Maine Cooperative Wildlife Research Unit
University of Maine
Orono, Maine

QUARTERLY REPORT

January-March
1943

RESEARCH PROJECTS

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.

Because of the press of many other duties, Curtis was not able to devote as much time as usual during the past year to the cedar reproduction studies. He made the regular spring and fall checks on the permanent plots, and has recently completed the tabulation of his data. His accomplishments for the year may be summarized as follows:

A. Alton. The only work carried on was the spring and fall collection of foliage and the annual reproduction counts and examination of individual trees.

B. Forest Nursery. The seed beds sown in 1941, 1942, and 1943 were cultivated and cared for. Good seedling growth was noted.

C. Seed Spots and Broadcast Sowing. Spring and fall examinations of the seed spots were made. Density of vegetation at present excludes an examination of the broadcast seeded areas and continuance of the seed spots with any degree of reliability. It is hoped that some data of value may be obtained in future checks.

D. Seedling Survival. Spring and fall examinations of the 550 tagged seedlings were made to record mortality. Losses from lack of moisture, deer trampling, and smothering by moss were determined with certainty.

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 10 days during each of January and March and two weeks during February to field work on the grouse studies, visiting the regular check areas and also inspecting a few new covers in central and northern Maine.

The cover preference trend from hardwoods to mixed growths and conifers, noted to only a moderate extent prior to late December, was very pronounced during the last few days of that month and early in January. Even more apparent was the heavy utilization of lowland covers. Undoubtedly these changes were occasioned by the very severe weather conditions. From the last week of December until the middle of February frequent and heavy snowfalls occurred in all parts of Maine, and these were interspersed with several periods of high winds and very low temperatures. Temperatures for January were somewhat below normal and total snowfall was far heavier than normal. In spite of these conditions, few losses among grouse were noted, a situation which may likely be attributed to an absence of severe ice storms. Since mid-February the weather has been much milder than average and an early Spring is indicated.

During the winter's work considerable time was spent in developing a roadside census technique which, although not having much value in determining actual populations, offers some promise of being very useful for indicating comparative trends and relative abundance.

Special emphasis was placed in compiling all possible data on the status of grouse populations in various parts of the State, field work by the Unit personnel being supplemented by analyzing reports from game wardens and a few carefully selected sportsmen. Gradually, a reasonably accurate picture is being obtained although, unfortunately, it is not very gratifying. Unsatisfactory trends continue throughout much of northeastern, central, and eastern Maine, although it appears that the low point in parts of eastern Maine has been reached--a slight improvement being noted in a few localities in southeastern Aroostook County and northeastern Washington County. A definite upswing in the cycle is indicated in the south-central sections of the State and conditions continue quite satisfactory in southwestern Maine--as they were a year ago. These gains are offset, however, by marked decreases in the northwestern and north-central sections. In the vast forested area of the Moosehead and Allagash regions (which normally produce Maine's heaviest grouse populations), the wardens are almost unanimous in their reports

of decreases. Mendall's personal field checks did not include the latter area but in the Moosehead region they bore out the wardens' reports very closely.

To supplement the data from Maine, Mendall spent 10 days during February checking covers in western and northwestern New Brunswick, visiting most of the areas inspected three winters ago, although traveling a little further north this year and omitting some of the southern localities. The trip was very productive in that many comparative data were obtained.

Assistant Leader Gashwiler made a weekly census on the permanent grouse study area on the University Forest. He also spent about 10 days analyzing the digestive tracts that have accumulated since Charles Brown's departure and in completing the Unit's reference collection of food material.

COOPERATION AND EDUCATIONAL WORK

The Unit's cooperative work with the State Pittman-Robertson program has continued. Mendall conferred with State officials in Augusta and with John Pearce in the Boston office relative to this year's program on the Swan Island area. All waterfowl stomachs that had accumulated during the past year were analyzed in the Unit laboratory by Gashwiler and Mendall during January and February.

Cooperation with the Extension Service in domestic rabbit production has likewise continued.

The usual assistance has been given game wardens and private individuals in autopsying specimens and in answering inquiries.

By request of the Chicago office, Mendall prepared a report analyzing the Unit's accomplishments from its beginning nine years ago. During the preparation of this report, a great deal of file material had to be examined. This work indicated a need for certain revisions in the Unit's filing system and this reorganization was accomplished during the quarter by the Unit staff.

Several lectures and illustrated talks were given by Gashwiler and Mendall to civic and sportsmen's organizations.

Dr. Gustav Swanson, of the Chicago Office, visited the University in March and spent four days conferring with the State cooperators and in going over the Unit program in considerable detail with Gashwiler and Mendall.

PUBLICATIONS

A detailed paper by former Graduate Assistant Saveraid entitled "Pelage Changes in the Snowshoe Hare" was published in the February issue of the Journal of Mammalogy. This study was carried out while Saveraid was connected with the Unit.

Respectfully submitted,

Howard L. Mendall

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

Univ. of Maine,
Orono, Maine.
April 4, 1945.

Maine Cooperative Wildlife Research Unit
University of Maine
Orono, Maine

QUARTERLY REPORT

April-June
1945

RESEARCH PROJECTS

MUSKRAT ECOLOGY

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

Assignment: Jay S. Gashwiler, Assistant Leader

Efforts were made during the past quarter to renew active work on the muskrat project--such studies having been largely at a standstill for two years because of the pressure of other duties. Gashwiler devoted full time for about a week to field studies; also both Gashwiler and Mendall obtained considerable data on muskrats during the spring woodcock and waterfowl investigations. During this time many wardens and trappers were contacted throughout the State in an effort to obtain all possible information as to the present status of the animals. Trapping results this spring were generally unsatisfactory, and it seems apparent that many of the State's waterways are somewhat underpopulated.

A new study area was laid out by Gashwiler to obtain specific data on muskrat ecology--a marsh at Mattanawcook Lake in the township of Lincoln, Penobscot County, being selected. This marsh is of the bog brush-sedge meadow type. It had been decided to establish the new study area under different habitat conditions from the Corinna area where most of the Unit's previous muskrat studies have been made. The Lincoln marsh is not as large as that at Corinna, but since the Unit is operating on a reduced budget and under the handicap of personnel shortages, it seemed better to obtain a limited amount of relatively complete data than to establish a large study area and be unable to give it adequate coverage. Gashwiler has prepared a large-scale map of the study area and is making bi-monthly checks to determine food preferences and utilization and to procure phenological data. Other ecological studies will be made later in the year.

In April Gashwiler made a trip to a privately-owned muskrat marsh at Camden, in Knox County, and inspected habitat conditions

there. This area is to be flooded this fall to create additional marshland. Through a cooperative agreement with the owner, the Unit is in a position to obtain comparative information relative to muskrat populations and plant distribution before and after permanent water level changes.

WATERFOWL DISTRIBUTION AND MANAGEMENT

Objectives: To obtain all possible data on the abundance, distribution, and migration of waterfowl species in Maine; and to conduct research that will assist in the management of the important species breeding in Maine, especially the ring-necked duck and the black duck.

Assignment: Howard L. Mendall, Leader

Mendall spent about a week in April, two weeks in May, and three weeks in June in the field obtaining distributional and nesting data. These studies were supplemented by three days' work in the Fredericton area of New Brunswick. Gashwiler devoted a week in May and two weeks in June to assisting in this work.

Spring waterfowl flights were remarkably early this year and all species other than the blue-winged teal arrived from 10 to 15 days ahead of their average. Nevertheless, except for black ducks and buffleheads, most species showed a decrease in numbers from last year. This decrease was heaviest in the cases of the wood duck, the golden-eye, the two species of scaup, and the two species of teal.

The nesting studies are proving very successful. Intensive searches have resulted in the location, to date, of 37 nests--10 more than were found last year. These are divided as follows: ring-necked duck -- 27, black duck -- 7, blue-winged teal -- 2, and wood duck -- 1. Each of these nests has been, or will be, re-checked at periodic intervals until successfully hatched or destroyed. Much information of value in a possible management program is being obtained. In view of the almost complete lack of specific knowledge as to the life history of the ring-necked duck and the lack of previous studies on the black duck in the northeast, this project appears very much worth while.

The abnormal weather of the entire spring and the summer to date have had a definite effect on waterfowl. Despite record-breaking dates for early breaking up of the ice and corresponding early migration dates, the nesting of waterfowl has been very irregular and actually retarded in comparison with 1944. This may be due either to the prolonged cold and wet period during the last half of April and all of May or to the flooded conditions of most of the waterways during May.

As was noted during the past two years, the crow has been the most important single factor in nest losses. Second in importance this year has been floods. Nests of both the ring-necked duck and black duck that were under observation were lost during the rise of water in mid-May. At that time water levels on most Maine waterways were actually much higher than they usually are at the time of the spring break-up.

An interesting sidelight was the finding of a black duck drake mated with a pintail hen. These birds were observed on the Moosehorn Refuge by State Warden Lloyd Clark, by Refuge Manager Smith, and by Mendall over a period of about three weeks. It seems quite apparent that these birds nested, but presumably the eggs were infertile or else the nest was destroyed by the flood conditions of mid-May.

WOODCOCK RESEARCH

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 devoted most of the period from April 15 to May 15 to the annual woodcock census studies. Gashwiler assisted in this work for three weeks. In addition to studies on the regular census areas, seven new areas were established to give future coverage in all parts of Maine. The Maine Unit also sponsored a plan whereby woodcock census data were obtained in the other New England States and New York. These census reports were analyzed and correlated by Mendall. Since a complete report has already been submitted covering the details of the census studies, it does not appear necessary to repeat the information at this time.

As has been the case during the past few years, personnel shortages and difficulties in obtaining the use of trained dogs have made it impossible to carry out an adequate banding program. Through the cooperation of two of the State Wardens, however, a few woodcock were banded during the course of the census studies.

COOPERATION AND EDUCATIONAL WORK

The Unit's cooperative work with the State Pittman-Robertson program has continued. Gashwiler and Mendall participated in a two-day inspection trip of the Swan Island Refuge and conference of Pittman-Robertson waterfowl workers from the northeastern states held there in April.

Cooperation with the Extension Service in domestic rabbit raising has continued. This enterprise is becoming increasingly important in Maine.

Gashwiler spent three days assisting Regional Biologist Goodrum with the latter's deer investigations at Acadia National Park.

Mendall participated in the annual State Game Warden School and gave instruction on game birds and conditions affecting them.

Gashwiler devoted two days to assisting members of the State Park Commission and Boy Scouts in developing a wildlife program at Sebago Lake State Park.

The usual assistance has been given game wardens and private individuals in autopsying specimens and in answering inquiries.

PUBLICATIONS

An article by Mendall entitled "Non-Game Birds in a Game Management Program" was published in the April issue of the Bulletin of the Maine Audubon Society.

Respectfully submitted,

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

Univ. of Maine,
Orono, Maine.
July 3, 1945.

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

QUARTERLY REPORT

July-September
1945

RESEARCH PROJECTS

MUSKRAT ECOLOGY

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

Assignment: Jay S. Gashwiler, Assistant Leader

Gashwiler continued work during the quarter on the new muskrat study area established last spring at Mattanawcook Lake in Lincoln. Bi-monthly checks were made to obtain data on food preferences and utilization. The principal foods of late summer were found to be arrowhead (*Sagittaria latifolia*), cattail (*Typha latifolia*), and pondweed (*Potamogeton natans*). Animal foods were taken very little during July and August, but constituted a fairly significant part of the September diet of the animals.

Gashwiler spent four days in establishing sample quadrats to determine the relative amounts of available vegetation in each of the cover types of the area.

The status of muskrats in Maine as a whole continues to be unsatisfactory.

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 10 days during August and September to field work on the grouse studies, and also obtained a few data during the course of the waterfowl work.

In general, the production of grouse was at a very low point, due probably to the combination of two factors: inadequate breeding

stock, and unfavorable weather conditions. Early nesting birds suffered losses through the abnormal cold and wet weather of May and June, and late, small-sized broods were found throughout the summer.

A slight improvement in the status of grouse in extreme eastern Maine was noted--thus bearing out the belief expressed in previous quarterly reports that last year marked the low point in the cycle there. Continued decreases were noted in northern and central Maine.

WATERFOWL DISTRIBUTION AND MANAGEMENT

Objectives: To obtain all possible data on the abundance, distribution, and migration of waterfowl species in Maine; and to conduct research that will assist in the management of the important species breeding in Maine, especially the ring-necked duck and the black duck.

Assignment: Howard L. Mendall, Leader

Mendall devoted most of July and about two weeks during each of August and September to this project, continuing the breeding study reported upon last quarter. Work in Maine was supplemented by 10 days of study in western New Brunswick. Gashwiler assisted Mendall for about two weeks during July.

All nests were re-checked at intervals until hatched or destroyed and brood counts were made throughout the summer. Of all nests under observation during 1945, slightly under half were successful, this being the first year that nesting success was lower than 60%. Chief cause of mortality, either directly or indirectly, was the excessively high water levels of May and June. Among the predators responsible for nest losses, crows and minks were of most importance.

As could be expected during a year of high nesting mortality, brood averages were correspondingly low and were, in fact, the lowest recorded during the Maine studies since the summer of 1939. It seems significant to point out that brood averages of the blue-winged teal, the green-winged teal, and the ring-necked duck, although low, were not as far below normal as were those of other species. These three ducks are the last to nest and apparently were not so badly affected by high water. The earlier nesting species, especially the black duck, wood duck, and goldeneye, fared somewhat worse.

The poor production of waterfowl in this region during 1945 was even more regrettable in view of the apparent reduction of breeding birds at the start of the season. This decrease was most

noticeable in the cases of the goldeneye and wood duck. No reason is immediately forthcoming. There has certainly been a reduction in nesting sites for these two hole-nesting species because of extensive timber operations during the war; yet lack of nesting sites does not appear to account for such a heavy decrease, especially in view of the fact that the hooded merganser (also a hole-nesting species frequenting similar waterways) has actually increased during this same period. Other resident waterfowl showed rather unsatisfactory numbers in Maine. Although populations in western New Brunswick were relatively a little better, substantial decreases among several species were noted. Nesting mortality of some consequence due to spring floods was likewise indicated in New Brunswick this year, despite a recent public statement to the contrary. The following table summarizes Mendall's conclusions on the comparative status of the game species of ducks:

Status of Breeding Waterfowl -- 1945

(In comparison with 1944)

Species	Maine	Western New Brunswick
Black Duck	Slight decrease	Slight decrease
Wood Duck	Heavy decrease	Slight decrease
Green-winged Teal	Insufficient data	Slight decrease
Blue-winged Teal	No change	Slight increase
Ring-necked Duck	Slight decrease	Slight increase
Goldeneye	Heavy decrease	Heavy decrease

WOODCOCK RESEARCH

Sub-project: Cover management studies

Objectives: To obtain growth data and plant succession data on the cover sample plots at the Moosehorn National Wildlife Refuge.

Assignment: Jay S. Gashwiler, Assistant Leader

Gashwiler spent three weeks in August continuing the annual forest plot studies on the Moosehorn Refuge in Washington County.

This work was a continuation of the studies carried out by Gashwiler when he was a member of the Refuge Division of the Fish and Wildlife Service. Although it is a long-time investigation it offers promise of obtaining valuable information in the management of woodcock covers in the northeastern region.

MISCELLANEOUS STUDIES

Waterfowl Banding

Assignment: Jay S. Gashwiler, Assistant Leader

Gashwiler devoted most of his time during September to the operation of a banding station on the Penobscot River. Five traps were operated between Lincoln and Passadumkeag and the most successful banding season was experienced since this work was initiated. Although about two weeks of baiting were required before any birds were caught, Gashwiler banded a total of 225 ducks during the last two weeks of the month. These were distributed as follows: black duck -- 121; wood duck -- 101; mallard -- 2; blue-winged teal -- 1.

COOPERATION AND EDUCATIONAL WORK

The usual cooperative work with the Extension Service in domestic rabbit raising was continued, as was that with the State's Federal Aid program. Assistance was given members of the Department of Inland Fisheries and Game and the personnel of the Moosehorn National Wildlife Refuge upon several occasions.

PUBLICATIONS

An article by Mendall entitled "Redhead Breeding in New Brunswick" was published in the July issue of The Auk.

The Unit staff spent considerable time in the revision of former Assistant Leader Brown's manuscript on the ruffed grouse. This material has now been submitted to the Journal of Wildlife Management for publication.

Respectfully submitted,

Howard L. Mendall

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

Univ. of Maine,
Orono, Maine.
October 10, 1945.

Quarterly report

Office copy

Maine Cooperative Wildlife Research Unit
University of Maine
Orono, Maine

QUARTERLY REPORT

October-December

1945

RESEARCH PROJECTS

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 Department.

During the past year Curtis made the regular spring and fall checks on the permanent study plots and tabulated the data thus obtained. His report is summarized as follows:

A. Alton. Since these plots have now been established for five years, a complete check was made which included reproduction counts, seasonal collections of dead foliage, and measurement of all trees on the plots.

B. North Bradford. No work was carried out on these plots other than a small amount of thinning.

C. Forest Nursery. The seed beds which were sown in 1941, 1942, and 1943 were cultivated regularly. As was the case last year, a good growth of these seedlings was noted.

D. Seedling Survival. Spring and fall examinations of the 550 tagged seedlings on the various sites were made to record mortality. Losses from lack of moisture, trampling by deer, and smothering by sphagnum moss continue to be the chief causes of mortality.

MUSKRAT ECOLOGY

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

Assignment: Jay S. Gashwiler, Assistant Leader.

Gashwiler continued his bi-monthly checks of the Lincoln area throughout October and November, obtaining data on food utilization. His activities were halted the last of November by the freezing of the marshes. For about three weeks the ice was too thick to permit travel by boat, yet not firm enough to enable the work to be conducted on foot.

During November, preliminary surveys were carried out on a newly selected study area in Eddington -- an excellent marshy thoroughfare between Davis and Holbrook Ponds. A third study area was selected -- this one being in Washington County. Although it is the smallest unit of the three, it affords an opportunity to obtain data not possible on the other two; there will be no trapping because it is on the Moosehorn National Wildlife Refuge, and the water levels will be controlled by a recently constructed dam. Gashwiler spent a week in November mapping this area and establishing sample quadrats to determine the relative amounts of available vegetation before the new change in water level occurs.

Gashwiler also obtained considerable data from the files of the Department of Inland Fisheries and Game on the catch of muskrats in recent years; he devoted considerable time in December to tabulating and analyzing these data.

RUFFED GROUSE MANAGEMENT

Sub-project: Cover requirements and populations.

Objectives : To determine preferred cover types and population densities.

Assignment: Howard L. Mendall, Leader.

Mendall made the usual fall checks of grouse covers, spending about a week during each month of the quarter on this work. For the most part, covers checked in previous years were examined in order to obtain the maximum amount of comparative data.

As was to be expected, the grouse population in the State as a whole continued to be unsatisfactory. Birds were scarce both during and after the hunting season over much of Maine. Although wardens and deer hunters reported seeing more birds after the grouse season closed, this situation is usual because of the fact that the grouse generally move to more open covers in November.

By way of summarizing the abundance of grouse, Mendall's studies indicated a continued decline throughout northern, northwestern, and central Maine. On the other hand, in Washington and Hancock Counties in eastern Maine, a definite increase in the numbers of grouse was noted. This increase in 1945 has been predicted for eastern Maine for some time. Studies by Unit personnel have been carried out there continuously since 1936, and during the period the grouse population has fluctuated through a definite range -- building up to a peak in 1938 and 1939, then declining until 1944.

The usual December cover shifts by the birds from upland to lowland covers and from hardwoods to mixed growth was noted, but, as was the case a year ago, the mild weather of early December caused this shift to be very gradual and to occur later.

Mendall continued the work started last year on the development of a roadside census technique.

WATERFOWL DISTRIBUTION AND MANAGEMENT

Objectives: To obtain all possible data on the abundance, distribution, and migration of waterfowl species in Maine; and to conduct research that will assist in the management of the important species breeding in Maine, especially the ring-necked duck and the black duck.

Assignment: Howard L. Mendall, Leader.

Making the regular fall migration checks, Mendall devoted about ten days during each of October, November and December to field work on this project. As has been noted in recent years, the increased interest by the sportsmen of Maine in duck hunting has continued, both in the interior of the State and in the tidewater and coastal marshes as well. In the famed Merrymeeting Bay area, the largest number of hunters in history ~~were~~ were present on the opening day of the season, according to wardens' reports.

In the inland marshes hunting conditions were extremely variable due to the unusually mild weather of the fall and the resulting eccentric migration of waterfowl. With no appreciable October freeze-up anywhere in Maine, some favorite hunting areas had almost no birds, while others afforded unusually good shooting. On the coast, the hunting was poor during the first part of the season, but steadily improved and the last half of November found practically perfect conditions with heavy kills resulting.

Because of the somewhat erratic migration of fowl this year, it was difficult to accurately determine the status of the various species, but there appeared to be a slight decrease of the group as a whole, this being in line with the rather poor northward flights last spring and with the unfavorable breeding season in this region. Both species of teal, the ring-necked duck, and the bufflehead showed little change in

status over last fall; more ring-necks were shot, however, than in 1944 because they migrated later. Black ducks were less plentiful than usual during the first half of the fall season but the late November flights were very good -- this fact indicating the northern birds enjoyed a much more successful breeding season than did those nesting in Maine and New Brunswick. Unsatisfactory populations were noted for the wood duck, golden-eye, both species of scaup, and the pintail. The latter duck, which has been steadily increasing in migration from its status of a "rarity" ten years ago, was not plentiful in Maine this year. For the third consecutive year there was a complete absence of a scaup flight in eastern Maine, while very few of these birds were reported at other sections of the State.

COOPERATION AND EDUCATIONAL WORK

The usual cooperative work with the Extension Service in domestic rabbit raising was continued, as was that with the State's Federal Aid program.

PUBLICATIONS:

An article by former graduate assistant Severaid, entitled "Breeding Potential and Artificial Propagation of the Snowshoe Hare", was published in the October issue of the Journal of Wildlife Management.

An article by Mendall entitled "Canada Geese Nesting in Maine" was published in the October issue of the Auk.

PERSONNEL

Miss Florence Laplante, Secretary-Clerk of the Unit since 1937 resigned in November. She has been replaced by Mrs. Grace Hanscom.

Malcolm Coulter, the last graduate assistant appointed prior to the wartime curtailment of activities, has now been released by the Army and reported to the Unit December 31. He will resume his work, which was interrupted by the war, and has been assigned to the muskrat project as his thesis study.

Respectfully submitted,

Howard L. Mendall, Leader
Maine Cooperative Wildlife
Research Unit

Univ. of Maine,
Orono, Maine,
January 10, 1946.