center, Oregon Department of Forestry,

Washington Department of Natural Resources, Oregon State University Extension Service, Washington State University Cooperative Extension, University of Washington College of Forest Resources, Oregon Association

of Conservation Districts, Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, USDA Forest Service, USDA Natural Resources Conservation Service.

Issued by Washington State University Cooperative Extension, Oregon State University Extension Service and the U.S. Department of Agriculture in furtherance of the Acts of May 8 and June 30, 1914. Cooperative Extension programs and policies are consistent with federal and state laws and regulations on nondiscrimination regarding race, color, gender, national origin, religion, age, disability and sexual orientation. Evidence of noncompliance may be reported through your local Cooperative Extension office. Published November, 1989. Revised June, 1998. Subject code 440 MISC0141.

Reprinting of this publication, in whole or in part, is allowed with written permission of Woodland Fish and Wildlife.