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MAINE COOPERATIVE WILDLIFE RESEARCH UNIT

University of Maine

Orono, Maine

QUARTERLY REPORT

January-March, 1961

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 - Albert D. Nutting
Faculty Collaborators - Horace F. Quick
 David C. O'Meara
 Chester F. Banasiak
Graduate Assistants - D. James Coutu
 Richard M. Gibbs
 Frederick J. Payne
Graduate Student - Hugh Haswell
Secretary - 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NOT FOR PUBLICATION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

January-March, 1961

RESEARCH PROJECTS

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: Spring field work will be started in April.

(b) Renesting and Homing Study

Objectives: To study renesting behavior and the degree of migrational homing exhibited by waterfowl, primarily the black duck and the ring-necked duck.

Assignment: Malcolm W. Coulter, Assistant Leader
(Vermont phase conducted jointly with William Miller,
Waterfowl Project Leader, Vermont Fish and Game Service)

Inactive during quarter.

Plans for next quarter: Field investigations on this project will be resumed.

(c) 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 quarter the preliminary draft of the manuscript relating to this project was completed. This is based on ten years of study and is being written jointly by Howard Spencer, Jr., of the State Game Division and by Mendall.

Plans for next quarter: To complete the manuscript revision.

(d) Breeding Ecology of the Common Goldeneye

Objectives: To determine the density of breeding populations on selected study areas, nesting and brood rearing preferences, and to measure productivity and annual production.

Assignment: Richard M. Gibbs, Graduate Assistant

The first draft of the thesis was completed by Gibbs during the quarter.

Plans for next quarter: To finish all work on the thesis; also to prepare manuscripts for publication on two phases of the study.

FUR ANIMAL RESEARCHProductivity of Maine Beaver

- Objectives:
1. To investigate possible changes in the overall rate of reproduction since the period 1947-1950 when a productivity study was conducted.
 2. To investigate possible differences in the rate of reproduction between beaver from the different climatic zones.
 3. To compare the rate of reproduction between major size classes of beaver.

Assignment: D. James Coutu, Graduate Assistant

During the second winter's work on this project a total of 283 beaver reproductive tracts were received. Of these 44 were from virginal animals or were unsuited for use. Thus, 239 uteri were available for analysis. These were reasonably well distributed within the three climatic zones of Maine that are being considered in this study.

A slight increase in the reproductive rate is indicated this year in comparison with that of a year ago. This held true in all climatic zones and for all classes of specimens examined with one exception. In the central zone the "all-female" class showed a slightly lower placental scar count this year. Within this same zone, however, a tabulation of productive females only showed a higher count than in 1960.

A comparison of the placental scar counts by zones for the two seasons is shown in the following listing:

	Northern Zone	Intermediate Zone	Central Zone
1960 - all females	1.9	1.7	2.2
1960 - productive females	3.1	3.1	3.4
1961 - all females	2.2	2.6	2.0
1961 - productive females	3.4	3.8	4.0

Combining data for each zone the following placental scar counts were obtained for the two seasons:

1960 - all females - 1.9
 1960 - productive females - 3.1
 1961 - all females - 2.3
 1961 - productive females - 3.7

Plans for next quarter: To prepare the thesis.

WOODCOCK RESEARCH

(a) Woodcock Population Studies

Objectives: To conduct an annual census and to obtain related ecological data on the Unit's permanent census routes in Maine.

Assignment: Howard L. Mendall, Leader

Inactive during quarter.

Plans for next quarter: To resume the regular studies in April.

(b) Inter-relationships of Woodcock and Beaver

Objectives: To study the effects of beaver flowages in the maintenance of desirable woodcock habitat, especially as related to the management program on the Moosehorn National Wildlife Refuge in eastern Maine.

Assignment: Frederick J. Payne, Graduate Assistant

During the quarter Payne completed a preliminary draft of the thesis.

Plans for next quarter: To prepare the final thesis write-up.

BIG GAME RESEARCH

A new project is now being formulated by Graduate Student Haswell. It will deal with a population analysis of the New Brunswick deer herd. Additional details will be presented in a later quarterly report.

COOPERATION, EDUCATION WORK AND MISCELLANEOUS ACTIVITIES

Maine, in common with other states along the eastern seaboard, experienced an unusually prolonged and severe cold wave from January 18 to February 4. Sub-zero temperatures prevailed for 14 consecutive days, and even on the coast readings of -10° to -15° were noted several times. By the end of January, intensive icing of mud flats, bays and small harbors had occurred. Reports were received of some waterfowl mortality. Thus, Unit staff members spent several days on the eastern Maine coast during the first 10 days of February. Some evidence of mortality was obtained, primarily to black ducks, with minor losses to the common goldeneye. Several dead ducks were found and autopsy results indicated starvation. In western Maine other reported losses were investigated by representatives of various agencies, including state game biologists, U. S. Game Management Agent Baker, and personnel of the Portland Society of Natural History. There, some of the losses were attributed to weakened birds that had become frozen in the ice. This was not observed in eastern Maine.

Fortunately, a storm with abnormally high tides and general thaw occurred February 5 and 6 and the situation was noticeably alleviated. Although losses to waterfowl definitely took place, it is believed that these were not excessive in the portion of the coast checked. In several areas investigated no evidence of mortality was noted, and by February 8 large flocks of black ducks were exhibiting normal behavior. The majority of the ducks presumably moved only short distances offshore, returning immediately to their accustomed feeding areas as soon as mild weather set in. In the Penobscot Estuary, an important winter concentration area, population counts February 8 and 9 showed essentially the same numbers as counts in early January prior to the cold wave.

Subsequent reports of all investigations lead to the conclusion that waterfowl suffered only minor losses on the Maine coast as a whole.

Coulter and Mendall continued to furnish technical aid when requested to the State Department of Inland Fisheries and Game.

Assistance was given the general public in arranging for autopsies, identifying specimens, and in furnishing technical information.

A 5-minute radio tape was prepared by Mendall dealing with highlights of the waterfowl hunting season. This was subsequently used by the majority of Maine's radio stations on news programs.

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

During the winter Unit personnel participated in the wildlife staff seminar and in several meetings of the Forestry Club.

Coulter gave 6 weeks of instruction in the undergraduate course, Elements of Forestry.

Quick, Coulter and Mendall attended the North American Wildlife and Natural Resources Conference in Washington, D. C., during March. Mendall also attended the annual Unit Leaders' meetings prior to the conference. Coulter was elected as Regional Representative of the Wildlife Society for Region I.

PUBLICATIONS

Alkon Philip U.

1961. Nutritional and acceptability values of hardwood slash as winter deer browse. J. Wildl. Mgmt., 25(1):77-81.

Gibbs, Richard M.

1961. Banding the goldeneye. Maine Fish and Game, III(1):11.

Robinson, William L.

1960. Test of shelter requirements of penned white-tailed deer. J. Wildl. Mgmt., 24(4):364-371.

A manuscript by Graduate Assistant Gibbs, entitled "Mammals of the Pierce Pond Region, Somerset County, Maine", has been accepted for publication in The Maine Field-Naturalist.

Coulter and Mendall devoted much time during the winter to editorial work on manuscripts and theses. This was in addition to Coulter's preparation of a preliminary draft of the food habits of the fisher and to Mendall's work on the waterfowl harvest publication mentioned previously.

Respectfully submitted,



Howard L. Mendall, Leader
Maine Cooperative Wildlife
Research Unit

May 31, 1961

MAINE COOPERATIVE WILDLIFE RESEARCH UNIT

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QUARTERLY REPORT

April-June, 1961

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RESEARCH PROJECTS

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 regular field studies were carried out during the spring and summer. The annual Unit report on production was prepared by Mendall and submitted to the Washington and Boston offices as of July 15. Although this covers slightly more than the current quarter, it is presented at this time in the interest of continuity in progress reporting:

This report summarizes the results, to date, of the 1961 waterfowl breeding ground studies in northern, eastern and central Maine. Investigations were conducted primarily by the writer assisted by members of the Unit staff. Assistance was also provided on some phases of the study by warden Lawrence Caron and biologists J. William Peppard and Henry Carson of the Maine Department of Inland Fisheries and Game; also by John M. Dudley and John C. Dudley of Calais, Maine.

This is the 23rd consecutive year of these studies. Techniques were the same as in recent years. Coverage was similar to that of 1960 except that fewer brood checks were made in habitat frequented by the common goldeneye. Data on breeding populations and nesting success are comparable with that of previous years.

Breeding Populations

Initial breeding populations are determined from 13 study areas that, over a period of years, have proven quite reliable indicators for northern, eastern and central Maine, especially for the State's two most numerous species - the black duck and the ring-necked duck. Data for the wood duck, being fewer, have less value. The two teals and the common goldeneye do not occur on the study areas in sufficient numbers to permit more than general estimates as to their comparative status.

The overall breeding population is considered to be somewhat higher than a year ago. This is due primarily to a 25 per cent increase in the ring-necked duck as measured on the census areas. This is the largest percentage change in the status of this duck to be recorded in a single year. Except for the blue-winged teal, which also appeared to be substantially

increased this year (especially in eastern Maine), little change or slight declines were indicated in the other breeding ducks. A 6 per cent decrease was recorded in the black duck.

Results of breeding pair counts or estimates are summarized as follows:

<u>Species</u> (Measured on census areas)	<u>Status in 1961</u>
Ring-necked Duck	25% increase
Wood Duck	3% increase
Black Duck	6% decrease

(Estimated)

Blue-winged Teal	Substantial increase
Green-winged Teal	No change
Common Goldeneye	Slight decrease

General Breeding Conditions

In common with most of the northeast, Maine experienced a cold, backward spring. Ice-clearing occurred at near-record late dates on most waterways except in northern Maine where a "heat wave" in mid-May hastened the break-up and resulted in freshets. The growing season has been considerably retarded from average.

Waterfowl migration for all species was late and prolonged. Thus the chronology of the nesting season was late from the beginning. Excessive precipitation occurred during the period May 26-28 in northern, eastern and central Maine where 4" to 7" of rainfall fell in a 36-hour period. In the southern and western parts of the State precipitation was only moderate. Eastern Maine was hardest hit with Washington and Hancock counties officially measuring rainfall close to 7".

Investigations revealed an appreciable loss to all ground-nesting ducks, although part of this is being compensated for by re-nesting. On study areas located in the St. Croix Valley, on and near the Moosehorn National Wildlife Refuge, breeding pair counts had been completed and a sample nesting study was under way at the time of the flood. Subsequent observations of single adults, pairs and flocks (plus re-nests found) enabled a good estimate of the loss to be made. It is believed that of the ducks nesting at the time, the following nest losses occurred:

Ring-necked Duck	- 80%
Blue-winged Teal	- 60%
Black Duck	- 50%
Green-winged Teal	- 20%

Overall black duck losses are less than the above figure would indicate since some hatching had already occurred. Brood checks indicated this may have amounted to 25 per cent of initial nests. No nests of the other species had hatched at the time.

It should be emphasized that this special study was made in that portion of Maine hardest hit by the flood. Losses were less elsewhere. The fact that

the breeding season was retarded to start with undoubtedly was a factor conducive to re-nesting. Thus, while substantial lowering of production has taken place, and very late hatchings will be recorded, it was not the disaster to teal and ring-necks that would have resulted had the flood been a week or 10 days later.

Renesting occurred in many of the instances where nests were lost. Some of these nests have now hatched while others are still being incubated. However, the extent to which the losses will be compensated for cannot be determined until later in the summer.

Nesting Success

A total of 45 nests was available to supplement other data in determining natural success. These were divided by species as follows: ring-necked duck - 24; black duck - 16; common goldeneye - 3; blue-winged teal - 2. As of mid-July, 11 of these were still being incubated or had not been re-checked. Of the 34 remaining, only 13 or 38 per cent had hatched successfully. This is the lowest hatching success recorded in 23 years. As would be expected, flooding constituted the most important single factor in nest loss. Of several predators destroying nests, the crow and/or raven and the mink were most important.

The field studies do not sample late nesting efforts in proportion to early nesting activity. Thus, actual hatching success, in the area under study is undoubtedly higher than the figures indicate. Nevertheless, there appears little doubt that nesting success in 1961 is considerably below average. To date, ring-neck success is less than that of the black duck. Usually the reverse is true. Since the ring-neck was hardest hit of all species by the May flood, low production is indicated in spite of the fact that the initial breeding population of this duck was especially favorable.

The Brood Season

With the retarded breeding chronology, together with considerable re-nesting following the flood, the hatching and rearing season is later and even more prolonged than in 1960. The hatching peak of the black duck was at near average dates but there were many fewer early hatches. Likewise, there was a higher proportion of hatches in late June and July. Peaks for the hole-nesting ducks were about a week later than a year ago. With the ring-neck, the hatching peak had apparently not occurred as of mid-July. It is expected this will be nearly 3 weeks later than in an average year and more than 2 weeks behind last year's dates.

A total of 71 broods where complete counts were made were tabulated by age classes. This is in comparison with 117 broods at this time a year ago. Although brood sizes are actually larger than in 1960, this is due in part to the much smaller sample of goldeneyes this year. This is a species that is usually a low producer in this region. Excluding goldeneyes, brood averages are similar to those of a year ago. Relatively few Class III broods have been observed to date and is further evidence of the retarded season. In fact, from known nests still being incubated, it is likely that many young will not be awing until late September.

Rearing conditions on all marshes have been excellent this year. With most water levels still higher than average, this favorable condition should prevail for the balance of the rearing season. Thus, although fewer young

are being produced, the number of ducklings reared per brood will probably exceed that of a year ago.

Conclusions

1. The total breeding population at the start of the 1961 season appeared to be larger than in 1960. Substantial increases were indicated for the ring-necked duck and blue-winged teal. Other species showed little change or slight decreases.

2. The nesting season has been retarded and prolonged. Serious flood losses occurred in late May, especially in eastern Maine. Renesting will only partly compensate for nest losses. Nearly 25 per cent of 45 nests found were still being incubated the second week of July.

3. Measured nesting success on study areas has been the lowest, to date, recorded in Maine. In addition to flood losses, predation has been greater than usual.

4. Rearing conditions are excellent throughout the state and probably will remain so for the remainder of the rearing season.

5. The effects of renesting in compensating for excessive early losses have not yet been fully determined. Nevertheless, it is believed that waterfowl production this year will be appreciably reduced from that of 1960 in eastern Maine, and somewhat reduced, although to a lesser extent, in northern and central Maine as well.

Plans for next quarter: To conclude the season's studies.

(b) Renesting and Homing Study

Objectives: To study renesting behavior and the degree of migrational homing exhibited by waterfowl, primarily the black duck and the ring-necked duck.

Assignment: Malcolm W. Coulter, Assistant Leader
(Vermont phase conducted jointly with William Miller,
Waterfowl Project Leader, Vermont Fish and Game Service)

Intensive field work was resumed during the last week in April. Studies were concentrated at 3 major locations, including 2 in Maine and 1 in Vermont. This is the fifth year of joint work in Vermont. Because field work is in progress and the season's results incomplete, no attempt will be made to summarize details until the next quarterly report.

Briefly, 38 nests (16 black ducks, 9 mallards and 3 ring-necked ducks) have been located and studied. Twenty hens have been trapped at their nests, banded, color-marked and released. The nests of these birds have been collected to simulate destruction by predators and the eggs taken to incubators for hatching. Resulting ducklings are being reared for release on the study areas. Activities of the marked hens are being followed to determine whether they attempt a second nesting.

Hatching success of eggs in the incubators has been high. At the end of the quarter approximately 210 ducklings were being reared at the Sandbar State Refuge by project personnel in Vermont and at the Moosehorn National Wildlife Refuge in Maine by Refuge personnel. The splendid cooperation and assistance by personnel at the Moosehorn Refuge in rearing ducklings has greatly aided the work in Maine.

Plans for next quarter: To conclude the season's field studies.

(c) 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

Work was completed on the manuscript dealing with the 10-year summary of this study. The publication, with joint authorship by Mendall and Howard Spencer, Jr., of the State Game Division, is scheduled for the last of July.

Plans for next quarter: Inactive.

(d) Breeding Ecology of the Common Goldeneye

Objectives: To determine the density of breeding populations on selected study areas, nesting and brood rearing preferences, and to measure productivity and annual production.

Assignment: Richard M. Gibbs, Graduate Assistant

Gibbs completed his thesis revision during the quarter. This was accepted by the Graduate Faculty and Gibbs was awarded the Master's degree at the June Commencement. The thesis summary is as follows:

The breeding ecology of the common goldeneye was studied during the summers of 1959 and 1960 at Pierce Pond in Somerset County. Supplemental data were obtained along a portion of the Kennebago River in Franklin County. The objectives were to determine the density of breeding populations, brood rearing preferences and behavior, and to study reproductive potential and annual production.

Counts were made of the breeding pairs, broods and total populations on the areas of study during the spring, summer, and fall. The censuses were made by means of car or canoe, except in the fall, when a plane was utilized. To facilitate nesting studies, 25 nest boxes were placed in the Pierce Pond study area. Five boxes were already present in the Kennebago area. Observations were made on brood behavior and movements, as well as other factors involved in the brood ecology.

In 1959, banding operations were conducted at Pierce Pond, and in 1960, at both study areas. The birds were captured by drive-trapping. Adult and juvenile females were marked with colored nasal discs in addition to the regulation bands.

The principal results of this study are as follows:

1. In general, the breeding range of the common goldeneye comprises the northern two-thirds of Maine. The approximate southern limit of regular nesting appears to be a line running east and west through the vicinity of Bangor.
2. Goldeneyes begin moving inland almost as soon as openings appear in the ice covering the waterways. There appears to be a differential spring migration according to both sex and age.
3. Most of the adults are paired upon arrival at the breeding area. The adult male does not defend a specific portion of a lake as a territory. Instead he defends his mate or an area around her. The pair bond lasts until shortly after the initiation of incubation, at which time the adult male deserts his mate and leaves the vicinity.
4. Of the 30 nest boxes at both areas of study, only one was used. This nest was eventually destroyed by a raccoon. No nests in natural cavities were found.
5. The average size of a completed clutch in Maine and adjacent areas of the northeast was determined from the literature and unpublished file records to be 8.8 eggs. The hatching peak at both study areas in 1960 occurred the second week of June.
6. In general, renesting as a result of any initial losses was considered impossible after the first week of incubation since the adult males had left the area.
7. The average size of downy young or Class I broods in 1960 was 5.1 based upon a total of 29 broods on the study areas. At Pierce Pond there were 77 young of this age in 15 broods. Of these, 22 reached the flying stage.
8. Juvenile mortality was very high, at least 66 per cent between two days and eight weeks of age. Specific mortality factors and their relative importance could not be determined.
9. Desertion of the broods by the hen took place throughout the summer. Most females deserted when their young were four to five weeks of age.
10. Combining of broods coincided with desertion by the hens. Abandoned broods joined others with the female still in attendance. Young birds showed a stronger tendency to combine than did older birds.
11. Broods exhibited a "brood range" in their movements. The size varied with each brood. Movements within the brood range were continual and irregular, but the range itself remained fixed. The boundaries, however, tended to expand as the ducklings became older. Upon desertion by the hen or the attainment of flight, the limits of the brood range broke down.

12. Brood rearing requirements consisted primarily of available food and shelter from heavy wave action. The feeding areas were among beds of aquatic vegetation, both emergent and submersed.

13. With the attainment of flight, the immature birds scattered throughout the study area. By September, they had left the area completely.

14. The activities of man apparently had little effect on the breeding ecology, at least on the areas of study.

15. Ninety birds were banded and/or color marked in 1959 and 1960. Eight direct recoveries have resulted from the 1960 bandings. The pattern of movement tended to be west and northwest.

16. There was a differential migration in the fall. Adult females, subadults, and immatures migrated through the study areas in late September and early October, and adult males in late October and November.

A lack of potential nest cavities does not appear to be the chief factor limiting the goldeneye population in Maine. Rather it seems to be the high rate of mortality between the initiation of incubation and the attainment of flight. The total mortality during this period was 80.8 per cent of the reproductive potential of the breeding population on the Pierce Pond study area in 1960.

NOTE: This is a completed project.

FUR ANIMAL RESEARCH

Productivity of Maine Beaver

- Objectives:
1. To investigate possible changes in the overall rate of reproduction since the period 1947-1950 when a productivity study was conducted.
 2. To investigate possible differences in the rate of reproduction between beaver from the different climatic zones.
 3. To compare the rate of reproduction between major size classes of beaver.

Assignment: D. James Coutu, Graduate Assistant

The thesis was completed by Coutu and accepted by the Graduate Faculty. He will receive the Master's degree at the August Commencement. The thesis summary is as follows:

A two-year study was undertaken to investigate the current rate of reproduction of beaver in Maine. The objectives were: (1) to determine any changes in the overall rate of reproduction since the period 1947-1950;

(2) to investigate possible differences in reproduction between beaver of the different climatic zones; and (3) to compare the reproductive rate between large (presumably older) and small (presumably younger) adult female beaver.

Reproductive tracts were collected by state biologists from all female beaver which met certain prescribed minimum carcass measurements. These uteri were examined in the laboratory, and the number of placental scars was determined and recorded.

Of 716 reproductive tracts that were obtained, 82 were from non-parous animals. The average number of placental scars for 634 females was 2.0. The averages for the three inland climatic zones were: Northern, 2.0; Intermediate, 2.1; and Central, 2.1. The large adult females had an average of 2.5 scars, while that of the small adults was 1.0.

Because of the large number of barren females, and because of the difficulty of separating sub-adults from non-breeding adults, it was felt that the averages for only productive females were more reliable than by considering all females. Thus, an overall average of 3.4 scars was obtained for 385 uteri. Geographically the averages were: (1) Northern Zone, 3.2; (2) Intermediate Zone, 3.4; and (3) Central Zone, 3.7. Considering different size classes, averages of 3.5 scars were found for the large animals, and 2.8 for the small beaver.

A comparison of averages showed that the reproductive rate of beaver in Maine has not changed statistically in the past decade. Beaver of the Central Zone produced significantly more young than did those of the Northern Zone.

Two hundred forty-nine barren uteri constituted 39.2 per cent of the total sample. Comparable percentages were also found for each of the climatic zones. Low environmental temperatures, inadequate diet, low water levels, and lack of cover were not considered to be the cause of these females being barren.

Possible reasons for the large number of barren uteri include the difficulty of separating age classes and the scarcity of breeding males in the population. The latter possibly could be caused by a change in the sex ratio of adult beaver through a high natural mortality of males. However, a more logical explanation seems to be that an excess number of males are trapped before they have bred with the females. It is recommended that the beaver trapping season in Maine be set later in the year to allow more mating to take place.

During the course of the investigation it became evident that additional study was needed on the following subjects:

1. The effect of low environmental temperatures on reproduction in beaver.
2. The nutritional requirements of beaver and the influence of a poor diet on reproduction.
3. A determination of whether young adults definitely produce fewer beaver per litter than do older animals.
4. Criteria to definitely separate age classes of beaver.

5. A determination of whether a segment of beaver populations do not reproduce every year, and the reasons for this if found to be true.

6. Methods of clearly defining placental scars.

7. The incidence of embryo resorption in beaver.

NOTE: This is a completed project.

WOODCOCK RESEARCH

(a) Woodcock Population Studies

Objectives: To conduct an annual census and to obtain related ecological data on the Unit's permanent census routes in Maine.

Assignment: Howard L. Mendall, Leader

Census studies were conducted as usual on the Unit's study areas in central and eastern Maine. General increases in breeding population, ranging from 5 per cent to 20 per cent were recorded on all but one of the census routes.

In connection with the woodcock-pesticide investigations of the Patuxent Research Center, a population study was conducted for the second year at Greenbush in Penobscot County. This was under the direction of Graduate Assistant Payne. Attempts were made to trap and band the entire male population on this study area. This year a total of 30 woodcock were banded. In addition there were three returns from 1960 bandings and one of a bird originally tagged in 1955 and retrapped a year ago. Since the latter was an adult when first banded, it is now at least 7 years old. This is believed to be a longevity record for the species.

During this work Payne received a great deal of student help. Both wildlife and forestry major students provided the necessary man-power, on an entirely voluntary basis, for conducting the studies. A total of 27 students thus furnished 111 man-evenings of work on this project. The interest demonstrated by the students was most gratifying. In addition, Sergeant David Bell, of the Military Science Department, spent much time in assisting Payne and in supervising student workers.

Plans for next quarter: Inactive.

(b) Inter-relationships of Woodcock and Beaver

Objectives: To study the effects of beaver flowages in the maintenance of desirable woodcock habitat, especially as related to the management program on the Moosehorn National Wildlife Refuge in eastern Maine.

Assignment: Frederick J. Payne, Graduate Assistant

Payne completed his thesis which was accepted by the Graduate Faculty. He received the Master's degree at the June Commencement and is now employed as a biologist with the Nova Scotia Department of Lands and Forests. The thesis summary is as follows:

This study was conducted to determine some of the inter-relationships of beaver and woodcock on the Moosehorn National Wildlife Refuge, especially the effects of flooding alder woodcock habitat. The estimated area of habitat destroyed by beaver flooding and the estimated habitat which has developed within previously flooded areas were measured. Factors such as lowering water levels, depth and duration of flooding and the diameter of the alder stems flooded were considered with regard to the survival of alder after flooding. The following conclusions resulted from the study:

1. Approximately 790 acres of habitat have been flooded by beaver on the Moosehorn Refuge since the re-establishment of these animals in 1940. Man has influenced, through construction of impoundments, approximately 311 acres of the habitat originally flooded by beaver. Therefore, this acreage was excluded from the study. Of the 479 acres remaining, 253 acres were considered to have been woodcock habitat at the time of flooding. Most of this woodcock cover (85 per cent) contained alder. Furthermore, as a result of flooding, all of the cover was destroyed. Only three acres of cover have since developed within drained flowages.
2. Most suitable sites for beaver on the refuge have been occupied by these animals at least once. The trend in the last few years has been for beaver to re-occupy previously abandoned areas. The re-occupation of these sites retards plant succession and should be discouraged.
3. Beaver dams hold back some water for several years after the animals abandon the area. This also retards plant succession. Thus, there appears to be no reason, from the standpoint of woodcock habitat development, to allow dams to remain intact after flowage abandonment.
4. Sedge and grass meadow types invaded all previously flooded areas after the water level had dropped. Shrub swamp (other than alder) was the only recognized type not invaded by meadow in all cases. The presence of alder within drained flowages was primarily a result of the survival of plants existing previously. Alder that survived flooding spread initially by vegetative sprouts. This plant as well as tree species, also became established by seed on well-drained, mineral soils and occasionally on rotting stumps and logs. However, indications are that alder will be established by seed within all drained flowages at a later stage in plant succession. Therefore, it appears that the majority of the area within both drained and flooded beaver flowages represents potential woodcock cover.
5. At least 90 per cent of alder clumps that were flooded to an approximate depth of from six inches to one foot, and for less than four years, survived flooding. Seventeen such flowages were sampled. Variation in the survival of clumps existed when alder was flooded for periods longer than three years. No definite evidence was found to indicate that the depth of flooding had an effect on the survival of alder during this study. However, this factor needs to be tested further.
6. The effect of lowering water levels on the survival of alder could

not be determined definitely. However, there is an indication that, if water levels are lowered rapidly in flowages flooded less than three years, all alder supporting green leaves at that time will survive and regenerate vegetatively.

7. On two flowages sampled, alder less than one inch in diameter survived flooding more readily than did that more than one inch in diameter. This evidence supported conclusions from general observations of many flooded and previously flooded areas. The survival of the younger stems is important in the development of alder stands. The age of the stand when flooded appears to have little bearing on the survival of alder clumps.

NOTE: This is a completed project.

COOPERATION, EDUCATION WORK AND MISCELLANEOUS ACTIVITIES

Coulter and Mendall continued to furnish technical aid when requested to the State Department of Inland Fisheries and Game.

Assistance was given the general public in arranging for autopsies, identifying specimens, and in furnishing technical information.

Coulter and Graduate Assistant Payne attended the Northeastern Wildlife Conference in Halifax, Nova Scotia in mid-June.

PUBLICATIONS

Mendall, Howard L.

1961. Timberdoodles in Spring. Outdoor Maine, 12(5):4,6.

Respectfully submitted,

Howard L. Mendall

Howard L. Mendall, Leader
Maine Cooperative Wildlife
Research Unit

July 21, 1961

MAINE COOPERATIVE WILDLIFE RESEARCH UNIT

University of Maine

Orono, Maine

QUARTERLY REPORT

July-September, 1961

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 - Albert D. Nutting
Faculty Collaborators - Horace F. Quick
 David C. O'Meara
 Chester F. Banasiak
Graduate Assistants - Benjamin W. Day, Jr.
 Russell R. Hyer
 John D. Sexton
Graduate Student - Hugh Haswell
Secretary - 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, 1961

RESEARCH PROJECTS

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 season's breeding ground studies were concluded in August. Since the main results were summarized in detail as of mid-July in the last quarterly report, they will not be repeated here. Late summer nestings were more successful than the earlier attempts. This was offset, however, by a lower proportion of renestings than was expected by birds whose initial nests had been destroyed. This was especially noticeable in the ring-necked duck. Thus, as a result of these contrasting factors, mid-summer predictions of lowered production in 1961 are still considered valid. This reduction was most apparent in eastern Maine.

Plans for next quarter: Limited population data will be obtained throughout the fall in connection with work on subproject (c).

(b) Renesting and Homing Study

Objectives: To study renesting behavior and the degree of migrational homing exhibited by waterfowl, primarily the black duck and the ring-necked duck.

Assignment: Malcolm W. Coulter, Assistant Leader
(Vermont phase conducted jointly with William Miller,
Waterfowl Project Leader, Vermont Fish and Game Service)

Techniques for study were essentially the same as those described in previous quarterly reports. However, in contrast to some former years, all birds were marked with airplane dope; none were marked with Day-Glo or other kinds of paints. Testors airplane dope, carefully applied in two or three thin coats, then coated with Testors clear plastic and allowed to dry thoroughly has given good results. It has been possible to identify marked hens up to 75-80 days after marking. For dark-colored birds white and orange colors show up well. Bright red is satisfactory on mallards but is not easily seen on black ducks.

Greater use was made of an automatic triggering device for springing the nest trap. The mechanism is activated when the temperature of the eggs in a nest reaches 90-95°F. This device has proven useful in instances where hens become very wary and are inclined to leave the nest at the slightest hint of the approach of a person to the vicinity.

The need for some kind of an automatic trap, especially at nests on islands in Lake Champlain, has become increasingly evident during the last two years. Black ducks and mallards nesting there seem to have become more wary and tolerate much less disturbance than they did during the period 1957-1959, especially on islands where colonies of other birds nest (principally herring gulls (Larus argentus), ring-billed gulls (Larus delawarensis), black-crowned night herons (Nycticorax nycticorax). The alarm calls of these birds appeared to alert nesting black ducks and mallards. Some hens, observed from blinds, quickly covered their clutches and then stood in the cover near the nest as soon as other birds began to call. It has been impossible to trap some of these hens with a manually operated trap.

Fifty-two nests of three species of ducks were studied; included were 27 black ducks nests, 22 mallard nests and 3 ring-necked duck nests. Twenty-four hens (13 black ducks, 8 mallards, 3 ring-necked ducks) were marked and their clutches taken to incubators. Six of the marked hens renested; one of them renested twice. She was known to lay three clutches totaling 30 eggs between April 9 and June 14.

Only three ring-necked duck hens were marked this season. They were nesting on floating islands in a small pond where fairly complete rechecks for the presence of marked hens or renests are possible. The hens marked this season disappeared from the study area and no evidence of renesting was observed. This behavior pattern is similar to that observed occasionally during past years. The instances of marked ring-necked ducks renesting during this study have resulted when only a few of the hens on an area have been marked. When numbers of hens are marked, few if any of them have been found renesting on the area.

Homing by hand-reared hens to release areas continued to be low. Homing by adults followed the usual pattern of being much higher than for young birds. Much variation exists, however, in the numbers of adult hens returning to the nesting covers.

The rate of recovery of hand-reared ducklings has been good in cases where the ducklings have undergone a "hardening period" in large pens located in a marsh. Survival of ducklings not placed in the "hardening pen" prior to their release has been very low. At one marsh, by coincidence, equal numbers of wild ducklings and hand-reared ducklings were banded during 1955-1959. About 11 per cent of the wild birds (25 of 219) have been recovered. About 1 per cent of the hand-reared birds (3 of 219) have been recovered. None of the latter were held in a large "hardening pen" prior to release. They were reared in wire pens, elevated above ground and furnished with lights to attract insects. Water and pelleted turkey feed was supplied 2 to 3 times per day.

In contrast to the above, hand-reared birds released after a hardening period in "natural" pens have yielded a recovery rate slightly higher than

that for wild birds banded on the same areas. These pens were wire enclosures 50-70 feet square and included part of a weedy pond. The birds were fed the usual rations, but in the pond they also fed extensively upon natural foods. One important result of permitting the birds free access to the marsh was that their plumage became water repellent before they were released. This may be important to survival in the wild. This higher rate would be expected since studies elsewhere have indicated that hand-reared birds are more vulnerable to gunning than wild ones.

Plans for next quarter: Inactive.

(c) 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

Proof-reading was completed on the 10-year harvest study manuscript authored by Mendall and Howard Spencer, Jr., of the State Game Division. This was published in August as a 60-page bulletin by the Maine Department of Inland Fisheries and Game.

Plans for next quarter: Hunter field-bag checks will be conducted during the open season.

WOODCOCK RESEARCH

Woodcock Population Studies

Objectives: To conduct an annual census and to obtain related ecological data on the Unit's permanent census routes in Maine.

Assignment: Howard L. Mendall, Leader

Inactive during the quarter.

Plans for next quarter: Inactive.

NEW PROJECTS

Several new projects are currently being formulated. Some of these are scheduled for initiation this fall while others will get under way next year. Details will be presented in subsequent reports.

COOPERATION, EDUCATION WORK AND MISCELLANEOUS ACTIVITIES

Coulter and Mendall continued to furnish technical aid to the State Department of Inland Fisheries and Game.

Assistance was given the general public in arranging for autopsies, identifying specimens, and in furnishing technical information.

Mendall was invited to present a paper on the breeding biology of diving ducks, with special reference to the ring-necked duck, at the annual seminar of the Delta Waterfowl Research Station in Manitoba. Following the three-day seminar, he spent several days inspecting field projects and observing drought conditions in the famed Minnedosa pothole country.

PERSONNEL CHANGES

Three new graduate assistants began work at the Unit during the quarter:

Russell R. Hyer, a graduate in June of Purdue University, reported for duty in July and participated in the summer activities of the Unit. His thesis study will be devoted to a classification system of tidal marshes and mud flats.

Benjamin W. Day, Jr., a graduate of the University of Maine in 1957, and more recently a State game biologist, began work at the Unit in September. He will conduct a winter behavior study of the white-tailed deer through a P-R sponsored assistantship.

John D. Sexton, a June graduate of South Dakota State College, also reported to the Unit in September. His assistantship was provided through P-R funds and was to deal with food and feeding habits of waterfowl in coastal habitats. Unfortunately, Sexton, who has a reserve status in the Army, was called for a tour of active duty soon after his arrival.

PUBLICATIONS

Mendall, Howard L. and Howard E. Spencer, Jr.

1961. Waterfowl harvest studies in Maine. Game Div. Bull. No. 7, Maine Dept. Inland Fisheries and Game, Augusta, Maine. 60 pp.

Gibbs, Richard M.

1961. Notes on the mammals of the Pierce Pond Region, Somerset County, Maine. Maine Field Naturalist, 17:14-23.

Respectfully submitted,

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

December 8, 1961

MAINE COOPERATIVE WILDLIFE RESEARCH UNIT

University of Maine

Orono, Maine

QUARTERLY REPORT

October - December, 1961

Cooperating Agencies

Maine Department of Inland Fisheries and Game
Wildlife Management Institute
University of Maine
U. S. Bureau of Sport Fisheries and Wildlife

Unit Personnel

Leader - Howard L. Mendall
Assistant Leader - Malcolm W. Coulter
University Representative - Albert D. Nutting
Faculty Collaborators - Horace F. Quick
 David C. O'Meara
 Chester F. Banasiak
Graduate Assistants - Benjamin W. Day, Jr.
 Russell R. Hyer
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Secretary - Maxine L. Horne

NOT FOR PUBLICATION

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MAINE COOPERATIVE WILDLIFE RESEARCH UNIT

Quarterly Report

October-December, 1961

RESEARCH PROJECTS

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

A limited amount of population data during the fall migration were obtained in connection with the hunter bag check studies (see subproject c).

Plans for next quarter: Inactive.

(b) Renesting and Homing Study

Objectives: To study renesting behavior and the degree of migrational homing exhibited by waterfowl, primarily the black duck, mallard and the ring-necked duck,

Assignment: Malcolm W. Coulter, Assistant Leader
(Vermont phase conducted jointly with William Miller, former Waterfowl Project Leader, Vermont Fish and Game Service)

Inactive during the quarter.

Plans for next quarter: Inactive.

(c) 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

Hunter field bag checks were conducted during the open season. Population estimates were made at this time; also prior to opening day and between split seasons. The summarized report of this study is as follows:

For the 14th consecutive year personnel of the Maine Cooperative Wildlife Research Unit and the state Game Division cooperated in a field bag check study of waterfowl hunting. Coverage was somewhat greater than in 1960, especially in Merrymeeting Bay, the northeastern interior, and the Penobscot Estuary. Proportionately fewer data were obtained in the Sebec drainage and the east coast.

An uneven split season was in effect on ducks with open dates of October 13 - 21 and November 4 - December 9. The bag limit was two birds. For geese a straight season was selected, October 13 - December 11. The special sea duck regulations on eiders, oldsquaws and scoters extended to January 8, but the bag check study does not include that phase of hunting.

This year's opening date was the latest in more than 20 years. The daily bag limit of two ducks was the lowest that has ever prevailed.

During the field work a total of 1,173 hunter contacts was made and 1,340 birds were examined. This is a larger sample than in 1960, but also represented more time spent by the technicians. Actually, there is little question but that hunting pressure was considerably reduced from a year ago. It was the consensus of biologists and wardens, that fewer hunters were afield this year. It is logical to assume, as well, that the total waterfowl harvest was also substantially lower in Maine. The full extent to which the number of hunters was reduced will not be known until the tabulation of the state's duck stamp sales are available.

Fall Populations

With a poorer breeding season in Maine this past summer, it was expected that early fall populations would be reduced. This was not the case, however, and opening day concentrations at several areas were larger than those of a year ago. It appears likely that because of the delayed opening, more than the usual number of migrants from Canada had come into Maine prior to the start of gunning. This belief was substantiated in eastern Maine by field checks that showed an influx of birds in early October.

Mild weather prevailed throughout most of the fall and birds remained on inland waters later than in an average year. Even during the final few days of the season, many diving ducks, especially goldeneyes, were present on the rivers and large lakes. Most black ducks, however, had moved to the coast by then even though many interior waters were still open.

Hunting Success

Average hunter success, as determined by the bag checks, was 1.8 birds per man-day of effort. With the daily limit reduced to 3 birds in 1960 and to 2 birds this year, it is difficult to draw valid comparisons of hunting success. This is true in attempting comparisons of 1960 and 1961 data as

well as in considering the long-term average* when a 4-bird limit was in effect.

Crippling Loss

Crippling loss (birds "downed" but not retrieved) was slightly more than 27 per cent this year. This was determined from 1,232 birds bagged and 336 lost. This represents an improvement from the record-high loss of 31 per cent in 1960. It is still higher, however, than the long-term average of 25 per cent. It represents an unfortunate, and to a large extent needless, waste of game.

Bag Composition

The kill by species of the birds examined is given in Table 1. Black ducks showed little change from a year ago, making up nearly half of all birds checked. The second place green-winged teal declined somewhat from 1960 but, at 18 per cent, still remained well above the 10-year average of 11 per cent.

The goldeneye increased in bag composition from its already higher than average level of a year ago. This was surprising since it was expected that "whistler" shooting would not attract many enthusiasts with a 2 bird limit. However, disproportionate sampling may well have affected the figures. A large concentration of goldeneyes remained on the Penobscot River well into December and stimulated considerable local hunting interest. It is probable that during late season field checks both the Penobscot River and the Estuary were sampled proportionately too heavy. In many areas of the state the goldeneye kill was relatively light.

The most unexpected feature of Table 1 is the fact that the American coot (mud hen or crowbill) made up 2 per cent of all birds examined. Ordinarily this bird is uncommon in the state with only an occasional specimen shot, generally in Merrymeeting Bay. Thus the fact that 27 were checked among hunters contacted is noteworthy. A special point of interest was that all but 4 of these were taken at a single marsh in Waldo County.

A continued decline was seen in the kill of the two scaups, a trend apparent in recent years. In spite of good populations of greater scaup late in the season, very few were shot.

As stated in previous reports, the bag check studies are not designed to measure the goose kill. Therefore, the figures in Table 1 relative to the Canada goose have little importance.

*References in this report to the long-term average are to data compiled in a 10-year period 1948 through 1957. This is the period of most intensive field bag check studies. The data are tabulated and discussed in a 1961 publication by Howard L. Mendall and Howard E. Spencer, Jr., entitled Waterfowl Harvest Studies in Maine. It is Game Division Bulletin No. 7 of the Maine Department of Inland Fisheries and Game, Augusta, Maine.

A final point seems worthy of mention. Although the blue-winged teal showed a slight decline in the bag from 1960, the decrease was less than half a percentage point. With one of the latest opening dates on record (October 13), it might well have been expected that the blue-wing kill would have been insignificant. It was apparent that this early migrating duck remained in the state later than usual this year.

Age and Sex Ratios

More than 80 per cent of all ducks examined were aged and sexed. Age composition of the harvest is directly related to breeding ground production. Figures from a single state such as Maine, of course, have little meaning except when considered with information obtained throughout all parts of the Atlantic Flyway. Even so, it is of interest that the age ratio for all species was 1 adult to 2.1 young. This is a biologically satisfactory ratio. Considering only the black duck, the ratio for the entire season was 1 adult to 2.2 young. For the opening two days (when gunning may be expected to be heaviest on local birds), the ratio was even more satisfactory - 1 to 2.9.

Sex ratios, like age ratios, must be considered on a broad regional basis to be very meaningful, and findings from the present study may or may not be typical of the situation elsewhere. However, a noticeable change was recorded in sex ratios of Maine birds this year in comparison with 1960. The proportion of males shot was much greater, especially in the black duck. This is the only species in which the sample size was large enough to draw tentative conclusions. The all-season ratio for black ducks was 131 males per 100 females as compared with 108:100 in 1960 and 116:100 for the long-term average. Also of interest is a comparison of early season figures. This year's sex ratio for the first two days was 119 males per 100 females while in 1960 the figure was 89 males to 100 females.

It has been found from past studies in Maine that the proportion of males in the bag increases as the season progresses. Therefore, it is likely that the ratios recorded this year are, to some extent, a result of the late opening date.

It is a well established fact that a larger number of males than females exists in most waterfowl populations. This past fall considerable national publicity was given to the desirability of shooting more drakes than hens. Thus, it appears that Maine hunters accomplished this, even though deliberate selection was impossible in the black duck since the sexes are colored alike.

Summary and Conclusions

1. During field bag checks, a total of 1,173 hunter contacts was made and 1,340 birds were examined.
2. Waterfowl hunting pressure in 1961 appeared to be substantially lower than in 1960.
3. Crippling loss was somewhat improved from the record high figure of 1960 but was still above the long-term average.

4. The black duck, green-winged teal and goldeneye, in that order, lead all species in the hunters' bag. Together they comprised nearly four-fifths of all ducks checked.

5. Age ratios of birds killed were satisfactory from a biological standpoint.

6. Sex ratios of black ducks in the bag indicated that the proportion of males was larger than usual. This appears to be due, in part at least, to the later opening date of the hunting season.

Table 1
1961 Waterfowl Bag Checks
Species Composition (Exclusive of Sea Ducks)

Species	No. Birds Checked	Per cent	Per cent Change from 1960
Black Duck	628	46.9	+0.4
Green-winged Teal	247	18.4	-3.1
Goldeneye	165	12.3	+2.2
Wood Duck	68	5.1	-1.3
Blue-winged Teal	45	3.4	-0.4
Ring-necked Duck	36	2.7	-0.1
Pintail	27	2.0	-0.6
American Coot	27	2.0	+2.0
Mergansers (3 species)	26	1.9	+0.4
Mallard	19	1.4	-0.2
Bufflehead	19	1.4	No change
Lesser Scaup	5	0.4	-0.3
Greater Scaup	5	0.4	-0.1
Canada Goose	4	0.3	-0.2
American Widgeon	3	0.2	+0.1
Shoveler	2	0.1	
Black x Mallard Hybrid	1	0.1	
Miscellaneous (unidentified*)	13	1.0	
Total	1340	100.0	

*Includes birds plucked and dressed when examined.

WOODCOCK RESEARCHWoodcock Population Studies

Objectives: To conduct an annual census and to obtain related ecological data on the Unit's permanent census routes in Maine.

Assignment: Howard L. Mendall, Leader

Inactive during the quarter.

Plans for next quarter: Inactive.

ECOLOGY OF COASTAL HABITATClassification of Coastal Marshes and Mud Flats

Assignment: Russell R. Hyer, Graduate Assistant

This is a new project with plans currently being formulated. One of the major objectives is to determine a system of classifying the tidal marshes and mud flats of Maine. The importance of coastal habitat of the state as waterfowl wintering areas has long been recognized. In addition, many such areas also support breeding populations, as well as provide for feeding, resting and natural sanctuaries during migration. Yet preliminary surveys have shown wide variation in the amount of usage by the birds of the many tidal coves and bays.

Detailed information of the state's tide-waters can help insure that individual areas of major importance may be protected from harmful influences such as pollution, deposition of dredged spoil, drainage, etc. An important prerequisite is the determination of a classification scheme that reflects basic ecological differences in environment and that is sufficiently descriptive as to be practicable for field biologists.

Plans for next quarter: To complete the project outline and to initiate field work.

BIG GAME RESEARCHWinter Behavior of the White-tailed Deer

- Objectives: (1) To determine environmental differences in two deer yards of contrasting cover types but with similar climatic conditions.
 (2) To determine variations in deer behavior within the two yards and to relate these to environmental factors.

Assignment: Benjamin W. Day, Jr., Graduate Assistant

This is a new project which appears likely to result in much useful information. Requirements of yarding areas vary greatly from one section

of Maine to another. In the northern and northwestern portion of the state fairly dense coniferous stands are necessary to attract wintering deer. Heavy cutting in these yards has been known to eliminate them as winter range. In more southerly areas these same cutting practices have no deleterious effects on distribution of wintering deer.

Between these two contrasting areas, there exists a wide, roughly defined transition zone in which the standards for suitable wintering areas are less definite. This zone comprises 30 per cent of the state and supplies a proportionate share of the annual deer harvest.

Determining shelter preferences, bedding locations, feed sources and movement of deer within yards in this zone would do much towards establishment of guides for management purposes.

During December two study areas were selected in cooperation with John Gill, state project leader of deer management, and other Game Division personnel. One is in Piscataquis County, north of Brownville in Township 5, Range 9. It is typical of yards in the mountainous, hardwood sections of Maine. The other is located in the Mattawankeag drainage in Springfield, northeastern Penobscot County. This is considered typical of yards found in the low-lying spruce-fir regions of northern and eastern Maine.

Following consultation with state and University personnel, including Professor Frank Todd, meteorologist in the Physics Department, a study plan has been drawn up.

Plans for next quarter: To initiate intensive field work.

COOPERATION, EDUCATION WORK AND MISCELLANEOUS ACTIVITIES

Coulter and Mendall continued to furnish technical aid to the state Department of Inland Fisheries and Game.

Assistance was given the general public in arranging for autopsies, identifying specimens, and in furnishing technical information.

Coulter assisted in organizing and conducting a wildlife seminar.

The Unit again cooperated, as in the two previous years, with the Nova Scotia Department of Lands and Forests in their mammalian food habits study. This was conducted by Dr. Harrison Lewis, retired former chief of the Canadian Wildlife Service. Laboratory phases of this study have been carried out in the Unit laboratory. In addition the Unit provided office, library and clerical facilities, arranged for student labor and furnished staff technical assistance. More than 3,000 digestive tracts and scats of red fox, bobcat and raccoon were examined during the three autumns Dr. Lewis spent in Orono.

PERSONNEL CHANGES

A new graduate assistant has been appointed, effective in January. He

is Henry W. Houseman, a graduate in conservation of Northern Michigan College in 1960. Houseman will be assigned to the coastal waterfowl project that was suspended following graduate assistant Sexton's recall to active Army duty early in the fall.

PUBLICATIONS

A manuscript on the distribution of the goldeneye in Maine, by former graduate assistant Richard Gibbs, has been accepted for publication in the Maine Field Naturalist.

Respectfully submitted,



Howard L. Mendall, Leader
Maine Cooperative Wildlife
Research Unit

March 26, 1962