

SURVEY OF RUFFED GROUSE DRUMMING IN CENTRAL PENNSYLVANIA

Christopher Turnbull, Jason Clark, Tyler Shenk, Trey Nicolette and Kodi Hockenberry

ABSTRACT

The ruffed grouse has been shown to inhabit young, clear-cut areas of timber. Many previous studies have been performed which show this to be true, specifically with aspen timber stands. Since aspen stands are not found regularly in Pennsylvania, this study will focus on clear-cuts of mixed hardwood forests compared to non-timbered areas of hardwoods. We found highly significant difference among average drums per station between managed and unmanaged trails. This suggests that the grouse prefer young, clear-cut areas over unmanaged areas in central Pennsylvania.

Keywords: *Bonasa umbellus*, *drumming*, *habitat preference*, *ruffed grouse*, *Tetraonidae*

INTRODUCTION

Of all the Tetraonidae that are native to the North American continent, the ruffed grouse is the most remarkable in its adaptability both to varied environments and to humans as neighbors and predators (Davis 1970). The ruffed grouse of North America is the most widely distributed native tetraonid on the continent, and the most successful survivor of its group (Davis 1970). This game bird still continues to exist over its entire original range, except where intense farming has ruined its habitat. The ruffed grouse can be found from Alaska to Georgia.

Potential benefits of this study have significance for both humans and the advancement of ecological understanding. The ecological significance is that this study will find out which type of habitat the ruffed grouse prefers. From this humans can help create more habitat for the ruffed grouse so the bird will thrive and hopefully be in existence for a very long time.

The benefit to humans is that the ruffed grouse will increase in abundance and there will be more birds to enjoy for sport. The ruffed grouse is a prized game bird to many millions of people. This study will help continue the existence of the bird for sport and also help sportsmen determine which type of habitat they are most likely to find ruffed grouse.

In this study we compared the densities of grouse (as indicated by their drumming) along trails in managed (clear-cut) and unmanaged (old growth) forest land in Huntingdon County, Pennsylvania.

FIELD SITES

Two study trails were used during this study; Old Loggers Trail and Gate 35 Trail. Both were located near Raystown Lake located in Hesston, PA on United States Army Corps of Engineers property. Old Loggers Trail is approximately 4 miles long and has 27 marked sites to listen for drumming grouse that were approximately 250 yards apart (Figure 1). Gate 35 is approximately 2 miles long and has 11 marked sites about 200 yards apart for listening (Figure 2). Gate 35 crosses through managed land that is relatively more clear-cut. As a result it has considerably more underbrush than the Old Loggers Trail.



Figure 1. Trail map of Old Logger's Trail.



Figure 2. Aerial view of Gate 35 Trail.

METHODS

The study took place around the beginning of the spring breeding season for ruffed grouse during April 6-8, 2004. Male ruffed grouse were counted by performing the very common drumming count. A drumming count is the measure of how many grouse are heard drumming, which is the flapping of their wings to create a vacuum; a process similar to how lightning leads to thunder. The counts took place early in the morning and stations were set up at specific locations so counting could be performed from the same location each day. Compass readings were taken for each drumming grouse so it would not be counted twice. Since only male grouse drum, the males were the only ones surveyed. But since the males drum to attract a female it will be assumed that a hen is nearby and therefore the study should show habitat preference for both sexes.

The study locations were divided into unmanaged, old growth hardwood forests and managed, young, clear-cut forests. The two areas were studied at the same time on the same days so other factors such as weather will not be a variable.

To survey for drumming grouse both Old Loggers Trail and Gate 35 were walked three different times. To keep variables at a minimum, these trails were walked on the same days and at the same time. The data was collected over a one week period beginning at sunrise with each session lasting approximately 2 hours. Listening points were designated by markers along the trails from previous research. There were 11 markers and 27 markers located on Gate 35 and Old Loggers Trail, respectively. At each marker recordings were taken for five minutes intervals. During this time span, if grouse were heard, the recorder took a compass reading on the location of the bird. Along with the data that were collected this year we obtained data from the previous seven years that was taken using the same methods.

RESULTS

Paired t-tests showed that there was a highly significant difference among average drums per station between managed and unmanaged trails ($t = 8.5$, $df = 7$, $P < 0.001$) (Figure 3).

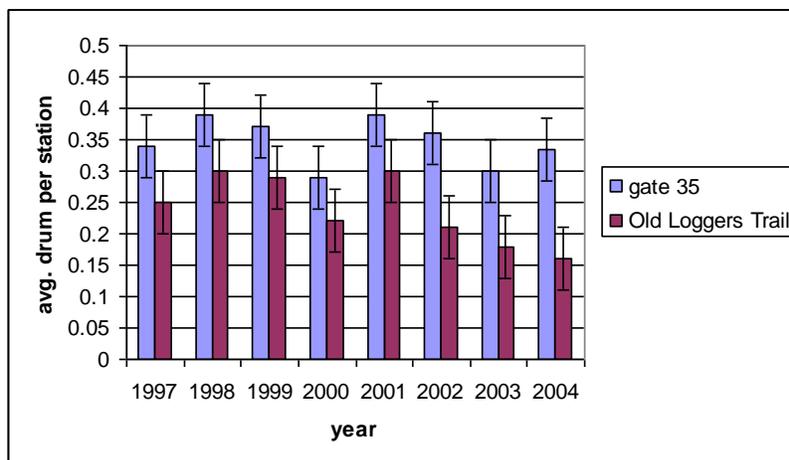


Figure 3. Average number of drums per station for managed, Gate 35, and unmanaged, Old Loggers Trail, trails over an eight year period.

DISCUSSION

We hypothesized that more ruffed grouse would be heard at Gate 35 than OLT (Old Loggers Trail). The reason is because Gate 35 has much more managed areas of timber specifically for grouse. Gate 35 trail is 2 miles long as opposed to OLT being 4 miles. Although the numbers look at first like OLT has more grouse there is more area located along OLT as opposed to Gate 35. At OLT there was an average of about 2 birds per every mile. At OLT there was approximately 1 bird per every mile. These data suggest that managed timber areas are better suited for grouse habitat because there were more birds found per unit area.

Our original plan was to simply use the data that we collected, but we found that there was not enough data obtained to conduct significant statistical analysis. Consequently, we acquired the data that was collected in the same manner as ours from seven years previous to our study. We were then able to perform a significant analysis among the numbers from previous years and the numbers that we obtained in 2004. We determined that the grouse do prefer managed habitat as compared to unmanaged (see Fig. 3). We saw that there was a significant difference in the average drumming calls per station found between the two trails. This correlates well with the data that we obtained from 1997 to 2003.

To improve this study it is possible to take samples over a longer period of time and at more sites to reduce the amount of variation in our numbers. It is important that this study be conducted frequently to monitor the behavior and populations of the ruffed grouse.

ACKNOWLEDGEMENTS

We would like to thank Douglas Glazier for his support and advice while on this project. We would also like to thank Jeff Krause, Wild Life Biologist for letting us use his valuable equipment and the photographs he provided. Also we thank him for his project protocol.

LITERATURE CITED

- Davis, K. 1970. The ruffed grouse of North America. *Biological Conservation* **2**: 2
- McDonald Jr., J.E., G.L. Storm and W.L. Palmer. 1998. Home range and habitat use of male ruffed grouse in managed mixed oak and aspen forests. *Science Direct Website*.
- Wiggers, E.P., M.K. Laubhan and D.A. Hamilton. 1992. Forest structure associated with ruffed grouse abundance. *Forest Ecology and Management* **49**.