

U. S. G. W. P.
Maine Cooperative Wildlife Research Unit
University of Maine
Orono, Maine

QUARTERLY REPORT

January-March

1944

RESEARCH PROJECTS^{1/}

DEER MANAGEMENT STUDIES

Sub-project: Northern white cedar investigations

Objectives: To determine silvicultural factors involved in obtaining cedar reproduction suitable for deer browse.

Assignment: Professor James D. Curtis, Forestry Dept.

Curtis analyzed all available data which has been accumulated to date on this sub-project and formulated plans for the coming season's work. In spite of the press of regular duties, which are more acute than ever in view of the current manpower shortage, it is planned to continue this study on a somewhat modified scale in 1944.

RUFFED GROUSE MANAGEMENT STUDIES

Sub-project: Cover requirements of grouse in Maine

Objectives: To determine the forest cover types preferred or required by the birds with particular reference to those during the winter months and during the breeding season.

Assignment: Howard L. Mendall, Leader

Mendall devoted about eight days in each month of January, February, and March to field studies. A noticeable increase in the use of forest types containing conifers and in lowland covers was observed over last year and is most certainly due to the severity of the 1944 winter. Ice storms and heavy snowfalls have been of frequent occurrence in all except the extreme northern part of

^{1/} Only those projects on which work was actually carried out during the present quarter are listed in this report.

Maine. In the latter locality, surprisingly enough, a comparatively mild winter occurred.

As this study has progressed--and with an opportunity being afforded for Mendall to make more re-checks of sample areas throughout the State--it has become increasingly apparent that the present status of grouse is far from satisfactory. Field observations have been supplemented by questionnaires sent to game wardens and certain reliable sportsmen and, while these have not all been returned to date, they are tending to bear out Mendall's observations quite well.

In a few widely separated localities in northern, central, and south-central Maine, grouse numbers are still fairly good but these local instances are the exception and it is only in southwestern and northwestern Maine that the birds are consistently reported in anything approaching satisfactory numbers. The cycle appears to be at its lowest point in eastern Maine. It is believed that grouse shooting will be very poor over much of the State this coming fall.

Sub-project: Influence of forest types on food habits of ruffed grouse in Maine

Objectives: To ascertain, by collection of the digestive tracts of grouse and analyses of contents of same, the relative amounts of the various kinds of food taken, as correlated with the cover type in which feeding occurred.

Assignment: Charles P. Brown, Assistant Leader

Brown has now completed his thesis under the foregoing title and has been voted the degree of Master of Science in Wildlife Conservation. The summary and conclusions of his study are as follows:

"A study was made of the food habits of ruffed grouse in Maine during all seasons of the year. Attempts were made to determine the relations existing between food habits and food availability in five prevalent cover types. Type composition, with reference both to woody and herbaceous plants, was determined by tabulating information from cover data sheets filled out by the various persons who collected grouse during the study. Food items in each crop were measured volumetrically by the water displacement method, and recorded as a percent of the total food in the crop, while grit was recorded as a percent of the total crop content. Percentages of the various kinds of food were compiled by seasons, as well as by cover types. In arriving at percentage figures for seasons and types, individual percentage values for like items were totalled for all crops allocated to that season or type, and the sum divided by the number of crops, the resulting figure being an average percent. The literature was reviewed, and comparisons made with findings of this investigation. The following conclusions were drawn from this study:

"(1) A definite relationship exists between food availability and the kinds of food eaten by ruffed grouse in the various cover types.

"(2) The degree of interrelation between food availability and usage is highest in the old field and orchard type, since the birds frequent this type primarily for the purpose of feeding. The degree of interrelation is lowest where softwood tree species predominate, since this sort of cover is used by the birds largely for resting and shelter purposes.

"(3) The principal food items taken by ruffed grouse in each of the cover types studied, according to the tabulations, were as follows: in the mixed growth types, aspen, clover, and hazelnut; in upland hardwoods, clover, aspen, beech, and birch; in lowland hardwoods, clover, apple, willow, and hazelnut; and in old fields and orchards, apple, hawthorn, and sumac. However, as has been pointed out in the text, there is reason to believe that at least some of the volume of these foods had probably been taken in types other than those in which the birds were collected.

"(4) Grouse subsist largely on catkins and buds in winter and early spring; on fruit, leaves, and insects in summer; and on leaves, fruit, catkins, and buds in autumn. Animal food is of significance in summer only.

"(5) Aspen is the most important single year-round food of ruffed grouse in Maine, being of first importance in winter and spring. The three other most important items on an annual basis are clover, hazelnut, and apple. Wintergreen occurs among the ten most important foods for each season.

"(6) Food would rarely be a limiting factor for grouse in this State, except locally in extremely severe winters.

"(7) The ideal grouse habitat, from the standpoint of food supply, would contain a mixture of diversified forest types, interspersed with numerous small open areas. The optimum range for an individual grouse would be composed of limited acreages of mixed growth, hardwoods, open fields, orchards, and gravel roads. Large, unbroken tracts of one type of forest cover do not ordinarily support satisfactory populations of grouse, except around the edges."

Among the highlights of this study have been the determination of the high places held by aspen, clover, and hazelnut in the diet of Maine grouse. The importance of the two latter foods is especially noteworthy, since they formed very much higher percentages than previous studies by other workers in various parts of the ruffed grouse range have indicated. The degree to which buds are utilized by grouse was impressively shown during the study. This type of food was apparently

consumed from choice for a much longer period during the year than was necessary merely by the presence of snow in the covers.

A copy of Brown's thesis will be forwarded to the Chicago office in the near future.

Since this study is to be continued for a while as a Unit project, several specimens were collected by Brown and Mendall during the current period, and the stomach contents analyzed.

COOPERATION AND EDUCATIONAL WORK

Brown conducted the regular undergraduate course in game management during the winter term under the A.S.T.P. curricula.

Mendall continued his cooperative work with the State Pittman-Robertson program. Because of the drafting in March of the State's Research Leader, the waterfowl stomach analysis work (ordinarily performed by the Augusta personnel under Unit supervision) has now been taken over by the Unit. Brown and Mendall are carrying out this duty at present.

Cooperative work with the Extension Service in domestic rabbit production has continued. Charles E. Kellogg of the Chicago office met with Unit personnel and other interested individuals in furtherance of this work in connection with the University's annual Farm and Home Week program.

A number of lectures and illustrated talks were given by Brown and Mendall to various civic and service organizations in the vicinity of Orono.

Respectfully submitted,



Howard L. Mendall, Leader,
Maine Cooperative Wildlife
Research Unit

University of Maine
Orono, Maine
April 5, 1944.

file 077
Maine Cooperative Wildlife Research Unit
University of Maine
Orono, Maine

QUARTERLY REPORT

April-June

1944

RESEARCH PROJECTS^{1/}

ECOLOGICAL STUDIES OF MUSKRAT HABITATS IN MAINE

- Objectives:
1. To study environmental conditions and factors influencing muskrat populations in Maine.
 2. To determine specific interrelationships existing between the muskrat and its plant environment as well as between the muskrat and other wildlife species inhabiting the same marsh areas.

Assignment: Charles P. Brown, Assistant Leader

Because Brown was on leave of absence from the last of April until the first of June, he had no opportunity to carry out any field work on this subproject. Mendall devoted a few days during the woodcock and waterfowl investigations to checking muskrat conditions in eastern Maine, and also to making inquiries among trappers and wardens relative to the abundance of the animals in the trapping season.

The unsatisfactory status of Maine's muskrat population, observed for the past three or four years, is continuing. In contrast to water levels of a year ago, the waterways throughout the State were abnormally low this year. While this did not cause the mortality that flood conditions of 1943 did, it made for poor habitat conditions during the early part of the breeding season.

Very few muskrats, comparatively speaking, were taken in Maine this spring, due to the scarcity of the animals and also to the fact that far less than the normal number of trappers were active.

^{1/} Only those projects on which work was actually carried out during the present quarter are listed in this report.

DEER MANAGEMENT STUDIES

Sub-project: Layering experiments with white cedar

- Objectives:
1. To determine what percentage of living limbs which are put in contact with the soil will send out roots.
 2. To determine whether the branches which are not in contact with the soil will continue to grow and produce trees of browse size for white-tailed deer.
 3. To determine in this connection the approximate time required to place the trees in a position so that layering will take place.
 4. To determine what size of trees it is feasible to work with.

Assignment: Professor D. B. Demeritt, Forestry Dept.

In 1941 a number of small northern white cedar trees were pulled over and stems laid as near as possible to the horizontal on the ground and the tops were weighted down with logs or other debris conveniently located nearby. Another group was treated in the same area and in the same manner in 1942, except that in some cases individual limbs were artificially buried with leaf mold or moss in an attempt to stimulate layering. A re-examination of these treated trees was made in June 1944 and interesting observations were made. Of the trees overturned in 1941, 35 percent were browsed by rabbits and some portions of the crown were nearly dead on account of this browsing. Of the trees overturned in 1942, 25 percent were browsed by rabbits, half of them heavily so that the death of some limbs has occurred. Of the trees treated in 1941, one-third have limbs with roots well established as layers and of the 1942 trees, one-fifth have well established roots, some of them young roots just starting this year. Of the trees treated in 1941, one-fifth have started to grow at the tip from a horizontal to a vertical position and one-fifth of the trees treated in 1942 have also responded to this growth stimulus. In connection with the upturning of the tips it is interesting to note that the portion of the stem which turns upward has not only last year's growth and the current year's growth but in addition from two to four years previous to that. In no case have the trees started to send limbs up to form future tree stems. In all cases where limbs were artificially or naturally buried with leaves and duff to such an extent that green foliage was buried along with the woody part of the limb, the entire limb has died. It seems obvious that one of the necessary precautionary measures for rooting of layers is that the woody portion of the limb only be buried with the end of the limb containing foliage left uncovered.

Cedar trees can be made to produce immediate browse for deer by tipping them over by hand at any time of year except that period when the ground is frozen. Trees that are tipped over must not be large;

otherwise, the work of tipping them over is excessive. Three inches at breast height and twenty feet tall is about the largest tree that a man can pull over except in the most moist conditions. After the trees are pulled over, limbs which are buried leaving their tips of green foliage exposed will begin rooting--in some cases within one year--and the tip of the crown will begin to assume a vertical position again, sometimes within two years. Tipping these trees over makes browse immediately available for deer and rabbits and as soon as layering takes place the new growth will come up providing more low browse. The length of time required for the latter development has not yet been determined.

Sections have been taken of young roots developed from buried limbs and will be examined to determine the nature of the origin of these roots.

RUFFED GROUSE MANAGEMENT STUDIES

Sub-project: Cover requirements of grouse in Maine

Objectives: To determine the forest cover types preferred or required by the birds with particular reference to those during the winter months and during the breeding season.

Assignment: Howard L. Mendall, Leader

Mendall devoted about two weeks in April to field studies; also the results of the questionnaires sent out in the winter to wardens and sportsmen were analyzed. These data have borne out well the indications of low numbers of grouse as mentioned in recent quarterly reports. Except in south-central and in western Maine, the birds are in a very unsatisfactory status. Their scarcity is most apparent in eastern and northeastern sections. Although no time was spent during May or June specifically in grouse checks, much negative information on the birds was obtained during the woodcock studies in the eastern part of the State. Fewer drumming males and fewer birds along roadsides were recorded than in any year since the Unit's beginning. Only one grouse nest was seen by Unit personnel this spring, and few were reported by wardens.

Weather conditions at nesting and hatching time were very favorable for the birds.

MISCELLANEOUS STUDIES

Waterfowl Distribution Studies

Objectives: To obtain and compile all possible data on the distribution and abundance of waterfowl species in Maine, especially during the breeding and migration seasons.

Assignment: Howard L. Mendall, Leader

Mendall spent about a week in May and three weeks in June in the field obtaining distributional and nesting data. As was the case last year, the studies were largely confined to the most important and accessible breeding areas. Field studies in Maine were supplemented by two days' work in the Woodstock area of western New Brunswick. In connection with the nesting studies special attention was paid, as in 1943, to the black duck and the ring-necked duck.

The spring flights of ducks were very early this year because of the remarkably early date at which the streams and lakes were free of ice. Likewise, nesting was early for all species, especially so for black ducks.

The status of waterfowl as a whole during migration and the early part of the breeding season appeared to be about average, with some species naturally showing up better than others. Black ducks showed the greatest increase over 1943 of all waterfowl and are very abundant this year throughout the entire State. Wood ducks and blue-winged teal seemed to be present in about the same numbers as last year, while green-winged teal, goldeneyes, and ring-necks are apparently slightly reduced. Except for the black duck, however, none of the species recorded showed enough change from last year as to cause either great optimism or alarm.

Although not resident in Maine, the northward flights of Canada geese and brant appeared normal. Scaup continued to be about as scarce as they were last fall.

The nesting studies are proving to be quite successful. Intensive nest-hunting has resulted in the location to date of 20 ring-neck nests and 5 black duck nests--two more than were found last year. These nests are all being followed through and considerable information of value on life history and habitat requirements are being obtained. Weather conditions have been very favorable to date for breeding waterfowl in most portions of the State.

Brown spent two and one-half weeks in June assisting Mendall in locating nests.

Woodcock Studies

- Objectives: 1. To take an annual census on the Unit's census area located at the Moosehorn Refuge in Washington County, and on supplemental areas in the State.
2. To band as many juvenile woodcock as possible during the height of the hatching season.

Assignment: Howard L. Mendall, Leader

Mendall spent five days in April and three weeks in May conducting the annual census studies on the permanent census areas. A 26% increase over 1943 was noted. Since a complete report has already been submitted on this work, details will be omitted at this time. This figure shows the most favorable woodcock status noted in Maine since the peak year of 1939. Reports of observers in southern and central Maine (apart from regular census data) likewise indicate an abundance of birds.

Favorable weather conditions existed throughout the entire nesting season this year and a good hatch probably occurred. Because of the lack of personnel and the impossibility of obtaining the use of trained dogs, little efforts were made in checking or banding young. Eleven birds were banded incidentally to the census studies.

COOPERATION AND EDUCATIONAL WORK

Mendall continued his supervisory duties of the State Pittman-Robertson projects. Brown and Mendall completed the analysis of all waterfowl stomachs accumulated during the past year by Pittman-Robertson personnel.

The Unit has continued to participate actively in the program for the increased production of domestic rabbits.

As usual, assistance has been rendered whenever possible to members of the Maine warden force in identifying specimens, bones and remains of animals killed illegally.

Respectfully submitted,

Howard L. Mendall

Howard L. Mendall, Leader,
Maine Cooperative Wildlife
Research Unit

Univ. of Maine
Orono, Maine
July 12, 1944.

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Maine Cooperative Wildlife Research Unit
University of Maine
Orono, Maine

QUARTERLY REPORT

July-September
1944

RESEARCH PROJECTS^{1/}

MUSKRAT ECOLOGY

Objectives: To determine the influence of environmental factors on muskrat abundance.

Assignment: Howard L. Mendall
Charles P. Brown

In connection with the waterfowl studies, Brown and Mendall made numerous observations on muskrats throughout the summer in northern, eastern, and central Maine. In addition, Brown devoted four days in July specifically to the muskrat studies in south-central Maine.

In most of the sections covered the previously suspected low level of the muskrat population was clearly apparent, although a few local marshes showed satisfactory colonies. It seems more and more apparent that in Maine the combination of excessive fluctuation of water levels and over-trapping (as well as pollution in some areas) of a few years back has seriously affected the animals over a considerable portion of the State. Gorinna Stream (which was the study area of both Takes and Clark, and which had a high population of muskrats until 1941 and 1942) was surveyed by Brown in July and by Mendall in September. It is believed that fluctuating water levels and pollution were the chief factors in the decline here. This year the pollution was noticeably lessened but the water levels continue to fluctuate greatly and muskrats have failed to make any recovery whatsoever.

On the other hand, on the Moosehorn Refuge and in the Pocamoonshine-Crawford Lakes area in Washington County and at the Portage Lake marshes in Arcostock County, very good colonies of muskrats were found. At the two Washington County areas, dams specifically maintained for waterfowl have kept the water levels fairly constant and at Portage Lake the muskrats utilize floating islands which rise and fall in accordance with the water levels. All three of these areas are entirely free from pollution.

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WHITE-TAILED DEER MANAGEMENT

Sub-project: Northern white cedar investigations

Objectives: To determine silvicultural factors involved in obtaining cedar reproduction suitable for deer browse.

Assignment: Professor James D. Curtis, Forestry Dept.

In spite of being on a practically full time basis now with his regular University duties, Curtis managed to put in about ten days' work in September, checking the permanent cedar plots. In addition he re-checked the 500 specially tagged seedlings. At present he has not had the opportunity to analyze his data but this will be summarized in the next quarterly report.

RUFFED GROUSE MANAGEMENT

Sub-project: Cover requirements and populations.

Objectives: To determine preferred cover types and population densities.

Assignment: Howard L. Mendall, Leader

Mendall devoted about ten days during August and September to field work in this sub-project. Very favorable weather conditions existed throughout the nesting and rearing seasons but the decline of grouse in northern and eastern Maine, previously reported upon, is continuing. Fewer broods in early summer and fewer birds by roadsides in late summer were observed than at any time since the Unit was started. As nearly as can be determined, the summer of 1944 marked the extreme low point in the cycle in eastern Maine, and thus the birds' status should shortly improve. In northern and central Maine it is believed that the decline is still continuing. In southern and western Maine, grouse appear to be in more satisfactory numbers.

Probably because of the drought conditions of July, August, and early September, the cover preferences tended toward alder swales and mixed growth swamp habitats much more than is usual in summer.

WATERFOWL DISTRIBUTION AND LIMITING FACTORS

Objectives: To determine the distribution and abundance of waterfowl and to study limiting factors.

Assignment: Howard L. Mendall, Leader

Mendall devoted most of July and about two weeks during both August and September to the waterfowl studies. The work was a continuation of the June nesting study; also annual brood counts on the regular check areas, and early migration studies. Investigations in Maine were supplemented by about a week in western New Brunswick. Brown assisted Mendall for a week during July.

Resident waterfowl in Maine and New Brunswick had one of the best breeding seasons in recent years, and had the number of adults returning last spring been equal to that of 1943, a heavy production of all species would doubtless have occurred. This was not the case except with the black duck. Water levels fluctuated little except where industrial dams entered the picture, and weather conditions were favorable during nesting and rearing. There were no flood conditions as in 1942 and 1943, and the severe drought of summer had little effect on waterfowl. A mild spring season with ice going out at a remarkably early date enabled most species to nest earlier than usual and hence increased the chances for successful re-nesting when first nests were lost.

Breeding populations of teal, wood ducks, and ring-necked ducks showed little change in status from 1943--this being especially regrettable in the cases of the teal as these species had been reduced last year from their 1942 level. Two species, however, showed considerable change over 1943 in Maine. An almost phenomenal increase in the number of black ducks was observed throughout the entire State, while a heavy, and entirely unexplained, decrease was seen in golden-eyes. These changes were not as apparent in the New Brunswick marshes that were visited. The following table summarizes Mendall's conclusions on the comparative status of the game species of ducks:

STATUS BREEDING WATERFOWL -- SUMMER, 1944
(In comparison with 1943)

Species	Maine	Western New Brunswick	Combined Regions
Black Duck	Very marked increase	No change	Noticeable increase
Wood Duck	No change	No change	No change
Green-winged Teal	Insufficient data	No change	No change
Blue-winged Teal	No change	No change	No change
Ring-necked Duck	No change	Slight increase	Very slight increase
Golden-eye	Noticeable decrease	Slight decrease	Noticeable decrease

Considerable life history data of value were obtained on the black duck and ring-necked duck. Progress is being made now at a satisfactory rate, even in spite of the personnel shortage, on limiting factors and habitat requirements of these two species. This is especially desirable for the ring-necked duck in that this bird is constantly becoming of more importance to northeastern hunters; also because so little life history data on the ring-neck are available in the literature.

Highlighting the New Brunswick studies was the discovery of breeding redheads near Fredericton--the first authentic nesting record for this species in the Maritime Provinces.

MISCELLANEOUS

Hungarian Partridge Studies

Objectives: To release Hungarian partridges in a carefully selected study area, and to check on the success or failure of these releases in an endeavor to obtain specific information on the feasibility of attempting to stock certain areas in Maine with this species.

Assignment: Howard L. Mendall, Leader,

Mendall spent three days in August and September checking the experimental release area at Fort Fairfield in Aroostock County. Field investigations were supplemented by inquiries of farmers living in the vicinity. No birds were observed and as nearly as could be ascertained none has been seen since late summer of a year ago. Therefore, it seems that this sub-project can be considered closed, at least for the time being. In view of the fact that only 39 birds constituted the initial release it is likely that the experiment did not have a fair trial. Possibly at some future date after the war another release of Hungarian partridges can be made as the area appears to fulfill the environmental requirements of the species.

COOPERATION AND EDUCATIONAL WORK

Mendall continued his supervisory duties of the State Pittman-Robertson projects.

The Unit personnel continued to participate in the program for the increased production of domestic rabbits. Considerable progress has now been made in this endeavor in Maine, with satisfactory results.

Brown spent five days at Acadia National Park cooperating with the representatives of the Fish and Wildlife Service and Park Service in setting up deer study plots.

PUBLICATIONS

Brown spent considerable time during the quarter in preparing a manuscript for publication on ruffed grouse foods and feeding habits--based on data presented in his Master's thesis.

A paper by Mendall entitled "Food of Hawks and Owls in Maine" was published in the July issue of the Journal of Wildlife Management.

A short paper by Mendall relating to the breeding record of redheads in New Brunswick has been accepted for publication in The Auk.

PERSONNEL

Assistant Leader Brown has resigned his position here as of September 30 to accept a better paying job with the New York State Conservation Commission. Thus the Unit is now without an Assistant Leader.

Respectfully submitted,



Howard L. Mendall, Leader,
Maine Cooperative Wildlife
Research Unit

Univ. of Maine
Orono, Maine
October 10, 1944.

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Maine Cooperative Wildlife Research Unit
University of Maine
Orono, Maine

QUARTERLY REPORT

October-December

1944

Note: Because of the fact that the Unit was without an Assistant Leader during this entire quarter, field work was at a minimum, with progress being made on ^{only} two projects. A new Assistant Leader has now been appointed and it may be expected that the Unit's activities will be materially increased during the next quarter.

RESEARCH PROJECTS

RUFFED GROUSE MANAGEMENT

Sub-project: Cover requirements and populations

Objectives: To determine preferred cover types and population densities.

Assignment: Howard L. Mendall, Leader

Mendall spent about a week during each month of the quarter making field checks in northern and central Maine. The investigations were carried out primarily in covers checked during previous years but a few new areas were inspected. A continued scarcity of birds was noted practically everywhere, although some scattered covers held good local populations. The open season of six weeks produced the lightest kill of grouse for many years. A large number of regular grouse hunters forsook this particular sport in favor of woodcock or duck shooting. The prediction of some "experts" in the hunting fraternity that there were plenty of birds but they were frequenting the swamps because of the warm autumn was not borne out by post-season checks; unsatisfactory populations were just as apparent in December as they were in October and November.

The usual shift in cover preferences from the hardwoods of November to mixed growths or conifers in December was noted although this shift was far less obvious than a year ago, due probably to the fact that unusually mild weather prevailed throughout the first half of December.

WATERFOWL DISTRIBUTION AND LIMITING FACTORS

Objectives: To determine the distribution and abundance of waterfowl and to study limiting factors.

Assignment: Howard L. Mendall, Leader

About a week in October, 10 days in November, and a week in December were spent by Mendall checking waterfowl populations and conditions. One of the most outstanding facts was the greatly increased interest in duck hunting in this State, especially in northern, central, and eastern Maine. A gradual increase in the number of duck hunters has been noted for several years, and has been mentioned in previous quarterly reports, but this year the increase was unexpectedly heavy. Merrymeeting Bay, the lower Kennebec and Saco Rivers, and various coastal points in central and southern Maine have long been famous among waterfowl enthusiasts and these areas naturally were most favored this year. However, a marked increase in hunting activity was noted in the inland waters of northern and central Maine, and in both inland and coastal marshes of eastern Maine. A random "poll" compiled by Mendall among hunters contacted during the course of regular duties showed more new duck hunters this year than in any season since 1937 (when such contacts were first made), in spite of war conditions and ammunition shortages.

Duck hunting was generally quite satisfactory although it was only during the first week and the last three weeks that conditions were really favorable, and had it not been for the eight days' open season in December, coastal shooting would have been rather poor.

Fall flights through the State were quite good although they were highly erratic, possibly because of unusually mild weather throughout October and early November, and again during the first half of December. Black Ducks were very abundant all through the season, thus bearing out the favorable breeding season checks in Maine and New Brunswick. Wood Ducks and both species of Teal were somewhat scarcer than last year. These three species have not shown a very satisfactory status for three years. Buffleheads were present in about the same numbers as in 1943 but were late in arriving.

Aside from Buffleheads, the diving ducks presented a puzzling picture. Ring-necked Ducks migrated very early for some unknown reason. A small flight of Scaups occurred through central Maine late in October, but no appreciable numbers came in until the first of December. Even then their numbers were below normal and the flocks were made up largely of Greater Scaups (normally the Lesser Scaup is the most abundant migrant although the winter resident in Maine is the Greater). For the second year in succession no appreciable flights of diving ducks were reported in eastern Maine at any time during the fall. Early migrations of Golden-eyes all over

the State were very light--this being in line with the scarcity noted on the breeding grounds. However, heavy late flights during the last few days of November and in early December produced some of the largest flocks in the coastal marshes of Hancock, Penobscot, and Waldo counties that have been observed for many years. This would indicate an unusually successful breeding season in the northern parts of the range of the species.

The flights of Canada geese through the State were reported as heavier than a year ago, but since only a small minority of the geese stop in Maine waters enroute south it is not possible to obtain any accurate information on the status of the species except during the Spring.

It was very gratifying to note the continued increase of two former "rarities"--the Ruddy Duck and the Pintail. Although the former is still largely confined to southern and southwestern Maine, the Pintail is increasing as a migrant throughout the entire State.

Mendall spent the last week of December tabulating waterfowl data obtained during the summer and fall.

COOPERATION AND EDUCATIONAL WORK

Mendall made two visits, of two days' duration each, to the State's Swan Island Refuge to inspect the Pittman-Robertson projects.

Dr. Clarence Cottam visited the Unit in October. He spent five days with Mendall conferring on Unit activities, meeting some of the State cooperators, and looking over various field projects.

PUBLICATIONS

Mendall read and revised a preliminary draft of former Assistant Leader Brown's thesis manuscript which is being prepared for publication.

A paper by former Graduate Assistant Takos entitled "Summer Movements of Banded Muskrats" was published in the October issue of the Journal of Wildlife Management. This study was carried out while Takos was connected with the Unit.

PERSONNEL

Jay S. Gashwiler has just been appointed as Assistant Leader and Instructor in Game Management to fill the vacancy caused by Brown's resignation in September. Gashwiler, who was one of the

first of the Unit's graduate assistants, has recently been Junior Refuge Manager at the Parker River National Wildlife Refuge. His appointment here is to be effective as soon after January 1 as his release from the Refuge Division of the Fish and Wildlife Service is forthcoming. He has already reported for duty and is serving in a temporary capacity pending receipt of the release.

Respectfully submitted,


Howard L. Mendall, Leader,
Maine Cooperative Wildlife
Research Unit

Univ. of Maine
Orono, Maine
January 2, 1945