

The Results Are In! Six Years Of Grouse Research Completed



Steve Shaluta, Jr.

By Bill Igo

Ruffed grouse command an allegiance among a certain segment of the hunting population. Understandably, the decline in grouse populations in the Eastern United States during the past 25 years has spurred interest in determining the factors causing the decline and possible ways to reverse the trend. The multi-state Appalachian Cooperative Ruffed Grouse Project was initiated in 1995 to look for answers.

Biologists captured and placed

radio transmitters on 3,118 ruffed grouse on 12 study sites in Ohio, Kentucky, West Virginia, Maryland, Pennsylvania, North Carolina and Rhode Island. An analysis of the data shows that the ecology of ruffed grouse populations in the Appalachians differs from that of northern grouse living in the Great Lake states where aspen and aspen management provide abundant food and cover. Adult survival tended to be higher in the Appalachians, but clutch sizes and chick survival was lower.

Ruffed grouse generally selected early successional habitats, forested sites having high stem densities. Females with broods (young) selected sites that had higher than average herbaceous (fleshy stems) cover and greater insect abundance than random sites.

Home ranges were calculated for 1,054 grouse, based on 67,814 telemetry locations. Adult and juvenile females and juvenile males had larger home ranges than adult males. Females with broods had larger home ranges (96 acres) than females whose broods failed (37 acres). In oak-hickory areas, both female and male home ranges increased following years of acorn failure (49 to 128 acres in females and 17 to 67 acres in males).

The primary cause of adult mortality was avian predation (44 percent) followed by mammalian predation (26 percent). A diversity of predators were observed on the study sites. Only owls and Cooper's hawks sightings showed a relationship to predation rates of ruffed grouse.

Overall adult survival was 43 percent across all sites and years. Annual survival rates were higher on oak-hickory areas (50 percent) than mixed northern hardwood (birch-beech-maple) sites (39 percent). Survival was higher in the spring and summer and lower in fall and winter. In addition, age or gender did not appear to affect the survival rate.

Nest success ranged from 52 percent to 87 percent across the sites and years studied. Successful nests tended to be over 100 yards from openings in pole-size timber stands (trees between 5 and 9 inches in diameter) with dense undergrowth. Clutch sizes ranged from 9.4 eggs per nest on oak-hickory forests to 10.7 eggs in mixed northern hardwood forests.

A hunting experiment on seven



DNR Photo



DNR Photo

Ruffed grouse are known for their drumming behavior which is displayed when trying to attract a mate and establish a territory (left). Biologists use antennas to track “radioed” grouse.

sites over the six-year study was conducted. Hunting was closed on three sites during the last three years of the study. These sites had the highest hunting mortality rates during the first three years of the project. The other four sites served as control sites where hunting occurred throughout the study. Survival generally increased during the last three years of the experiment on both the non-hunted and hunted sites. However, we did not find evidence that the increase in survival rate was higher in the non-hunted areas than in the sites where hunting continued. We concluded that hunting mortality on these sites was compensatory. In other words, hunting just

replaced mortality from other factors such as weather and disease and did not add to the number of grouse which died during the year.

Another factor which we must consider when making inferences from the study is that hunting averaged only 12 percent of all mortality across sites in all states and years, ranging from 0 percent to 35 percent. We cannot conclude or infer that hunting would be compensatory at higher harvest rates, say if hunting killed 50 percent of the population.

Hunting success rates on West Virginia study sites averaged only about 5 percent of the population. Even this low harvest rate was deemed artificially high due to increased hunting pressure on these sites. Publicity on the research project, along with the reward for the return of radio transmitters, probably increased hunter effort and suggests our harvest rates were inflated. Birds dispersing from study areas had low harvest rates (2 percent) and probably reflect normal hunting effort and kill rates. The Wildlife Resources Section is using this information to better manage the grouse population.

Bill Igo is a wildlife biologist stationed in White Sulphur Springs.

Management Suggestions:

- Maintain current harvest levels and seasons since populations aren't limited by current hunting levels.

- Grouse population increases are linked to habitat management. In areas forested with a mix of northern hardwood trees and shrubs, “traditional” early successional grouse management will likely be successful. This should emphasize using timber harvest techniques that will provide a diversity of young-aged tree stands interspersed among mature forests.

- In oak-hickory sites, forest management plans should provide for both the food (acorns) and cover (early successional habitat) needs of grouse in close proximity. This can be done through a mix of clearcuts and various selective timber cuts to provide both acorns from mature oak trees and cover from young tree stands.

- Roads can be managed by gating. Planting fleshy shrubs and flowers is recommended to supplement existing natural foods.



DNR Photo

Radio transmitters were carefully placed on grouse for the study.