

MAINE COOPERATIVE WILDLIFE RESEARCH UNIT

Quarterly Report

January-March, 1955

RESEARCH PROJECTS

FUR ANIMAL RESEARCH

Ecology of the Fisher

Objectives: To obtain data on the distribution, habitat preferences and winter food habits of the fisher.

Assignment: Malcolm W. Coulter, Assistant Leader

Ten fisher, taken accidentally by trappers in sets intended for other animals, were examined during the quarter. These specimens were submitted by game wardens and regional biologists. Many of these men have also contributed observations of fisher activity or distribution. Largely because of the splendid cooperation of these men scattered over the State, a total of 53 fisher has been examined at the Unit laboratory since the last legal trapping season in 1950. These collections are of special value since they have provided data for the period from October to April. Most previous specimens were taken only during the month of January.

At the end of the 1950 trapping season brief mention was made in the quarterly report concerning the incidence of porcupine quills in the specimens examined. Thirteen (87 per cent) of 15 males had quills embedded in the flesh while only 2 (5.8 per cent) of 34 females showed evidence of quills. Analysis of data since that date indicates a similar situation. Seventy-five per cent (24 of 32) of the males have had from one to over 100 quills throughout the body. Quills were found in only 25 per cent (5 of 20) females. For the total sample for which these data are available 79 per cent of the 47 males and 13 per cent of the 54 females have contained porcupine quills. This suggests that the larger male is much more inclined to attempt to prey upon porcupines. Another interesting trend is that few fisher from areas well within the established range contain evidence of quills, whereas a higher proportion from ranges more recently occupied have attacked or fed upon porcupines. In this connection porcupines are very abundant in the southern half of Maine. At this session of the State Legislature, proposals have been introduced to place a bounty on these rodents. Yet in the northern areas, where fisher are common, the porcupine has been decreasing in recent years.

Four trips were made during the quarter to study areas. Two new areas were investigated in Piscataquis County. These are near the edge of fisher range and they present habitat conditions quite different from those found further north. At one area, in the town of Parkman, fisher are living in a tract of woodland bordered on all sides by farmlands or villages. The presence of human activity, including old and recent woods operations, seems to have little influence. Some of these animals are using covers within a few hundred yards of occupied farms.

Several scats were collected during the quarter and additional information gathered on hunting habits and winter activity.

Graduate Assistant Marquardt began analysis of some of the accumulated stomachs and droppings. Leading foods determined thus far are snowshoe hare, porcupine, deer, shrews, mice, squirrels, and birds in that order. It should be pointed out that it is believed that the deer remains represent carrion. No field evidence of fisher habitually preying upon deer has been found although the animals have been tracked through deer yards on many occasions. Also, instances of fisher feeding upon deer that had died from other causes have been observed.

The high incidence of shrews is of interest in view of the fact that some mammals often kill, but seldom eat these animals.

In only one case has ruffed grouse been identified from fisher food materials. Much of the evidence of birds is believed to be from song birds.

A bill has been introduced at the current session of the State Legislature to permit trapping of fisher for 30 days during parts of November and December, 1955 and 1956. The bill includes the essentials of the recommendations made by the Unit regarding length of season, approximate time for an open season, and the general area in which fisher may be taken. The proposed legislation, will, if passed, permit a harvest in most of the areas where fisher are abundant. Protection will be given the fisher in sections to which the animal has recently moved or where sizeable populations are not yet well established.

Plans for next quarter:

Additional food habits material will be analyzed. Also, an effort will be made to contact men who may trap fisher to make arrangements for obtaining all possible data on the trapping season. A field trip to western Maine is planned for early April.

WATERFOWL RESEARCH

(a) Waterfowl Distribution and Management

Objectives: To obtain 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 breeding species, especially the black duck and the ring-necked duck.

Assignment: Howard L. Mendall, Leader

Inactive during quarter.

Plans for next quarter:

The annual spring breeding ground studies will be initiated in April.

(b) Snapping Turtle-Waterfowl Relationships

Objectives: To study the extent and influence of snapping turtle predation upon waterfowl broods.

Assignment: Malcolm W. Coulter, Assistant Leader

During the quarter Coulter prepared a preliminary draft of the completion report on this project. The final report was delayed because of the press of other duties, but this will be finished during the spring. A summary will appear in the next quarterly report.

(c) Waterfowl Productivity Studies

Objectives: To make a detailed study of waterfowl productivity on an unmanaged sedge-meadow marsh.

Assignment: Richard E. Marquardt, Graduate Assistant

Marquardt started making population checks in March. He also repaired the observation tower that was blown down during the September hurricane.

In spite of a later ice-out date this spring, waterfowl arrived early on the study area. Black ducks and goldeneyes were present in considerable numbers on March 12. Ring-necked ducks arrived March 26 - over a week ahead of **last** year. The main channel was relatively ice-free by then, but the ponds and the marsh were still frozen. Pre-baiting of banding sites was begun the last of March.

Plans for next quarter:

The spring trapping and banding program will be carried out beginning as early in April as feasible. Color-marking will be carried out along with trapping to facilitate observations of breeding birds. The nesting study, conducted last year, will be continued this spring.

(d) Waterfowl Banding

Objectives: To study the movements and migration routes of waterfowl in Maine.

Assignment: Malcolm W. Coulter, Assistant Leader

Inactive during quarter.

Plans for next quarter:

Inactive, except for limited banding in connection with Marquardt's project as described above.

(e) Waterfowl Hunter Bag Checks

Objectives: To determine hunter success, crippling loss, and species, sex and age composition of the kill.

Assignment: Howard L. Mendall, Leader

Inactive during quarter.

Plans for next quarter: Inactive.

WOODCOCK RESEARCH

(a) Woodcock Census Studies

Objectives: To conduct an annual census on the Unit's permanent census routes in Maine; and to correlate census results of cooperators in the northeastern states.

Assignment: Howard L. Mendall, Leader

Inactive during quarter.

Plans for next quarter:

The usual spring census studies will be continued on the Maine study areas. In addition, Mendall will again serve as regional coordinator of all census studies in the New England States and New York.

(b) Woodcock Productivity Studies

Objectives: To study in detail the cover requirements of breeding woodcock from the onset of courtship to the conclusion of the brood season.

Assignment: Robert B. Weeden, Graduate Assistant

Weeden completed cover mapping of the Greenbush study area during the winter. He also started the preliminary write-up of his thesis.

Plans for next quarter:

During the spring as much data will be obtained on courtship and breeding as is possible in the available time. This project will be terminated by mid-May and a summary of the thesis will be presented in the next quarterly report.

UPLAND GAME BIRD RESEARCH

Ruffed Grouse Cover Requirements and Population

Objectives: To determine preferred winter cover types and population densities.

Assignment: Howard L. Mendall, Leader

Because of very adverse weather in mid-winter, as well as the pressure of administrative duties, the usual winter grouse studies were considerably curtailed. Only 3 trips of 3 days duration each were made to the study areas.

Winter snowfall in northern and central Maine was considerably above average and several periods of intense cold prevailed. This was particularly noticeable in late January and early February with 9 consecutive days of sub-zero temperatures in central Maine; temperatures dropped to an official -33 degrees at Old Town, and to the -40's in northern Maine.

Grouse preferences for coniferous cover, or for mixed growth in which conifers predominated, were more strongly indicated than for several winters. Likewise, extensive use of lowland covers was recorded - a situation noted previously during severe winter weather. Snow roosts were observed more commonly than usual.

In spite of a comparatively cold, stormy winter, little evidence of mortality was obtained and it is believed that grouse went through the winter well. Ice storms were virtually lacking, as were the alternate periods of heavy thaws and rapid freezes which have characterized several recent winters.

Plans for next quarter: Inactive.

BIG GAME RESEARCH

Studies of Moose Disease in Nova Scotia

Objectives: To study the causes and effects of disease among moose in the Province of Nova Scotia, Canada.

Assignment: Denis A. Benson, Graduate Student

Benson has completed the preliminary draft of his thesis. He had a lengthy conference with Mendall and Coulter on this material at the Montreal Wildlife Conference. It is expected that the final draft will be submitted early during the next quarter.

COOPERATION AND EDUCATIONAL WORK

Coulter and Mendall furnished considerable technical assistance to the State Pittman-Robertson program and several conferences were held in this connection in Augusta and Orono.

The usual assistance was given to the warden service and to the public in examining specimens, arranging for autopsies, and in answering inquiries for technical information.

Quick conducted the regular undergraduate wildlife courses and the wildlife seminar. He also initiated the new course in law enforcement. This is a one-semester course offered for the first time this spring.

Coulter and Mendall prepared a manuscript which is to be published as a non-technical Bulletin of the Extension Service, entitled "GAME BIRDS OF MAINE". This will supersede a bulletin under the same title published in 1940, and which was written by C. M. Aldous and Mendall; this is now out of print as well as out of date.

Several speaking engagements were accepted during the quarter by Unit staff members.

The entire Unit personnel participated in the second Maine Sportsmen's Day program which was held in February on the campus. This all-day affair, consisting of demonstrations and panel discussions, was jointly sponsored by the University of Maine, Maine Department of Inland Fisheries and Game (both the Game and the Fisheries divisions), the Maine Cooperative Wildlife Research Unit, and the Maine Federation of Sportsmen's Clubs. It was considered fully as successful as last year's program and was attended by approximately 300 people from all parts of Maine. Several New Brunswick visitors attended as well. It was of interest to note that 254 written requests were made for Unit publications by those in attendance - in addition to requests for other game publications.

Ashman, Coulter, Quick, and Mendall attended the Unit Leaders' Meetings and North American Wildlife Conference, held in March in Montreal. In addition, Graduate Assistant Weeden and several undergraduate wildlife majors, attended part of the Wildlife Conference sessions.

PERSONNEL

Professor Ashman is currently on leave of absence and is making a three-month tour in Europe. He will return early in July. His duties as University representative in the Unit program are being filled by Gregory Baker, Professor of Forestry and Acting Head of the Department.

Respectfully submitted,

Howard L. Mendall (H)

Howard L. Mendall, Leader
Maine Cooperative Wildlife
Research Unit

University of Maine
Orono, Maine
April 18, 1955

MAINE COOPERATIVE WILDLIFE RESEARCH UNIT

Quarterly Report

April-June, 1955

RESEARCH PROJECTS

FUR ANIMAL RESEARCH

Ecology of the Fisher

Objectives: To obtain data on the distribution, habitat preferences and winter food habits of the fisher.

Assignment: Malcolm W. Coulter, Assistant Leader

During early April Coulter spent a few days in the elevated sections of southwestern Maine. Considerable assistance was given during this trip by State Regional Biologist Nathan Fellows, Jr.

Several records of the further extension of fisher range in that area were recorded. As has been the case at the edge of the range in central Maine, the animals in the southwestern counties are often found near villages or farms. The habitat is of special interest because of the low percentage of conifers in the forest stands in contrast to the abundance of conifers in other parts of fisher range.

Considerable progress was made by Graduate Assistant Marquardt in the examination of food materials from fisher specimens. A detailed breakdown of these data will be presented in a later report.

The State Legislature passed the bill providing for a trapping season for fisher from November 15 to December 15, 1955 and 1956. During the quarter some contacts were made with trappers and others who may be in a position to furnish carcasses for further study during the trapping season.

Plans for next quarter:

Inactive, except for a continuation of the laboratory study of food materials.

WATERFOWL RESEARCH

(a) Waterfowl Distribution and Management

Objectives: To obtain 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 breeding species, especially the black duck and the ring-necked duck.

Assignment: Howard L. Mendall, Leader

Mendall conducted the annual breeding ground studies, assisted by

Coulter and Marquardt. During the nest hunting work, assistance was also given by Graduate Assistant Weeden, by State Regional Biologist Carson, by State Warden Caron, by Eldon Clark, Biologist of the Moosehorn National Wildlife Refuge, by John Dudley of Calais, and by J. William Peppard of Holden.

The studies consist of 3 phases: (1) a count of pairs and territorial males prior to and during the early part of the breeding season; (2) a sample nesting study to determine nesting conditions and success; (3) brood counts commencing with the beginning of the hatching period. At the present writing, the nesting season is not quite over, while the brood period is still in a rather early stage. Therefore, some of the conclusions in this report must be considered as tentative.

Breeding Populations

Waterfowl populations at the start of the 1955 breeding season appeared to be quite satisfactory. Black ducks were slightly decreased on the study areas for the second consecutive year, but the loss was so small (5 per cent) as to have little or no significance. This loss occurred entirely in eastern Maine; little change from last year was recorded in the northern and central portions of the State. By contrast, the ring-necked duck showed a substantial increase which was very gratifying after its decrease of the past two years.

Both the blue-winged and the green-winged teal likewise appeared to be increased. Little change was noted for the goldeneye. However, these latter three species do not occur in sufficient numbers on the study areas to permit accurate measurement.

Only the wood duck showed an unsatisfactory trend. A decline of 26 per cent was recorded this year; this followed an 18 per cent decrease a year ago and a 31 per cent loss in 1953. Even though Unit study areas do not include the important wood duck habitat in the southern and south-western counties, this diminishing trend may be viewed with some concern.

In summary, the status of the initial population of the six species of breeding game ducks is as follows:

<u>Species</u>	<u>Status in 1955</u>
(Measured on Census Areas)	
Ring-necked Duck	14% increase
Black Duck	5% decrease
Wood Duck	26% decrease
(Estimated)	
Blue-winged Teal	Moderate increase
Green-winged Teal	Slight increase
American Goldeneye	No change

General Breeding Conditions

From the standpoint of water levels, phenology, and climatic conditions, an excellent breeding season is occurring. This is a distinct contrast to the retarded spring and the greatly fluctuating water levels of a year ago.

The entire 1955 season, phenologically, has been about two weeks ahead of last year. The break-up of ice was at near average dates as was the start of nesting for most species - an exception was noted in the ring-necked duck which nested earlier than usual. Although hatching data are still incomplete at this time, it is apparent that the hatching peaks will be somewhat ahead of the long-term average and considerably advanced over last year. It is likely the black duck hatching peak will be around a week earlier than average, while that for the ring-neck will approach two weeks. The earliest hatching date recorded for the ring-neck in the 17 years of these studies (June 7) occurred this year.

Water levels were moderately high at the start of nesting, with a very gradual run-off, and with no serious floods. Although a drought is currently in progress and water levels on some areas are dropping rapidly, it is believed that most of the broods are of a sufficient age so that few adverse effects will be noted.

Nesting Success

During the nesting study a total of 76 nests were located. All but 4 of these were of the two most important species in Maine - the black duck and the ring-neck.

At the present time there are 8 nests on which females were still incubating when last checked. Based on the 68 already hatched or destroyed, it is apparent that waterfowl have experienced a very successful nesting season. The present nesting success stands at 72 per cent, 49 nests having hatched and only 19 being destroyed. Very little difference has been noted between the black duck and the ring-neck.

In contrast to 1954 when the mink was the principal nest predator, the majority of losses this year have been equally divided between raccoons and crows. Flood losses were unusually low.

Further indications that 1955 has been a successful nesting season were seen in the fact that clutch sizes were larger than usual, fewer re-nests were found, and the average size of black duck broods in the downy stage was the highest in 17 years.

The Brood Season

Data from brood counts are somewhat inconclusive at this time because only a limited number of young have reached the important Class III stage (birds about 2/3 grown or older). However, high average figures have been obtained for Class I and Class II broods. Furthermore, habitat conditions are still fairly good despite very little precipitation during the past 4 weeks. These facts would indicate that 1955 will prove to be a better than average breeding season.

Conclusions

1. Overall waterfowl populations were similar at the start of the 1955 nesting season to those of a year ago. A substantial increase occurred for the ring-necked duck. A noticeable decrease was indicated for the wood duck for the third consecutive year. A very slight decrease was noted in the black duck, but this is not believed to be of significance.

2. Weather conditions and water levels have been much more favorable for nesting ducks than they were a year ago.

3. Nesting success appears to be somewhat better than average for the ring-neck and considerably better than average for the black duck.

4. Hatching peaks are greatly advanced from last year and are earlier than the 17-year average.

5. Brood count figures to date are running higher than usual.

6. Considering all aspects of the 1955 breeding season, it is believed that waterfowl productivity in northern, eastern, and central Maine will be materially increased over that of 1954.

Plans for next quarter:

The nesting and brood studies will be continued through August.

(b) Snapping Turtle-Waterfowl Relationships

Objectives: To study the extent and influence of snapping turtle predation upon waterfowl broods.

Assignment: Malcolm W. Coulter, Assistant Leader

The final report on this project was completed during the quarter. A summary from the report follows:

A total of 171 turtles was collected from eight areas. Food was present in 157 of the specimens used for the study.

Bird remains were found in about one of every four turtles. Forty-two turtles (26.7 per cent) contained evidence of a minimum of 52 birds including 27 ducks, 11 grebes, 3 rails and 11 unidentified birds. In most instances evidence of only a single bird was found. However, one 31 pound turtle had consumed five birds, including one ring-necked duck, one golden-eye, and three pied-billed grebes. Another specimen contained two black ducks, one unidentified surface feeding duck and one grebe. Four others had eaten two birds each.

The highest incidence of birds was found under conditions where high densities of both turtles and birds occurred. No correlation with habitat conditions was evident.

Known mortality to ducklings at one area during a 25 day sample period was 10 per cent of the estimated duckling population of 100. At another area the mortality was four per cent during a 21 day period. At the latter area data permit an estimate of a minimum residual turtle population. If the assumption is made that the untrapped population of turtles preyed upon ducklings at the same rate as those captured, the calculated mortality during the 21 day sample period is nine per cent.

It is concluded that under conditions where high densities of both

turtles and ducks are present, noteworthy losses to ducks may occur. Widespread control of snapping turtles is not considered feasible or desirable. However, turtle control on marshes being managed intensively for waterfowl production may be worthwhile.

It became apparent during the study that in the areas investigated the frequency of observation of turtles was no indication of their density. It is suggested that an examination of gravel banks used by turtles for nesting may furnish a more reliable clue to their density.

(c) Waterfowl Productivity Studies

Objectives: To make a detailed study of waterfowl productivity on an unmanaged sedge-meadow marsh.

Assignment: Richard E. Marquardt, Graduate Assistant

Marquardt continued his studies along the lines as previously described. No progress report will be given at this time because this project will be terminated during the summer. A summary of the thesis will be given in the next quarterly report.

(d) Waterfowl Banding

Objectives: To study the movements and migration routes of waterfowl in Maine.

Assignment: Malcolm W. Coulter, Assistant Leader

Limited banding was conducted by Marquardt in connection with his thesis study. A special effort was made to trap and color-mark resident ring-necked ducks. Two types of traps were used, and a total of 28 ring-necks were obtained. Thirteen were taken in a deep water diving duck trap and the remainder in a standard shore trap. Five black ducks and three wood ducks were also banded.

Preliminary checks of the Penobscot River were made to assist in planning initiation of early summer banding at the regular stations. Arrangements for labor, storage facilities and equipment have been made.

(e) Waterfowl Hunter Bag Checks

Objectives: To determine hunter success, crippling loss, and species, sex and age composition of the kill.

Assignment: Howard L. Mendall, Leader

Inactive during quarter.

Plans for next quarter: Inactive.

WOODCOCK RESEARCH

(a) Woodcock Census Studies

Objectives: To conduct an annual census on the Unit's permanent census routes in Maine; and to correlate census results of cooperators in the northeastern states.

Assignment: Howard L. Mendall, Leader

The regular spring census studies were conducted on the Maine study areas. Mendall also served as regional coordinator of all census studies in the New England States and New York. A complete seasonal report of this study, mimeographed for rather wide distribution, was made under date of June 2, so it seems unnecessary to repeat the details at this time. In general, a slight decrease in woodcock populations occurred throughout the region.

Plans for next quarter: Inactive.

(b) Woodcock Productivity Studies

Objectives: To study in detail the cover requirements of breeding woodcock from the onset of courtship to the conclusion of the brood season.

Assignment: Robert B. Wooden, Graduate Assistant

Wooden completed all work on this project during the quarter and was awarded the Master of Science degree in June. He is to enter the University of British Columbia in September to begin work for a Doctorate. His thesis summary is as follows:

The ecology and behavior of breeding woodcock in central Maine were studied for the purpose of obtaining information which would be of value for future environmental management of this species. Singing grounds, daytime resting and feeding covers, nesting and brood covers were located for purpose of determining cover preferences of woodcock and the relationships between the various portions of the breeding areas. To obtain data on movements adult birds were captured, marked, and released. Breeding populations were determined by means of annual censuses of the males. The following conclusions were drawn from this study.

1. Breeding woodcock, in general, require young, open hardwood or mixed hardwood-conifer growth in which to carry on their spring and summer activities. On the Greenbush area, grey birch and alder stands are most often used for diurnal, nesting, and brood covers. Conifers, particularly young spruce, balsam fir, and larch, make up an average of 10 to 20 per cent of the entire stand in all breeding covers. Areas receiving greatest usage are those which are moist and which have moderately thin ground cover.

2. It was observed that woodcock exhibit strongest territorial behavior on the singing grounds. Diurnal covers are usually established and maintained by one adult male although on several occasions two birds were flushed from one cover. Nesting sites and brood covers are not actively defended, although there is probably some tendency toward isolation during the nesting and post-nesting seasons.

3. Most diurnal, nest, and brood covers are within 100 yards of a singing ground. The average distance between various portions of the breeding covers are as follows:

- (1) Between two singing grounds, 65 yards.
- (2) From singing ground to nest, 75 yards.
- (3) From nest to diurnal cover, 70 yards.
- (4) From singing ground to nearest diurnal cover, 120 yards.

Brood covers are not easily located after the young are over three days old, but are probably close to the nest site.

4. One female, marked for identification, was captured in a trap placed on a singing ground and was later found on a nest three-quarters of a mile away. The nest was only 50 yards from the singing ground of another male bird. This observation indicates that females may not nest near the singing ground of the male with which they mate, or that female woodcock visit more than one singing ground prior to nesting.

5. Alder covers, which are of considerable importance to woodcock, have a very short period of usefulness. All alder stands used by woodcock at Greenbush average from seven to nine years of age; unused stands average 10 to 12 years. Alder is a short-lived species, probably not surviving more than 20 years under favorable soil conditions. However, since most alder covers are of uneven age, they are probably used by woodcock for approximately seven or eight years.

6. In connection with the study of woodcock activities, a device for recording the movements of nesting females was constructed. This device is inexpensive, easy to build and maintain, and has no electrically activated parts. With some modifications in construction and use, such a recorder should be of value in many studies of nesting birds.

7. Future management of the Greenbush area for improved woodcock usage should include (1) heavy thinning of existing overmature alder stands; (2) annual grazing of some alder and birch-alder stands; (3) the establishment of new singing grounds in areas of dense mixed growth; (4) the cutting of bushes and trees on several of the singing grounds now in use.

UPLAND GAME BIRD RESEARCH

Ruffed Grouse Cover Requirements and Population

Objectives: To determine preferred winter cover types and population densities.

Assignment: Howard L. Mendall, Leader

Inactive during quarter.

Plans for next quarter: Inactive.

BIG GAME RESEARCH

Studies of Moose Disease in Nova Scotia

Objectives: To study the causes and effects of disease among moose in the Province of Nova Scotia, Canada.

Assignment: Denis A. Benson, Graduate Student

During the quarter Benson completed his thesis entitled "Nova Scotia Moose Studies" and was awarded the Master of Science degree in Wildlife Conservation. He is employed as Wildlife Biologist with the Nova Scotia Department of Lands and Forests.

Benson's thesis involves three main sections: (1) a history of big game in Nova Scotia, (2) recent climatic trends and (3) results of studies of diseased moose. The three major lines of investigation are correlated to support the conclusion that climatic changes which have occurred in Nova Scotia since the start of this century constitute a primary cause of the decrease in the moose population during the latter part of the period. A summary of Benson's work is as follows:

Caribou and moose were the big game animals in Nova Scotia when the white man arrived. Caribou were well on the way to extinction when deer reached the Province during the 1890's. Moose populations built up to a peak during the 1920's and 1930's. This high level was not the first recorded in written history, but it was not until about the time of the last peak that the first reported observations of diseased or sick animals were noted.

The twenty year period, 1920-1940, shows three co-incident phenomena, viz., (1) rapidly warming temperature, (2) irruption of white-tailed deer, and (3) rapidly decreasing moose populations accompanied by losses from disease.

Moose disease was studied during a five year period 1949-1954. Forty-seven specimens were examined of which 28 were subjected to post-mortem examinations (the appendix of the thesis includes a case history for each animal studied). A pathological brain abnormality was demonstrated in 11 out of 15 cases submitted to specialists. The brain disorder is believed to be the same entity as that described by previous investigators in Minnesota and in Maine.

There are indications that moose sickness may be attributed to malnutrition. A warming climate in Nova Scotia is changing the environment. It is suggested that moose sickness is a demonstration of the inability of the species to adjust itself to these changing conditions. Malnutrition may be involved in the mechanism through which this climatic change eventually results in the disease.

No organism or pathogen responsible for moose sickness has been isolated.

It is recommended that any further investigations of moose sickness be approached from the point of view of the brain abnormalities demonstrated and their probable relationship to malnutrition.

COOPERATION AND EDUCATIONAL WORK

Coulter and Mendall continued to furnish technical aid to the State Pittman-Robertson program. Several conferences were held in Augusta and Orono, as well as in the field.

The regular assistance was given to the Warden Service and to the public in examining specimens, arranging for autopsies, and in answering inquiries for technical information.

Quick conducted the undergraduate courses in wildlife management, law enforcement, and the wildlife seminar.

PUBLICATIONS

Coulter, Malcolm W.

1955. Spring food habits of surface feeding ducks in Maine.
Jour. Wildl. Mgt., 19(2):263-267.

Coulter, Malcolm W. and Howard L. Mendall

1955. Game birds of Maine. Maine Ext. Serv. Bull. #443, 37 pp.

Mendall, Howard L.

1955. Waterfowl breeding ground survey in Maine - 1954. Special Scientific Report - Wildlife No. 27, U. S. Fish and Wildlife Service and Canadian Wildlife Service. pp. 280-285.
1955. Woodcock census studies in northeastern United States - 1954. Special Scientific Report - Wildlife No. 28, U. S. Fish and Wildlife Service and Canadian Wildlife Service. pp. 13-18.

Respectfully submitted,



Howard L. Mendall, Leader
Maine Cooperative Wildlife
Research Unit

University of Maine
Orono, Maine
July 20, 1955

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Return to



MAINE COOPERATIVE WILDLIFE
RESEARCH UNIT
UNIVERSITY OF MAINE
ORONO, MAINE

MAINE COOPERATIVE WILDLIFE RESEARCH UNIT

University of Maine

Orono, Maine

QUARTERLY REPORT

July-September, 1955

Cooperating Agencies

Maine Department of Inland Fisheries and Game
Wildlife Management Institute
University of Maine
United States Fish and Wildlife Service

Unit Personnel

Leader - Howard L. Mendall
Assistant Leader - Malcolm W. Coulter
University Representative - Robert I. Ashman
Faculty Collaborator - Horace F. Quick
Graduate Assistant - Richard E. Marquardt
Graduate Student - Arne Krafft
Clerk- Maxine L. Horne

NOT FOR PUBLICATION

The quarterly reports are usually statements of progress. The data presented often are incomplete and the conclusions reached may not be final. Consequently, permission to publish any of the information contained herein is withheld pending authorization from the Research Unit.

MAINE COOPERATIVE WILDLIFE RESEARCH UNIT

Quarterly Report

July-September, 1955

RESEARCH PROJECTS

FUR ANIMAL RESEARCH

Ecology of the Fisher

Objectives: To obtain data on the distribution, habitat preferences and winter food habits of the fisher.

Assignment: Malcolm W. Coulter, Assistant Leader

Inactive during quarter.

Plans for next quarter:

Detailed studies will be made during the fall trapping season and as many carcasses as possible will be obtained.

WATERFOWL RESEARCH

(a) Waterfowl Distribution and Management

Objectives: To obtain 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 breeding species, especially the black duck and the ring-necked duck.

Assignment: Howard L. Mendall, Leader

The seasonal breeding ground study, described in the last quarterly report, was concluded. Breeding population data have already been presented so the figures will not be repeated at this time. Most of the nesting data likewise were available for the April-June report and final figures on nesting success showed few changes. Altogether, 73 nests were kept under observation until hatched or destroyed. Hatching success was 73 per cent, indicating an unusually favorable nesting season. Figures for both the black duck (67 per cent) and the ring-necked duck (76 per cent) were substantially higher than the long-term average.

Brood studies were continued through August and resulted in data as follows:

Average Brood Size by Age Classes

Species	Total Broods	Class I		Class II		Class III	
		Broods	Ave. Size	Broods	Ave. Size	Broods	Ave. Size
Black Duck	70	23	8.1	21	6.9	26	6.6
Ring-necked Duck	100	40	7.4	34	7.1	26	6.8
Wood Duck	13	6	8.2	4	6.0	3	7.0
American Goldeneye	6	3	7.7	1	6.0	2	6.5
Blue-winged Teal	1	---	--	1	7.0	--	--
Totals	190	72	7.7	61	7.0	57	6.7

The foregoing table shows figures were obtained on 190 complete broods which were classified by age. Studies showed the 1955 brood sizes for all species in all 3 age classes were noticeably higher than usual. A single exception occurred in Class I ring-necks which averaged 7.6 a year ago and 7.4 this year. Despite this, brood figures for Class III ring-necks were almost a full bird higher this year (6.8 as contrasted with 5.9 in 1954). Black ducks likewise showed an appreciable gain in the Class III average (5.9 in 1954 and 6.6 in 1955), but all 3 age classes of black ducks were noticeably above last year's figures.

Conclusions

1. Overall waterfowl populations were similar at the start of the 1955 nesting season to those of a year ago. A substantial increase occurred for the ring-necked duck. A noticeable decrease was indicated for the wood duck for the third consecutive year. A very slight decrease was noted in the black duck, but this is not believed to be of significance.

2. Weather conditions and water levels were much more favorable for nesting ducks than they were a year ago.

3. Nesting success was somewhat better than average, and much higher than in 1954, for both the black duck and the ring-neck.

4. Hatching peaks were considerably advanced from last year and were earlier than the 17-year average.

5. Brood count averages were unusually high for all species and indicated a very successful rearing season.

6. Considering all aspects of the 1955 breeding season, it is believed that waterfowl productivity in northern, eastern, and central Maine was materially increased over that of 1954.

Plans for next quarter:

The usual fall migration studies will be conducted in conjunction with work on the hunter bag check project.

(b) Waterfowl Productivity Studies

Objectives: To make a detailed study of waterfowl productivity on an unmanaged sedge-meadow marsh.

Assignment: Richard E. Marquardt, Graduate Assistant

It was expected that a complete summary of Marquardt's study would be given in this report. However, because of the opportunity to obtain much more data, Marquardt's field research was continued throughout the quarter.

Extension of this study made it possible to follow renesting efforts, to resume trapping and banding, primarily for ring-necked ducks, and to complete the brood studies. Thus, it has been possible to gather detailed productivity data for two consecutive complete seasons. This will permit a more thorough and detailed thesis than would otherwise have been possible.

Considerable work was also accomplished on sections of the thesis and a complete summary will be presented in the next quarterly report.

(c) Waterfowl Banding

Objectives: To study the movements and migration routes of waterfowl in Maine.

Assignment: Malcolm W. Coulter, Assistant Leader

The summer banding program was conducted between July 11 and September 6. A special allotment from the Washington office of the Fish and Wildlife Service permitted a continuation of the stations along the Penobscot River. Sophomore wildlife student, William E. Shoemaker, assisted full time during the banding period.

In addition to the regular stations, Graduate Assistant Marquardt operated two traps at his study area on Goose River.

The trapping activity was highly successful and resulted in 1449 birds banded. Included in the total are 1132 black ducks, 259 wood ducks, 49 ring-necked ducks, 7 mallards, 1 blue-winged teal and 1 hooded merganser. Of special interest was the number of ring-necks banded at Goose River. Relatively few of this species have been previously tagged on northeastern breeding grounds. The number of birds banded this year is exceeded only by the 1953 total when many more stations were in operation at three principal areas.

As has been the case for the past three seasons, banding during July and early August was very productive on the Penobscot River. About 500

birds were banded from July 11-31 of which 36 per cent were flightless young. Actually 77 per cent of 150 wood ducks and 11.4 per cent of 342 black ducks were flightless. In early seasons similar to 1955, banding should begin approximately 8-10 days earlier in order to trap more of the young black ducks when they are flightless and can definitely be associated with a specific breeding area.

Recapture of birds resulted in a number of interesting and valuable recoveries of ducks previously tagged on the Penobscot River. In addition, further data concerning molting adults were obtained.

Several persons visited the banding stations including sportsmen, one State Legislator, wardens, fish and game biologists, and youths of Boy Scout age. These persons had an opportunity to learn more about the work and its purpose; also to examine and handle birds.

Plans for next quarter: Inactive.

(d) Waterfowl Hunter Bag Checks

Objectives: To determine hunter success, crippling loss, and species, sex and age composition of the kill.

Assignment: Howard L. Mendall, Leader

Inactive during quarter.

Plans for next quarter:

The hunter bag check studies will be carried out during the open season which will run from October 7 to December 15.

WOODCOCK RESEARCH

Woodcock Census Studies

Objectives: To conduct an annual census on the Unit's permanent census routes in Maine; and to correlate census results of cooperators in the northeastern states.

Assignment: Howard L. Mendall, Leader

Inactive during quarter.

Plans for next quarter: Inactive.

UPLAND GAME BIRD RESEARCH

Ruffed Grouse Cover Requirements and Population

Objectives: To determine preferred winter cover types and population densities.

Assignment: Howard L. Mendall, Leader

Inactive during quarter.

Plans for next quarter:

Largely inactive, although initiation of the season's work is scheduled for the latter part of December.

COOPERATION AND EDUCATIONAL WORK

Coulter and Mendall continued to furnish technical aid to the State Pittman-Robertson program. Several conferences were held in Augusta and Orono, as well as in the field.

With the opening of college in September, Quick conducted the undergraduate courses in wildlife management and the wildlife seminar.

PERSONNEL CHANGES

Professor Ashman returned to the campus July 1 from his European trip. He resumed his duties as University representative on the Unit program.

A new graduate student, Arne Krafft, reported to the Unit in mid-September. Krafft is a native of Norway. He was graduated from the University of Oslo in 1948, majoring in Zoology. Since then he has been engaged in wildlife management work for both the Norwegian and Danish governments; and also as game manager on a private preserve. At the Unit, Krafft's Master's degree studies will be primarily on grouse and big game.

Respectfully submitted,

Howard L. Mendall

Howard L. Mendall, Leader
Maine Cooperative Wildlife
Research Unit

University of Maine
Orono, Maine
September 30, 1955

MAINE COOPERATIVE WILDLIFE RESEARCH UNIT

Quarterly Report

October-December, 1955

RESEARCH PROJECTS

FUR ANIMAL RESEARCH

Ecology of the Fisher

Objectives: To obtain data on the distribution, habitat preferences and winter food habits of the fisher.

Assignment: Malcolm W. Coulter, Assistant Leader

Trapping Season

The second trapping season for fisher since 1936 occurred during the period November 15 to December 15, 1955. Trapping was legal in an area that included most of western and northwestern Maine. This zone was established on the basis of known distribution and relative abundance of fisher as outlined by Unit studies.

Few men established trap lines specifically for fisher. Most trappers concentrated upon mink or muskrats until the latter part of November; some then made a few sets for fisher. The incidental nature of the fisher trapping activity is illustrated by two aspects of the catch data. First, success averaged less than two fisher per trapper. Second, a high proportion of the catches were made in readily accessible areas. (During the previous trapping season, where there was more intensive activity, some individuals made an effort to establish definite trap lines in some of the more isolated areas where fisher were more abundant.) Also, from the data collected, many of the fisher taken were caught in sets intended for other animals, especially bobcat.

Lack of intensive trapping activity this year was due to several reasons:

1. Trappers felt that they could more profitably devote their efforts to catching mink and muskrats because they already had trap lines established for these animals when the fisher season opened. They had previous experience with mink and muskrats, whereas many men now lack the experience necessary to make large catches of fisher.

2. The price outlook for fisher was not encouraging at the start of the season. Few men made the advance preparations to trap that are usually quite necessary to take fisher.

3. As soon as the mink and muskrat season ended (November 30) those who planned to trap for beaver then devoted their time to cruising beaver flowages rather than attempting to trap fisher for the remaining 15 days. A man cannot establish and operate a profitable trapline for fisher in

less than about 30 days because of the habits of fisher and the excessive auto and foot travel necessary by the trappers.

Thirty-five fisher carcasses were collected through the cooperation of state game biologists and wardens. The digestive and reproductive tracts have been removed for further study. As was the case during the 1950 season (month of January) females greatly outnumbered males. About two-thirds (24) of the current specimens were females. For the overall sample gathered during two trapping seasons, males have been outnumbered by more than two to one in the catch. This unbalanced ratio may be due in part to a greater loss of males escaping from traps by footing. It also seems possible that there may be some difference in response to bait between sexes. Some indication of this possibility may become evident when all of the food habits material has been examined and studied.

There was much variation in pelt prices which ranged from a low of \$3.00 to a high of about \$40.00-\$45.00. The average price received seemed to be in the neighborhood of \$20.00.

Distribution

Since the open zone for taking fisher was well within the known fisher range, few new distribution records were gathered. Three sight or track records beyond present known range were investigated, but have not yet yielded concrete evidence of further extension of range.

Food Habits

Graduate Assistant Marquardt completed examination of food materials from 56 fisher. Since over 80 specimens have yet to be examined a detailed tabulation will not be given at this time. Leading items from the food determinations to date are white-tailed deer, porcupine, snowshoe hare, shrews, mice, birds, and squirrels (rod and flying).

Based upon field studies there would seem to be little concern about the high incidence of deer. It appears that fisher feed heavily upon carrion whenever it is available; this includes deer, moose, raccoon, beaver, muskrat, fish or offal from slaughter houses. No evidence of fisher killing or attempting to kill deer during the winter has been found although the animals have often been tracked in and around winter deer yards. A fisher typically revisits a site at which it has previously found carrion. Although little food may remain, the bones, hair, and bits of skin are dug out and the fisher may attempt to salvage another morsel of food. Apparently in so doing they ingest further hair or bits of bone several weeks after the time when any appreciable food was obtained. The result of this type of activity, in terms of laboratory food habits studies, is apparent. One deer carcass, for example, may be responsible for hair found in fisher seats or stomachs throughout much of the winter. The resulting picture, if not qualified by field study, would indicate heavy dependence upon deer.

General

As was the case during the 1950 trapping season, several marten were

taken accidentally in sets intended for fisher or bobcats. Most of the marten were taken in Aroostook County. Data on these animals, gathered incidental to the fisher study, suggest that marten are discontinuously distributed over the northwestern third of the State. It appears that there has been a slight improvement recently in their status, but they have not demonstrated the almost spectacular gains in numbers and range expansion witnessed for the fisher.

Plans for next quarter:

Several field trips are planned to further study winter habits, population densities and distribution. Part of the specimen data on hand will be tabulated, and initial preparations made for publishing some of the results obtained to date.

WATERFOWL RESEARCH

(a) Waterfowl Distribution and Management

Objectives: To obtain 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 breeding species, especially the black duck and the ring-necked duck.

Assignment: Howard L. Mendall, Leader

Population data were obtained throughout the fall period. These are summarized in connection with the report under sub-project (d) - Waterfowl Hunter Bag Checks.

Plans for next quarter: Inactive.

(b) Waterfowl Productivity Studies

Objectives: To make a detailed study of waterfowl productivity on an unmanaged sedge-meadow marsh.

Assignment: Richard E. Marquardt, Graduate Assistant

Marquardt completed his thesis entitled A STUDY OF WATERFOWL PRODUCTIVITY ON AN UNMANAGED SEDGE-MEADOW MARSH IN MAINE. He finished all work at the Unit as of December 1 and will be awarded the Master's degree at the next Commencement. He is currently enrolled at Oklahoma A and M College to work for a Doctorate. A brief summary of his thesis follows:

The productivity of waterfowl on Goose River, a typical sedge-meadow marsh consisting of approximately 567 acres of marsh and water, was studied from March 1954 to October 1955. Emphasis was placed upon investigations of migration, courtship, nesting and brood rearing success of black ducks and ring-necked ducks. Field studies were aided by trapping and marking ducks to permit identification of individual birds.

Ducks used the area from late winter until late autumn each season. The first spring arrivals of black ducks were paired birds; ring-necked ducks usually arrived in unpaired groups. Territorialism appeared to be reasonably pronounced among brooding black ducks but was not evident among the ring-necks.

The overall density of breeding ducks was 1 pair per 13 acres of marsh and water area.

Several nests under observation were lost to predators or were destroyed because of fluctuating water levels. Yet it became apparent, as the breeding season progressed, that more females produced broods than nesting success data from the area would indicate. This increased production beyond that suggested from a sample of known nests is believed to have resulted from the fact that re-nesting occurred more frequently than was actually detected.

The overall loss from the time eggs were laid until the broods reached flying age was approximately 2.55 birds for black ducks and 2.48 for ring-necked ducks. The ultimate production of flying young on this marsh was 1 young for approximately every two acres. Expressed in terms of breeding pairs, production totaled close to 6 young per pair of ring-necked ducks and about 5 3/4 young per pair of black ducks.

Based upon the data gathered it is believed that the natural production of waterfowl on this marsh may be increased by two techniques:

1. Control of the water level to reduce nest losses.
2. The creation of additional small potholes and channels to provide more interspersion of marsh and water areas. This technique would be likely, in particular, to increase the density of breeding black ducks by providing more potential territorial areas.

Experimental control of dense areas of brush in the nesting cover also is believed to be worthwhile. Both of the principal nesting species of ducks preferred cover with less woody vegetation than is present on some sections of the marsh.

(NOTE: This sub-project has now been completed.)

(c) Waterfowl Banding

Objectives: To study the movements and migration routes of waterfowl in Maine.

Assignment: Malcolm W. Coulter, Assistant Leader

Inactive during quarter.

Plans for next quarter: Inactive.

(d) Waterfowl Hunter Bag Checks

Objectives: To determine hunter success, crippling loss, and species, sex and age composition of the kill.

Assignment: Howard L. Mendall, Leader

During the waterfowl hunting season the Unit staff participated in the annual hunter bag check studies, conducted jointly with personnel of the State Game Division. The seasonal report, recently prepared, is reproduced in full as follows:

The 1955 Waterfowl Hunting Season in Maine

By

Howard L. Mendall

In accordance with the recommendation of the Maine Waterfowl Council, a straight season was selected for the state in 1955, running from October 7 to December 15. This was the longest season since 1945. During this period, personnel of the Maine Cooperative Wildlife Research Unit and the Game Division of the Department of Inland Fisheries and Game conducted the annual bag checks of hunters. This was the eighth consecutive year of these studies. Unit personnel worked under the supervision of the writer, and the State biologists were under the direction of Howard Spencer, Jr., waterfowl project leader.

Regional coverage within the State was essentially the same as in the past two years and practically all of the important waterfowl areas were sampled. A total of 2744 hunters was contacted and 3938 birds were examined. The men had hunted a total of 1838 man-days.

Waterfowl Populations

Although specific population censuses were not conducted during the fall, considerable data were gathered to indicate comparative numbers of birds available to gunners. It was apparent that there was a general overall increase in waterfowl in comparison with 1954. Most species were present in very satisfactory numbers. Noticeable increases were recorded for the black duck and the ring-necked duck, the State's two most important breeding waterfowl. Likewise, both species of teal and the bufflehead appeared to be increased from last year. The goldeneye was not as abundant as formerly in eastern Maine (which was the case last year as well), but large flocks occurred from the Sebasticook and Kennebec valleys westward, and it is probable that the statewide population was slightly increased. Only two species definitely seemed to be decreased, these being the Canada goose and the wood duck.

Although October was warm and with deficient precipitation, there were frequent overcast and windy days, thus producing better hunting weather than in 1954. Local birds had shown little movement out of the interior of Maine by the time the season opened and large numbers of ducks were present. This was a very favorable contrast from the situation of a year ago. A cold spell between the 22nd and 26th of the month apparently caused most of these local birds to move out of Maine; it also brought in substantial flights of Canadian birds although these passed through the State relatively fast.

The first week of November was calm, very warm, and with almost constant rain and fog. But during the remainder of the month good hunting weather prevailed and heavy flights of migrants passed through the interior waters. Many of these birds remained at inland concentration points for a surprisingly long period of time.

The winter build-up of birds on the coast occurred slowly, as the ducks lingered inland, but coincident with a heavy freeze just before Thanksgiving the coastal population increased rapidly. By the first of December few birds were left in fresh water. Unseasonably severe weather set in, however, and this continued to the end of the hunting season. Most of the salt marshes and even

many of the mud flat areas were iced-over, especially in eastern Maine. Thus, although ducks were present in favorable numbers on the open bays and around off-shore islands, hunting conditions were very difficult.

Hunting Success

A study of the bag check data shows that the 1955 season was noticeably improved from that of 1954. The average hunter success was 2.1 ducks per man-day of shooting, as compared with 1.8 a year ago. These figures indicate the state-wide average, but most of the regional tabulations likewise showed considerable improvement this year. Only in two sections, the eastern and western Maine coastal areas, was hunter success lower in 1955. By contrast, the central Maine coast, including Waldo, Knox, and Lincoln counties, enjoyed much better shooting this year. In Merrymeeting Bay, hunting success was substantially higher than in 1954, despite a slump after the first two weeks of the season. Moreover, practically all of inland Maine had better gunning in 1955 than at any time in the past 4 years. Local birds remained later and Canadian flight birds came in earlier than in recent years. A few hunters found poorer conditions at their favorite spots because of low water levels, but for the majority of gunners throughout the interior of the State hunting success was the highest since 1951.

In Merrymeeting Bay, the season got off to a banner start with many veteran gunners asserting it was the best first week in modern times. After that, the hunting began to fall off rather rapidly, although in certain parts of the Bay good shooting occurred toward the last of October and again in mid-November. However, the lack of geese was very disappointing. A few flocks were present during the early part of the season, but the anticipated late flocks failed to show up. This situation was all the more noticeable because 1954 had produced the best goose shooting in memory.

The low success over much of the coast is largely attributable to the severe cold of December. Many gunners were unable to get into their usual hunting areas because of ice. The final two weeks of the season, which had provided good gunning in 1954, was of slight importance this year.

Crippling Loss

The figures that were compiled on crippling loss showed that for 3392 ducks bagged, an additional 810 were not retrieved. This represents a loss of 23.9 per cent, only a fraction of a bird lower than a year ago. A more conscientious effort by hunters to find the birds they drop or the use of retrievers would be of considerable help in cutting down on this waste. In this connection some interesting data were compiled. Of the various hunting parties contacted, 20 per cent were using dogs in 1955 in comparison with 17 per cent a year ago. Crippling loss was only 13 per cent for those hunters who had dogs as against 25 per cent for those without them. Hunting success was much higher when dogs were used - 2.6 ducks per man-day while it was 1.9 when dogs were not used. However, these last figures should not be taken entirely at their face value. It is obvious that the more experienced gunners are likely to predominate among the dog users and hence could be expected to have higher hunting success anyhow. Even so, there is no question but what the hunters with good retrievers will tend to bring home more birds.

Sea Ducks

The study is not designed to permit accurate sampling of the off-shore hunters of sea ducks which includes the scoters (sea coots), eiders, and old squaws. Impressions of the waterfowl technicians and other observers indicate that there was no decline in the large flocks of these birds that regularly frequent our coast. Although hunting pressure on them may have increased this year in a few localities, it is believed to have decreased over the State as a whole, undoubtedly attributable to the extreme cold and ice conditions that prevailed continuously throughout the entire month of December - the period when sea duck hunting usually reaches its peak.

Bag Composition

The kill by species of the birds examined is shown in table 1.

Table 1 - Kill by Species - 1955
(Exclusive of Sea Ducks)

Species	No. Birds Checked	Per Cent
Black Duck	2125	54.0
Goldeneye (*)	327	8.3
Blue-winged Teal	314	8.0
Green-winged Teal	269	6.8
Bufflehead	207	5.3
Wood Duck	179	4.5
Ring-necked Duck	113	2.9
Mergansers (3 species)	103	2.6
Mallard	63	1.6
Ruddy	36	0.9
Pintail	28	0.7
Baldpate	27	0.7
Lesser Scaup	25	0.6
Greater Scaup	15	0.4
Canada Goose	11	0.3
Redhead	4	0.1
American Coot (Crowbill)	4	0.1
Black x Mallard Hybrid	2	--
Canvasback	1	--
Unidentified (**)	85	2.2
Total	3938	100.0

(*) Including 5 Barrow's goldeneyes, all others being American goldeneyes.

(**) Chiefly birds plucked and dressed when examined.

The 1955 bag composition showed a number of changes from that of 1954 in the numerical order of the various species although there were only a few percentage changes of importance. Most apparent of these was in the case of the goldeneye which rose from fifth place to second. Many more goldeneyes were shot in central and western Maine this year. Blue-winged teal also were taken in appreciably larger numbers, undoubtedly reflecting their greater abundance and the fact that there was no early departure of birds from the State. The proportion of blue-wings killed this year was the second highest recorded since the bag check studies were begun, being exceeded only in 1952. The only other gain of consequence was in the case of the bufflehead.

The black duck again lead all species by a very wide margin. Although not occupying quite as high a proportion of the bag as last year, it's figure of 54 per cent is the third highest recorded in the past 8 years. Principal declines were with the greater scaup, wood duck and the Canada goose. The wood duck situation is believed directly related to the present unfavorable breeding status of this bird in Maine. The decline in the goose kill is quite obviously due to the almost complete absence of the usual late flights of geese through the State.

Sex and Age Ratios

Approximately 60 per cent of all the birds examined were sexed and aged. This information is given in table 2.

Table 2 - Sex and Age Ratios - 1955

Species	Adult Male	Adult Female	Immature Male	Immature Female	Total	Ad.-Im. Ratio	Sex Ratio (Per Cent) Male:Female
Black Duck	311	210	402	307	1230	1:1.4	58:42
Green-winged Teal	31	34	68	57	190	1:1.9	52:48
Blue-winged Teal	12	16	56	87	171	1:5.1	40:60
Goldeneye	75	24	31	31	161	1:0.6	66:34
Wood Duck	23	11	29	35	98	1:1.9	53:47
Ring-necked Duck	6	11	24	28	69	1:3.1	44:56
Bufflehead	20	10	10	23	63	1:1.1	48:52
All other species (15)	41	35	65	46	187	1:1.5	57:43
Grand Totals (22 species)	519	351	685	614	2169	1:1.5	56:44

It has been explained in reports of previous years that interpretations from sex and age data must be made with caution in view of the small size of the sample for most of the species. It is believed that in two more years sufficient figures will have been compiled to permit a complete 10-year analysis of this material. This is desirable because sex and age composition of the kill certainly has a significant bearing on the future welfare of our ducks. For the present, only a few general conclusions will be offered.

The 1955 black duck ratio of adults to immature birds (1:1.4) is better than that of a year ago which was about 1:1.1 for the combined portions of the split season. Biologically, of course, it is desirable to shoot more young birds than adults. Only in the goldeneye was a preponderance of adults taken this year.

From the standpoint of sex ratios, many more males were taken this year than in 1954. This was most noticeable with the black duck and the goldeneye where adult males ranked high in the bag. By contrast, females predominated in the blue-winged teal, ring-necked duck, and bufflehead.

Time of the Hunting Season

Since the abolishment of September shooting in 1946, Maine hunters have been widely divided as to whether they preferred a straight or a split season, with the latter usually being chosen. However, this year, with a longer season available, there was no controversy. At the August hunters' meeting and the subsequent meeting of the Maine Waterfowl Council, there was virtually unanimous agreement on a straight season. Since then, the 1955 hunting success figures showed a definite improvement over last year; thus, as could be expected, the majority of the gunners contacted at the close of the season expressed satisfaction with the dates that had been selected.

It was apparent that the weather this fall, as in most years, was an important factor in determining individual bags. This was particularly true during the latter part of the season on the coast when intense and prolonged cold discouraged many hunters from going out; those that did venture afield often found it impossible to successfully combat the ice.

Prior to that time, several periods of favorable hunting conditions had occurred. During the first two weeks of the season, large populations of ducks coincided with good gunning weather, and the hunters capitalized on their opportunities. During the last few days of October and the first week of November there were not as many birds in the State, this being a period between flights of northern migrants. But throughout the second and third weeks of the month heavy migrations of ducks passed through Maine. In fact, on many inland waters some of the best populations of the season occurred then. Even as far north as Aroostook County and northern Washington County large flocks of black ducks were reported in mid-November; in Androscoggin, southern Somerset and Penobscot counties, both black ducks and goldeneyes remained in appreciable numbers until almost the end of the month.

It is of interest to note that this heavy mid-November population of ducks in the inland waters has occurred during each of the last four years. In 1952 and 1954, with split seasons, hunters had no opportunity to take advantage of this situation. During the straight season of 1953, the gunners enjoyed excellent November shooting. This year the birds were again present at that time, although the hunting pressure on them was relatively light.

Summary

1. Populations of waterfowl in Maine during the fall of 1955 showed a general increase from 1954. The only noticeable decreases occurred with the Canada goose and the wood duck.
2. Hunting success was appreciably higher than a year ago. Practically all sections of the State except the eastern and western Maine coast had better gunning this year.
3. Goose shooting was very poor, with relatively few flocks of the birds stopping in Maine during the fall of 1955.
4. Black ducks continued to lead all species in the bag by a very wide margin, making up over half the kill.
5. Principal gains in the 1955 bag composition were made by the goldeneye and blue-winged teal. Declines occurred in the Canada goose, wood duck, and greater scaup.
6. Crippling loss continued to remain at nearly one fourth of the total kill.
7. Age ratios of the birds killed were slightly more favorable, biologically, than those of 1954. Sex ratios indicated that more males were taken this year, particularly among black ducks and goldeneyes.

WOODCOCK RESEARCH

Woodcock Census Studies

Objectives: To conduct an annual census on the Unit's permanent census routes in Maine; and to correlate census results of cooperators in the northeastern states.

Assignment: Howard L. Mendall, Leader

Inactive during quarter.

Plans for next quarter: Inactive.

UPLAND GAME BIRD RESEARCH

Ruffed Grouse Cover Requirements and Population

Objectives: To determine preferred winter cover types and population densities.

Assignment: Howard L. Mendall, Leader

Inactive during quarter.

Plans for next quarter: The regular winter studies will be conducted although probably on a reduced scale from that of previous years.

BIG GAME RESEARCH

Moose Studies in Norway

Objectives: To study the productivity and management of moose on a private forest of 80,000 acres in Romerike, Norway.

Assignment: Arno Krafft, Graduate student

Krafft's thesis will be based on data obtained in Norway while he was employed as biologist by the Norwegian Government and also as a private game manager. To facilitate this he is getting as much experience as possible with big game conditions in Maine, particularly with respect to moose and moose habitat.

Plans for next quarter:

Analysis of the field data and beginning of the thesis write-up.

COOPERATION AND EDUCATIONAL WORK

Coulter and Mendall continued to furnish technical aid to the State Pittman-Robertson program.

Cooperative assistance likewise was continued to the Warden Service and to the general public in arranging autopsies, identifying specimens, and in providing technical information.

Quick conducted the undergraduate courses in wildlife management and the wildlife seminar.

Several speaking engagements were given during the quarter by the Unit staff.

PUBLICATIONS

Coulter, Malcolm W.

Predation by snapping turtles upon aquatic birds in Maine.
(Submitted for publication).

Mendall, Howard L.

Woodcock census studies in northeastern United States - 1955.
(Accepted for publication).

Waterfowl breeding ground survey in Maine - 1955. (Accepted for publication).

O'Moara, David C.

1955. Blood parasite infections of wild and domestic ducks in Maine.
(Paper delivered at 27th Annual Conference Northeastern
Laboratory Workers in Pullorum Disease Control).

Blood parasites of some Maine waterfowl. (Accepted for
publication).

Westfall, Claude Z.

Foods eaten by bobcats in Maine. (Accepted for publication).

Woodcock primary feather width as a sex character. (Accepted
for publication).

Westfall, Claude Z. and Robert B. Wooden

Plastic neck markers for woodcock. (Accepted for publication).

Wooden, Robert B.

Cover requirements of breeding woodcock in central Maine.
(Accepted for publication).

Respectfully submitted,

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

University of Maine
Orono, Maine
February 24, 1956

NOTE:

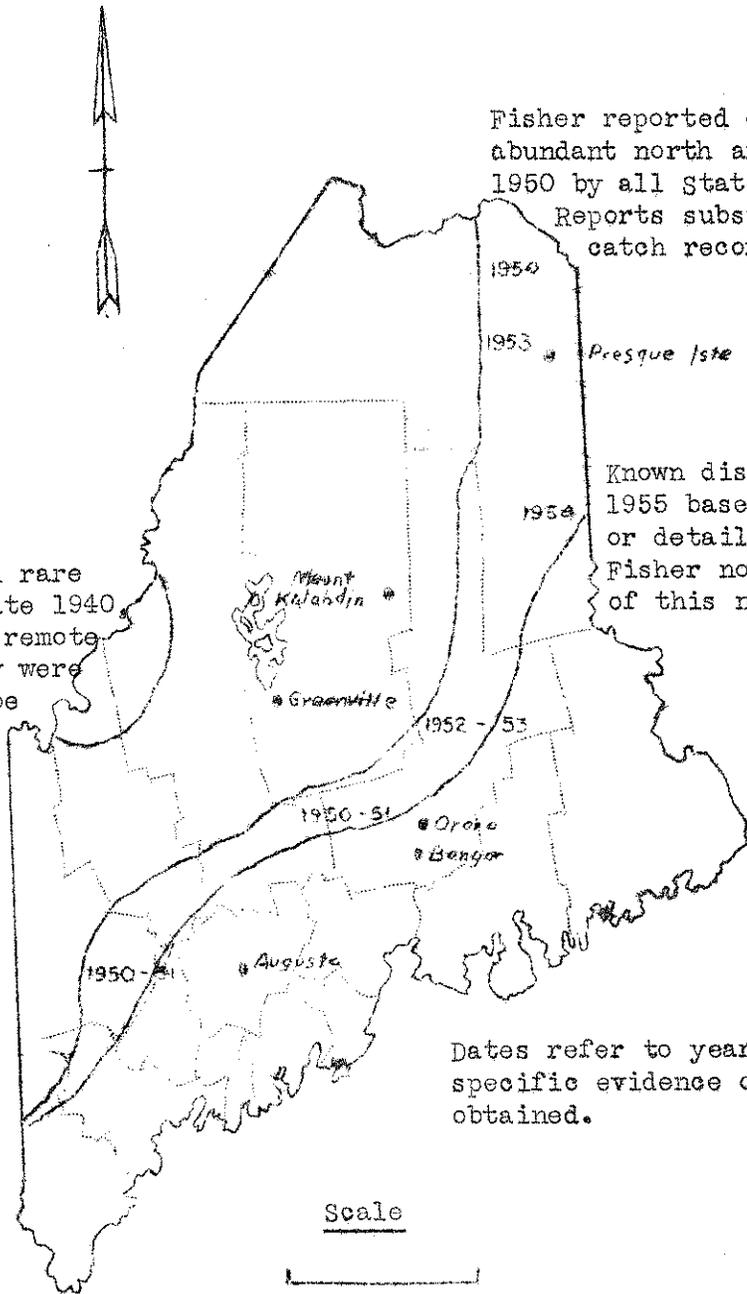
The attached map showing changes in fisher range is being sent to some of our State cooperators in the belief that it would serve as an interesting supplement to the summary of the fisher studies of the Unit quarterly report.

Fisher reported rare over entire state 1940 except in this remote area where they were considered to be common.

Fisher reported common or abundant north and west of line 1950 by all State Game Wardens. Reports substantiated by catch records.

Known distribution Dec. 1955 based upon specimens or detailed track records. Fisher now common in parts of this new area.

Dates refer to years when first specific evidence of fisher where obtained.



DISTRIBUTION OF FISHER