

SOME ASPECTS OF THE COOPERATIVE GAME MANAGEMENT PROGRAM ON VIRGINIA'S NATIONAL FORESTS

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We, in Virginia, are proud of the cooperative wildlife management program which has been in effect for over 15 years on the 1½ million acres of mountain land that comprises the two National Forests in our State.

The Virginia Plan, as the program is known, was started in 1937 when the Commission of Game and Inland Fisheries and the U. S. Forest Service agreed to work together to cooperate in managing wildlife species on the George Washington and Jefferson National Forests.

Located in the western part of Virginia, these two great National Forests have become increasingly important as major public hunting areas for the east. Located in 30 of Virginia's 100 counties, these National Forests extend for over 200 miles along western Virginia.

The cooperative wildlife plan was born from the concept that wildlife is a product of the land and that the control of the habitat and harvest of the game are two major tools in managing wildlife. Due to the fact that the U. S. Forest Service controls the land and the State of Virginia owns the game, it became apparent to wildlife workers that these two agencies had to join hands in order to manage the game on the vast acreage of Federal land. Thus, the cooperative wildlife program was born in Virginia.

With every plan of action there has to be a method of finance, so in 1938 the Virginia General Assembly passed a law requiring a special \$1.00 National Forest Stamp of every person who hunts, traps or fishes on National Forest land. The law also stated that this money had to be spent for wildlife restoration and management work on National Forest land and for this purpose only. In 1939 a total of 11,000 National Forest Stamps were sold. This figure grew over the years and in 1954 a total of 65,000 National Forest Stamps were bought by Virginia sportsmen.

In addition to this fund, the cooperative wildlife budget is financed by contributions from the Pittman-Robertson Fund, of which everyone, I believe, is familiar. The Commission also contributes matching money to obtain this P-R money.

In recent years the total wildlife budget, including all fish and game work done on the National Forests—totals about \$250,000. Since approximately 750,000 acres of the National Forests are within game management units this indicates that roughly 33 cents per acre is being spent in Virginia to manage fish and game on National Forest lands.

After the cooperative wildlife agreement came into being one of the most pressing needs facing wildlife workers was the re-establishment of the white tail deer in the western part of the State. In this area, deer had been eliminated or reduced to such a low number that stocking was a necessity.

In 1939 a system of game management units were established on the National Forests. These units ranged in size from 10,000 to 80,000 acres with a full-time Manager assigned to each unit.

Within these areas, some 1,790 deer were released during the period 1932 through 1943. These releases were highly successful and most counties had their first deer season in 1945. Now the annual deer kill from western Virginia totals 7,500 animals.

At the present, the personnel of the Cooperative Wildlife Program consists of 23 Game Managers. These men are the backbone of the program itself. These men are employed by the Commission and are assigned to game management units on each of the Forest Ranger Districts. Each Game Manager is paid by the Commission. In the early years of the program the Game Manager

came under the direct supervision of the U. S. Forest Ranger on whose district he works. Now the Game Biologist is his immediate supervisor.

The Game Manager is responsible for carrying out assigned game habitat development work; he also enforces the fish and game laws, carries out fish management work and cooperates with the U. S. Forest Service in boundary marking and fighting fires. The Ranger works with the State Game Biologist on all wildlife management work and approves all plans for wildlife development work on his district. He coordinates, through inspections, wildlife management work with the other uses identified with the National Forest; such as timber management, watershed protection and recreational use. It is this basic concept of multiple-use that has been the key to such successful cooperation in this program.

On each Forest Ranger District, the Ranger Assistant, is a very important person in the Cooperative Program. He is a representative of the Forest Ranger on the ground. He works with the Game Manager and expedites the game management work on the Ranger District by marking and disposing of timber or pulpwood or any other products that may be on a designated wildlife site selected for habitat development. He also hauls supplies to the Game Manager, directs boundary marking, assists in keeping records, and supervises the operation of Forest Service equipment, such as bulldozers, graders, trucks, etc., which are often used in game management work.

The State Game Commission has four Game Biologists assigned to work on National Forest wildlife work. The Game Biologist is responsible to the State Game Commission for all the game management work in his district. Detailed plans for habitat development work are drawn up by watersheds or in many cases on a game management unit basis. All plans, showing location, acreage, types and numbers of planned improvements, and required technical standards, are submitted to the Forest Ranger for prior approval before any of the ground work begins. Adequate wildlife inspections are made by the Game Biologist and Ranger to assure that development plans are followed. Monthly work plans are prepared for the Game Managers.

In the time that is left, I would like to tell you about some of the actual types of habitat development work we do in Virginia. The two National Forests are largely covered with dense stands of second growth timber—so, our biggest job has become that of land clearing and the creation of forest edge.

Wildlife clearings of one acre to five acres have been established throughout the forest—usually spaced $\frac{1}{4}$ mile apart. At present, the two forests contain over 5,000 acres of wildlife clearings and this figure increases at the rate of 300 acres per year. The overall goal is to place 1% of the forest in wildlife clearings or to clear 15,000 acres. On each wildlife clearing various wildlife foods are seeded. Every area is fertilized and limed according to soil sample analysis.

The first type of habitat work in any area is the reclamation of the many abandoned fields and orchards. This has been done widespread on the forests.

Within recent years, heavy equipment has replaced hand labor in land clearing operations. Heavy bulldozers of the D-7 class are employed for land clearing at an average cost of \$75 per acre. This is in contrast to the old "girdle and cut" method of hand labor which averaged \$125 per acre for land clearing.

Recently the development and improvement of woods roads and trails have been stepped up on the National Forests. We come into an area and widen trails to at least the height of the adjacent trees. These roads have a double purpose in helping to disperse hunters and also are excellent habitat developments.

Another feature to mention about our work on the National Forests is the use of "screenings" in our seeding program. "Screenings" consist of a mixture of grass seed heads, weed seeds and chaff obtained from the cleaning of grass seed or small grain. We obtain orchard grass "screenings" from several local seed houses and periodically send trucks to obtain "screenings" which we estimate costs us a cent per pound. Wildlife crews sow this seed on timber sale areas, rough forest clearings, eroded areas, woods roads, log landings or any opening in the forest where we wish to establish a little vegetative cover or control erosion. Some people question the use of such seed because of the

introduction of obnoxious weed seeds, etc. We, however, have found that no such growth results and that the germination appears as high as regular grass seed. Wildlife use appears high, since the resulting cover contains many valuable wildlife foods.

In Virginia the Commission and the U. S. Forest Service have a program to establish blight resistant chestnuts. We have over 100 blight resistant chestnut plantations established on selected spots throughout the National Forests. Some plantations are 15 years old and bear seed annually. Groups of 50 to 100 blight resistant chestnut trees have been planted with the idea that in years to come we would have a local seed source of chestnuts which would be distributed and planted on a wider scale. This program is endorsed by all.

Our program on the National Forests started out and still is one of habitat development, however, the program is moving very rapidly into a maintenance type of program. We are getting to a point where we have a total of around 5,000 acres in clearings on the National Forests and over 500 miles of wildlife trails and roads. Each Game Manager is faced with the problem of having so many clearings to maintain that his development work has been reduced to a minimum. We maintain our forest clearings and trails with tractor drawn rotary mowers and we estimate that a man with such a mower can maintain 4 to 5 acres per day. We carry on a program of using basal sprays on trails and clearings during the winter months.

Another interesting feature of our program on the National Forests is the development of hunter access roads. Hunter management has become a vital part of big game management on the National Forests. We have large blocks of forest land inaccessible to hunter use and get hunter use only around the edge. Through the development of access roads into this country we get the hunter back into these areas where they can harvest the animals that we want removed. Access roads also facilitate development work, establishment of clearings, and other features in managing this back country.

A wide scale salting program is carried on as part of our deer management program. We have found that through establishment of salt licks, water holes and wildlife clearings, we can hold our deer herds back away from populated areas where they could cause crop damage.

Another recent feature of our development program on Virginia's National Forests is that of establishing water holes. We construct a series of bulldozed basins or water holes for wildlife purposes throughout the forest. They usually are less than $\frac{1}{4}$ acre in size, and are often on mountain tops and ridges. The Soil Conservation Service is contacted from time to time to approve water hole sites and construction of these ponds. In other areas, we take advantage of natural springs and use dynamite to create small water holes. In still other areas we construct small log dams to back up basins of water for wildlife purposes. We feel that water is a very important tool in the management of big game and turkeys in Virginia, especially in mountain areas where many streams are intermittent and little water exists throughout the summer months. Deer, bear, raccoon and turkey use is heavy around established water holes. This phase of our program will be increased in the future, possibly to include some development for water fowl.

In conclusion, I'd like to state that wildlife living on the George Washington and Jefferson National Forests in Virginia constitutes a valuable and popular forest crop. Like any crop it has presented problems in its management.

Since 1938, the Commission of Game and Inland Fisheries and United States Forest Service have cooperated as a team to manage this valuable resource.

Only teamwork and close cooperation between these two agencies have made this wildlife management program a success.

TABLE OF WILDLIFE STATISTICS ABOUT COOPERATIVE WILDLIFE PROGRAM
ON VIRGINIA'S NATIONAL FORESTS

George Washington National Forest—Net Acreage.....	906,375
Jefferson National Forest —Net Acreage.....	544,640
(Total Acres—National Forest)	1,451,015

Number of Counties Containing National Forest Land.....	30
Acreage of Federal Refuge (Big Levels)	30,000
Acreage of State Game Refuge	7,000
Estimated Game Populations—White-Tail Deer.....	60,000-80,000
On National Forest	1,500
Land	3,000
—Black Bear	
—Turkeys	
Number Deer Stocked on National Forest Land	
Period 1932 through 1943.....	1,790
1954 Deer Kill (National Forest Counties)	7,460
1954 Bear Kill (National Forest Counties)	253
1954 Turkey Kill (National Forest Counties).....	500
Number National Forest Stamps Sold 1939.....	11,000
Number National Forest Stamps Sold 1954.....	65,000
Number of Cooperative Game Management Units.....	23
Size of Management Units—10,000 to 80,000 acres	
Number of Game Managers.....	23
Acreage in Game Management Units on Virginia's National Forests..	750,000
Number of Wildlife Clearings to Date.....	5,000
Number of Wildlife Roads and Trails (Miles).....	500

SESSION ON WETLAND RESOURCES

WINTER LOSSES OF CANADA GEESE AT PEA ISLAND, NORTH CAROLINA

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Mortality of Canada geese (*Branta canadensis*) wintering along the Outer Banks of North Carolina was reported as early as 1901. Since 1931 there have been yearly losses of varying intensity with peaks appearing to occur every 7-9 years. The last severe mortality was in the winter of 1948-49 and was reported to be centered on the Pea Island National Wildlife Refuge.

Following heavy losses during the winter of 1931-32, a number of short-term investigations were made. Unpublished reports covering these investigations indicated that heavy parasitism, malnutrition, adverse weather conditions, and wounding of birds by hunting were possible contributing factors, but they did not explain the recurrent excessive mortality. The present attempt to determine the cause or causes of losses was begun in the winter of 1949-50 and has centered primarily at Pea Island.

Initial work concentrated on examination of sick geese collected at Pea Island and control geese trapped at Pea Island, Mattamuskeet, Back Bay, Blackwater, and Bombay Hook National Wildlife Refuges. Results suggested that gizzard worm (*Amidostomum anseris*) infections and malnutrition were probably important factors in causing sickness. Renal coccidiosis, an early suspect, was ruled out as a primary factor because it occurred in only approximately 50 percent of the sick geese and was equally prevalent and intense in the controls. On the whole, parasitic infections were markedly heavier in the sick geese than in the controls; and, with few exceptions, the controls from Pea Island were usually more heavily infected than controls from other areas. At least 29 species of internal parasites were found in Pea Island geese; but only the gizzard worm caused readily apparent pathology, evident as erosion of the gizzard lining. It was also found most frequently, occurring in 98 percent of the sick, 98 percent of the Pea Island controls, and 74 percent