Ruffed Grouse

Bonasa umbellus


Photo by SC DNR

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DESCRIPTION

Taxonomy and Basic Description

Linnaeus first described the Ruffed Grouse in 1776, and since then, many subspecies have been named. Johnsgard (1983) distinguishes 11 subspecies; Atwater and Schnell (1989) list 12; and del Hoyo et al. (1994) recognizes 14 subspecies. The Ruffed Grouse is a gallinaceous bird in the Order Galliformes and the Family Phasianidae, which includes grouse, quail, turkey, and pheasants.

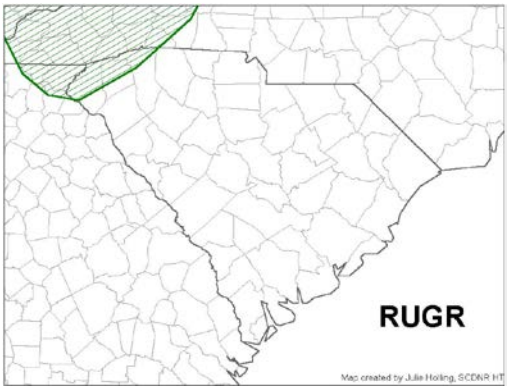
The Ruffed Grouse is a chicken-like bird that weighs about 500 g (1.1 lbs.). The genus *Bonasa* is translated as "good when roasted" and the specific epithet *umbellus* means "sunshade" referring to the long, shiny, black or chocolate colored neck feathers most prominent on the male. Males tend to be slightly larger than females and have a large tail that it fans to attract a mate or defend its territory. The female's tail is similar but smaller and usually is the best external basis for determining sex (Gough 1998). Across most of its range, a fully-grown tail feather of over 14.9 cm (5.87 in.) in length usually belongs to a male; less than 14 cm (5.5 in.), a hen. Ruffed Grouse have two or more color phases ranging from a grayish to a reddish-brown color. Red-phased grouse become more prevalent in milder climates while gray birds are more abundant where winter climates are more severe. Male Ruffed Grouse are aggressively territorial throughout their adult lives and proclaim their area with a "drumming" display. The male usually stands on a log, stone or mound of dirt and beats his wings against the air to create a vacuum, creating a drumming sound. The substrate, often called a "drumming log," is used strictly for a stage; the bird does not strike the "log" to make the sound (Rusch et al. 2000).

Chicks are precocial and are not much larger than a man's thumb when they leave the nest. They are very mobile and begin flying when about 5 days old. The hen may lead her brood as far as four miles from the nest to a summer brood range during their first 10 days of life. By 17 weeks of life, the chicks have reached their adult weight and usually disperse to find their own home range at 18 weeks.

Status

According to the North American Breeding Bird Survey (BBS), Ruffed Grouse populations have been in a slow decline throughout the Appalachian region over the past 45 years (Sauer et al. 2011). Except for localized declines, Ruffed Grouse generally appear to be stable and secure in Canada and the Western United States, but numbers appear to be declining in the Eastern United States (Atwater and Schnell 1989; Rusch et al. 2000). Ruffed Grouse have a state rank of

apparently secure (S4) in South Carolina and a global rank of G5, indicating that they are considered secure globally (NatureServe 2011).



Though the Ruffed Grouse is considered peripheral in South Carolina's southern Appalachian ecoregion, eggs and young have been found in the vicinity of the Foothills Trail in Pickens County (Huckabee 2000). The species is included as a species of concern because South Carolina could provide more suitable habitat for Ruffed Grouse if disturbance regimes such as prescribed fire are used and early successional habitats are created within its mountain range.

POPULATION SIZE AND DISTRIBUTION

Ruffed Grouse is the most widely distributed upland game bird in North America (Gullion 1977). Its range spans from northern Georgia north through Labrador in the east, and west throughout northern California into Alaska. In the central portion of the United States, Ruffed Grouse are found in the Great Lakes states north into Canada to the tree line (Gullion 1977). Trippensee (1948) described the range of Ruffed Grouse; according to his range map, Ruffed Grouse did not occur in South Carolina. However, he reported that isolated populations of the species still maintained themselves outside the indicated range. Nesbitt (1966) reported that though the literature did not disclose information regarding population levels and distribution, Ruffed Grouse did occur in the northwest mountain counties of Greenville, Pickens, and Oconee in South Carolina. Population numbers are relatively low in the southern and southwestern parts of its range. The Ruffed Grouse breeding population density was estimated at about 1.9 drumming males per km^2 (5 males per $mi.^2$) in 2005 (Dessecker et al. 2006). Northern populations show approximately 10-year cycles. Other populations can exhibit significant year-to-year variation, largely dependent upon spring weather and its effects on brood production.

Densities vary between forest types. Throughout their range, Ruffed Grouse find most of their habitat needs in mixed age, upland hardwoods. In more northern reaches of their range, Ruffed Grouse are associated with aspen (*Populus tremuloides*) stands that meet all of their food and cover requirements (McDonald et al. 1998). In southern portions where aspen is sparse to absent, Ruffed Grouse are typically associated with upland oak (*Quercus* spp.) stands (Cole and Dimmick 1991).

HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Ruffed Grouse have 4 main habitat requirements: nesting cover, a "drumming log" for males, brood cover for females and fall/winter cover (Atwater and Schnell 1989). Proctor (2003) indicated that in the southern portions of their range where long-term snow cover is absent, Ruffed Grouse utilize other methods of winter cover for protection from predation and thermal insulation. During winter in the southern Appalachians, Ruffed Grouse can be found using evergreen thickets in the form of rhododendron (*Rhododendron* spp.) and mountain laurel (*Kalmia latifolia*). Not only do Ruffed Grouse seek refuge in such evergreen habitats, but also in

the southern Appalachians, Ruffed Grouse often forage on the leaves and buds of mountain laurel where the largely popular aspen trees of the north are absent (Stafford and Dimmick 1979). Ruffed Grouse in Tennessee were found to utilize evergreen thickets comprised mainly of mountain laurel where desirable higher stem density stands were lacking (White and Dimmick 1978). Young clear-cuts that provide tall and dense stands of sapling age trees, also provide excellent year round cover where Ruffed Grouse can find adequate food and protection from aerial predators. Literature concerning home range sizes of Ruffed Grouse varies widely, with differing tendencies in males and females. Densities of Ruffed Grouse and habitat quality also play a large role in determining average home range size for a particular area.

The Appalachian region is classified as oak-hickory or mixed-mesophytic forest associations; this classification is based on literature review, canopy tree composition, and abundance data collected as part of the Appalachian Cooperative Grouse Research Project (ACGRP) (Tirpak, 2002 unpublished data) and a Relative Phenology Index. Oak-hickory forests are dominated by chestnut (*Quercus prinus*), white (*Q. alba*), northern red (*Q. rubra*), scarlet (*Q. coccinea*), and black (*Q. velutina*) oaks and shagbark (*Carya ovata*), pignut (*C. glabra*), mockernut (*C. tomentosa*) and bitternut (*C. cordiformis*) hickories. Mountain laurel and great rhododendron are important understory species. Dominant species on mixed-mesophytic sites are sugar (*Acer saccharum*) and red (*A. rubrum*) maple, yellow birch (*Betula alleghaniensis*), basswood (*Tilia Americana*), black (*Prunus serotina*) and pin (*P. pensylvanica*) cherry, yellow poplar (*Liriodendron tulipifera*), white pine (*Pinus strobus*), beech (*Fagus grandifolia*), northern red oak (*Q. rubra*), and Eastern hemlock (*Tsuga canadensis*).

The ACGRP (2004) reports the nutritional quality of Ruffed Grouse diet differs markedly between the core range and the Appalachian region. Throughout most of their range, Ruffed Grouse depend on aspen buds, twigs and catkins to meet their nutritional requirements. In contrast, Ruffed Grouse diets in the Appalachian region consist of the leaves and seeds of herbaceous plants, buds of beech, birch and cherry trees, acorns and the fruits of grape, greenbrier, and numerous other soft mast producers. In the Appalachian region, diets of grouse tend to be higher in tannin and phenol levels, which serve as potential toxins. Additionally, Appalachian diets tend to have lower protein levels than the diets of grouse in the Northern United States and Canada. The poor nutritional quality of grouse diets in the Appalachian region may result in increased foraging time and predation risk, as well as decreased body condition, reproductive potential, and chick survival.

CHALLENGES

In the Appalachian region, habitat loss and degradation are the principle causes for Ruffed Grouse population declines. Fire suppression, maturing eastern deciduous forests, and lack of management practices involving timber harvest are major causes of habitat degradation and loss. The quantity and quality of Ruffed Grouse habitat has declined in recent decades in the Appalachian region (ACGRP 2004).

Although the Ruffed Grouse is still a popular game species, hunting mortality is considered compensatory to some extent and is not thought of as a major factor controlling grouse populations. In a recent study, it was reported that, on average, hunting accounted for only 12%

of all mortality and ranged from 0 to 35% across sites and years. This study did not conclude or infer that hunting would be compensatory at higher harvest rates (ACGRP 2004).

CONSERVATION ACCOMPLISHMENTS

Prior to 1996, Ruffed Grouse management in the Appalachian region was based on research conducted in the Northern United States and Canada. ACGRP was established in 1996 by state natural resource agencies to investigate potential factors limiting Ruffed Grouse populations in this region. Data were collected on twelve study sites in eight states over a 6-year period. Partners in this project were varied and provided funding and personnel as well as study sites. Partners consisted of state wildlife agencies, universities and various foundations and conservation organizations.

The objectives of the ACGRP were to:

1. Estimate survival rates and identify limiting factors,
2. Estimate reproductive rates and identify limiting factors,
3. Determine if harvest mortality is compensatory or additive, and
4. Evaluate habitat selection and quality.

This enormous undertaking has provided much needed information for management of Ruffed Grouse habitat in the Appalachian region. State wildlife agencies now have critical information to develop management strategies to slow or stop the decline of Ruffed Grouse in the Appalachian region.

Another accomplishment was the purchase of the Jocassee Gorges and creation of the Franklin Gravely Wildlife Management Area, a core area of South Carolina's grouse range.

Throughout the Appalachian region, land ownership varies and includes National Forest land, state public land and industrial land. In South Carolina, land ownership is similar and a majority of potential grouse habitat will be protected by virtue of being within National Forests and state public land.

Finally, the *Ruffed Grouse Conservation Plan* (RGCP) which identifies Ruffed Grouse habitat needs and sets population and habitat restoration goals for each Bird Conservation Region (BCR) across the range of the species was completed in 2006 (Dessecker et al. 2006).

CONSERVATION RECOMMENDATIONS

- Implement management practices developed through the ACGRP (2004) on DNR lands and encourage implementation of these practices on National Forests and other public lands within the state. Action items include:
  - Maintain current Ruffed Grouse harvest levels and season; the current level of hunting pressure does not limit populations in South Carolina.

  - In mixed-mesophytic areas, employ "traditional" early-successional habitat management techniques that emphasize timber harvest techniques that provide a diversity of younger aged stands interspersed among mature forests.
  - In oak-hickory dominated sites, forest management should strive to provide both food (acorns) and cover (early successional habitat) needs of grouse in close proximity. Clearcutting, shelterwood, two-age and group selection silviculture offers managers alternatives to create these contrasting needs of acorns from mature oak trees in association with cover from young stands.
  - Manage roads by gating and planting preferred herbaceous foods to supplement existing natural foods.
  - Utilize prescribed fire as appropriate within Ruffed Grouse range in South Carolina to restore, enhance, and maintain habitat.
- Conduct surveys as appropriate to evaluate Ruffed Grouse population response to habitat management.
- Partner with private landowners and interested constituents to publicize and implement the recommendations of the ACGRP and the RGCP.
- Provide Ruffed Grouse habitat management recommendations to private landowners through on-site technical assistance, fact sheets, management bulletins and websites.

MEASURES OF SUCCESS

Existing bird surveys are insufficient to detect changes in the population of Ruffed Grouse in South Carolina. However, increased sightings of Ruffed Grouse by DNR personnel and members of the public would be considered one measure of success. Likewise, increased interest in management of Ruffed Grouse by the general public, as demonstrated by increased phone calls or e-mails related to Ruffed Grouse management and hunting, would be considered a measure of success of outreach and public awareness efforts.

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