VIRGINIA'S NUMBER ONE DEER PROBLEM

THE SELF-HUNTING DOG
THE SURVIVAL OF RESTOCKED DEER

IN

VIRGINIA

By

Donald J. Woolley

Major Thesis Submitted to the Faculty
of
THE VIRGINIA POLYTECHNIC INSTITUTE
DEPARTMENT OF BIOLOGY

For the Degree of
MASTER OF SCIENCE

in

WILDLIFE CONSERVATION

Approved

Dean of School

Approved

Dean of Agriculture

Approved

Head, Department of Biology

Approved

Supervisor
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>2</td>
</tr>
<tr>
<td>Former Distribution and Abundance</td>
<td>3</td>
</tr>
<tr>
<td>Method of Hunting</td>
<td>4</td>
</tr>
<tr>
<td>Food Supply</td>
<td>8</td>
</tr>
<tr>
<td>Number of Deer Present in a Given Area</td>
<td>9</td>
</tr>
<tr>
<td>Number of Deer Per Acre</td>
<td>13</td>
</tr>
<tr>
<td>THE INVESTIGATION</td>
<td>15</td>
</tr>
<tr>
<td>Augusta County</td>
<td>15</td>
</tr>
<tr>
<td>Stuarts Draft Release</td>
<td></td>
</tr>
<tr>
<td>St. Mary's River Release</td>
<td></td>
</tr>
<tr>
<td>Augusta County</td>
<td>22</td>
</tr>
<tr>
<td>Fridley Cove Release</td>
<td></td>
</tr>
<tr>
<td>Kellison Flat Release</td>
<td></td>
</tr>
<tr>
<td>North River Release</td>
<td></td>
</tr>
<tr>
<td>Little River Release</td>
<td></td>
</tr>
<tr>
<td>Bland County - Tazewell County</td>
<td>31</td>
</tr>
<tr>
<td>Poor Malley Release</td>
<td></td>
</tr>
<tr>
<td>Round Mountain Release</td>
<td></td>
</tr>
<tr>
<td>Botetourt County</td>
<td>40</td>
</tr>
<tr>
<td>North Creek Release</td>
<td></td>
</tr>
<tr>
<td>Grey Ledge Release</td>
<td></td>
</tr>
<tr>
<td>Pen Branch Release</td>
<td></td>
</tr>
<tr>
<td>Patterson Creek Release</td>
<td></td>
</tr>
<tr>
<td>County</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Buchanan County</td>
<td>51</td>
</tr>
<tr>
<td>Looney Creek Release</td>
<td></td>
</tr>
<tr>
<td>Carroll County</td>
<td>56</td>
</tr>
<tr>
<td>Winesetts Store Release</td>
<td></td>
</tr>
<tr>
<td>Craig County</td>
<td>62</td>
</tr>
<tr>
<td>Barbours Creek Release</td>
<td></td>
</tr>
<tr>
<td>The Cove Release</td>
<td></td>
</tr>
<tr>
<td>Giles County</td>
<td>70</td>
</tr>
<tr>
<td>Mountain Lake Release</td>
<td></td>
</tr>
<tr>
<td>Giles County</td>
<td>78</td>
</tr>
<tr>
<td>Eggleston Release</td>
<td></td>
</tr>
<tr>
<td>Grayson County</td>
<td>83</td>
</tr>
<tr>
<td>Spring Valley Release</td>
<td></td>
</tr>
<tr>
<td>Montgomery County</td>
<td>91</td>
</tr>
<tr>
<td>Poor Mountain Release</td>
<td></td>
</tr>
<tr>
<td>Page County</td>
<td>97</td>
</tr>
<tr>
<td>Pitt Springs Release</td>
<td></td>
</tr>
<tr>
<td>Fridley Gap Release</td>
<td></td>
</tr>
<tr>
<td>Pulaski County</td>
<td>103</td>
</tr>
<tr>
<td>Max Creek Release</td>
<td></td>
</tr>
<tr>
<td>Roanoke County</td>
<td>109</td>
</tr>
<tr>
<td>Fort Lewis Mountain Release</td>
<td>119</td>
</tr>
<tr>
<td>Rockingham County</td>
<td></td>
</tr>
<tr>
<td>Big Run Release</td>
<td></td>
</tr>
<tr>
<td>Rockingham County</td>
<td>124</td>
</tr>
<tr>
<td>Rawley Springs Release</td>
<td></td>
</tr>
</tbody>
</table>
Slate Lick Release.................................................. 131
Cow Knob Release................................................. 131
Russell County..................................................... 160
Elk Garden Release................................................. 160
Hayters Gap Release............................................... 160
Scott County - Wise County...................................... 160
Stock Creek Release................................................ 160
High Knob Release.................................................. 160
Shenandoah County............................................... 137
Edinburg Gap Release............................................. 137
Buck Run Release................................................... 137
Smyth County....................................................... 143
Hurricane Branch Release....................................... 143
Tazewell County - Bland County................................. 31
Poor Valley Release............................................... 31
Round Mountain Release........................................ 31
Washington County............................................... 149
Alum Wells Release............................................... 149
Holston Release.................................................... 149
Washington County............................................... 154
Straight Branch Release.......................................... 154
Wise County - Scott County..................................... 160
Stock Creek Release............................................... 160
High Knob Release.................................................. 160
CONCLUSIONS....................................................... 169
FIGURES AND MAPS

Figure 1, Breeding Potential Graph............. 12
Figure 2, Survival of Restocked Deer (1926-July 1939) (Folder following thesis)
INTRODUCTION

This investigation was undertaken to determine the survival of restocked deer in Virginia over a period from 1926 to July 1939, and the factors which have hindered or favored an increase of the various releases. The releases in 20 counties were investigated. These investigations are recorded in reports by counties arranged alphabetically. In some instances the areas in which deer were restocked and are now found include parts of adjoining counties, in which case a joint report was filed for such areas.

The records of the various stockings were checked in the office before entering the field. The investigations were of the extensive type with from one to four days being spent in the areas restocked. Much of the information was gathered from persons contacted in the areas in which the deer were released and are now found. Naturally some of those contacted gave false impressions as to the abundance or absence of deer from the various sections. In most instances the reasons for such misinformation were apparent and consequently discounted in the writing of the reports. The reports are believed on the whole to be fairly accurate, although in cases of doubtful information a conservative viewpoint was taken.

It is hoped that the information contained in these reports may serve as a guide in planning future restocking, and indicate the approximate dates that the deer herd may be large enough to permit an open season.
Acknowledgements

Appreciation is expressed to , Leader of the , for assisting with and guiding the work undertaken; to A. B. Massey, Associate Professor of Botany, Virginia Polytechnic Institute, for checking the section on food supply and making corrections on the entire thesis; to Francis J. Maher, Instructor in applied mechanics, for assistance in figuring and checking the calculations on the breeding potential graph; and to

for many helpful suggestions and corrections on the entire thesis.

Acknowledgement is also made to

and to on the several districts visited, for their cooperation and information supplied concerning all phases of the releases covered in these reports.
Former Distribution and Abundance

Deer were at one time plentiful in all the mountainous sections of western Virginia, but they were exterminated in nearly all of the counties from 30 to 50 years ago. In only one county investigated, Craig, are any native deer found today. A number of factors are responsible for this condition, and will be discussed in the following paragraphs.

The topography of the mountainous sections is such that deer, when hard pressed by their enemies, can find no haven in which their enemies cannot or will not follow them. It is believed that one of the main reasons why deer are still found in considerable numbers in eastern Virginia is the presence of numerous swamps which afford them protection, and which are entirely lacking in the western counties, where deer were long ago exterminated.

Hunting methods are next in importance as the reason deer were exterminated over a large part of their former range. The Commission of Game and Inland Fisheries was established in 1916 at which time the first Game Wardens were appointed throughout the state. Prior to 1916 the game laws were either non-existent, inadequate or seldom enforced - the enforcement being in the hands of the local law enforcement officers in the counties. In only one instance was a person fined for shooting out of season, many persons reporting no enforcement whatever in regard to seasons or bag
limits prior to 1916. At this time the power to regulate the seasons and fix bag limits was exercised by the General Assembly, and was not delegated to the Commission until 1928.

**Methods of Hunting**

One of the most common methods of hunting, which is still prevalent in eastern Virginia today, was the hunting of deer with hounds. The deer hunts usually took place in the fall, and were looked forward to by many of the hunters as the most important event of the year. It must have been quite a colorful sight to view the deer camps of those days with the hunters gathered from miles around with their prize deer hounds and their muzzle loading shotguns and rifles to take part in the hunts. The hunters were placed at low points in the ridges which deer were apt to use in crossing from one mountain to the other, or other favorite crossing points where deer might pass. Men would then enter the woods with hounds and start the deer. The deer when chased by hounds would attempt to leave the section by their favorite routes on which the hunters had taken stands.

Another common practice in those days was to shoot deer in the vicinity of salt licks. Either at natural salt licks or artificial licks established for deer and cattle, the hunters would build a seat or platform in a nearby tree and shoot the deer as they came to the salt lick. Frequently the cattlemen in the mountains carried guns and shot deer whenever
ALL LEGAL

The last deer known to have been killed on Johns Creek, Craig County, Virginia, in the early '20's. At that time all of these deer - two does, two fawns, and a buck - were legal deer. Today only the buck would be legal game.
the opportunity offered.

Dogs were allowed to roam at will, as in many counties today, and chased deer the year round. In several sections deer were shot while swimming streams trying to escape the pursuing dogs. At times when the deer were in the water, men overtook them in boats and clubbed them to death with the poles used to push the boats.

George Eakles of Newport in Giles County claims that one time about 50 years ago he drowned a big buck in Sinking Creek with his bare hands. The buck had been run out of the Mountain Lake area by dogs. This story may or may not be true but it would be quite possible if the animal were nearly exhausted from being chased by dogs.

Another unusual instance of the manner in which deer were killed comes from Augusta County. This story which was related by Game Warden Clemmer Miller is believed to be true inasmuch as he was on a nearby deer stand at the time it occurred. The deer was killed in 1912 and was one of the last, if not the last killed in Augusta County. The hounds had started the deer, a rather small one, probably a fawn of that year, and had chased it into the farmyard of Mr. Altizer. Mrs. Altizer, who was reported as being quite a large woman, ran into the yard, seized the deer, and yelled for one of the children to bring her a butcher knife with which she cut the deer's throat. The following day she presented her husband with a bouncing child.
From Bland County comes another instance of the part played by the white-tailed deer in the lives of the natives. One day during a court session at Bland a report was received that the hounds had started a deer in the nearby mountains. Court was promptly adjourned by the judge so that all including the judge might take part in the hunt. Court was resumed the following day.

That deer were hunted commercially in this section is brought out by the following instance: Ike Graham, who lives near Deerfield in Augusta County, told Game Warden Clemmer Miller that if it hadn't been for the money received for the sale of venison during one cold winter in the '30's that he surely would have starved to death. In the deep snow it was possible for him to kill large numbers of deer. Graham made arrangement with a cattle dealer that made regular trips to Pennsylvania to haul his deer out of the state, where they sold for good prices in the Pennsylvania markets. Graham is reported to have killed well over a thousand deer during his life.

From the above and countless other stories heard during this investigation, it can be seen that the deer led a hard life. Prior to 1924, at which time the buck law was passed, bucks, does and fawns could be legally killed during the hunting seasons. The fact that deer were exterminated in many sections is not thought to be the disregard of hunting
laws of which there were practically none, but more the result of the instinct to kill for food or the delight of killing. Persons contacted during this investigation, due to a better understanding of game management principles brought about largely through contact with forest service officials and other conservation agencies, have shown a surprising interest in conservation matters which bids well for game and wildlife in the future.

Food Supply

The wooded sections covered in the course of this investigation contain an abundance of natural foods. The scope of this study did not permit a detailed study of the species browsed by deer, although notes were made whenever the opportunity offered.

Acorns, the principal food of the white-tailed deer during the fall of the year, were noted to have been sought after in an 8-inch snow on Potts Mountain in Giles County in January. Other items noted as browsed by deer were pitch pine, smilax, sassafras, red maple and black gum.

The foods listed below by F. J. Ruff (1938) as being important deer foods on the Pisgah National Forest, Asheville, North Carolina, were determined in the following manner: He rates the foods as to palatability and defines palatability rating of a species of plant in substance as, "The relative rating assigned to it, based upon the percent to which it is
eaten by a species of herbivore under proper use of a forage
type of that species." Nearly all of these plants are based
on winter use and have received a high palatability rating.
They are common in the areas investigated in Virginia and
are reproduced here in the hope that they may serve as an
index for availability of foods in areas selected for future
restocking.

<table>
<thead>
<tr>
<th>Trees</th>
<th>Shrubs &amp; Vines</th>
<th>Ground Plants</th>
<th>Ferns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red maple</td>
<td>Hazel alder</td>
<td>Wild ginger</td>
<td>Christmas fern</td>
</tr>
<tr>
<td>Birch</td>
<td>Flame azalea</td>
<td>Trailing arbutus</td>
<td></td>
</tr>
<tr>
<td>Flowering dog-</td>
<td>Japanese honeysuckle</td>
<td></td>
<td>Galax</td>
</tr>
<tr>
<td>wood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White ash</td>
<td>Pink rhododendron</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White walnut</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tulip poplar</td>
<td>Greenbrier</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black gum</td>
<td>Grape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sourwood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apple</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black locust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sassafras</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basswood</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Number of deer present in a given area**

The number of deer present in any given area were deter-
mined in the following manner: In most of the releases the
numbers of bucks, does and fawns were known, but when this
information was not available a conservative estimate as to
the number of does released was decided upon and applied to
the data so that an estimate could be computed on that basis.

The Virginia white-tailed deer normally breeds when
approximately 18 months old. The rut usually begins around
the first of November and continues through the first week in
December. The gestation period is approximately 200 days with most of the fawns being dropped around the fifteenth of June. The deer breeds only once a year and drops from one to three fawns. Normally the doe drops one fawn when she is two years old and two each succeeding year. Leopold bases the breeding potential for the white-tailed deer on 1:5 fawns per doe per year. In view of the above it is believed that a conservative estimate would be: one fawn per doe per year, and this rate of increase was assumed as the basis for estimates in the accompanying reports.

The accompanying figures and graph were figured on the basis of one fawn per doe per year. The probable rate of increase from a single doe will vary according to which was born first - a buck or a doe. In figuring the increase it was first assumed that a buck was born first and the resulting increase was plotted on curve A. Curve B was drawn in a similar manner on the assumption that a doe was born first. In each case it was assumed that the succeeding generations would alternate, as buck, doe, buck, doe, etc. Curve C represents the average.
The resulting curves are classified as organic growth curves. They were figured for a ten-year period and applied to does of breeding age.

As shown by the graph, an average of approximately 35 fawns is produced by each pair of deer in ten years. This figure is used in determining the number of deer produced by each doe over a ten-year period in the different areas studied in this investigation.

Several factors such as the number of known losses, rating of the area as to deer range, amount of poaching, attitude of the people to having deer in the section, presence or absence of effective dog laws, and other factors applicable to particular sections were considered before a final estimate of the deer now present in the particular section was decided upon.
Number of deer per acre

The number of deer an area can support is determined by the amount of food available during the critical period of the year. This period occurs during the severe winter months when the least amount of food is available. If only the summer months were considered in determining carrying capacities, large numbers of deer could be supported on small areas. In Europe large deer populations are maintained by supplementary feeding during the winter months, but this practice is justifiable only when large game populations are the principal uses of the area concerned.

In this country, large game populations are not justifiable when the expense of supplementary feeding is too high, and when game managers are forced to correlate game management practices with general land use programs. Therefore the number of deer which an area can support is determined by the number that can be supported during the least favorable season.

According to Clepper (1931), Pennsylvania forests are overstocked with one deer per 24 acres of available range, and he suggests that one deer per 40 acres would be conservative stocking.

F. J. Ruff (1938) in figuring the carrying capacities of the Pisgah National Forest, near Asheville, North Carolina, uses a figure of around 65 acres per deer in estimating the
proper carrying capacity of the range.

A carrying capacity of 50 acres per deer was decided upon as the unit for the carrying capacity of the areas covered in this investigation, which is approximately the mean for the forested areas to the north and south of Virginia.

Various factors, such as the types of agriculture practiced in adjacent areas, the proximity of the area to centers of population and other factors pertaining to particular areas were taken into consideration before a final carrying capacity was decided upon for the respective areas.
THE INVESTIGATION
Augusta County
(Big Levels)

The Range

Location and Topography

The range examined was the Big Levels Game Refuge and vicinity in the southeast corner of Augusta County. This area lies on the western slopes of the Blue Ridge Mountains. A series of flat-topped ridges rather than mountains extend generally in a northeast-southwest direction and are the main topographic features of the area. To the north and west of these ridges the terrain slopes gently down to the valley floor. These ridges range in elevation from 3500 feet down to 1500 feet along the creeks that drain the area.

The area is drained by several streams which have formed precipitous, narrow ravines at the points where they have cut through the mountains. These streams drain to the west and north into South River which flows to the north into the Shenandoah River.

The Big Levels Game Refuge of 32,000 acres lies three miles south of Stuarts Draft. It is in the Pedlar Ranger District of the George Washington National Forest, and is maintained as a game refuge by the Forest Service. A Deputy Game Manager is employed to patrol the area and carry on game management practices. A number of scientific studies
are being conducted on the refuge to determine the proper procedure to be practiced in game management on similar areas throughout the country.

**History**

According to Forest Service records, the Big Levels section was a favorite hunting ground of the Indian tribes at the time the white men came to this continent. The tribes gathered in the fall for the hunt, which provided them with meat for the coming winter, the white-tailed deer being the primary food item in the diet, not only for the Indians but for the white settlers who followed in the region for the next generation.

The last deer known to have been killed was shot around 1890 by a party of eight hunters who cornered and killed them in a narrow, snow-covered ravine known as Stoney Gulch.

**Present Condition**

The entire area is wooded with farms and orchards along the north and west border of the refuge. These orchards and farms are adjacent to and sometimes occur as isolated fields within the flatwoods bordering on the refuge.

The tops and slopes of the ridges are mainly covered with bear oak. The lower slopes and flatwoods are covered with a mixture of second growth hardwoods with loose stands of pine scattered throughout the area.

Clearings of various sizes and shapes have been made
throughout the area and planted to various varieties of wildlife foods.

The area is largely owned by the Forest Service with the farms and orchards being in private ownership. No changes in either land uses or ownership are anticipated in the near future.

Normally the section because of the extensive nature of the range and the fact that it is owned by the Forest Service would be rated as excellent deer range. However, the proximity of important farming and orchard sections on the borders of the flatwoods are viewed as an unfavorable factor and the range can only be rated as good deer range.

Restocking

In November 1932 three adult deer, two bucks and a doe were received from the Pisgah National Forest, Asheville, North Carolina.

In the spring of 1933 five adult does were received from the same source. At the same time three deer were received from the State Game Farm, Boulevard, Virginia.

The above deer were held in a corral on Johns Run and released after becoming acclimated. One doe died in the corral and another was killed against the fence by dogs.

All of the following deer were received from the Pisgah National Forest:

In February and March, 1936, thirteen deer—eight adult does, two yearling does and three adult bucks—were received.
Six were released at the Ore Bank, two miles southwest of Sherando and six on the St. Marys River three-quarters of a mile north of Mine Bank Mountain. One buck died when liberated and one doe escaped before it could be tagged. They were tagged as follows:

2 bucks U. S. B. D. 502603-4  1 doe A-726326
4 does U. S. B. D. 502605-8  1 doe A-726322
1 buck U. S. B. D. 502609  1 doe A-726324

During 1937 twenty-five adult deer, twenty-two does and three bucks — were released; twelve at the Ore Bank and thirteen at the Orchard, which is located at the point where Kennedy Creek crosses Coal Road.

On August 22, 1938, fifteen fawns, eight does and seven bucks — were received and held in a corral until November. One of the does died in the pen prior to the release. Nine were released at the Ore Bank and five on the North fork of Back Creek, three miles east of Bald Knob.

All of the above deer were purchased in 1936-1937-1938 and were placed on the refuge by the Forest Service.

On January 21, 1939, eleven adult deer, ten does and one buck — were released on Humpback Mountain, one and one-half miles northwest of the Triangulation station. These deer were purchased from W. B. Cohick, Salladasburg, Pennsylvania. The Waynesboro Sportsman Association furnished the local share of the fund.

A total of 71 deer have been released in this section.
Present Deer Herd

Number of Deer

It is estimated that there are about 300 deer present on the area.

Some deer are found along the St. Marys River in the southern part of the refuge. Deer are also found on the western slopes of Humpback Mountain and along the North fork of Back Creek.

Most of the deer on the area are found in the flatwoods along the northern border of the refuge from Stoney Run east to the Ore Bank. There are probably as many deer to the north of the refuge boundary as within the refuge proper.

Some deer are found throughout the area along the ravines and hollows cut by the streams through the ridges.

The deer herd is increasing satisfactorily.

Mortality

The following known losses have occurred in the area:
A doe died at the Ore Bank in August 1938. The cause of death was not determined.
A buck was killed by dogs in October 1938 at Silver Lake.
A doe was killed by a car at Greenville, on the Stuarts Draft Road in September 1938.
A tame buck from the State Game Farm died in the spring of 1934 near Sherando. The animal had drunk from a barrel
containing spray used in spraying an orchard.

A doe died giving birth to a fawn which also died on May 21, 1938, on Humpback Mountain.

A fawn buck was killed by dogs in February 1939 on Humpback Mountain.

Dogs are the biggest hindrance to the growth of the deer herd in this section, most of the bobcats having been removed through a predator campaign conducted by the Forest Service during the last few years. Constant vigilance on the part of the Forest Service officers is reflected in the comparatively small loss attributed to dogs.

**Problems Presented by Present Herd**

It is estimated that the refuge and the surrounding area can support a herd of about 800 deer as compared with the 300 that are thought to be present at this time.

No evidence of overbrowsing has been noted although in several areas of concentration tracks and horned brush were much in evidence.

Several reports of property damage have been received. In one instance deer were causing considerable damage in a potato field. The erection of an electric fence by the Forest Service proved very effective in correcting this condition. In another case considerable damage was done to young fruit trees in a nursery, around 100 trees having been damaged through hornng activities.
As the herd grows the damage to the surrounding farms and orchards may be expected to increase.

**Conclusions**

The releases in the section under discussion are considered a success.

The herd is scattered throughout the suitable range in the area.

**Recommendations**

It is recommended that trapping be instituted and that the trapped deer be moved to more suitable areas.

It is recommended that no additional deer be stocked in the area.

It is recommended that a series of experiments be set up on this area to determine the most effective means of controlling deer damage to crops and orchards.

It is further recommended that when the deer season opens in the western section of Augusta County that hunting be permitted in the area adjacent to the refuge. This should temporarily help the deer problem in that it will drive the deer back onto the refuge.
The North River, Kel-
lison Flat and Little River
Releases in Western
Augusta County

The Range

Location and Topography

The range examined lies in the western section of Augusta
County. It is composed of three parallel ranges of mountains
which extend in a northeast-southwest direction. Bordering
the Shenandoah Valley proper lies Little North Mountain. This
mountain, which rises in Rockbridge County to the south, is
rather narrow and extends only half way across the county. To
the northwest of Little North Mountain, from southeast to north-
west lie North, Crawford, Lookout and Narrow Back Mountains.
To the northwest of North Mountain lies Shenandoah Mountain
with Walker Mountain, a small mountain, lying between the two
in the southwest corner of the county.

Calf Pasture River drains the southern part of the area
and flows to the southwest. It drains the valley between the
North-Crawford Mountains section and Shenandoah Mountain. The
northern section is drained by North River, which flows to the
southeast, until it leaves the mountains and then turns to the
northeast. It drains the many ravines in Shenandoah Mountain
and the narrow valleys between Shenandoah Mountain and the
Lookout, Narrow Back Mountains.
The area is approximately 32 miles in length by 12 in width and is bounded by mountains on three sides. On the southwest the mountains continue on into Rockbridge and Bath Counties. On the west they are continuous with the mountains found in Highland County. To the northwest the mountains extend on into Rockingham County and Pendleton County, West Virginia.

The North River Game Refuge of 10,900 acres is located in the northern part of the area, three miles southwest of Stokesville, and is maintained by the Forest Service as a Game Refuge. It is in the Deerfield Ranger District of the George Washington National Forest. A Deputy Wildlife Manager is employed on a full-time basis to patrol the area and carry on game management practices.

History

Deer were plentiful in this section until the turn of the century. At one time they were killed and shipped to markets outside of the state. Game Warden Clemmer Miller killed one of the last deer known to have been killed in Augusta County near Buffalo Gap in 1911.

Most of the timber was removed from the county 30 years ago; however, a small amount of virgin conifers and hardwoods are still found in the more inaccessible coves. Fires were frequent in the section, while mountains having burned prior to the establishment of the Deerfield Ranger District in 1913.
Since that time the area has had fire protection and fires have occurred only at infrequent intervals.

**Present Condition**

The entire area other than the valley along Gulf Pasture River and the valley between North Mountain and Little North Mountain is wooded. The woods are mainly second-growth hardwoods with patches of pine occurring on the poorer slopes.

The many coves and hollows formed by North River in the northern section and the extensive flatwoods along the base of the mountains in the southern section form ideal deer coverts.

The few farms in the area are mainly devoted to the grazing of cattle and sheep. Some hay and small grains are also grown on these farms. Practically all of the large commercial apple orchards in the county lie in the Shenandoah Valley to the east of the mountains; only one small orchard occurs adjacent to the mountains at Buffalo Gap. The farms in the area are in private ownership as are a number of private hunting camps and summer cottages scattered throughout the mountains. The number of such camps and cottages will probably grow once the deer season is declared open.

Land ownership and land uses are not expected to change much in the near future.

The section, because of the extensive nature of the range, the absence of orchards and the fact that most of the area is
owned by the Forest Service, is rated as excellent deer range.

**Restocking**

**The North River Release**

On April 9, 1934 two deer, - a buck and a doe - were released on North River, two miles above the Staunton Dam. These deer were held in a corral until they became acclimated and then released. These deer were received from a deer farm in Michigan and were purchased from Kendall Brothers, Guilford, North Carolina, with cooperative funds, for $25.00 a head.

On November 26, 1934, twelve adult deer, - four bucks and eight does - were placed in the corral at the above point and then released. These deer were purchased from the Pisgah National Forest, Asheville, North Carolina, on the cooperative plan for $25.00 a head. Mr. H. B. Sproul of Staunton handled the above releases.

On January 14, 1936 twenty-four adult deer, - six bucks and eighteen does - were received from Westover, Pennsylvania and placed in the corral at North River. One deer was dead on arrival and two were killed against the fence. A total of twenty-one deer were liberated. These deer were purchased on the cooperative plan for $25.00 a head. T. E. Clarke of the Forest Service handled the releases.

On February 8, 1939 twenty-one deer, - seven yearling bucks, ten yearling does and four adult does - were released
in Fridley Cove, three miles southwest of Elliott Knob. These deer were tagged with Michigan Conservation Tag numbers as follows: Bucks: 2787, 2788, 2789, 2796, 2797, 2799, 2812; Adult Does: 2030, 2568, 2787, 2809; Yearling Does: 2785, 2790, 2792, 2794, 2795, 2798, 2804, 2805, 2806, 2811.

The Kellison Flat Release

On February 22, 1939, twenty-four deer, ten yearling bucks, nine yearling does and five adult does were released on Kellison Flat, two and one-half miles north of Elliotts Knob. These deer were tagged with Michigan Conservation Tag numbers as follows: Bucks: 2823, 2825, 2829, 2832, 2839, 2840, 2843, 2844, 2845; Adult Does: 2827, 2831, 2833, 2834, 2846; Yearling Does: 2824, 2826, 2830, 2835, 2836, 2837, 2838, 2841, 2842.

The Little River Release

On February 24, 1939 twenty-one deer, ten yearling bucks, five adult does and six yearling does were released on Little River, three miles northwest of Stokesville. These deer were tagged with Michigan Conservation Tag Numbers as follows: Bucks: 2414, 2133, 2134, 2135, 2136, 2137, 2139, 2142, 2296, 2302; Adult Does: 2408, 2413, 2141, 2143, 2144; Yearling Does: 2409, 2412, 2415, 2416, 2417, 2140.

All of the deer released in February 1939 were received from the Michigan Conservation Department and were purchased
with Federal aid funds. These deer were reported as being in good condition when released by T. E. Clarke of the Forest Service.

A total of 101 deer have been released in Augusta County.

**Present Deer Herd**

**Number of Deer**

It is estimated that there are 400 deer present in the western section of Augusta County. They are seen frequently along the valleys, Game Warden Miller having reported seeing 27 along the road between Camp Todd and Deerfield during an evening in May.

Most of the deer are found on North Mountain, Crawford Mountain and in the North River Section of Shenandoah Mountain.

Some deer are also found on Little North Mountain from Buffalo Gap south, and on Walker Mountain south of Deerfield.

Occasionally deer wander into the farm sections along the eastern border of the area, but eventually return to the mountains.

The present herd is increasing rapidly and should do well in the future.

**Mortality**

The following known losses have occurred to date:
A doe was found dead on October 10, 1939, two miles north of Stokesville. The cause of death was not known.

A deer was shot and skinned in November 1939, six miles west of Stokesville.

A deer was shot and skinned on November 14, 1939, five miles west of Stokesville.

A buck was shot and left in the woods in December 1939, one and one-half miles northwest of Staunton Dam.

A deer was shot and skinned in December 1939, five miles southwest of Staunton Dam.

A buck was killed by dogs in December 1939, three miles west of Staunton Dam.

A doe was killed by dogs in December 1939, three miles northwest of Staunton Dam.

A doe was killed by dogs in January 1939, two miles northwest of Augusta Springs.

A doe was killed by a car in August 1939, two and one-half miles northwest of Buffalo Gap.

A doe was killed by a car on April 18, 1940, three miles southwest of Buffalo Gap.

Most of the losses due to poaching were caused by bear hunters. These men have resented the fact that deer were restocked in an area in which they have hunted bear with dogs for years. The dogs chase the deer instead of the bears, which interferes with their sport and they commit these acts of vandalism as a protest to the restocking of deer in the area.
These losses are not considered large for the number of deer present. With the present dog law, the losses should not become excessive as the patrolling and law enforcement are considered excellent.

Problems Presented by Present Herd

It is estimated that the area could support a herd of 3000 deer as compared with the 400 that are thought to be present.

Reports of deer damage have already been received, the damage being caused in the grain and clover fields on the farms along the valleys. This type of damage will probably increase as the herd grows but should not become excessive due to the limited number of farms in the section.

Conclusions

The deer releases in the western section of Augusta County are considered a success. The deer are well distributed throughout the area.

Recommendations

It is recommended that the area be heavily stocked in 1939-1940 and 1940-1941.

It is recommended that an investigation be made of the area in the spring of 1942, relative to the advisability of
opening the deer season in the fall of that year.

It is recommended that steps be taken to control the limited deer damage that has occurred to date.

It is further recommended that steps be taken to break up the practice of the bear hunters killing deer when jumped by their dogs.
The Poor Valley and Round Mountain Releases in Tazewell and Bland Counties

The Range

Location and Topography

The range examined was Poor Valley, Clinch, Brushy, Garden and Round Mountains and vicinity. This area lies in the southern part of Tazewell, the western part of Bland and the northern part of Smyth Counties. Poor Valley lies between Clinch Mountain on the north and Brushy Mountain on the south. In the northern part of the area lies an oval fertile valley, Burkes Garden, bounded on the south by Garden Mountain, which extends to the north, where it is known as Round Mountain; and on the north by Rich Mountain. The area is drained on the north by Wolf and Hunting Camp Creeks which flow to the northwest. Poor Valley to the south is drained by Laurel Creek and its many tributaries, the largest being Roaring Fork. The southern slopes of Brushy Mountain are drained by Lick Creek. Both Laurel and Lick Creeks flow to the southwest and drain into the South Fork of the Holston River.

The mountains extend in a northeast-southwest direction and range in elevation from around 4000 feet on the higher ridges down to 2000 feet along the Holston River. The area is about 30 miles in length and from four to ten miles in width.
The creeks which drain the area have formed hundreds of coves and hollows on the mountains throughout the area. These coves and hollows are narrow at the headwaters of the various creeks but broaden out at the lower elevations.

History

Local residents in the Poor Valley section report that years ago the section was noted as a deer area, but that the deer were finally exterminated, the last being killed in 1910 near Asberry by John Grevier. The deer in the northern part of the range were also exterminated about that time, Hunting Camp creek deriving its name from the large number of deer camps maintained in the vicinity. It appears that around the turn of the century the area was a good deer section and that hunters came from miles around to enjoy the sport.

Lumbering activities have been carried on throughout the area for the last 25 years and have only been completed within the last ten years on Round Mountain and the headwaters of Laurel Creek. Fires have been frequent, a large one having occurred on the headwaters of Laurel and Hunting Camp Creeks within the last ten years.

Present Condition

The area as a whole may be said to be quite brushy due principally to the fact that the timber has been removed so recently. Poor Valley from Mr. Neal's Farm south is cleared,
as is Burkes Garden and the land along Hunting Camp Creek for a distance of five miles south of Bastian. The headwaters of all the creeks as well as the mountain proper are forested and form ideal deer coverts which are quite extensive. The farms throughout the area are mainly devoted to grazing and general farm practices. There are no large commercial apple orchards in these areas.

The Forest Service owns some land in the area but most of it is owned by local lumber companies. The farming areas in the valleys are naturally owned by individual farmers.

The status of ownership is expected to remain about the same, with the Forest Service acquiring more land as funds become available for purchase.

This section, because of the extensive nature of the range and the interest shown by the natives in adjoining areas, is rated as excellent deer range.

Restocking

The Poor Valley Release

The following deer were released in Poor Valley on the farm of Mr. James Neal, two miles East of Asberry:

On August 30, 1930 Sixteen fawns, - eleven does and five bucks - were shipped from the Pisgah National Forest, Asheville, North Carolina, and held captive in a barn at the above point.

In October, 1930 Five adult deer, - four does and a buck,
were also purchased from the Pisgah National Forest and released at the above point.

The fawns were fed from a bottle for two months after they were received and released along Laurel Creek at the end of that period. The fawns returned frequently to the farm for supplementary feeding throughout the winter of 1930-1931 but never returned in later years, although they were seen in the vicinity frequently. All the above deer were purchased on the cooperative plan for $25.00 a head.

The Round Mountain Release

The following deer were released on Round Mountain, one-half mile west of Bastian.

In December 1931 three deer, two adults and a fawn, were received from the State Game Farm at Boulevard, Virginia and released at the above point.

In March 1931 nineteen adult deer were received from Carisle, Pennsylvania, and released at the above point.

All deer released were purchased on the cooperative plan, those from the State Game Farm costing $25.00 a head and the Pennsylvania deer averaging $32.72 a head.

The sex ratio was never recorded but it is assumed that it was about three does to one buck. E. R. Boyd of Bastian reported that the deer were in good condition when released.

Clyde Patton, in a report on an investigation made of the area in 1937, reports that the deer were badly scattered after
the Round Mountain release and failed to establish themselves. This is not believed to be the case, from evidence brought out by the present investigation. It is believed that most of the deer released on Round Mountain, due to lumbering operations which started shortly after the deer were released, moved to the southwest onto Garden Mountain and into the headwaters of Lick and Laurel Creeks. The lumbering operations started at Bastian and worked southwest along Round Mountain which activity probably drove the deer ahead of the operations into the sections mentioned above.

**Present Deer Herd**

**Number of Deer**

It is estimated that there are at least 350 deer present in the area at this time. The deer released in Poor Valley have done well and too much credit cannot be given Mr. Neal and his neighbors for the manner in which they have protected and taken care of the deer.

Deer are reported to be particularly abundant on the southern slopes of Brushy Mountain from Broad Ford north to Shannon Springs, and on the headwaters of Laurel, Roaring Fork and Lick Creeks. Some deer are found on Clinch Mountain as far south as Little Valley, but become more abundant in the vicinity of Asberry and north of that point.

Some deer are reported on Garden Mountain and on Hunting Camp Creek as far north as the point where the valley widens
into farm sections.

Some deer have crossed Thompsons Valley onto Rich Mountain to the north of Clinch Mountain, but these are believed to be stragglers.

No reports have been received of deer either in the Kimberling Creek section or on Wolf Creek Mountain to the north and east of Bastian.

The deer in this area are increasing and should do well in the future.

**Mortality**

Tazewell County:

The following known losses have occurred to date:

A fawn doe died in October 1930 about the time they were released at Mr. Neal's farm. The cause of death was not known.

A buck was killed by dogs in December 1930 about seven miles southeast of the point of release.

A buck was found dead in 1935 two miles northeast of the point of release. Cause of death was not known.

A deer was killed and skinned on Clinch Mountain in the fall of 1936.

A deer was killed by dogs in Thompsons Valley in 1936.

A deer was killed four miles northeast of the point of release in 1937. The man who committed the act was arrested. Information as to whether or not this man was convicted was not available.
A doe was shot about four miles north of the point of release in 1938, but no evidence as to who killed the animal could be uncovered.

A buck was killed near the point of release in the summer of 1939. It was run by dogs and died after jumping a fence.

Bland County:

One deer was killed by dogs on Wolf Creek, northwest of Bastian, in the summer of 1932.

A deer was killed by a car on the highway to the north of Bastian, in 1934.

A deer was shot on Wolf Creek Mountain in the spring of 1935. No evidence as to who killed the animal was uncovered.

From the above it appears that illegal hunting is the principal source of loss rather than dogs. These losses are not considered excessive inasmuch as no caretaker was employed to look after the deer from the releases.

The attitude of the people as a whole in both these sections was considered excellent, and they were anxiously waiting the day when the herd would become large enough to permit hunting. The lumber companies that have been operating in these areas have even gone so far as to inform their employees that violations of the game laws will subject them to immediate dismissal.

Problems presented by Present Herd

It is estimated that the range could support a herd of 3000
deer as compared with the 350 that are thought to be present at this time. Although some concentrations of deer are found along the headwaters of Laurel and Roaring Fork Creeks, no evidences of overbrowsing have been reported at this time.

Some property damage has been reported by Mr. Neal in Poor Valley. Deer have damaged corn and wheat fields to a certain extent, but the local farmers have not made complaints inasmuch as they are interested in having deer hunting again in the area.

Deer damage may be expected to increase as the herd grows, although the adjacent areas are devoted mainly to grazing and the damage should not be as severe as in other sections of the state.

Conclusions

The releases in Poor Valley have been successful and the increases in the herd have been as great as any covered in these investigations.

The releases on Round Mountain are only considered partially successful, the deer apparently having left the area of release and moving southwest as noted under restocking.

The deer are fairly evenly distributed over their range and will probably spread even more once the hunting season is opened.

Recommendations

It is recommended that no additional deer be stocked in
this section, inasmuch as sufficient stock is considered to be present at this time to properly restock the area.

It is recommended that an effort be made to secure dog laws in Bland and Tazewell Counties.

It is further recommended that an investigation be made of the area in the spring of 1942, relative to the advisability of opening the deer season in the fall of 1942.
The Pen Branch, Grey Ledge,  
Patterson Creek and North Creek  
Releases in  
Botetourt County  

The Range  

Location and Topography  

The range examined was the North Creek section in the  
eastern part, and the Patterson Creek section in the western  
part of Botetourt County. These two sections will be referred  
to separately in this report.  

North Creek:  

The North Creek section lies to the west, north and east  
of the town of Buchanan. The James River in this section flows  
southeast from Eagle Rock and at Buchanan turns and flows north-  
east. The river averages a hundred yards in width through  
this section and is composed of long stretches of deep water  
with shoals occurring at intervals.  

The section to the east of Buchanan and southeast of the  
James River is made up of a number of ridges and small moun-  
tains. They extend generally in a northwest-southeast direc-  
tion and range in elevation from 3000 feet on the higher ridges  
down to 1000 feet along the James River. These ridges are  
drained by three creeks: Jennings Creek, North Creek and  
Sprout's Run. They flow northwest into the James River and  
have formed numerous coves and hollows throughout the section.  
This area is a part of the Blue Ridge Mountains.
To the north of Buchanan lie several mountains and hills which extend almost due north and south. Purgatory Mountain rises about a half mile northwest of Buchanan and extends to the north. Back Creek and May Mountain are extensions of Purgatory Mountain and continue nearly to the Rockbridge County line. To the east of Back Creek Mountain lie a series of hills known as The Knob and Short Hills. Purgatory Creek drains the valley between the hills and the mountains and flows south into the James River. The western slopes of the mountains are drained by short creeks which flow to the west into the James River. The river at this side of the mountains more or less parallel them.

To the west of Purgatory Mountain and on the opposite side of the river lies Timber Ridge. It extends in a northeast-southwest direction and is about six miles long by two miles wide. It rises about 500 feet above the river and contains a number of sink holes and hollows.

The North Creek Wildlife Area of around 12,000 acres lies in the section to the east of Buchanan. It is in the Natural Bridge Ranger District of the Jefferson National Forest. It is maintained as a game refuge by the Jefferson National Forest and a caretaker who lives on the area is employed to carry on game management practices.

Patterson Creek:

This section of the county lies eight miles northwest
of Fincastle and is composed of three mountains and three valleys extending in a northeast-southwest direction. Switzer Mountain, the southern-most of the three, is separated from Price Mountain to the north by Little Patterson Creek which drains the intervening valley and flows north into Patterson Creek. To the north of Price Mountain lies Patterson Mountain, with Patterson Creek draining the valley between and flowing northeast into Craig's Creek. These mountains are rather low, being only 2700 feet high and dropping down to 1000 feet along Patterson Creek. This section, although called mountains, is made up more or less of a series of hills.

The Patterson Creek Wildlife Area lies in this section and is in the New Castle Ranger District of the Jefferson National Forest. This area is maintained as a refuge by the Forest Service but at present no caretaker is employed on it.

**History**

Both areas under discussion have in the past been noted deer areas.

The deer were exterminated in the area to the east of Buchanan about 25 years ago. Forty years ago it was reported that it was no trouble to get deer on a stand known as the Dogwood Stand along North Creek. If a hunter failed to bag his deer from this stand it is said it was because he could not shoot.
Game Warden L. E. Styne reports that there have always been a few deer in the Short Hills to the north of Buchanan. The hunters were never quite able to kill all the deer in this section. This section has had fire protection since the Glenwood Ranger District was established in 1913 as a ranger district of the Natural Bridge National Forest. Later this district became a part of the George Washington Forest and on April 21, 1936, was placed in the Jefferson National Forest.

Patterson Creek has long been famous as a place to hunt deer, the last having been killed only 15 years ago. It is reported that wealthy hunters both from Virginia and from out of the state came to this section to hunt.

Most of the timber was removed from the area between 1900 and 1918. Fires were frequent until the Forest Service established the New Castle Ranger District of the Jefferson National Forest on April 21, 1936. The area has been provided with fire protection since that time.

Present Condition

The section to the east of Buchanan is almost entirely wooded with farms only occurring along the James River. The section along Sprouts Run contains a number of fallow fields and abandoned farms.

To the north of Buchanan, the valley along Purgatory Creek and the river bottom on the west of Purgatory and Back
are in farms, the mountains and hills being in woods.

Timber Ridge and all three mountains with their valleys in the Patterson Creek area are wooded, the few farms in both sections occurring along Craig Creek and the James River.

The wooded areas in Botetourt County are chiefly composed of second-growth hardwoods with some patches of pine occurring on the poorer slopes. Some good stands of white pine and hemlock occur along the coves formed by North Creek.

Timber Ridge is connected with Purgatory Mountain and Short Hills by stretches of continuous woods. Short Hills is in turn connected with the section to the east of Buchanan by another stretch of woods.

The State Planning Board estimated in 1938 that 49% or 173,000 acres of Botetourt County was in forests, parks and wastelands. Most of the farms in the country are devoted to general farming practices. Some commercial apple orchards are found in the southern part of the county near the city of Roanoke.

The United States Forest Service owns the land to the east of Buchanan and in the Patterson Creek area. The lands to the north of Buchanan and Timber Ridge are in private ownership. Land ownership or land uses are not expected to change in the near future.

Botetourt County, because of the large acreage in timber, nature of the terrain, and the fact that a large section of the deer range is owned by the Forest Service, is rated as excellent deer range.
Restocking

Deer have been released at four different points in Buchanan County.

The Pen Branch Release

In October 1936 one adult buck, three yearling bucks, two adult does and two yearling does, a total of eight deer, were released on Pen Branch, three miles northwest of Springwood. These deer were purchased from the Pennsylvania Board of Game Commissioners on the cooperative plan, the adults costing $20.00 and the yearlings $15.00 a head. Transporting and releasing the deer were handled by the Virginia Cooperative Wildlife Research Unit.

On November 29, 1937, one adult doe was released at the above point. This doe was purchased from E. Woodruff, Maidens, Virginia, for $25.00 on the cooperative plan.

In November two adult does were released at Grey Ledge on Purgatory Creek, four miles north of Buchanan. These deer were purchased from the Pisgah National Forest, Asheville, North Carolina. Three does were received in this shipment but one of the does died in the pen on November 6, 1937, and was not recorded as released.

On November 18, 1937, one adult buck was confined at Grey Ledge but died a week after he was received from N. M. Lancaster, Vanceboro, North Carolina.
The Grey Ledge Release

On December 8, 1937, three does, two yearling and one adult were received from E. Woodruff, Maidens, Virginia, and liberated at Grey Ledge. A yearling buck was received in this shipment but had a broken leg and died in the pen, and was not recorded as released.

On July 6, 1938 one adult buck was received from Game Warden Birdsong, Prince George County, Virginia. This was a confiscated deer.

All of the above deer were purchased on the cooperative plan for $25.00 a head. The local share of the funds for the above purchases were furnished by the Buchanan Post of the Botetourt County Game Association. The releases were handled by H. D. Swartz, Buchanan.

The Patterson Creek Release

On November 2, 1937 seven adult deer, - two bucks and five does - were released on Little Patterson Creek, three miles north of New Hope School. They were purchased from the Pisgah National Forest, Asheville, North Carolina for $25.00 a head, on the cooperative plan. The funds for the local share of the purchase were furnished by the Trouteville Post of the Botetourt County Game Association. This release was handled by W. A. Reid, Trouteville.

Within a week after these deer were released they were
reliably reported as having been chased out of the section by
dogs. It is believed that most of them crossed into Timber
Ridge.

The North Creek Release

On February 18, 1939 ten yearling deer, five bucks and
five does were released on North Creek, three miles east of
Arcadia. They were tagged with the following Michigan Tag,
numbers: Bucks: 2813, 2817, 2818, 2821 and 2822; Does: 2814,
2815, 2816, 2819, and 2820.

On March 6, 1939 three does, - one adult and two yearlings -
were released on North Creek. They were tagged with the follow-
ing Michigan Tag numbers: Adult doe: 2430; Yearling Does:
2427 and 2428. An additional yearling doe, Tag No. 2426, was
included in the above shipment but sustained a broken neck in
shipment and was destroyed.

Both releases in February were received from the Michigan
Conservation Department and were purchased with Federal Aid
funds. These releases were handled by District Forest Ranger
L. A. Smith of Natural Bridge.

A total of 35 deer have been released in Botetourt County.

Present Deer Herd.

Number of Deer

It is estimated that there are approximately 80 deer in
Buchanan County at this time.
As noted in the Patterson Creek release, no deer are found in that section. An occasional deer enters the section from Craig County, but does not remain for long.

Deer are found in the Timber Ridge section and in Short Hills to the north of Buchanan.

A herd of about 20 stay in the vicinity of Gray Ledge and are seen frequently crossing into some flatwoods along the James River to the east.

The deer released on North Creek have crossed over Thomas Mountain and are now located along Sprouts Run.

The deer in the sections where they are now found are able to travel from one section to the other by wooded terrain. This condition allows the deer to move from one section to another if any factor makes some section of the range uninhabitable.

It can be seen from the above that the deer released in the vicinity of Buchanan have become well established in this range, due to suitable range and the protection offered by interested persons in the vicinity.

The present herd is increasing and should do well in the future.

Mortality

The following known losses have occurred to date in Buchanan County:

One buck was killed by a car in April 1939 on U. S. High-
way Route 11, six miles northeast of Buchanan.

A doe was killed by a truck in July, 1939, on Route 11, five miles northeast of Buchanan.

A doe was killed by hounds on November 17, 1939, along the James River, three miles north of Springwood.

A doe was killed with buckshot on November 15, 1939, four miles north of Springwood.

A fawn doe was killed by dogs in August 1939, near Comp-ton's Bridge along the river.

The fact that deer were unable to establish themselves in Patterson Creek is undoubtedly due to the fact that a considerable amount of fox and coon hunting goes on in this area. This section is on the far side of the county from the Game Warden and rather inaccessible. The Craig County Warden though much closer to the area is also handicapped because of the inaccessibility of the area. It is believed that people hunt all through this area both on and off the refuge, in and out of season.

Dogs have been quite a problem throughout Botetourt County, but they have been effectively controlled in the vicinity of Grey Ledge. Mrs. Bertha Haminson of Grey Ledge has become much interested in the deer and has furnished much needed protection in that section of the county.

Problems Presented by Present Herd

It is believed that Botetourt County can support a herd
of 3000 deer as compared with the 60 that are thought to be present at this time. No damage by deer to their range by overbrowsing has occurred to date and none is expected until the herd becomes much larger.

No property damage has been reported, but some damage may be expected as the herd grows. Complaints from orchard operators will probably be received from the section near Roanoke, deer problems having already developed in Roanoke County near the Botetourt County line.

Conclusions

The stockings in the vicinity of Buchanan have been successful and the deer have become established in the better sections of the range.

The stockings in the vicinity of Patterson Creek have been a failure due to the lack of protection so necessary to successful restocking, particularly in a section that is heavily hunted with dogs.

Recommendations

It is recommended that deer be restocked in the North Creek section as funds become available.

It is recommended that efforts be made to secure a dog law for Botetourt County.

It is further recommended that no additional deer be placed in the Patterson Creek section until funds become available for the employment of a Deputy Game Management Agent.
Location and Topography

The range examined was the western half of Buchanan County. This section is composed of precipitous ridges and hills which are more or less connected with each other. The area ranges in elevation from 2200 feet on the higher hills down to 1000 feet along the creeks. Several creeks drain the area, the two largest being Levisa Fork at Grundy and Knox Creek some twelve miles to the north; both flow to the northwest into Pike County, Kentucky. These creeks with their many tributaries form hundreds of narrow valleys and ravines among the ridges and hills.

Geologically the area is composed of shale and sandstone formations containing many valuable coal beds.

History

The deer have been absent from Buchanan County since 1900, the last being killed about that time by John Hackney, just north of Grundy. However, deer became scarce about 1875 and were not considered abundant since the time of the Civil War.
Present condition

The area is mostly covered with second-growth hardwoods. The woods are typical West Virginia type, the principal timber species being beech, oak and hemlock. The State Planning Board estimated in 1935 that 41% or 135,000 acres in Buchanan County were in forest, parks and wastelands.

The principal occupation in this section is coal mining with the miners living in small towns and settlements along the creeks in the valleys. Lumbering activities are being carried on in the southern part of the county with much of the timber being used locally for mine timbers. The areas that have been lumbered recently are mostly in brush. Some farming and grazing is carried on in the valleys which on the whole are very narrow with the ridges and hills which rise from them being quite steep.

The county had a population of 16,000 persons in 1930 which were scattered throughout the county. This is considered relatively high population considering the nature of the terrain and the small number of towns in the county. Several large areas of land are owned by different coal companies, the rest being owned by individuals mostly engaged in lumbering and farming. The status of the land ownership is not expected to change in the near future; mining will continue to be the main occupation in the future as at present.
The country because of the nature of the range which is characterized by steep ridges and hills and because of the type of people inhabiting the areas, is only rated as good deer range.

Restocking

The following deer have been released on Looney Creek, three miles north of Grundy:

On December 31, 1938 seven deer, - six adult does and one yearling buck were released.

On February 3, 1939, one yearling doe was released.

On February 17, 1939 two adult bucks were released.

These deer were obtained from E. J. Schwalter, Jackson, Wisconsin for $45.00 a head and purchased on the cooperative plan.

The yearling buck released in December was not a very strong animal and was cared for on a farm at Looney Creek. Game Warden Henry Ratcliff reported that the other deer were in good condition when released, but were rather tame and mingled with the cattle near Looney Creek.

A total of ten deer have been released in Buchanan County.

Present Deer Herd

It is estimated that there are 12 deer present in Buchanan County. These deer have moved from the vicinity of Looney Creek, where they were released, and are now some
three miles to the north on the headwaters of Home Creek.

One isolated buck has been reported at Big Rock, five miles west of Looney Creek.

Four fawns are known to have been born during the summer of 1939 which would indicate that the herd is increasing.

Mortality

The yearling buck died on Looney Creek the latter part of January, 1939. It was in poor physical condition when released.

An adult doe died in March, 1939, on Looney Creek. Its leg was broken in a fence, and it was dead when found.

It was reported that the people on Home Creek have become interested in and are protecting the deer in that locality. No report of dogs running deer have been received to date.

Problems presented by Present Herd

It is estimated that the county can support a herd of 2000 deer as compared with the 120 deer present at this time. No property damage has occurred to date, but some damage can be expected as the herd increases in size. This expected damage should not be too large because of the farming practices carried on in the county.

The fact that deer were apparently exterminated as early as 1875 indicates that protection should play a large part in any restocking program carried on in Buchanan County.
Conclusions

It is believed that these releases will prove successful, but the releases have been so recent that their success or failure cannot be properly judged at this time.

The deer are concentrated in a small area, which is as it should be because of the small number present.

Recommendations

It is recommended that no additional deer be stocked in Buchanan County unless the following steps are taken:

1. A refuge of 8,000 acres be located south of Leemaster, which is located some eight miles south of Grundy.

2. A caretaker be placed on the refuge to patrol it and carry on game management practices.

It is further recommended that efforts be made to secure a dog law in Buchanan County.
The Winesetts Store
Release in
Carroll County
The Range

Location and Topography

The area examined was Winesetts Store and vicinity in the western section of Carroll County. Winesetts Store is located about seven miles to the northwest of Woodlawn and nine miles west of Hillsville. This section is composed of rolling hills and ridges, the elevation not varying more than 500 feet throughout the area. Some five miles to the northwest of Winesetts Store lie two small mountains, Farmers and Poplar Camp, which extend in a northeasterly direction. Poplar Camp Mountain lies to the east of New River and is a continuation of Farmers Mountain. New River separates the two. They are about 12 miles in length but only around one and one-half miles wide. These mountains continue in a northeast and southwest direction but are named differently when separated by certain terrain features. They rise 1000 feet above New River at the highest point, but are only 500 feet above the countryside as a whole.

Crooked Creek drains the area, flowing northwest into New River near Carroll Sulphur Spring.

History

Deer were killed out of the county by 1880 according to
local residents, the last being killed near Poplar Knob which lies four miles to the east of Galax.

The timber was removed in 1917, only logs of more than 12 inches in diameter and larger being cut.

Present Condition

The area is essentially a farming section, with patches of woods occurring along the ridges and ravines. These woods are of second-growth hardwoods with good stands of white pine and hemlock occurring at intervals. They are more representative of northern grouse coverts in their occurrence and are too patchy for the use of white-tailed deer.

The State Planning Board estimated in 1930 that 86% of the county was farmed with general farming practice and grazing being about equally divided. It further estimates that in 1935 only 12% of the land, or 36,000 acres was in forests, parks and wastelands. At least 70% of the area in forests, parks and wastelands is in the southern part of the county and will not be considered in this discussion.

The General Chemical Company of Galax owns some sections of land but the area for the most part is owned by individual farmers. Little change in land ownership or occupations in the area is anticipated within the next few years. From the preceding discussion it can be seen that the county is principally a farming section, not suitable for deer, and is rated as poor deer range.
Restocking

In October, 1937 fifteen adult deer were released in 1200 acres of woods on the property of the General Chemical Company, one mile southwest of Minesetts Store. There were 13 does and two bucks in the release and they were purchased from the Pisgah National Forest, Asheville, North Carolina. They were purchased on the cooperative plan, Carroll County supplying the local share of the fund. The deer cost $25.00 a head with the express amounting to $92.68.

On November 18, 1937 two additional bucks were released at the same place as those above. These deer came from N. M. Lanchaster, Vanceboro, North Carolina and were purchased for $25.00 a head, the Carroll County Sportsmen Club supplying the local contribution to the cooperative fund.

The releases were handled by Game Warden J. N. Reeves, who reported that the deer were in good condition when released.

A total of 17 deer were released in Carroll County.

Present Deer Herd

Number of Deer

At present there are not more than 12 deer scattered throughout the county as a result of the stocking in 1937. Frequent reports were received of deer having stayed in a certain vicinity for a short period, but they had moved on
apparently not finding the section suitable. Several deer were reported as moving to the southern part of the county in the summer of 1938; it is quite probable that they moved on into the Blue Ridge Mountains.

Deer that are known to stay in certain localities are as follows:

A buck stays on a farm near Winesetts store but is something of a nuisance, as he horns the mules and horses on the farm.

Another buck stays on a farm near Syllisby Dam on New River. The farmer feeds this deer along with his cattle.

Three deer stay in a woods about three miles to the west of Hillsville.

A doe was reported in the fall of 1939, two miles north-west of Winesetts Store.

Information gathered throughout the county indicates that the deer have not become established but that they are badly scattered and definitely not on the increase.

**Mortality**

It appears that dogs ran the deer almost from the day on which they were released as most persons who reported seeing deer also commented on the fact that they were pursued by dogs. During the fall of 1937 some fox hunters chased a deer under a garage that was built on a hillside near Winesetts Store. With few exceptions the people thought it wrong for
the dogs to chase the deer but none cared to put a stop to the practice.

Only three losses are known to have occurred and are as follows:

In November 1937 dogs chased a buck off a cliff near Austinville, it being killed in the fall. At about the same time a doe was found dead, it having been run into a fence by dogs, near the point of release. In January 1938 a doe was chased into Crooked Creek by dogs where it died, however, no dog marks were found on the animal.

It is doubtful if the above losses were all that occurred because of the fact that the deer were so badly scattered that all the sections into which they may have gone could not be covered in the course of this investigation.

Problems Presented by Present Herd

The section is not considered deer range, therefore, no estimate of the carrying capacity is considered necessary.

The only property damage reported was that of a buck annoying the horses and mules by horning them from time to time.

No increase is expected as the deer which move into suitable deer sections will become absorbed by other herds.

Conclusions

This release must be listed as a failure and the area is not believed to be suitable deer range. The deer are so
badly scattered over the countryside that no deer problems are anticipated from the restocking.

Recommendations

It is recommended that no more attempts be made at restocking deer in this section of Carroll County.
The Barbour Creek Release
in
Craig County

The Range

Location and Topography

The area covered in this investigation includes the entire county of Craig, inasmuch as deer are found in several sections of the county. The county may be described as composed of a series of mountains running in a northeasterly direction, with several creeks draining the intervening valleys. The creeks and their valleys run generally in the same directions as the mountains. In the southern section of the county, Johns Creek separates Potts Mountain on the northwest from Johns Creek Mountain on the south, and flows into Craig's Creek at New Castle. Barbours Creek separates the northeast extension of Potts Mountain from Bald Mountain, which lies to the southeast of Potts Mountain. Barbours Creek also flows into Craig's Creek about four miles northeast of New Castle.

In the southwest part of the county, Sinking Creek lies between Johns Creek Mountain on the north and Sinking Creek Mountain but flows in a southwesterly direction, draining into New River, a part of the Mississippi drainage system. Sinking Creek Mountain is separated from Brush, North, Broad Run and Lick Mountains by Craig's Creek, the largest stream in the county, and into which drain Johns and Barbours Creeks.
Craigs Creek eventually drains into the James River, a part of the Atlantic Drainage System, some twenty miles to the northeast in Botetourt County. Brush, North, Broad Run and Lick Mountains, which range to the northeast of Craigs Creek, are more or less the same mountain only being separated by small creeks.

The mountains range in elevation from 3500 feet on Potts Mountain to around 1500 feet along Craigs Creek. The terrain is a maze of small creeks which flow into the main streams mentioned above, forming hundreds of small valleys and coves throughout the area.

The Barbours Creek Wildlife Area, of around 20,000 acres, lies in the extreme northwest section of the county, about seven miles northwest of New Castle. It is maintained as a game refuge by the United States Forest Service and is in the New Castle Ranger District of the Jefferson National Forest. A Deputy Wildlife Manager lives on the area and is employed by the Forest Service to carry on game management practices.

History

Native deer were still present in the county in 1936, at which time the season was closed by the Commission of Game and Inland Fisheries for a five-year period. This was the only county west of the Blue Ridge which permitted the hunting of deer with dogs at that time. These native deer were for the
most part on Potts Mountain north of Hanging Rock, in Bald Mountain, and in Little Mountain, lying to the east of Bald Mountain. Two bucks were killed during the two weeks' open hunting season in 1937, one at the point where Barbour's Creek empties into Craig's Creek, and the other on the southwest end of Nutters Mountain along Johns Creek.

The last deer killed in the Johns Creek area were killed in 1925 by a party of twelve hunters. Mr. J. L. Givens, a member of the party, relates that the bag consisted of two does, two fawns and one adult buck. Webb Hoffman, a Craig county resident, is reported to have killed over 100 deer in the Johns Creek area during his lifetime.

Both Lick and Broad Run Mountain have always been noted as good deer areas, some native deer still being present at the time the season was closed in 1937.

Most of the timber was removed from the area between 1900 and 1915. Fires were frequent until the time the forest service established a ranger district at New Castle, at which time the county was given fire protection.

Present Condition

It is estimated by the District Ranger at New Castle that 80% of the county is wooded at this time. The wooded areas are composed of second-growth hardwoods interspersed with patches of pine on the poorer slopes. The soil over much of
the area is shale and sandstone with some limestone in a few
of the valleys. The numerous coves and hollows formed by the
many small streams in the mountains make for ideal deer range.

It has been estimated by the State Planning Board that
there has been a 25% decrease in farming between 1920 and 1930
and that there has been an increased acreage placed in pasture
in the last few years. The practice of placing land in pasture,
provided the area pastured is not too large a percentage of
the total area, is an agricultural practice which is not likely
to cause serious deer problems in the future.

Most of the county lies within the boundaries of the
Jefferson National Forest, and more land will be added in the
future as it becomes available for purchase. Craig County is
sparsely populated, the 1930 census showing a population of
only 3562 persons. The sparse population with so large a per-
centage of the county in forests coupled with the nature of
the terrain rates Craig County as an excellent deer county
and ranks it with the best west of the Blue Ridge. It is con-
sidered the best range included in this study.

Restocking

In September 1938 three deer were released on the Barbour's
Creek Area. An adult doe and an adult buck were purchased from
Mrs. Florence Manning, Purcellville, Loudoun County, Virginia.
The other deer, fawn bucks, were purchased from Ernest Woodruff,
Maidens, Virginia. These deer were purchased by the Commission
and released on Barbour's Creek, at the mouth of Camp Creek.
In February 1939, 20 deer were released on the Barbour Creek Wildlife Area, half at the point where the deer were released in 1938 and half in the Cove, six miles north of New Castle. These were Michigan deer and were composed of eight adult females, five yearling females and seven yearling buck. These deer were tagged with Michigan Conservation Department tags: Bucks: 2115, 2324, 2297, 2316, 2116, 2122 and 2102; does: 2126, 2124, 2125, 2321, 2110, 2114, 2318, 2123, 2120, 2119, 2117, 2290 and 2304.

Present Deer Herd

Number of Deer

It is difficult to estimate the number of deer at this time in Craig County, but after talking with the District Ranger Van Alestine, Game Warden C. Walter Surber, and several local woodsmen who are all familiar with the deer situation, it is believed that the present deer herd numbers between 75 and 100 animals.

Probably half the deer in the county are on the northern end of Potts Mountain in the vicinity of the Cove and the Ponds, in the southwest section of the management area. Some deer are also found on Bald Mountain, a part of which also lies within the management area.

The North ends of Brush, North, Broad Run and Lick Mountains contain most of the rest of the deer not in the section
mentioned above. They are fairly well scattered in the coves and hollows of all these mountains, deer being reported by nearly everyone who has been in this area. It is thought that practically all the deer in this section have come into the area as a result of the Fort Lewis release in 1928. As mentioned in the Roanoke County report, it is believed that some of the last deer killed during the regular hunting season in Craig County may have been some from Roanoke County.

It is estimated that the range could support a herd of 2500 deer without danger of damaging their range. Because of the small population and small area farmed, no deer problems are in prospect in the near future. The county has a bright future as a deer county and all that is needed is restocking and protection of the present herd. The increased law enforcement provided by the appointment of a Deputy Wildlife Manager with that already practiced by the local Game Warden and Forest Service officials should provide the necessary protection for deer in the future.

**Mortality**

Reports of dogs running deer in the county are quite common, but losses have been comparatively small considering the number of reports received. Only one known loss has occurred to date, an adult doe, Michigan tag number 2126, which died on December 9, 1939 on the farm of J. W. Looney, two miles east of New Castle. This deer possessed only three
legs, one being off above the hock and completely healed. Dogs chased this deer into the Creek on November 23 from which it was rescued by Game Warden Surber and Ranger Van Alstine. It was placed in Mr. Foltz's barn but developed diarrhea and died on December 9, 1939.

Three summons have been given during the fall of 1939 for dogs running at large on the Management Area. The owners of the dogs were fined, although one case has been appealed and the results of the appeal are not known. The control of dogs running at large in the county is the main problem confronting the growth of the deer herd. So far efforts to secure a law to keep the dogs from running at large unless accompanied by their owners have failed. This law which is required of all counties to be stocked with deer from Public Aid funds must be passed before additional stockings can be made.

Problems Presented by Present Herd

The range is so understocked at present that any damage by deer to their range from a deer management standpoint is not considered a problem at this time. It is estimated that the herd can stand 20 times the number of deer that are now present without running the danger of being overstocked.

The small area in agriculture with the types of agriculture practiced have not presented any deer problems to date and none of importance are contemplated in the near future by this investigator.
Conclusions

It is felt that Craig County is an excellent deer county and that any steps to increase the herd are justified from a deer management standpoint.

The law enforcement in the county as a whole is good and may be expected to be even better in the near future.

Recommendations

It is recommended that every effort be made to secure the passage of a dog law so that restocking may be continued at an early date. It is believed that this may be accomplished by perseverance and favorable publicity concerning the county as a game section.

It is further recommended that the season remain closed for an indefinite period, pending further restocking and development of the herd, and that when the season is again declared open, the hunting of deer with dogs never be permitted again in the county.
Location and Topography

The range examined was Mountain Lake and vicinity. This section is very mountainous and rugged. The mountains extend in a northeast-southwest direction and continue on into Craig County on the northeast. Then on the southwest they terminate about two miles northeast of New River.

To the east of Mountain Lake lies Salt Pond Mountain with Johns Creek Mountain joining it on its southwest extremity and extending to the northeast. To the west of Mountain Lake lies Doe Mountain, with Fork Mountain some two miles still farther to the west, Butt Mountain terminates the southwest extremity of Fork Mountain and is somewhat in the form of an arrowhead with Fork Mountain acting as the shaft.

These mountains range in elevation from 4300 feet at Bald Knob on Salt Pond Mountain down to 2200 feet along the creeks in the area. Stony Creek drains the northwest slopes of Fork Mountain and flows southwest into New River. Little Stony Creek lies between Fork and Doe Mountains and drains both these mountains, flowing to the southwest into New River. Johns Creek, which lies between Salt Pond and Johns Creek Mountains drains these two mountains and flows to the northwest into
Craigs Creek.

Mountain Lake, the only large body of water in the area, is about three-fourths of a mile long by a quarter of a mile wide, and extends almost due north and south.

The Mountain Lake Demonstration Area of around 2000 acres lies on the headwaters of Little Stony Creek. It is leased by the Virginia Polytechnic Institute and maintained as a State Game Refuge by the Commission of Game and Inland Fisheries. A caretaker lives on the area and is employed to patrol it and carry on game management practices.

**History**

Deer were exterminated comparatively recently in this section. The last deer known to have been killed was shot by Jim Meredith in August 1915 in a section known as the Good Bed, on the headwaters of Little Stony Creek. This section prior to that time was a favorite deer area and hunters assembled from miles around to hunt deer at Mountain Lake in the fall of the year. It was reliably reported that 50 years ago it was no trouble at all to get a deer in a day's hunt in the area under discussion.

Timber operations have been in effect for the past 20 years with timber still being removed at the present time on Fork Mountain.
Present Condition

This section is approximately 90% wooded with most of the timber being of the oak, chestnut, hickory association. Some stands of white pine and hemlock occur throughout the area, with a small amount of spruce in the bogs at the higher elevations. In areas which have been recently logged the area is quite brushy.

The creeks which drain the area with their many feeder streams have formed hundreds of coves and hollows throughout the section.

The section to the south of the mountains that lie between the mountains and New River is cleared and in farms. These farms in this section extend almost to the top of the mountains with the mountainsides being cleared of timber two-thirds of the way to the top.

The following individuals and organizations either own or lease the area under discussion: Mr. John B. Lang, Mountain Lake Hotel Corporation, University of Virginia, Virginia Polytechnic Institute and the United States Forest Service.

This section is quite famous as a resort and a Biological Science study area. No changes in future land uses or ownership are anticipated in the near future.

This area, because of the nature of the terrain, its status as to ownership and extensive nature of the range is rated as excellent deer range.
Re stocking

The following deer have been released at Mountain Lake:

In the spring of 1937 a yearling buck was released at White Pine Lodge, two miles north of Mountain Lake on the property of John B. Lang. This buck was transferred from the Poor Mountain section of Montgomery County because of tameness. This buck was purchased from the Pennsylvania Board of Game Commissioners on the cooperative plan for $15.00.

In June 1939 the above buck and three other deer transferred from the State Game Farm at Boulevard, Virginia, were confined in a corral of four acres on the Mountain Lake Demonstration Area, three miles northwest of Mountain Lake. The State Game Farm deer consisted of one adult doe, one stunted yearling doe and one yearling buck. Of this group of deer the yearling buck was gored and killed by the older buck and the stunted yearling doe disappeared from the corral during the winter of 1938-1939. The adult doe dropped one fawn in May 1939. Both the doe and her fawn were liberated on the Demonstration Area during the fall of 1939.

On February 21, 1939, ten deer, - two adult does, five yearling does and three yearling bucks - were received from the Michigan Conservation Department and released at a point one-half mile south of the University of Virginia Biological Station. They bore the following Michigan tag numbers: Does: 2407, 2132, 2503, 2313, 2300, 2128 and 2127; bucks: 2131, 2130 and 2129.
On February 28, 1939 eight deer, three adult does, two yearling does and three yearling bucks were received from the same source and released at the same point as the other deer received in February. They bore the following Michigan tag numbers: Does: 2418, 2422, 2423, 2424, and 2425; bucks: 2419, 2420 and 2421.

All the deer received from the Michigan Conservation Department were purchased with Federal Aid funds.

**Present Deer Herd**

**Number of Deer**

It is estimated that there are about 25 deer present in the area under consideration at this time.

Deer or deer sign have been reported throughout the area and they have become pretty well established on the Little Stony Creek watershed. Sign of two deer were noted along Johns Creek near the point where Salt Peter Branch flows into Johns Creek.

The herd is increasing and should do well in the future.

**Mortality**

The following known losses have occurred to date:

A doe, Michigan tag number 2423, was killed by dogs on April 2, 1939, in Clover Hollow on the farm of B. L. Givens.

On October 28, 1939, a fawn jumped down a bank into a dry creek bed one and one-half miles north of Hogs Store.
This fawn became confused by the lights of an automobile and jumped down an embankment into a boulder-strewn stream bed. It was reported as being unable to regain its feet after it jumped, evidently suffering a broken bone. Upon returning to the spot several hours later, the deer was not found, however, in the light of the above it is considered a lost deer.

A buck died as a result of internal injuries received after being chased by dogs in Clover Hollow on February 21, 1940. This deer was turned over to a charitable institution and the hide given to the Game Commission by members of the unit staff at Blacksburg.

A deer, Virginia tag number B-137, was found on the bank of New River at Berton, three miles south of Eggleston in March, 1940. The body was badly decomposed when found and was buried on the spot. There were no external marks on the body, however the chest cavity when opened was found to be filled with blood.

On March 31, 1940, an adult doe was found drowned in a water-filled hole about 300 yards north of the University of Virginia Biological Station. It evidently fell in the hole while feeding in a shallow pond and was unable to get out, the hole being quite deep. This doe was not tagged and was apparently the doe released from the corral on the Demonstration Area in the fall of 1939.

On two separate occasions deer were chased off the mountains by dogs into the farming sections to the east and south
of the mountains. Interested farmers caught the deer and they were returned to the Demonstration Area by members of the unit staff at Blacksburg.

Twice during the summer deer were seen to swim Mountain Lake when pursued by dogs and thus make their escape.

From the above it is evident that dogs are the number one predator in the area. The number of deer lost from this cause is about equal to the increase during the past year.

Problems presented by Present Herd

It is estimated that the section could support a herd of 800 deer as compared with the 25 that are now present.

No property damage has been reported to date and very little is expected in the future due to the extensive amount of range available.

Conclusions

The releases in this section are considered a success. The deer are not too widely scattered throughout the area, which is as it should be, due to the small number of deer present.

Recommendations

It is recommended that deer be restocked in this area as soon as funds become available for restocking.

It is recommended that efforts be made to secure dog
laws for Giles and adjacent Craig Counties.

It is further recommended that stronger measures be adopted to control the dogs that are running on closed wildlife areas in the Mountain Lake section.
The section examined was in the vicinity of the town of
Eggleston. The deer were released in a rolling hill country
with some mountains to the south. These mountains are three
in number, parallel each other and are separated by narrow
valleys. Buckeye Mountain lies two miles south of Eggleston
with Walker Mountain beyond it and Cloyds Mountain still
farther to the south. New River flows north through the
mountains at Eggleston and the above mountains continue to the
northeast where they are known as Spruce Run, Gap and Brush
Mountains respectively.

New River in this section averages about 100 yards in
width and is composed of shoals alternating with long stretches
of deep water.

The mountains are quite narrow not averaging more than a
mile in width and range in elevation from 3000 feet down to
1500 feet along New River. The valleys are drained by several
small creeks which parallel the mountains and empty into New
River.

The county line which separates Giles County on the north
from Pulaski and Montgomery Counties on the south follows the
tops of Walker and Gap Mountains. New River acts as the dividing line between Montgomery County on the east and Pulaski County on the west.

History

Deer have been absent from this area for at least 50 years and the only information that could be obtained on deer hunting in the past referred to the Mountain Lake section.

Fires have occurred frequently throughout the wooded sections, one of some intensity having occurred on Gap Mountain in the fall of 1939.

Present Condition

The area is primarily a farming section with the land being cleared up to the foot of the mountains. The valleys between the mountains are cleared and farmed with the exception of the valley between Gap and Brushy Mountains. This area lies to the east of New River and is wooded.

The wooded areas are quite brushy due to the fact that they have burned over frequently. Some lumbering is still being carried on in the section. The timber is mostly second-growth hardwoods with patches of pine on most of the poorer slopes and ridges.

The Forest Service owns some land on Brush Mountain but most of the area is in private ownership. The Forest Service will probably increase its holdings as funds become available
for future purchases.

Because of the nature of the terrain and the fact that the section is mainly devoted to farming, it is rated as poor deer range.

**Restocking**

On August 17, 1933 eight fawns, - six does and two bucks - were purchased from the Pisgah National Forest, Asheville, North Carolina, and confined on the farm of Austin Walker, one mile southwest of Eggleston. They were purchased on the cooperative plan for $25.00 a head, as a project of The Future Farmers of America in charge of J. R. Mansfield, Post Oak.

The fawns were fed milk from a bottle for the next two months and were penned up during the night but allowed the freedom of the countryside during the day. The deer were quite tame and remained in the vicinity of the farm throughout the winter of 1933-1934.

They were tagged with the Pisgah National Forest tags as follows: Bucks: 274 and 292; does: 294, 297, 299, 304, 306 and 311.

**Present Deer Herd**

**Number of Deer**

It is believed that there are about six deer present in the section as a result of the releases listed above.

A buck, doe and fawn were reported on the farm of
Carl Williams in November 1939 about a mile north of Eggles-
ton.

Three deer have been recently reported along Poverty Creek
between Gap and Brush Mountains.

The present herd, if it may be called a herd, is decreas-
ing, although the deer on Poverty Creek may eventually form a
nucleus for a herd in that section.

Mortality

The following known losses have occurred in the area.
All of them have occurred within a mile of the point where the
deer were released.

A doe died in October 1933. The cause of death was not
known.

A doe died in July 1934 from an infected leg, which was
injured in a fence in the spring of that year.

A doe died in the winter of 1934. The cause of death was
not known.

A doe died in the winter of 1937. The cause of death was
not known.

A doe, tag number 297, broke a leg in a fence on December
19, 1939, and was destroyed by Game Warden Wheeler.

Although most of the losses listed above were reported
as "Cause of death not known" it is believed that several
of these were caused by dogs. Mr. Walker reports that dogs
chased the deer frequently and that when they came through
his property he took proper control measures. On several occasions deer were seen to swim New River when pursued by dogs.

**Problems Present by Present Herd**

There are no deer problems presented by the present herd. The only section capable of supporting a deer is the Brush-Gap Mountain area, which area could support a small herd.

**Conclusions**

The releases covered in this report are considered a failure and what few deer are still in the vicinity are badly scattered throughout the area. It is doubtful if any of the deer could have survived if New River had not offered them a means of escape when harassed by dogs.

**Recommendations**

It is recommended that no additional deer be stocked in this section of Giles County.

It is further recommended that efforts be made to secure dog laws in Giles and Montgomery Counties in order that protection may be given the few remaining deer in the area.
The Spring Valley Release
On Iron Mountain
Grayson County

The Range

Location and Topography

The area covered in this investigation includes Iron Mountain and vicinity. The county line which separates Wythe County on the north from Grayson County on the south follows the top of Iron Mountain. Iron Mountain, the main ridge of which runs in an east-westerly direction, has numerous ridges and spurs jutting off the mountain proper, most of these ridges and spurs being on the northern slopes in Wythe County. The area ranges in elevation from 3800 feet at its highest point down to 2500 feet along Cripple Creek into which the creeks which drain the northern slopes flow. Cripple Creek follows generally the contour of the mountain and flows to the east into New River at Austinville, 12 miles southeast of Wytheville.

The area averages about seven miles in width and on the east terminates in a series of ridges and small mountains, including Farmers and Poplar Camp Mountains, which have been described in connection with the Carroll County release. On the west Iron Mountain extends on into Smyth and Washington Counties, which will be covered later in this report.

To the north of Cripple Creek lies Lick Mountain, which is rather small, being only about five miles in length by
three miles in width. It is a series of peaks and ridges which range in elevation from 3600 feet down to 2500 feet along Cripple Creek. The creeks which drain its southern slopes also drain into Cripple Creek, its northern slopes being drained by Reed Creek which also flows east into New River.

To the south of Iron Mountain in Grayson County lie three isolated, unconnected mountains, known as Briar Patch, Point Lookout and Brush respectively. They average three miles in length by one-half miles in width.

The Conners Rock Wildlife Area of around 6000 acres lies in the southwest section of Wythe County on Iron Mountain 15 miles southwest of Wytheville. It is maintained as a game refuge by the United States Forest Service and is in the Holston Ranger District of the Jefferson National Forest.

History

Deer were killed out of this area around sixty years ago, the last being killed by a man named Roberts near the present picnic area at Conners Rock. At that time cattle were grazed on the mountain. The local residents state that deer were fairly easy to kill around the salt licks which were established for the cattle.

The areas adjacent to the mountains are mainly in pasture, the timber having been removed half way up the mountains. The timber was cut about 40 years ago, and frequent fires set by the local residents to provide grass for their stock prevented
natural reforestation. This area was purchased by the Forest Service in the early '20's and placed in the Unaka National Forest. Fire protection has been provided since this time.

**Present Condition**

The area as a whole is composed of second-growth hardwoods with patches of pines on the poorer slopes. Much of the timber is of marketable size and timber sales are made from time to time by the District Forest Ranger. The numerous coves and hollows formed by the creeks which drain the northern slopes form ideal coverts for the deer.

The State Planning Board estimated in 1930 that 88% of Grayson County was in farm lands. More than half of these lands are devoted to grazing, the rest being utilized in general farming practices. In both Grayson and Wythe Counties there are no large commercial orchards adjacent to the deer areas.

The area lies almost entirely within the boundaries of the Jefferson National Forest. The Holston Ranger District, which embraces this section, is the oldest district on the forest and consequently has an older stand of timber than most of the other ranger districts. Timber being removed from time to time through sales produces some sprout growth which can be utilized as deer browse.

Grayson County as a whole, because of the large percentage of land utilized in agricultural practices, is rated as a
poor deer county. The area in which the deer were placed together with the adjacent sections of Wythe County, while not as extensive as might be desired, is nevertheless rated as good deer range. Grazing areas adjacent to deer range are not likely to bring about serious deer problems as are other more intensive forms of agriculture.

Restocking

The following deer releases were made at Spring Valley, two miles north of Briar Patch Mountain on Iron Mountain. This point is within a mile of the Wythe County line at the edge of the wooded area on the southern slopes of Iron Mountain.

On November 16, 1937 four deer, - two adult bucks, a yearling buck and a yearling doe - were released and on April 21, 1938 two adult does were released. These deer were purchased from H. E. Lanchester, Vanceboro, North Carolina for $25.00 a head.

On March 6, 1938 one deer, sex unknown, was received from E. J. Schowalter, Jackson, Wisconsin and released as above. This deer also was purchased for $25.00.

The following deer were purchased from Mr. Schowalter and released:

January 18, 1939 five yearling does were received at Galax and released at Spring Valley. One yearling buck was dead on arrival and not recorded as released.
January 21, 1939 one yearling doe was received and released.
February 19, 1939 one yearling buck was received and released.
March 8, 1939 one yearling buck was received and released.
All deer were purchased on the cooperative plan, the deer purchased from Mr. Schowalter in 1939 costing $45.00 a head.
The Game Commission used Federal Aid funds for their share of the 1939 purchases.
A total of 15 deer were liberated and were reported as being in good condition when released by Game Warden J. M. Reeves.

Present Deer Herd

Number of Deer

It is estimated that there are approximately twenty-five deer in the vicinity of Iron Mountain. Most of these deer have moved into the section of the mountain which lies in Wythe County and have spread east and west along the mountain.

Some few deer have moved off the mountain and have been located in other localities. Three deer stay on Briar Patch Mountain in Grayson County and have been seen frequently during the past few months. Two deer have been reported near the Fish Hatchery at Wytheville. During a fire in the fall of 1939 on Lick Mountain, three deer were seen to leave and cross into Iron Mountain. It is quite possible that these deer and others in the eastern section of the mountain may have come from the releases in Carroll County some 12 miles
to the east.

Two deer were reported by Mr. Reeves along New River near the North Carolina line in Grayson County. These deer are believed to have come into Virginia from North Carolina and are not thought to be the result of the releases mentioned in this report.

The herd in Iron Mountain is increasing and should do well in the future.

**Mortality**

The following known losses have occurred to date:

In November 1939 a buck was killed by L. R. Heath, just south of Independence in Grayson County. Mr. Heath, whose home was in eastern Virginia, shot the deer while bird hunting and not knowing the deer season was closed; he was apprehended and fined. In April 1939 a doe was reported dead about one mile west of the point of release. It had been killed with bird shot, the poachers evidently being afraid to move it after having killed it. In December 1937 a buck fawn was killed by dogs on Little Creek in Wythe County.

While the above losses are due to poaching and dogs, these incidents are believed to be the exception rather than the rule, as most of the local people seem to be interested in restoring the deer, largely as a result of constant contact with Forest Service officials.
Problems Presented by Present Herd

It is estimated that the section can support 1200 deer as compared with the present estimated population of 25 animals. The herd is so small at present that the possibility of deer destroying their range is very remote.

There has been no property damage reported to date from this area. Some few isolated animals have taken up with cattle and are being fed by local farmers, who tend to boast of the incident rather than make claims for damages for the amount of feed consumed.

As the herd increases, claims for damages may be expected to arise for deer damage to crops. The absence of commercial orchards together with the fact that grazing is extensive in nearby farming sections may be viewed as favorable in this area.

Conclusions

It is felt that the releases covered in this report have been successful and that the herd as a whole is fairly well distributed over the range.

Recommendations

It is recommended that the area be stocked as soon as funds become available and that such stockings be made in the Conners Rock Wildlife Area in Wythe County instead of at
Spring Valley.

It is recommended that the present dog laws in Wythe and Grayson Counties be strictly enforced, particularly in the section in which deer are found.

It is further recommended that no hunting be permitted in the area until it is felt that the herd numbers at least 600 deer.
The Poor Mountain Releasess in
Montgomery County
The Range

Location and Topography

The section of Montgomery County covered in this investigation was Poor Mountain and vicinity. The southern end of Poor Mountain lies some ten miles to the east of Christiansburg and extends to the northeast into Roanoke County. The northern end of this mountain is covered by the Roanoke County report. The mountain is drained by the south fork of the Roanoke River, which parallels its western edge and flows in a northeasterly direction. To the south, west, and east of the southern end of Poor Mountain are a group of wooded hills extending for approximately six miles, the hills on the east being in Floyd County. The creeks forming the headwaters of the Roanoke River drain these hills.

Poor Mountain ranges in elevation from 3900 feet on the top to around 1500 feet along Roanoke River. The valleys formed by the creeks and rivers are fertile and farmed more or less extensively.

History

Deer were reported by local residents as plentiful as late as 1885, the last reported being killed along Bottom Creek by Rich Bowman in 1892. Bowman, hunting with dogs,
killed two does with a muzzle-loading shotgun. Henry Hall is reported to have killed 14 deer in the same general vicinity during one winter around 100 years ago. Judging from the above reports, deer were common at one time in this section but were finally extirpated some 50 years ago.

The area was logged about 30 years ago, but there still remain a few hundred acres of virgin timber, which is owned by the Appalachian Power Company. The area is almost entirely owned by corporations and private individuals.

Present Condition

The mountains and hills are almost completely wooded but the valleys are farmed where feasible, the grazing and crop lands widening out as the country becomes less steep and more suitable for agricultural use. The area is composed mainly of second-growth hardwoods mixed with patches of pine on the poorer slopes and ridges. The valleys which are farmed support a comparatively large population which in turn support a good dog population. It was reported that a good deal of fox and soon hunting is carried on in the hills along the southern edge of the mountain.

The wooded area as well as the farms are in private ownership, and no changes in either land use or ownership are anticipated in the near future.

The nature of the range, together with the large percentage of the population engaged in agricultural pursuits,
indicates that the range can only be classed as poor deer range.

Restocking

In April 1937 six adult does and one yearling buck were released along Bottom Creek one mile north of Tices Mill (Poor Mountain). Four of the does were purchased from W. E. Cohick, Salladasburg, Pennsylvania, and two came from the State Game Farm at Boulevard, Virginia. The buck was purchased from the Pennsylvania Board of Game Commissioners, Refuge No. 5, Rector, Pennsylvania.

In September 1937 a pair of adult deer were released at the same place. These deer were secured from Ernest Woodruff, Maidens, Virginia.

In November 1937 two additional deer were released along Bottom Creek. One adult buck was purchased from N. M. Lancaster, Vanceboro, North Carolina. The other deer was an adult doe, which was secured from the Pisgah National Forest, Asheville, North Carolina.

These deer were all purchased on the cooperative plan, the deer costing $25.00 each, except the buck from the Pennsylvania Board of Game Commissioners, which cost $15.00.

They were released on the lands owned by John W. Palmer, who helped with the releases and acted as caretaker for the herd. C. C. Handley and Lawrence Givens of Blacksburg handled the releases. All of the deer except the adult doe released
in November were in good condition when released. This doe was confined in a fox pen at Christiansburg for several weeks when first received and injured its jaw in the fence while being caught for release. Mr. Givens, who assisted with the release, was of the opinion that it probably could not survive.

The yearling buck released in April was so tame that he became a nuisance and was removed to Mountain Lake about two weeks after his release.

Present Status of Herd

It is estimated that not more than six deer are present in the area, at the present time, these being found on the top of Poor Mountain near the Roanoke County line.

Mortality

One doe was found dead near the point of release in May 1937. Cause of death was not known.

In the spring of 1938 a doe was found dead in a field, three miles northeast of the point of release. This deer had been run all night by dogs and had blood flowing from its nose and mouth the next day.

Mr. Palmer reports that from the very first dogs chased the deer and that on several occasions he stopped dogs from harassing the deer. A bird hunter filled a hound with bird shot when he ran a deer by him. This incident created quite a local problem. The owner collected $15.00 damages for injuries to his dog.
Deer were seen in the vicinity of Bottom Creek until the fall of 1938 after which time they seem to have left this section. In the summer of 1938 a doe and fawn were seen to cross the creek just below Mr. Palmer's house. At about this time a doe and fawn took up residence in a small swamp about two miles northeast of Locust Grove in Floyd County. They were seen near the swamp for about two months but finally disappeared from the locality. At about this time a doe and fawn appeared about a half mile south of Terrys Fork, also in Floyd County. A farm boy, not recognizing the strange animals, put his dog on them and they were last seen headed east toward the Blue Ridge Mountains.

A doe took up residence near a school on the outskirts of Christiansburg in the spring of 1938, but disappeared shortly afterwards. In July a deer was seen to cross from Poor Mountain to Pedlar Hills about a mile north of Shavsville.

From information gathered, it appears that the deer were either killed or driven out of the area by January 1939 and that the only possible survivors of the original stockings are found on top of Poor Mountain near the Roanoke County line. It is quite possible that even these deer may have crossed over from Fort Lewis Mountain.

Problems presented by Present Herd

The range at present is practically unstocked and therefore damage by the deer to their range is not a problem at
this time. It is believed that the area could support a herd of 300 deer but that they would create a deer problem on the surrounding farms.

Conclusions

It is felt that the Poor Mountain section while capable of supporting a small deer herd is not good deer range.

Recommendations

It is recommended that no more deer be stocked in this section, because of anticipated deer problems in nearby farming sections.
The range examined was the Massanutten Mountains from New Market Gap, southwest to the end of the range at Montevideo. This range embraces three counties: Rockingham on the southwest, Shenandoah on the northwest and Page on the southeast.

The mountains extend in a northeast-southwest direction and range in elevation from 3000 feet at Morgans Knob down to 1000 feet along the South Fork of the Shenandoah River. This river parallels the southeast border of the mountains and flows to the northeast.

The range consists of a long narrow range of mountains averaging three miles in width by 22 miles in length. These mountains rise five miles southeast of Harrisonburg and extend to the northeast beyond New Market Gap. The mountains to the northeast of New Market Gap are covered in the Shenandoah County report.

Massanutten Mountain extends the entire length of the range on the northwestern side of the area. Several smaller mountains to the southeast adjoin and lie parallel to Massanutten Mountain. The northwest slope of Massanutten Mountain is precipitous and is broken only in the vicinity of Fridleys Gap.
and on the southwestern end. Its southeast slopes and the smaller adjacent mountains have many coves and hollows formed by several small creeks which flow to the southeast into the south fork of the Shenandoah River.

The Massanutten Wildlife Area of 3800 acres lies one mile west of Newport and is maintained as a game refuge by the Forest Service. It is in the Woodstock Ranger District of the George Washington Forest. A Deputy Wildlife Manager is employed on a part-time basis to patrol the area and carry on game management practices.

**History**

According to local residents the last deer in the Massanutten Mountains was killed in 1885 by J. Koontz near Newport.

The timber was removed from these mountains around 25 years ago. Only sales for fire wood have been made in this section in recent years.

**Present Condition**

The mountains together with the coves and hollows formed by streams along the southeast slopes are covered with second-growth hardwoods with patches of pine occurring on the poorer ridges.

Farms occur all along the foot of the Massanutten Mountains on the northwest border. Farms also occur between the mountains on the southeast and the south fork of the Shenandoah River.
Several large commercial apple orchards are located at the southern terminus of the area, some of the orchards even extending part way up the slopes of the mountain.

Fires are normally absent from the mountains inasmuch as the area is owned by the Forest Service. The farming areas which occur adjacent to the mountains are in private ownership.

No changes in either land uses or ownership are anticipated in the near future.

This area, because of the restricted nature of the range and the fact that it is bordered on three sides by farms and orchards, is rated as poor deer range.

**Restocking**

The following releases have been made in this section of the Massanutten Mountains:

On March 8, 1939 ten adult deer, - six does and four bucks - were released at Pitt Springs, two miles southwest of Newport. These deer were purchased from W. B. Cohick, Salladasburg, Pennsylvania, for $25.00 a head, Federal Aid funds being used for the purchase. W. P. Turpin of the Forest Service reported that the deer were in good condition when released.

On March 3, 1939 ten deer were released at Fridley Gap five miles west of the town of Shenandoah. These deer were purchased from Trexler-Lehigh, Allentown, Pennsylvania, for
$25.00 a head, Federal Aid funds being used for the purchase. W. P. Turpin of the Forest Service reported that the deer were in good condition when released.

**Present Deer Herd**

The deer have spread into the mountains to the north and south of Pitt Springs. Several deer stay in the vicinity of Cub Run with others being located to the southwest in Fridley's Gap.

Several deer have moved into the Massanutten Mountains from the Blue Ridge Mountains which lie to the east beyond Page Valley. A favorite crossing lies three miles to the southeast of Newport. At this point a ridge from the Blue Ridge reaches out and nearly joins the Massanutten Mountains. The present deer herd is increasing slowly.

**Mortality**

The following known losses have occurred to date:

A doe, number 828, was killed by dogs on October 19, 1939, one mile northeast of Grove Hill Bridge.

A doe was killed by dogs in November 1939, one-half mile west of Catherine Furnace.

A doe was found dead at Pitt Springs in the spring of 1939. The body was badly decomposed and the cause of death could not be determined.

A deer was found dead in Fridley Gap in the fall of 1939.
The cause of death was not determined.

A doe was killed by dogs near Ingham on November 5, 1939.

A doe was poached about November 1, 1939, one-half mile west of Catherine Furnace. Blood and the hide were all that remained as evidence that the deer was killed.

A doe was killed by a car in June 1939 near Montevideo.

The losses in this area are considered excessive. Coon and fox hunting is pursued in the mountains on a large scale. It is evident from the above that dogs are the number one predator in this area; however, these losses should be reduced to a minimum with the Deputy Game Manager now employed to patrol the area.

Problems presented by the Present Herd

It is estimated that the section could support a herd of 400 deer as compared with the 40 that are thought to be present at this time.

Some property damage has already occurred near the town of Shenandoah. Deer having fed on the tender shoots of wheat in the spring of 1939 foretells that damage to crops and orchards will develop as the herd increases in size.

Inasmuch as reports of deer damage to agricultural crops in this area have already been received despite the present low concentration of deer, it seems inadvisable to continue stocking deer in this section.
Conclusions

The releases in this section have up to this time not been particularly successful, judging from the large number of losses that were reported. The deer, however, appear to have spread satisfactorily throughout the range.

Recommendations

It is recommended that no additional deer be released in this section of the Massanutten Mountains.

It is recommended that the dog laws be more strictly enforced.

It is further recommended that control measures for crop damage be instituted as the damage develops.
The Max Creek Release
in
Pulaski County

The Range

Location and Topography

The section of Pulaski County examined included Max
Mountain and vicinity. It lies some eight miles southeast
of Pulaski and extends in a northeasterly-southwesterly
direction, being some eight miles in width by twelve in
length. The area is bordered on the west and north by New
River and on the south by Big Island Creek, which flows
northwest into New River. Max Mountain is several hundred
to 1000 feet above the surrounding area, the upper slopes
precipitous, the higher parts of the mountain forming a horse-
shoe which opens to the south draining into Big Island Creek.
The mountain ranges in elevation from 3400 feet on top to
around 2000 feet along New River. The area to the north of
the mountain is a series of hills and ridges some six miles
in extent which terminate in rolling farm country. It is
drained by several creeks, Max Creek, which flows to the
northwest into New River, being the largest. These creeks
form numerous coves and hollows which as a whole are wooded.

History

According to local residents, deer were killed out of
the section around 80 years ago. Oliver Huntington is reported
to have killed the last deer, a buck, on Max Mountain, in a
section known locally as Buck Hollow. Prior to that time this
section is reported to have produced some good deer hunting.

Most of the timber was removed from this area around 1910
but some logging is still carried on in a limited manner by
local residents. No evidence of recent fires were noticed
during the course of this investigation.

Present Condition

The area as outlined above is almost entirely covered
with second-growth hardwoods, interspersed with pine, with some
northern white cedar occurring along Max Creek. No flatwoods
occur on the outskirts of the range, the farms extending to
the foot of the mountains and ridges. Grazing and general
farming practices are carried on in this area, but no large
commercial orchards are in the vicinity.

The State Planning Board estimates that in 1935 34% of
the county was in forests, parks and wastelands. This re-
presents 74,000 acres, approximately half of which lies in the
area under consideration. The town of Pulaski contains several
factories and mills, the employees of which use this section
for hunting and fishing.

Clayton Dam on New River near Radford floods the portion
of the river adjacent to this section, it being around a
quarter of a mile in width. This body of water offers a means
of escape for deer when chased by dogs and is considered a
favorable factor in range classification. The use of the river in this section from a recreational standpoint is anticipated, particularly in the vicinity of the bridge which spans the river about a mile north of the point where Max Creek enters New River.

The county as a whole is considered poor deer range because of the large area that is used for agricultural purposes. The Max Mountain section is rated as good but limited deer range, its limited extent being its main drawback.

**Restocking**

On March 14, 1935 eight deer — six adult does, one yearling doe and one adult buck — were released on Max Creek, 200 yards east of the home of C. J. Leach, which lies about two miles from the point where Max Creek enters New River. These deer were purchased from W. B. Cohick, Saladasburg, Pennsylvania, on the cooperative plan for $25.00 a head. Game Warden R. G. Kunkel hauled the crated deer from Pennsylvania in a truck and handled the release of the deer. They were in good condition when released, and Mr. Cohick assured Mr. Kunkel that the adult does had all been bred the previous mating season.

**Present Deer Herd**

There are approximately 20 deer in Pulaski County as a result of the releases mentioned above. Most of these deer
are in the vicinity of Chimney Rock and White Oak Flat. These areas are not named on the map, but are on the headwaters of Max Creek. Does with fawns were reported by several persons during the summer of 1935, an occasional one having been seen since that time. Deer sign in the form of tracks and horned brush were reported by several squirrel hunters on the head of Max Creek during the past hunting season.

Four antlerless deer were reported by a bird hunter on November 15, 1939 on the farm of George Miller, two miles to the west of New River, opposite Max Creek. A local grouse hunter reported seeing on November 21, 1939 a buck on a bluff overlooking the bridge which spans New River. A buck has taken up residence in a patch of woods on the Altizer farm, one mile east of Dublin and has been seen frequently during the past two years. It is believed that this is the buck released in 1935, and therefore was not available during the breeding season of 1938-1939 in the Max Creek section. Some deer were reported as being chased out of the mountains to the north and east by dogs, but returned to the mountains at the first opportunity.

The southern part of the section to the south of Max Mountain does not contain any deer, although it appears to be as good or better deer range than the section in which the deer are found at present.

The deer herd in this section is on the increase, but its development will be slow due to the lack of a refuge in the vicinity.
Mortality

Two known losses have occurred to date. One doe died in May 1935 near the point of release, the cause of death was not known.

The remains of a deer were found one mile north of the point of release in the fall of 1936. It had been killed with a shotgun and the meat carried away.

Reports of dogs chasing deer were common, but this is to be expected in an area where fox and coon hunting is carried on. One hunter reported a take of 12 coons in the Max Creek section during the season of 1939. On several occasions deer were seen to swim New River in order that they might escape dogs which had chased them from the mountain. It is quite evident that the area is heavily hunted with dogs and that the people do much as they please. From the people contacted it is felt that they, through illegal hunting, are probably as big a hindrance to the increase of the herd as the dogs.

Problems Presented by Present Herd

It is estimated that the area could support a herd of 500 deer without running the risk of damaging their range. To date no property damage has been reported and until the herd becomes much larger, none is anticipated by this investigator. The overflow into the farming sections will
probably not be a problem for some years to come. The increasing deer herd as mentioned above will be slow to develop and no deer problems are anticipated in the near future.

Conclusions

It is felt that Pulaski County as a whole is not a good county, but that the Max Mountain section is good but limited deer range.

The private ownership of the land with the type of people who are allowed the use of the area does not warrant additional restocking.

Recommendations

Recommendations for Pulaski County are as follows:

1. That no additional deer be placed in the Max Mountain section,

2. That efforts be directed to preserving the present deer herd by better law enforcement and educational work among the local residents,

3. That another and more intensive investigation of the area be made in 1944, at which time a better picture may be had of the herd in relation to their range, and

4. That efforts be made to serve a dog law so that the deer may be legally protected.
The area covered in this investigation, the Fort Lewis Mountain and vicinity, lies to the south and west of the city of Salem. The mountains range in elevation from 3329 feet on the top of Fort Lewis Mountain to around 1500 feet at the foot. Fort Lewis, Paris, Catawba, Brush and North Mountains are individual mountains running in a northeasterly direction being separated for the most part by narrow valleys as shown on the accompanying map. Southeast of Fort Lewis Mountain lie Poor Mountain and Twelve O'clock Knob, which is directly south of Salem. Both are separated from the Fort Lewis Region by the Roanoke River Valley. The valleys in the Fort Lewis region are drained by lesser streams which are a part of the Roanoke River drainage system.

The Havens Refuge, comprising an area of 6271 acres, lies in the northern end of Fort Lewis Mountain and was established as a state game refuge in 1930 by the Commission of Game and Inland Fisheries.

History

Deer were once plentiful in the county but were all
killed out by the turn of the century, the last on record be-
ing killed in 1896 in Millers Cove, which lies in the western part of the county on the Craig, Roanoke County line.

Most of the timber of this section was removed around 25 years ago. The area was burned annually over a long period of years, but for the last ten years only small fires have occurred at infrequent intervals.

Present Condition

The mountains for the most part are covered with second-
growth hardwoods with patches of pines on the southern and western slopes. The valleys as a whole are fertile and in sections that are not farmed some good stands of timber still exist. Food and cover in such an area is normally abundant and can be classed as a favorable factor at this time.

It was estimated in 1935 by the Virginia State Planning Board, that 35% of the county was in forests, parks and wastelands, and that there had been a decrease in farming of 28% between 1880 and 1930. The above would indicate that there is more deer range available now than there was 50 years ago, but the indication of industrial growth in and around the cities of Salem and Roanoke has offset any advantage that may have occurred due to the cessation of farming activities.

Industrial growth accompanied by increased human population along with the resultant increased dog population is a factor of considerable importance when considering the classification
of the deer range. Normally this type of range rates as excellent, but its proximity to orchards and small farms in the valleys, coupled with the factors mentioned above, act as detrimental factors in the range classification, and the range can only be rated as good deer range.

**Restocking**

In August 1926 fifteen adult deer, raised at the State Game Farm, - nine does and six bucks - were released at the foot of Fort Lewis Mountain, two miles northwest of the city of Salem. These deer were given to the county by the Commission of Game and Inland Fisheries. The money for the trapping and shipping of the deer from the State Game Farm, Boulevard, New Kent County, Virginia, was raised in Roanoke County by popular subscription. Mr. J. A. Boone, Game Warden, handled the release of the deer and supervised the trapping of the deer in a corral at the State Game Farm, the operations being completed in about three days. The total expenses for the deer release as reported by Mr. Boone were $508.00.

Mr. Frank Wiley, who owns a camp site on the southeast border of the refuge, where he keeps a few deer in confinement, has released six additional deer, all bucks, at the edge of the refuge. Two of these bucks were released in 1933 and one each in 1934, 1935, 1936 and 1937.

As mentioned before, the Havens Refuge was established
in 1930, and F. C. Wasko was appointed refuge keeper in 1932, at which time he took up residence on the mountain. It is largely due to his efforts coupled with ardent support rendered by Mr. Boone that the deer have done so well, and it is doubtful whether the deer could have become established if it had not been for the enthusiasm with which they both attacked the dog problem.

Present Deer Herd

Number of Deer

Clyde Patton, Graduate Student in Wildlife Conservation, at the Virginia Polytechnic Institute, made a detailed survey of the area in the summer of 1937 and estimated the deer on the refuge at between 75 and 100 animals; this estimate he believes to be conservative. No estimate of the deer on the refuge proper has been attempted by this investigator, but it is believed that their approximate number is 350 present on Fort Lewis Mountain and in the surrounding territory. It is felt that most of the deer on Fort Lewis Mountain are in the vicinity of the refuge, due to the element of protection afforded them by the refuge keeper when the deer are pursued by dogs. However, deer have become established in several sections and tend to stay in those sections when not molested.

Some deer have become established on the north end of Poor Mountain and Twelve O'clock Knob, but are having difficulty due to the presence of numerous dogs from the many small farms
around the foot of the mountain. Deer are reported from time to time in Fedlar Hills (southwestern extension of Fort Lewis Mountain) but do not stay for long for the same reason as mentioned above. Paris Mountain contains some deer, especially on the south end, with a few scattered along its length to the point where it joins Catawba; most of the deer that have wandered or been chased off Fort Lewis Mountain are on North Mountain having crossed over Catawba Mountain. However, some stay on Catawba Mountain with a few reported on the north end of Brush Mountain.

These deer have spread from the refuge to the north and west, probably due to the more extensive wooded areas and natural travel lanes in these directions. It is believed that some of the last deer killed in Craig County, before the season was closed for a five-year period in 1938, came from the stocking on Fort Lewis Mountain. At any rate, the southern portion of Craig County is becoming well stocked as a result of the refuge, and will probably again furnish good deer hunting as in years past. The herd is growing rapidly and within the next ten years will probably have attained its proper proportions which is estimated at around 1400 deer.

Mortality

Dogs are the number one predator problem in this section but are being kept well under control on the refuge proper. Bobcats were once present in considerable numbers, some 11
having been trapped on the refuge since the deer were released; however, it is not believed that they ever would become a serious predator.

To date there have been twenty-five losses in the herd:

1. A buck found dead September 1938, one mile northeast of La Fayette. Cause of death was not known.
2. A buck killed by dogs in the spring of 1935, two miles northwest of La Fayette.
3. A buck was killed by a train November 1938 four miles east of La Fayette.
4. A doe was killed by a train in the fall of 1939 four miles southwest of Salem.
5. A doe was killed by dogs in the spring of 1931 two miles southwest of Salem.
6. A doe was killed by a truck in October of 1936 two miles southwest of Salem.
7. A doe was killed by a car in August of 1934 one mile southwest of Salem.
8. A buck was killed by a train in the fall of 1939 one mile southwest of Salem.
9. A doe was killed by dogs in the spring of 1933 three miles southeast of Salem.
10. A buck was killed by dogs in June 1935 four miles southeast of Salem.
11. A doe was killed by dogs in April 1932 one mile west of Salem.
12. A buck was killed by dogs in August 1934 one mile northwest of Salem.
13. A doe was killed by dogs August 1934 one-half mile north of Salem.
14. A doe was killed in the spring by dogs one mile north of Salem (1935)
15. A buck was killed by dogs in May 1938 two miles northwest of Salem.
16. A doe was killed by dogs April 1940 one-half mile north of Salem.
17. A buck was killed by dogs September 1937 three miles northwest of Salem.
18. A buck was killed by dogs January 1938 three miles northwest of Salem.
19. A doe was killed by dogs fall of 1939 two and one-half miles northwest of Salem.
20. A doe was killed by a car in the spring of 1938 two miles north of Salem.
21. A doe was killed by dogs in December 1938 five miles southwest of Catawba.
22. A doe was killed by dogs in October 1939 two miles southwest of Catawba.
23. A doe was killed by dogs in December 1937 six miles northeast of Salem.
24. A buck was killed by a car in November 1937 three miles
north of Salem.

25. A doe was killed by dogs in April 1940 two miles northeast of Salem.

Patton reported a loss of thirteen animals in the summer of 1937, which indicates that the herd is increasing rapidly inasmuch as the losses have almost doubled in the past three years. A glance at the map shows that most of the dog losses occurred at the foot of the mountains, the deer trying to reach the river when pursued, but they are either overtaken shortly after leaving the woods or become entangled in fences where they are quickly killed. Fresh dogs often join the chase shortly after the deer leave the woods with almost always fatal results for the deer.

Problems presented by Present Herd

The range is understocked at present and the possibility of the browse line appearing within the next few years is very remote. It is estimated that the range can support a herd at least four times as large as that present now without running the risk of being overstocked. At least no damage to the deer range is apparent at this time. Deer problems have developed within the last year on opposite sides of Fort Lewis Mountain. The Mountain Brook Orchard Company (northern slope) suffered losses due to the horning activities of the bucks in the fall of the year. Eleven three-year old apple trees and nine three-year old peach trees were destroyed by this activity.
The Virgil L. France Orchard (eastern slope) suffered a different type of damage; namely, the browsing of year-old peach trees. Many of these trees were reported as damaged so badly that it was impossible to shape the trees by pruning. In both these cases the orchards were adjoining the refuges, the Mountain Brook Orchard for all practical purposes being within the boundary of the refuge. (See map) It is believed that this damage could have been prevented by the use of the electrical fence or other control measures as developed by nearby states having deer problems. As the herd grows the amount of damage to orchards in the vicinity may be expected to increase with resultant claims for deer damage being presented for payment to the Commission.

Conclusions

It is felt that the deer releases on the Havens Refuge have definitely accomplished their purpose in restocking the surrounding country.

While the dog losses appear to be high, one must keep in mind the thickly settled condition of the countryside and the proximity of the refuge to the cities of Salem and Roanoke. These two factors, with the resultant large dog population, tend toward heavy losses, no matter how diligently the deer are guarded. In view of the fact that the deer are not confined to the refuge by any natural or physical barriers, a relatively high mortality in the herd as a whole is to be expected.
Recommendations

It is recommended that no further stocking of this area be made because it may aggravate the present deer problem.

It is recommended that the deer damage in this section be kept at a minimum either by control measures or the purchase of affected areas.

It is further recommended that a three-day season be authorized in 1942 and not later than 1943. This will help spread the herd and consolidate the public opinion behind the deer restocking program as carried on by the Commission of Game and Inland Fisheries.
The Big Elk Release in
the Shenandoah National Park
Rockingham County

The Range

Location and Topography

The range examined was in the Shenandoah National Park in the southeastern part of Rockingham County. This section lies in the Blue Ridge Mountains, which extend in a northeast-southwest direction and vary in elevation from 3500 feet down to 1500 feet along the creeks which drain the area.

The area is quite rugged with numerous ridges and spurs extending from the mountains. The mountains continue on into Page County to the northeast and into Augusta County to the southwest. The northwest and southeast spread out into wide valleys that are farmed extensively.

The mountains in this section are approximately six miles in width.

The mountains all lie in the Shenandoah National Park, which was established in 1935. The park is a wildlife sanctuary and is patrolled by Park Rangers.

History

Information furnished by Park Service officials indicates that deer have been absent from this section of the Blue Ridge for at least 60 years, and were not plentiful prior to that time.
The mountains supported a comparatively large human population who gained much of their livelihood from the game in the area.

The principal occupation of the inhabitants in the area prior to the establishment of the Shenandoah National Park was the grazing of cattle on the mountain "meadows". The natives annually burned the woods to provide pasture for their cattle.

**Present condition**

Approximately 86% of the area is wooded. The wooded sections are largely brushy in character because of fires which annually swept the area. Fire protection has been provided since the establishment of the park in 1935. The wooded sections that have not been burned in recent years are composed mainly of second-growth hardwoods with patches of evergreens occurring throughout the area.

The former residents of the park have been moved into homes furnished by the government in more suitable farming sections.

The valleys adjacent to the park are in farms and orchards.

The narrow nature of the range and the fact that it borders on important farming sections where deer damage is sure to develop, causes the area to be rated as poor deer range.

**Restocking**

In April and May 1934 seventeen deer were released on Big Run, six miles east of Port Republic. These deer were
transferred from Mount Vernon, Virginia, by the Park Service at no cost to either the state or local residents. No record of the sex ratio was ever recorded. C. C. Hagenbooth, Grottos, Virginia, reported that the deer were in good condition when released.

**Present Deer Herd**

**Number of Deer**

It is believed that there are about 50 deer in the section as a result of the above release.

Some of these deer were seen to cross into the Massanutten Mountains near McGeheysville shortly after they were released.

Deer are reported as far to the southwest of Big Run as Turks Gap and to the northwest as far as Swift Run Gap.

Deer that are reported north of Swift Run Gap have probably crossed into the Blue Ridge from the Massanutten Mountains, four miles north of Shenandoah, at a point where ridges from the two ranges nearly meet.

The present herd is increasing and should do well in the future.

**Mortality**

No losses have been reported for the deer in this section. The absence of habitations coupled with the fact that the area is constantly patrolled by Park Rangers is probably responsible
for this condition. No stray dogs or cats are allowed in the park, the Rangers being under orders to destroy them when found.

**Problems Presented by Present Herd**

No estimate of the carrying capacity of the range will be made inasmuch as it is considered poor deer range.

No property damage has been reported in this section to date, although it may be expected to occur as the herd grows and spreads into the adjoining farming areas.

The farming areas bordering on the park will present one of the most difficult deer problems in the state to solve. The deer herd will become large under full protection and will not be subject to control through hunting, as the park allows no hunting within its boundaries.

**Conclusions**

The release in the section are considered a success.

The herd is well distributed over the range.

**Recommendations**

It is recommended that no additional deer be placed in this section of the park.

It is recommended that when Rockingham County is opened to hunting that the area adjacent to the park also be hunted. This will temporarily help with the expected deer problems.
on the farms bordering the park.

It is further recommended that steps be taken to control
der damage when it makes its appearance in the farming sections.
Location and Topography

The range examined lies in the western part of Rockingham County. It is composed of a series of mountains and ridges extending in a northeast-southwest direction. Some of the mountains range as high as 4000 feet and drop down to 1500 feet along the creeks that drain the area. The range averages 12 miles in width by 25 in length. To the northeast it extends on into West Virginia and Shenandoah County, Virginia. West Virginia lies to the west, mountain ranges extending in this direction for many miles. On the southwest it continues on into Augusta County. To the east lie the fertile sections of the Shenandoah Valley.

The northern half of the area is drained by the north fork of the Shenandoah River. The southern portion is drained by Dry River. Both of these rivers drain to the southeast out of the mountains, the former turning and flowing to the northeast paralleling the Massanutten Mountains. These two rivers are fed by literally hundreds of creeks which drain the numerous valleys and hollows in the area.

The Slate Lick Game Refuge of 4100 acres is located six miles north of Rawley Springs. It is in the Dry River Ranger
District of the George Washington National Forest. It is maintained as a game refuge by the Forest Service and a Deputy Wildlife Manager is employed to patrol the area and carry on game management practices.

History

Deer were reported as being plentiful 60 years ago in the area. A. D. Brenneman relates that he killed the last deer, a doe, near Genoa about 1890.

Fires were frequent throughout the area prior to 1913 at which time the Dry River Ranger District of the George Washington National Forest was established. Since that time fire protection has been furnished.

Present Condition

The mountains and ridges are wooded, most of the timber being second-growth hardwoods with some pine occurring on the poorer slopes. The valleys along the rivers near the south-east border are in farms but with these exceptions the area is wooded.

The section to the east of the mountains is an excellent farming section, where general farming practices are carried on. Some large commercial apple orchards and turkey farms also occur in this section.

The State Planning Board estimated in 1935 that 38% of Rockingham County, or 217,000 acres, was in forests, parks
and wastelands. Approximately half of this acreage lies in the area under discussion.

The entire area other than the farming sections along the river valleys, is owned by the United States Forest Service. No changes in either land uses or ownership are anticipated in the near future.

The extent and nature of the range, together with the fact that it is owned by the Forest Service, rates this section as excellent deer range.

**Restocking**

**The Cow Knob Release**

In 1926 thirteen adult deer, eight does and five bucks - were purchased in Romney, West Virginia, and released in a 40-acre enclosure one mile southeast of Cow Knob near the Virginia-West Virginia line. These deer were purchased with funds raised by popular subscription throughout the county. The deer were kept in the enclosure for about two years after which time they were turned loose. The point of release being so near the West Virginia line, it is highly probable that many of the deer resulting from the release have moved into West Virginia. Game Warden Wade Farley furnished the above information concerning the release.
The Slate Lick Release

On March 5, 1937, eight deer, - one adult buck, one yearling buck, five adult does and one yearling doe - were released on the Slate Lick Refuge, six miles north of Rawley Springs. These deer were purchased from George E. Mann, Calisj, Vermont, on the cooperative plan for $30.00 a head.

On March 29, 1938, four deer, - three adult does and one yearling doe, - were released on the Slate Lick Game Refuge. These deer were purchased from W. B. Cohick, Balladasburg, Pennsylvania, on the cooperative plan for $25.00 a head.

The Rawley Spring Release

The following deer were purchased from Trexler-Lehigh, Allentown, Pennsylvania, for $25.00 a head, Federal Aid funds being used for the purchase:

In February 1939, sixteen adult deer, - eleven does and five bucks - were released one mile west of Rawley Springs. They were tagged with Virginia tags numbered 802-817.

On March 12, 1939, two does, - one adult and one yearling - were released in Rawley Springs.

T. E. Clarke, Game Technician of the George Washington National Forest, reported that the deer were in good condition when released.

A total of 45 deer have been released in this section of Rockingham County.
Present Deer Herd

It is estimated that there are 350 deer present in the area under discussion.

Most of the deer are found in the county in the mountains to the north of Dry River. Some deer are found in the vicinity of Rawley Springs and Hone Quarry.

Game Warden Farley reports that deer sign is plentiful in the northern part of the area for a distance of five miles south of the Shenandoah County line. He expressed the opinion that more deer are in this section of the county than in Shenandoah County to the north which has an open season. No doubt the hunting in that county has driven some deer into this section.

The deer herd is increasing satisfactorily.

Mortality

The following known losses have occurred to date:

A buck was killed by dogs in March 1939, one mile southeast of Hone Quarry.

A deer was killed by dogs in February 1939, one mile southeast of Rawley Springs.

A doe was poached in the fall of 1938, four miles east of Rawley Springs. The poacher was apprehended and fined $25.00 and costs.

A doe was killed by dogs in February 1939, three miles east of Rawley Springs.
A doe was killed by dogs in the fall of 1939, five miles northeast of Rawley Springs.

A doe was killed by a car in October 1939, four miles northwest of Rawley Springs.

A deer was killed by dogs in December 1939, three miles south of Rawley Springs.

A doe was killed by dogs in March 1939, four miles northeast of Rawley Springs.

A doe was killed by dogs in January 1939, one mile northwest of Broadway.

A doe was killed by N. Listterrell, near Broadway, November 2, 1939. This man was convicted and fined $50.00 and sentenced to 30 days in jail.

A buck was found dead in May 1937, three miles northwest of Genoa. The body was badly decomposed and cause of death was not determined.

A doe was found dead in October 1939 at Fulk Run. The body was badly decomposed and cause of death was not determined.

From the above it is evident that dogs are the number one predator, in this section of the range. It is believed that many losses have occurred other than those listed above. These losses are considered excessive for the section considering the number of law enforcement officers in the county. Two full-time wardens and the part-time warden employed on the Slate Lick Refuge should certainly be able to control the dog
situation in the area.

**Problems Presented by Present Herd**

It is estimated that the section could support a herd of 2000 deer as compared with the 350 that are thought to be present.

No property damage has been reported, although deer damage may be expected to occur along the eastern border of the range and on the farms which lie along the creeks within the range.

**Conclusions**

The releases in the western section of Rockingham County are considered a success.

The herd is fairly well distributed throughout the range and will continue to spread satisfactorily.

**Recommendations**

It is recommended that the dog laws be more strictly enforced in the deer range.

It is recommended that the Rawley Spring be heavily stocked during the next two years.

It is further recommended that an investigation be made in the spring of 1943 relative to the advisability of opening the deer season in the fall of that year.
The Elk Garden and Hayters Gap Releases in Russell County

The Range

Location and Topography

The section examined in Russell County was Clinch Mountain and vicinity from Hansenville north to Elk Garden on the north side of the mountain, and from Holston north to Hazel Springs on the south. The area lies some six miles southeast of Lebanon, the county seat of Russell County, and is a northern extension of the section described in the Washington County (Clinch Mountain) report. The mountain averages five miles in width by 15 in length and contains a large plateau near the top, three miles north of Holston. This plateau is drained by Brumley Creek, the largest creek in the area, which flows into the north fork of the Holston River. To the north of Brumley Creek the southern slopes of the mountain are cut up by several small streams which also flow to the south and empty into the Holston.

The county line which separates Russell County on the north from Washington County on the south, follows the main ridge of Clinch Mountain. The northern slopes of the mountain are precipitous which accounts for the fact that most of the drainage is to the south and east into Washington County.

The mountain ranges in elevation from 4200 feet down to
1500 feet along the north fork of the Holston River. The river, as in the section to the south, follows the foot of the mountain and flows in a southwesterly direction.

History

Harry Stewart, of Honaker, says that his grandfather often told him of the excellent deer hunting on Clinch Mountain, but that the deer had all been killed by 1880. A favorite deer stand was a low place in the mountain between Brumley Creek and Cave Branch on the Washington County side.

The country was logged about 30 years ago, the old tram sites offering a means of access to the more rugged areas on top of the mountain. Fires have occurred in the area from time to time, a fire of several hundred acres having occurred north of Holston in December 1939.

At one time some brothers cleared a part of the plateau mentioned above and moved several families into the section so that it might be farmed. The venture proved unsuccessful and quite a sum of money was lost in the enterprise.

Present Condition

The mountain is covered with second-growth hardwoods with possibly 80% of the timber stands at the higher elevation being river birch. These upper slopes, particularly along Brumley Creek, are extremely brushy and hard to penetrate. The valley along the river is cleared and in farms with cattle
being grazed on the mountain.

On the northern side in Russell County the timber has been removed nearly to the top of the mountain in order that more land may be devoted to grazing. The State Planning Board estimated that in 1938 only 8% of the county was in forests, parks and wastelands. It can be seen from this one fact alone that Russell County as a whole is not a deer county. It is reported that this county is one of the two counties in the state that can ship cattle directly from pasture to the market without an additional period of fattening.

The section is owned by individuals and no change in land ownership or land uses are anticipated in the future.

The area, two-thirds of which lies in Washington County, is rated as good deer range. It could be rated as excellent but for the fact that the valleys along the river and creeks are in farms and rather thickly settled with a questionable type of people.

Restocking

A total of 14 deer have been released in this section.

The Elk Garden Release

On April 14, 1933, two adult deer, - a doe and a buck - were released on the farm of Harry Stewart, one and one-half miles north of Elk Garden. These deer came from the State Game Farm, Boulevard, Virginia, and were purchased by Mr.
Stewart from the Game Commission for $25.00 a head.

The Hayters Gap Release

In October 1937 twelve adult deer, 11 does and one buck—were released one mile south of Hayters Gap on Clinch Mountain. These deer were purchased from the Pisgah National Forest, Asheville, North Carolina, on the cooperative plan for $25.00 a head. The counties' share of the purchase was supplied by the Russell County Board of Supervisors. Harry Stewart, on whose land the deer were placed, is having his caretaker and tenants look after them. They were reported as being in good condition when released by Game Warden H. D. Wallace.

Present Deer Herd

It is estimated that there are 20 deer in the area, nearly all of which are located on the southern slopes of the mountain between Bramley Creek and Hayters Gap.

The two deer released north of Elk Garden were seen in the vicinity throughout the summer and fall of 1933, but evidently went east onto the mountain as they have not been seen in the vicinity for several years. In the summer of 1938 two deer were reported as seen and later shot along Tumbling Creek, north of Haasel Springs. These were probably the two deer released north of Elk Garden.

The present herd is increasing and should do well as long as they remain on Mr. Stewart's property where they can be
looked after by his employees.

Mortality

Two known losses have occurred to date.

An eight point buck was shot on Tumbling Creek near Hazel Spring in the fall of 1928.

In the summer of 1938 a doe was shot near the head of Tumbling Creek.

Both of these deer had been skinned and only the hides and heads remained as evidence of their fate. The people encountered in this area appear to have little regard for the game laws and will probably be the biggest source of future loss to the deer herd.

Problems Presented by Present Herd

It is believed that this section can support a herd of 500 deer as compared with the twenty estimated to be present. The number of deer being so small, no damage to their range through overbrowsing is anticipated for some time to come.

No property damage has been reported and none will probably occur until the herd becomes much larger. The section being primarily engaged in grazing should not produce many deer problems if proper protective measures are inaugurated as the deer problems develop.
Conclusions

The release in 1933 must be regarded as a failure as there are no deer on the mountain in the vicinity of the release.

The release in 1937 is regarded as a success. The deer are concentrated in the section between Brumley Creek and Hayters Gap, and are not distributed throughout the area.

Recommendations

It is recommended that no additional deer be placed in the section.

It is recommended that educational work and better law enforcement be carried on in the section.

It is further recommended that an investigation be made in 1944 to determine the status of the deer in relation to the distribution throughout the range and the attitude of the local people toward the deer as a game animal.
The Edinburg Gap and Buck Run Releases in the Massanutten Mountains

Shenandoah County

The Range

Location and Topography

The range examined was the Massanutten Mountains from New Market Gap northeast to Strasburg. At Strasburg the mountains terminate, the areas to the north, east and west becoming rolling farming country. On the southwest below New Market Gap the mountains continue and are covered in the Page County report.

This section averages eight miles in width by 22 in length. The mountains extend in a northeast-southwest direction and range in elevation from 2500 feet on Kennedy Peak down to 1000 feet along the rivers. The mountains are bounded by two rivers: on the northwest by the north fork and on the southeast, the south fork of the Shenandoah River. These two forks each average 50 yards in width and flow northeast to Riverton where they merge to form the Shenandoah River.

Massanutten Mountain, the largest mountain in the section, parallels the south fork of the Shenandoah River and extends the entire length of the range. Middle Mountain occurs just north of New Market Gap and lies between Massanutten Mountain and Kern Mountain on the northwest. To the northeast of Kern Mountain and adjacent to the north fork of the Shenandoah River,
occur three additional mountains, Short, Fowells and Three Top. Fort Valley lies between Powell and Three Top on the northwest and Massanutten Mountain to the southeast. This valley is drained by Passage Creek, which flows northwest into the north fork of the Shenandoah River at Waterlick.

**History**

This section 50 years ago furnished excellent deer hunting. The last deer, a doe, was killed on Buck Run in 1908 by R. C. Whitman. The country was logged around 1910 and fires occurred frequently up until the time the area was purchased by the Forest Service in 1915. During the Civil War period iron mines were operated throughout the section to furnish metal for Confederate cannon.

**Present Condition**

Fort Valley is cleared and in farms for a distance of about 12 miles. The farms in the valley are mainly devoted to general farm practices. Between the north and south forks of the Shenandoah Rivers and the mountains, some farms also occur, most of which are devoted to general farming practices, although some orchards occur. The main valleys to the east and west of these rivers are purely farming sections with some of the largest apple orchards in northern Virginia being located in these valleys.

The mountains and their valleys other than the sections
mentioned above are in timber, most of which is second-growth hardwoods with large patches of pine occurring on the poorer slopes. The headwaters of Passage Creek and its many tributaries have formed many coves and hollows throughout the mountains. Abandoned farms and fallow fields occur and with the coves and hollows, form ideal deer coverts.

The area other than those sections in farms, is largely owned by the United States Forest Service. It is in the Woodstock Ranger District of the George Washington National Forest.

No changes in either land ownership or land uses are anticipated in the near future.

This section is well suited for deer. But because of the fact that it borders on some of the best orchards in the state and because of its limited extent, it is rated as only good deer range.

Restocking

The following deer have been restocked in this section of the Massanutten Mountains:

On April 7, 1933, six deer were released in Edinburg Gap, three miles southeast of Edinburg.

On February 8, 1935, eighteen deer were released in the Massanutten Mountains. Half of these deer were released in Edinburg Gap and half at Buck Run, one-half mile west of Edith in Fort Valley.

In March 1936 ten deer were released also in Edinburg Gap.
No record of the sex ratio was recorded but it was reported that there was a preponderance of does in the releases.

The deer released in 1933 and 1935 were released by C. O. Handley, Blacksburg, Virginia. T. E. Clarke, Harrisonburg, handled the 1936 releases.

All the above deer were purchased from W. B. Cohick, Galladásburg, Pennsylvania, on the cooperative plan for $25.00 a head. The local share of the cooperative funds was furnished by the Shenandoah County Game and Fish Protective Association.

A total of 34 deer were released in the mountains north of Edinburg Gap.

**Present Deer Herd**

It is estimated that there are 150 deer present in this section of the Massanutten Mountains.

These deer have spread out and are now found throughout the entire range. Local concentration are found in Bowmans Fields two miles southeast of Edinburg Gap and Buck Run one-half mile west of Edith in Fort Valley. These concentration points are both in the vicinity of abandoned farms, the fallow fields evidently forming an ideal situation.

Two deer were reported to have crossed into the Blue Ridge Mountains south of Front Royal.

**Mortality**

The following losses are known to have occurred:
In the summer of 1936 a buck was found dead in Taters Gap four miles southwest of Edith. Cause of death was not known.

A doe was shot with buck shot in the summer of 1936, one-half mile west of Elizabeth Furnace.

A doe was found dead in the fall of 1938 at Edinburg Gap. T. E. Clarke sent this animal to the Biological Survey for autopsy.

A buck was found dead on Buck Run in the fall of 1938. This animal was badly decomposed when found and cause of death could not be determined.

A buck was found dead near the Edinburg reservoir in the fall of 1939. This buck's antlers had become entangled in an old chestnut stump and he was unable to free himself.

For the first two years after the deer were released they were run frequently by dogs. In 1936 the Forest Service carried on a predator campaign throughout the mountains which accounted for a good many stray dogs. Since that time reports of dogs running deer have become less and less frequent until at this time it is an unusual occurrence. The Forest Service officials evidently have the situation under control and losses from this source should not be excessive in the future.

Problems Presented by Present Herd

It is estimated that this section could support a herd of 1200 deer as compared with the 150 that are thought to be present at this time.
No evidence of overbrowsing was noticed, although considerable deer sign was noted in Bowman's Fields and along Buck Run.

Some deer damage to garden crops has been reported on a farm along the north fork of the Shenandoah River near Edinburg. Damage to crops and orchards may be expected as the herd increases in size. It is believed that such damage can be controlled if proper control measures are adopted.

Conclusions

The releases in the area under discussion are considered a success.

The herd has spread throughout the mountains with local concentrations at Bowman Fields and Buck Run.

Recommendations

It is recommended that this section be heavily stocked with deer during the next two years.

It is recommended that an investigation be made of the area in the spring of 1943 relative to the advisability of opening the deer season in the fall of that year.

It is further recommended that an effort be made to secure a dog law for Shenandoah County.
The Hurricane Branch Release in Iron Mountain

Smyth County

The Range

Location and Topography

The area investigated in the county includes Iron Mountain and vicinity which extends entirely across Smyth County for a distance of 25 miles. The mountain extends in a northeast-southwest direction, with numerous ridges and some individual mountains jutting off from Iron Mountain proper. The two highest mountains in the state, Mount Rogers and Whitetop, are located on the Smyth-Grayson County line in the extreme southern corner of the county. These mountains are respectively 6700 and 6200 feet high, while Iron Mountain is 4600 feet at its highest point, dropping down to around 2500 feet at the base of the foothills. The area on the north and west is drained by several streams which empty into the south fork of the Holston River. The drainage to the south and east is into New River, which rises in North Carolina.

This section, which is cut up by many streams forming coves and hollows, averages around 12 miles in width and continues on into Washington County to the southwest and into Wythe County to the northeast.

The Hurricane Wildlife Area of around 13,000 acres is included in this area and lies on Iron Mountain some 10 miles
to the southeast of Marion. It is maintained as a game refuge by the United States Forest Service and is in the Holston Ranger District of the Jefferson National Forest. A Deputy Wildlife Manager lives on the area and is employed by the Forest Service to carry on game management practices.

**History**

Deer have been absent from the area for the past 60 years the last being killed near Conners Rock just over the county line in Wythe County. The timber was cut about 30 years ago and frequent fires set by local residents to provide grass for their stock prevented natural reforestation. This area was acquired by the Forest Service in the early '20's and placed in the Holston Ranger District of the Unaka National Forest. It was subsequently placed in the Jefferson National Forest on April 21, 1936. Fire protection has been provided since that time.

**Present Condition**

The area is forested primarily with second-growth hardwoods, white pine and hemlock occurring on the more fertile slopes. At the higher elevations the country has the appearance of a northern forest with some spruce occurring on White-top and Rogers Mountains. Timber sales made at intervals by the district forest ranger tend to keep the range in good condition for the deer by making sprout growth available as
browse. The numerous coves and hollows throughout the area form ideal coverts for the deer.

The State Planning Board estimates that in 1936 30% of Smyth County, or 85,000 acres, was in forests, parks and wastelands. At least half of this acreage lies in the Iron Mountain section and may be considered deer range. There are no large commercial apple orchards in the section, most of the areas adjacent to the deer sections being grazed or devoted to general farm practices.

The area lies almost entirely within the boundaries of the Jefferson National Forest and is on the Holston Ranger District which has its headquarters at Marion. No change in land ownership is anticipated within the next few years.

The range is rated as excellent because of the extensive nature of the range and the fact that it is owned by the Forest Service.

Restocking

In November 1938 four yearling deer, - one buck and three does - were released on the Hurricane Wildlife Area at the junction to Hurricane Branch and Comers Creek. This point lies nine miles south of Marion and is in the Iron Mountain section. These deer came from the Pliagah National Forest and had been used by the National Forest Service as an exhibit at the County Fairs throughout the state. These
deer were released by the Forest Service at no cost to the
Game Commission.

On February 11, 1939 thirteen deer - two adult does, 
four yearling does and seven yearling bucks - were released at 
the above point. Two additional adult does were dead on 
arival at the point of release and consequently not re-
corded as released. These deer were Michigan deer and 
donated to Virginia by the Michigan Conservation Depart-
ment. They were tagged as follows: 2105 M-fawn; 2106 F-
adult; 2107 F-fawn; 2108 M-fawn; 2109 F-adult; 2111 F-adult;
2291 M-fawn; 2314 F-fawn; 2322 M-fawn; 2402 F-fawn; 2403
M-fawn; 2404 F-adult; 2405 M-fawn; 2406 M-fawn; 2310 F-fawn.

On March 8, 1939 two adult bucks were released at the same 
point as those above. They were purchased from E. J. Schow-
alter, Jackson, Wisconsin for $45.00 a head, tagged with 
Virginia tag numbers D-21 and D-22.

Federal Aid funds were used to purchase and transport 
the deer received from Mr. Schowalter and the Michigan Con-
servation Department. The deer were reported as being in 
good condition when released by District Forest Ranger E.
M. Karger, Marion, Virginia. A total of 19 deer have been 
released.

**Present Deer Herd**

**Number of Deer**

There are approximately 20 deer present on Iron Mountain
as a result of the releases listed above. Three deer are known to have moved into the area near Camp, which is on the county line below Comers Rock in Wythe County. Several have stayed in the vicinity of the management area along the mountain, with the remainder having scattered out. One fawn track has been observed near the caretaker's cabin, which would indicate that at least one of the adult does that was released dropped a fawn during the past fawning season.

Deer were reported from Skulls Gap on Iron Mountain near the Washington County line but these are believed to have spread from the Feather Camp District in Washington County.

Mortality:

To date no losses have been reported for the deer released in this area. Dogs continue to be the number one predator, although the section is very well patrolled. Several dogs have been disposed of when seen chasing deer.

Problems Presented by Present Herd

It is estimated that the area could support a herd of 1200 deer as compared with the 20 which are believed to be present. There has been no property damage reported as yet, probably due to the small number of deer that are present. No deer problems are anticipated until the herd becomes much larger, at which time claims for property damages may be expected.
Conclusions

These releases are regarded as successful and the present deer should act as a nucleus for a future herd. It is felt that the section is excellent deer range and is capable of supporting a herd of considerable size.

Recommendations

It is recommended that the Hurricane Wildlife Area be stocked as funds become available.

It is recommended that strict enforcement of the dog law be continued especially in the deer area.

It is further recommended that an investigation of the area be made in 1943 relative to the advisability of opening the deer season.
The Alum Wells and Holston Releases on Clinch Mountain
Washington County

The Range

Location and Topography

The range examined in Washington County was Clinch Mountain and vicinity from the town of Holston southward. Clinch Mountain lies 15 miles north of Bristol and extends in a northeast-southwest direction. It continues into Scott County on the southwest and follows the northwest border of the county to the northeast. The north fork of the Holston River borders the eastern edge of the mountain and flows to the southwest. East of the Holston River lie a series of hills and ridges that are drained by creeks that flow northwest into the Holston River. The mountain is around 3000 feet high along the main ridge with the hills averaging 2000 feet, both dropping to 1500 feet along the river. Clinch Mountain is precipitous with the streams which drain its slopes forming narrow ravines. The hills to the east of the river have numerous coves and hollows formed by the streams which drain the area.

The area is about 15 miles long by five miles wide; the Holston River flowing lengthwise through the middle.

History

According to local residents deer were killed out of this section about 60 years ago. A hunter from Rich Valley with a
pack of deer hounds killed the last deer near Nordyke which lies in the hills to the south of the river. Some of the older residents recall seeing deer shot years ago near the present railroad station at Mendota.

Timber was removed from Clinch Mountain around 1910 but some lumbering operations are still going on near Nordyke. Fires have been frequent on the mountain, several large tracts of land having burned in December 1939.

Present Condition

The mountains are covered with second-growth hardwoods with the valley along the river and creeks being cleared, and devoted to farming practices. The section is in private ownership and no change in either ownership or land uses are anticipated in the future. There are no large commercial orchards in the vicinity.

Because of the fact that the valleys are cleared and primarily devoted to farming, and because the range is not considered extensive, the section is rated as poor deer range.

Restocking

In October 1937 twelve adult deer, - 8 does and 4 bucks - were released on Clinch Mountain. Six were released at Alum Wells, which is 12 miles due north of Bristol, and the other six were liberated one mile north of Holston. These deer were purchased from the Pisgah National Forest, Asheville, North
Carolina for $25.00 a head on the cooperative plan. Game Warden G. W. Mains reported that the deer were in good condition when released.

**Present Deer Herd**

**Number of Deer**

It is estimated that there are approximately 15 deer in this area as a result of the releases made in 1937.

Most of the releases near Holston have moved off along the mountain and none have been seen in the vicinity for the past year. However, during a fire in December north of Holston, a doe and fawn were seen to leave the mountain and cross the river.

At least six deer stay on the mountain on the farm of J. D. Kennedy near Alum Wells. These deer are seen frequently and are apparently doing well. About the middle of December 1939 during a fire on the mountain south of Alum Wells, eight deer were seen to leave Clinch Mountain and cross into Coopers Ridge in Scott County. These deer are not believed to be the same animals that stay in the vicinity of Mr. Kennedy's place.

Eight deer have become established along Nordyke Creek, just east of Nordyke. These deer are seen frequently by lumbermen who are working in the section, and are looking after them from all reports.
Mortality

Three known losses have occurred to date in the herd.

During the winter of 1937 a deer was shot near Castle-wood in Russell County. This deer was chased out of Clinch Mountain by dogs and finally killed, several different sizes of shot being found lodged under the skin. The animal had been run for several days by dogs before it was finally killed. Evidently several different persons had taken a shot at it before it succumbed.

In December 1937 a doe was chased into a fence by dogs and later died, two miles west of Holston.

On December 1, 1939 a doe was killed on the farm of J. D. Kennedy near Alum Wells. The deer had been shot with a 22 rifle, evidently the work of some squirrel hunters who visited the woods the previous day.

Reports of hounds chasing the deer were received from several places along the mountain, the section evidently being a favorite place for coon and fox hunting. Dogs are hunted almost daily during the winter months and were it not for the local protection afforded the animals by Mr. Kennedy and the lumbermen on Nordsyne Creek, it is doubtful if they could remain in the vicinity.

Problem Presented by the Present Herd

Inasmuch as this section is considered poor deer range,
no estimate of the carrying capacity will be made. The present herd being so small, no property damage has been reported to date. Any increase in the present herd will be very slow, therefore no deer problems are expected to develop in the near future.

Conclusions

The releases in this area are regarded as a partial success inasmuch as some deer have become established at Alum Wells and on Nordyke Creek. The interest of a few local people is responsible for the deer remaining in the vicinity. These deer are concentrated in a limited area and it is quite a coincidence that they have returned to the section where the native deer made their last stand.

Recommendations

It is recommended that no additional deer be placed in this area.

It is recommended that an investigation be made again in 1945 to determine the status of the deer in this area.
The Straight Branch Creek
Release in Iron Mountain
Washington County

The Range

Location and Topography

The range examined was Iron Mountain and vicinity. It lies in the southeast corner of the county and is a continuation of Iron Mountain described in the Smyth County report. It continues in a northeast-southwest direction and extends on the southwest into Tennessee and North Carolina. The area is about eight miles in width by ten miles in length and varies in elevation from 3700 feet at Feathercamp Lookout to 2500 feet along the base of the foothills to the northwest. Iron Mountain is composed of several individual mountains which are separated by numerous creeks and their valleys. All the creeks which drain the area flow into the south fork of the Holston River, which more or less parallels the northwest edge of the mountain. The town of Damascus lies in the southwest part of the area and is about one and one-half miles north of the Virginia-Tennessee line.

The Feathercamp Wildlife Area of around 13,000 acres lies in this section, its southern boundary touching on the town of Damascus. It is maintained as a game refuge by the United States Forest Service and is in the Holston Ranger District of the Jefferson National Forest.
History

The last deer reported killed in this section of Iron Mountain was killed along Straight Branch at the point where the town of Damascus is now located. Mr. A. A. Mock relates that around 100 years ago when his father first moved into this section that deer were seen frequently on the mountain.

Most of the timber was removed from the area around 30 years ago, the Forest Service acquiring the land from the owners after the available timber was removed and placed it in the Holston Ranger District which was established in the early '20's as a ranger district of the Unaka National Forest. It was subsequently placed in the Jefferson National Forest on April 21, 1936. Fires were common in the area prior to the establishment of the ranger district. Since that time fire protection has been provided in the area. Roads have been constructed into the inaccessible areas and timber sales are being made at the present time.

Present Condition

The area is composed mostly of second-growth hardwoods, most of the white pine and hemlock having been removed at the time the logging operations were being carried on. The streams and their valleys have formed numerous coves and hollows throughout the mountains thus forming ideal coverts for deer. The range is quite extensive, having continuous wooded areas
extending in all directions with the exception of the northwest.

The State Planning Board estimated in 1935 that 33% or 88,000 acres of Washington County was in forests, parks and wastelands. Approximately half of this acreage lies in the area under consideration, with the farming area on the northwest being mainly in pasture.

The area is almost entirely within the boundaries of the Jefferson National Forest and is on the Holston Ranger District with headquarters at Marion. The few wooded sections that are not now owned by the Forest Service will be added as they become available for purchase. No changes in land ownership or farming practices in adjacent areas are anticipated in the future.

Because of the extensive nature of the range and the fact that the land is owned by the Forest Service, the section is rated as excellent deer range.

Restocking

In the winter of 1930-1931 ten deer, six adult does, two yearling does, one fawn buck and one adult buck were released on Straight Branch Creek, three miles northeast of Damascus. These deer were purchased on the cooperative plan from the Pisgah National Forest, Asheville, North Carolina. H. Stanford, Project Superintendent, C. C. C. Camp, Sugar Grove, Virginia, handled the release and reported that the deer were in good condition when released.
Present Deer Herd

Number of Deer

It is estimated that there are at least 200 deer present in this section. These deer have done well and have spread out in all directions from the point of release. Some have crossed into Tennessee to the south, while others have spread to Taylors Valley to the east. Some have been reported as far north as Skulls Gap in Smyth County. They have spread throughout the area under consideration with local concentrations at Sandy Flat and Fork Mountain (not shown on map). As high as 20 deer have been seen at one time in a wheat field near the town of Damascus. Almost everyone contacted who has had occasion to be in the woods reported seeing deer. Numerous tracks were seen along the roads in the area during the course of this investigation. The present herd is increasing and should continue to do so in the future.

Mortality

Three known losses have occurred to date. In the spring of 1934 dogs ran a doe into a fence in Taylors Valley, where it killed itself. At about the same time some C. C. C. boys carried a dead deer into camp at Damascus. The cause of death was not known. On November 2, 1939 a spike buck was chased by dogs from Damascus and died near Beach Grove School in Wilmers Valley.
It is believed that other losses may have occurred due to dogs as many reports of deer being run by dogs were received, but such losses may be considered to be a thing of the past, with the appointment of the District Game Manager who is now living on the Feathercamp Wildlife Area.

Problem Presented by Present Herd

It is estimated that this section of Iron Mountain can support a herd of 900 deer as compared with the present estimated population of 200 animals. There are indications of some concentrations within the area, but no signs of over-browsing are apparent at this time.

The only property damage reported occurred in the fall of 1938. An adult buck during the rut attacked and killed an angora goat in the vicinity of Konnarock. Witnesses reported that the buck charged the goat repeatedly and when the body of the goat was examined it was found to have been pierced in some 50 places.

The herd may be expected to increase and some property damage will probably occur. The fact that most of the areas adjacent to the deer area are devoted to grazing would indicate that property damage should not be particularly heavy.

Conclusions

The deer released in this area have increased rapidly and at present are fairly evenly distributed over the range.
Recommendations

It is recommended that no additional deer be released in this area as the herd is considered of sufficient size to build up to the point where shooting can be permitted.

It is recommended that close contact be maintained with the section so that as deer problems develop they may be promptly dealt with and damages be kept at a minimum.

It is recommended that strict enforcement of the dog laws be continued, particularly in the deer area.

It is further recommended that an investigation of the section be made in the spring of 1942 relative to the advisability of permitting a deer season in the county.
The Glades Wildlife Area of around 5000 acres lies on Powell Mountain four miles southeast of Norton, in the vicinity of High Knob. It is maintained as a game refuge by the United States Forest Service and is in the Clinch Ranger District of the Jefferson National Forest. A Deputy Wildlife Manager lives on the area and is employed by the Forest Service to carry on game management practices.

The area examined was Powell Mountain and vicinity in Wise and Scott Counties. The county line which separates Wise County on the north from Scott County on the south follows the top of Powell Mountain. The mountain examined was some 12 miles in width by 25 miles in length. It extends in a northeast-southwest direction and continues on to the southwest for several miles beyond Big Stone Gap.

To the south lie several mountains and ridges which more or less parallel Powell Mountain. Stone Mountain and Chestnut Ridge are adjacent to Powell Mountain and are separated from Copper Ridge to the south by the Clinch River.

To the north lies another Stone Mountain and Little Stone Mountain, both of which parallel Powell Mountain. A
number of ridges and spurs are found throughout this section, most of which are connected with Powell Mountain and in turn with each other.

The area on the south is drained by a number of creeks which empty into the Clinch River flowing to the southwest. The creeks which drain the northern slopes flow into the Powell River which flows to the west and into the Guest River which flows to the east. These creeks have formed hundreds of coves and hollows throughout the mountains and ridges.

The area ranges in elevation from 4000 feet on top of Powell Mountain down to 1200 along the Clinch, Powell and Guest Rivers.

History

The deer were all killed out of the Powell Mountain section by 1890, the last being killed in the vicinity of High Knob. Most of the desirable timber was removed from the section around 30 years ago. However, logging has been carried on intermittently for the purpose of securing timber for use in coal mines. Fires were common in the area prior to the establishment of the Clinch Ranger District at Norton on September 1, 1936. Since that time the area has been provided with fire protection.

Present Condition

The area is covered mainly with second-growth hardwoods and in sections where the timber has been cut within the last
few years the brush is quite thick.

The State Planning Board estimated in 1935 that 63% of Wise County, or 171,000 acres, was in forests, parks and wastelands. It also estimates that Scott County has only 19%, or 68,000 acres, in forests, parks and wastelands; however, most of the woods in Scott County are in the area described and are on Powell Mountain. This range is considered quite extensive and well suited for deer.

There are some farming areas northeast of Norton as well as some commercial apple orchards. The country is not so steep in this section, which permits general farming and grazing.

The chief occupation of the people in Wise County is coal mining. Some lumbering is also carried on. Most of the people reside in small towns and settlements along the valleys.

Most of the wooded areas are in the Clinch Ranger District of the Jefferson National Forest. This is a new ranger district, having only been established since 1936. More land will be added to the forest as it becomes available for purchase. Mining and lumbering will continue to be the main occupations in the area with the Forest Service expanding its holdings in the future.

Because of the extent and nature of the range the section is rated as excellent deer range.
Restocking

Wise County

The following deer were purchased from the Pisgah National Forest, Asheville, North Carolina, and released at Camp Rock, one mile southeast of High Knob:

On September 1, 1931 ten fawns - seven bucks and three does - were received and purchased on the cooperative plan. They were tagged with the following Pisgah National Forest numbers: Bucks: 6, 10, 12, 23, 24, 40 and 50; does: 7, 58, 95.

On September 9, 1931, six fawns - three bucks and three does - were purchased by R. S. Graham. They were tagged with the following Pisgah National Forest numbers: Bucks: 16, 51, 67; does: 69, 71, 97.

On September 2, 1932 ten fawn does were received and purchased on the cooperative plan. They were tagged with the following Pisgah National Forest numbers: 101, 120, 132, 147, 162, 201, 206, 223, 226, 235.

All of these deer were held on a farm near Norton and transferred to High Knob at intervals during the fall. $25.00 a head was paid for the above deer.

In February and March 1933, fifteen deer, - four adult bucks, three yearling bucks and eight adult does were purchased from C. E. Thomas, Pratts ville, Alabama, for $45.00 a head, Federal Aid funds being used for the purchase.
These deer were also released as above. Game Warden Dave O'Neill reported that the deer were in good condition when released.

Scott County

The following deer have been released on Powell Mountain at the head of Stock Creek, four miles south of Big Stone Gap, Scott County:

On August 28, 1931, twenty-five fawns - eight does and 17 bucks - were purchased from the Pisgah National Forest and held on a farm until released throughout the fall. They were tagged as follows: Pisgah National Forest tags numbered:
Bucks: 1, 9, 30, 31, 46, 52, 60, 61, 64, 65, 78, 79, 81, 85, 92, 93, 94; Does: 13, 39, 45, 49, 62, 83, 86, 90, 96. The above deer were purchased on the cooperative plan. The deer were reported as being in good condition by Fred M. Tompkins, Game Warden of Scott County, when released.

The deer released at High Knob were placed in charge of a local mountaineer. This man was so fond of the deer that he shot his own dog for chasing them. They stayed in the vicinity of his cabin for the first two years and did very well, the local residents being afraid to poach any of them because of the caretaker. About 1933 the caretaker ran afoul of the law for certain moonshining activities and was sent to prison. After this the deer began to suffer through poaching and dogs.
Present Deer Herd

It is estimated that there are 200 deer present in this section of Wise and Scott Counties. From the above stocking records it is evident that there are too many bucks in the area for the number of does. Their horning activities in the fall would indicate a larger deer population than is actually present, because of the fact that they travel a good deal during the rut.

The deer on Powell Mountain are well distributed throughout the mountain. They are found as far west as Big Stone Gap and Duffield. Some deer are found south of the mountain proper, on Stone Mountain, Chestnut Ridge and Copper Ridge. They are found as far east as the Guest River.

A herd of around 20 deer are found to the north of Powell Mountain on some ridges about four miles east of Norton. Some few deer are also found on Little Stone Mountain to the north-west of Powell Mountain.

In the northern part of the county near Pound, some 15 additional deer are located on some ridges. About half of these are located two miles south of Pound with the remainder being found just north of the town near the Kentucky line. It is believed that these deer have come into the county from Kentucky, which is carrying on a restocking program a few miles to the north of the state line.

The present herd is increasing and should do well in the future.
Mortality

The following known losses have occurred in Wise County:
A doe was found dead in Clear Creek near the school in 1934. Cause of death was not known.

A deer was found dead in the Guest River near the mouth of Hurricane Creek in 1935. Cause of death was not known.

Two deer were found dead and badly decomposed in the Guest River above Tocoma, one in 1936 and one in 1937. It is believed that they were chased into the river by dogs.

A doe was killed in 1935 one mile northeast of Wise by a man who was convicted and fined.

A doe was killed in 1935 by dogs near Buffort School.

A buck was killed by a car near Greton in 1935.

Three deer were killed by dogs in the summer of 1936 on a ridge four miles east of Norton.

The following known losses have occurred in Scott County:
A buck was killed in Cove Creek one mile south of Maple Gap in 1934 by dogs.

A doe was shot in the eye and blinded two miles south of Fort Blackwell on Copper Ridge in 1935. This deer was put out of its misery by Game Warden Alley and turned over to a local hospital. The man who shot the deer was tried but acquitted.

A doe was found dead near High Knob in 1936. The cause of death was not known.
A doe was killed by dogs in Little Stony Creek five miles south of Coburn in the summer of 1937.

A buck died in the winter of 1937 one and one-half miles northeast of Maybe. Its antlers had become wedged between a tree and a cliff where it succumbed.

Two deer were killed by dogs on Big Stony Creek below the mouth of Glady Fork. One was killed in November of 1938 and the other in May of 1939.

It is quite evident that losses due to poaching and dogs have been high in this section. These losses may be expected to continue in the future because of the type of people who live in these areas.

The law enforcement carried on by the State Game Wardens and Forest Service officials is considered excellent and should do much toward permitting the deer herd to build up rapidly. The present dog laws in Wise and Scott Counties should help in controlling the dog losses in the future.

Problems Presented by Present Herd

It is estimated that the county could support a herd of 3000 deer as compared with the 200 that are thought to be present at this time. There is no evidence of deer overbrowsing their range.

Some deer damage to orchards by browsing has occurred within the last year or two north of Tocoma. As the herd increases in size damage may be expected to increase in the
Conclusions

The releases in Wise and Scott Counties are regarded as a success. The deer are fairly well distributed throughout Powell Mountain.

Recommendations

It is recommended that the area be heavily stocked during the coming year.

It is recommended that an investigation be made of the area in the spring of 1942 relative to the opening of the season in the fall of 1942.

It is recommended that the dog laws be strictly enforced.
CONCLUSIONS

As a result of observations made on areas where deer have been released, it is felt that certain factors can be definitely associated with successful restocking and the presence or absence of certain conditions should determine the selection of areas for future deer restocking programs.

1. The areas where released deer have become established and have increased satisfactorily are composed of extensive wooded sections containing wooded valleys and bottom lands. It is apparent that small wooded areas are not suitable deer range, and when deer are stocked in small areas bordered on two sides by cultivated valleys they are less able to establish themselves and, becoming badly scattered, are usually destroyed by dogs.

2. In general the areas in which restockings were listed as failures or only partial successes were often inhabited by a class of people who were indifferent as to what became of the deer, and who poached the animals whenever the opportunity was presented. Best results have always occurred when the deer were placed in charge of a refuge keeper, or when local inhabitants were interested in the restocking program and were able to provide the necessary protection.

3. The restocking of deer in areas adjacent to important sections of orchard lands should be carefully considered in view of possible future deer damage before releases are
approved for such sections. The deer problem has already made its appearance in several sections and it is believed that a definite policy as to preventing or reducing such deer damage should be given consideration when restocking programs are decided upon. Proper evaluation of deer areas before restockings are begun should save the Game Commission many headaches and possibly large sums of money in damaged property.

4. By far the main source of loss of restocked deer has been dogs. The deer when run by dogs often leave the woods and are caught shortly after. It is believed that they leave the woods and try to reach bodies of water in which they can shake the dogs or cross open ground so that they can look back and see if they are still being pursued. Many losses which were listed as "Cause of death not known" are probably the result of injury resulting from having been chased by dogs. The custom of the natives in the sections covered in these investigations of allowing their dogs, and in particular hunting dogs of the hound type, to roam at large at all times is by far the greatest factor which has hindered the increase of the deer herds. Until the public becomes much better informed as to the great harm caused by these dogs, the owners of which form a comparatively small number of people in most communities, the success in restocking deer in the good deer range throughout the state will be definitely limited by this factor.
In view of the large number of browse plants which occur abundantly in wooded sections of Virginia, available deer food is not considered an important problem in areas otherwise suitable for restocking. Of primary importance are the location of deer ranges in relation to important farming and orchard sections where deer damage is likely to be serious, and extensive forest lands where the deer can find natural means of escape from their enemies, particularly self-hunting hounds, or where suitable artificial protection can be supplied.
BIBLIOGRAPHY


Aldous & Smith Food Habits of Minnesota Deer as Determined by Stomach Analysis, Transactions of the Third North American Wildlife Conference, pp. 756-767


Bailey, V. Mammals of Bath and Highland Counties of Virginia, Game and Fish Conservationist, May-June 1929, pp. 4-5


Case, G. The Influence of Elk on Deer Populations, First and Second Idaho Game Management Conference, School of Forestry Dec. 1938, Bul. No. 9, pp. 25-27


Darrow, R. A Study of the Food Preference of the White-tailed Deer in New York State, Transactions of the Twenty-first Game Conference, pp. 392-396

Darrow, R. Food Preference and Requirements of the White-tailed Deer in New York State, Bulletin No. 1, New York Conservation Department, pp. 1-35


Dixon-Summer The Deer Problem, Deer Trapping and Deer Removal at Zion Canyon, Utah, Transactions of the Fourth North American Wildlife Conference, pp. 231-235

Fitch, C. P. A Preliminary Note on the Occurrence of Head and Throat Bot in the Wild Deer (Cervus Virginianus) of Minnes-ota, Cornell Veterinarian, Vol. 16, 1928, pp. 355-357


Goldman, E. A. Management of Our Deer Herds, Transactions of the Nineteenth Game Conference pp. 49-61
Handle, C. O. The Present Status of the White-tailed Deer East of the Blue Ridge Mountains of Virginia, Virginia Academy of Science (Mss) 5 pages

Hill, R. R. Minnesota's Deer Problem, The Minnesota Conservationist, May 1938, 4 pages


Leffler, R. L. The Deer Situation in Pennsylvania, Transactions of the Fifteenth National Game Conference, pp. 180-185


Leopold, A. Deer and Dauerwald in Germany, Journal of Forestry Vol. 1, 1936, pp. 460-466


Maxweiler, J. Minnesota's Deer Problem, The Minnesota Conservationist, Oct. 1937, 6 pages


Mass, F. H. The Deer Situation in Northern Idaho, First and Second Idaho Game Management Conference, Dec. 1938, School of Forestry Bulletin No. 8, pp. 20-34


McKenney, J. E. Malignant Edema in Deer, Transactions of the Third North American Wildlife Conference, pp. 886-889


Newson, W. M. White-tailed Deer, Chaa. Scribner's Sons 1936, pp. 1-234


Patton, C. P. Deer Investigation Roanoke County, 1937-1938, 5 pages

Patton, C. P. Deer Studies, Tazewell, Smyth and Bland Counties Virginia, 1937, 8 pages


Ruff, F. J. Region S Technique of Wildlife Inventory, Transactions of the Fourth North American Wildlife Conference, pp. 542-545

Ruff, F. J. The White-tailed Deer of the Piesgah National Game Preserve (1938) pp. 1-249


Seaton, E. T. Lives of Game Animals, Doubleday, Doran & Co., Inc. 1928, pp. 231-322


Wildlife Leaflet BS-144, August 1939, Deer Raising in Captivity, pp. 1-6

Wildlife Research and Management Leaflet BS-117, June 1938, Protecting Orchard Trees from Deer - E. M. Mills, pp. 1-6