We thank our partners in wildlife conservation, hunters and shooters, the U.S. Fish and Wildlife Service and private industry.

Excise taxes collected on the purchase of firearms, ammunition and archery equipment are distributed to state agencies like the N.H. Fish and Game Department to conduct research, restore and manage wildlife populations, purchase habitat, conduct hunter education programs and create opportunities for hunting and other wildlife-associated recreation.

You are the key to wildlife restoration success in New Hampshire!
Dear Small Game Hunting Enthusiast:

Thank you for your participation in our 2013-2014 Small Game Hunter Survey. This year 237 survey participants submitted survey cards and this report summarizes your survey data, and data sent to us by other avid New Hampshire small game hunters. Hopefully, you enjoy these annual reports and they will prompt you to continue to participate in our survey for many years to come. **The information that you provide us through your participation in our survey provides us with valuable abundance and distribution data on small game species. We urge you to participate again this coming small game season.**

This was the sixth year that the Small Game Summary Report has focused on New Hampshire’s two most sought after small game species, those being the ruffed grouse and the woodcock. Of the surveys we received for the 2013-2014 Small Game season, 66% of the hunter-hours resulted from ruffed grouse hunting while 21% resulted from woodcock hunting. While all the data provided from your surveys is highly valued and still used by the small game project, we feel it is best to focus on our premier species in this report.

This survey effort has proven to be an efficient means of achieving a good understanding of the distribution, abundance and trends of our small game populations. YOUR participation is key to the success of our small game survey. With a better understanding of small game populations, we hope to achieve improved management and to provide enhanced opportunities for public enjoyment of New Hampshire’s small game species.

Signing up to become a small game survey participant is easy. Simply call the New Hampshire Fish and Game Department Wildlife Division at (603) 271-2461 or e-mail your name and mailing address to wildlife@wildlife.nh.gov. Be sure to mention your interest in the small game survey. You can also download a survey from wildnh.com our NH Fish and Game website. **Please pass the word on by encouraging your friends to do the same.**

Sturm Ruger has once again donated a firearm to be raffled off at the conclusion of our 2014-2015 seasons!

For those small game hunters who participated in our 2013-2014 survey efforts, you have our sincere thanks and deepest appreciation. We congratulate the winner of this year’s Ruger quality firearm and wish the winner years of safe hunting enjoyment. Without survey participants and the dedicated Fish and Game staff who conduct grouse and woodcock surveys each spring, we would have little to report on.

We want your feedback. If you have comments to share or ideas to offer, or if you would like to learn about our annual grouse wing and tail collection efforts, please feel free to contact me directly at (603) 744-5470. I look forward to hearing from you!

We wish you a safe and enjoyable hunting season in our beautiful state.

Sincerely,

Karen A. Bordeau
Small Game Project Leader
New Hampshire
Small Game
Management
Regions
GENERAL SURVEY INFORMATION

Fig 1. New Hampshire small game hunter effort (2013-2014).

Small game hunters who return their annual surveys provide information on small game hunting effort, hunter observation rates and species distribution. A total of 237 hunters responded to our 2013-2014 survey, which spans the period 09/1/13-3/31/14. Sturm Ruger Company’s generous donation of a firearm as an incentive for survey participation has helped increase survey participation rates. A total of 6090 hunter-hours were reported on the 2013 small game survey. The graph below depicts the distribution of hunter effort over New Hampshire’s 2013-2014 small game season. Seventy-seven percent of hunting occurred in October. The squirrel season begins Sept. 1st, thus the data for the month of September. During the remainder of the season, weekend hunting accounts for the majority of small game hunting in New Hampshire.

Fig 2. New Hampshire small game hunter effort per species and region (2013-2014).

Ruffed grouse were the most sought after small game species in NH accounting for 66% of hunter-hours, while woodcock accounted for 21% of hunter effort. Other species of interest included snowshoe hare and gray squirrel.
RUFFED GROUSE
Bonasa umbellus

A characteristic species of young forests.

The ruffed grouse (Bonasa umbellus) is a bird of northern woodlands. In North America they can be found in 38 states and 10 Canadian provinces. Ruffed grouse occupy a similar niche wherever they are found, even though their habitat varies considerably in the different portions of their range. A plant that is the major part of the grouse’s diet in Minnesota, might be nearly absent in New Hampshire, nevertheless, the habitat remains similar in term of the structure - what size are the plants and how dense are they? The one constant is dense woody cover.

Ruffed grouse find their habitat needs in brushy mix-aged forests. The farther grouse have to travel to find food, the more likely that grouse will become prey. Their habitat varies according to the birds’ age and what time of year it is. There are in fact four basic cover types that will satisfy their needs – drumming log cover, nesting cover, brood cover, and fall and winter cover. Ruffed grouse can adapt to a variety of different forest types, but aspen is the prime “partridge” cover. Where aspen is not prevalent, young, second-growth forests are utilized by ruffed grouse. There are several factors that influence the bird’s distribution, its abundance and the cyclical high and lows in the population. Factors including food availability, cover, weather and predation all play a role in grouse survival. The ruffed grouse’s 10-year cycle has been well documented and there is little wildlife managers can do to influence it in any way. So our real job is to manage the habitat. In New Hampshire, young forests are what ruffed grouse prefer – they require a wide variety of habitats. The birds are often tied to a particular niche by preferred food items, especially in fall and winter. This is where the art of wildlife management comes into play.

Ruffed grouse are the most sought after species of small game in New Hampshire. The majority of ruffed grouse hunting effort during 2013 occurred in northern New Hampshire (Fig 2). Observation rates are expressed in terms of grouse (or woodcock) seen per 100 hunter hours. This method is viewed as a reliable index to species abundance and allows us to compare species within and between years. Fig 3 shows the variability in grouse numbers from year to year and region to region.

Fig 3. New Hampshire grouse observation rates by region for dog hunters (2009-2013).
RESULTS FROM NH GROUSE SURVEY ROUTES CONDUCTED DURING SPRING 2014

Wildlife biologists and volunteers perform grouse drumming surveys from mid-April through mid-May to assess regional grouse breeding populations. This survey effort began in 1999 and continues today. Ruffed grouse populations are surveyed by counting the number of male ruffed grouse drumming events heard per stop on established routes throughout the state. The following two graphs depict the results from these surveys.

**Fig 4.** Results from randomly stratified grouse drumming routes run in New Hampshire during the last 5-years (2010-2014).

The number of drumming events heard per stop in 2014 remained the same in the North region and increased in the White Mountains, and Southwest regions. There was a decline in the Central and Southeast regions. The spring of 2014 started off nicely in the lower two-thirds of the State, the northern region was a bit slower. Surveys that were conducted towards the end of the survey period may have been after drumming had slowed. Weather during the hatch and brooding time has a significant impact on nesting success and chick survival. The spring of 2014 appeared excellent for breeding birds until we had a heavy rain event (2-5 inches) in late June when chicks were downy and on the ground. This might cause some chick mortality. Early reports indicate that we should have average production.

**Fig 5.** Results from select ruffed grouse drumming routes run in New Hampshire’s North Country (2005-2014) depicting the number of grouse drumming events heard per stop per year.

For the past 10 years, we have run 6-8 select drumming survey routes in the North Country. These routes track changes in grouse abundance on our premier grouse range. In 2014 the survey results show an average of 0.84 drumming events per stop this is a decrease from the reported 1.03 drumming events per stop in 2013. The North Country continues to have the most abundant grouse habitat in the state.
New Hampshire Fish and Game is working hard to increase our knowledge of ruffed grouse. A pilot study was started in 2005 in the town of Pittsburg to collect additional data on this popular game bird. Hunters were asked to submit wings and tails from their harvested birds and to fill out a short survey for each harvested bird. The samples provide us with age and sex composition, distribution data and a juvenile to adult female ratio. In 2013, the sample size was 234 and the data we are gathering is increasingly important by providing age and sex data over a multiple-year period.

**Again in 2014,** we will be asking ruffed grouse hunters **THROUGHOUT NEW HAMPSHIRE** to help us with our survey efforts. As the hunting season approaches watch our website **wildnh.com** for details on where to pick up and drop off your completed survey packets!

Here are some of the highlights of last year’s survey:

- 218 samples taken in October, 16 from November
- 146 hunters hunted with a dog, 84 hunted without a dog
- 164 adult grouse were harvested (63 females, 101 males)
- 70 juvenile birds were harvested
- Juvenile to adult female ratio was 1.1
- 176 hunters reside in NH, 58 were from out of state
- 234 hunters reported grouse flushes (761 hours hunted, 1325 flushed grouse) 1.74 grouse flushed per hour hunted.
- Crop content reported was mostly, greens, berries, catkins, mushroom, and raspberry leaves.

The following table provides a synopsis of the Wing and Tail Survey. It is important to remember that the flushing rates can be skewed because not all hunters report flushing rates on their survey cards, so the total number of samples will not necessarily coincide with the rate of flushes.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sample Size</th>
<th>Juvenile/Adult Female Ratio</th>
<th>Grouse Flush Rate/Per hour</th>
<th>Woodcock Flush Rate/Per hour</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>54</td>
<td>0.58</td>
<td>Not Recorded</td>
<td>Not Recorded</td>
<td>Pilot study</td>
</tr>
<tr>
<td>2006</td>
<td>112</td>
<td>0.78</td>
<td>Not Recorded</td>
<td>Not Recorded</td>
<td>Expanded study</td>
</tr>
<tr>
<td>2007</td>
<td>108</td>
<td>1.90</td>
<td>1.36</td>
<td>1.90</td>
<td>Expanded study</td>
</tr>
<tr>
<td>2008</td>
<td>162</td>
<td>1.71</td>
<td>1.50</td>
<td>1.62</td>
<td>Expanded study</td>
</tr>
<tr>
<td>2009</td>
<td>194</td>
<td>1.72</td>
<td>2.00</td>
<td>1.78</td>
<td>Statewide</td>
</tr>
<tr>
<td>2010</td>
<td>168</td>
<td>1.81</td>
<td>1.50</td>
<td>1.20</td>
<td>Statewide</td>
</tr>
<tr>
<td>2011</td>
<td>157</td>
<td>1.67</td>
<td>1.80</td>
<td>Inadequate sample size</td>
<td>Statewide</td>
</tr>
<tr>
<td>2012</td>
<td>242</td>
<td>1.90</td>
<td>2.00</td>
<td>1.00 (Small sample size)</td>
<td>Statewide</td>
</tr>
<tr>
<td>2013</td>
<td>234</td>
<td>1.10</td>
<td>1.74</td>
<td>0.40</td>
<td>Statewide</td>
</tr>
</tbody>
</table>

Watch our website as the 2014 season approaches at **wildnh.com** for more information on where you can pick up sample packets throughout the state. You can also call Karen Bordeau at (603) 744-5470 for more details.

**As an incentive for hunters to participate in this wing/tail study,** The Ruffed Grouse Society has generously donated a quality upland game bird gun to be given to a randomly selected participant. The drawing will take place after the 2014 survey results are summarized.
Woodcock (Scolopax minor) are an early successional species that use different habitats depending on activity, time of day, and season. Dense, shrub-dominated forests with moist soils are ideal habitats. Moist soils ensure that earthworms, which comprise nearly 80% of woodcock diets, are near the soil surface and are available to foraging birds. Tree species can vary from aspen, poplar, alder, dogwood and hawthorn to name a few. It is more the density of those trees than the specific type that provides what the woodcock needs.

In spring, males need openings (“singing grounds”) to perform courtship displays and attract females. Available nesting and rearing habitat determine the location of singing grounds within specific vegetative types. Migrating and breeding woodcock favor areas of young aspen, birch, or alders and may also use overgrown fields, burned or recently logged areas, and wetlands. Nests and broods can be found in mixed-age forests, although young hardwood stands (especially aspen) are preferred.

RESULTS FROM WOODCOCK SURVEY ROUTES CONDUCTED DURING SPRING 2014

Fig 6. Regional results from randomly stratified woodcock singing ground surveys run in New Hampshire during 2010-2014.

Singing ground survey routes provide an index to the overall abundance of resident singing males, which is used to make inferences about the breeding population. The number of woodcock heard per stop increased this year in the North, White Mountains, Central and Southwest regions of the state. One survey route was reclassified as a White Mountain rather than Central region route and figure 6 reflects the changes to the number of woodcock heard per stop. The Southeast region had a decrease in the number of woodcock heard per survey stop. During the nesting and rearing period, weather is the key to chick survival. N.H. Fish and Game is working with public and private landowners to increase small game habitat as a means to safeguard the future well-being of this species.


CONCLUSION

This small game summary helps bring awareness to New Hampshire’s small game species. With your help by reporting what you see afield, we are obtaining a better understanding on these valuable resources. The most critical need right now is for more young forest habitat and New Hampshire Fish and Game is working hard on our lands, and those of our partners, to create those young forests on the landscape.

New Hampshire’s small game species are a valuable resource to the citizens of this state and to those that visit here. This report, compiled by the Fish and Game Department, is the most efficient means of achieving a good understanding of the distribution, abundance and trends of our small game populations. With greater understanding of these populations, we hope to achieve improved management and to provide enhanced opportunities for public enjoyment of small game species.

YOUR participation in our efforts is key to the success of our small game surveys. Without participation from hunters in the field, our project’s success would not be possible. The more surveys we get back, the more meaningful our data will be, so please take the time to participate in our small game survey.

You can sign up to participate in the 2014-15 survey by contacting us at N.H. Fish and Game Department, Wildlife Division Small Game Project, 11 Hazen Drive, Concord, NH 03301, or e-mail your name, address and small game interest to wildlife@wildlife.nh.gov, or call us at (603) 271-2461. We will send you a survey card in September. And remember, we will be giving away a gun from Sturm Ruger to a randomly selected participant in the small game survey. In addition, The Ruffed Grouse Society has generously donated a quality firearm to be awarded to a randomly selected participant in the grouse wing and tail survey.

Our thanks go out to Sturm Ruger and The Ruffed Grouse Society for their generosity in supporting our small game program. We also thank you for your continued participation in our survey efforts and for your interest in our small game project and in our state’s invaluable wildlife resources.
NEW HAMPSHIRE FISH AND GAME DEPARTMENT’S MISSION:

As the guardian of the state’s fish, wildlife and marine resources, the N.H. Fish and Game Department works in partnership with the public to:

- conserve, manage and protect those resources and their habitats;
- inform and educate the public about those resources; and
- provide the public with opportunities to use and appreciate those resources.