

THE AMERICAN WOODCOCK (*PHILOHELA MINOR*) IN LOUISIANA

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Because of their unusual habits woodcock are somewhat of a mystery to many ornithologists and hunters. It is common knowledge that they are habitually nocturnal birds. Since they usually migrate and feed at night, they are seen by few people except when flushed from daytime cover or, perhaps, as they make their evening or morning flight.

The breeding range extends over most of the eastern United States and the adjacent areas of Canada. The winter range lies south of a line extending from Virginia to Arkansas with the greatest wintering concentrations occurring in Louisiana.

It is a major game species in the eastern provinces of Canada and in our north central and northeastern states where it possesses a special appeal to many hunters. In most other states woodcock hunting is incidental to rabbit, quail and grouse shooting.

The purpose of the current project, which was initiated in 1949, is to study the ecology of woodcock on the wintering grounds in Louisiana.

The success of this project has been dependent on the cooperation of many people, particularly the Game Management Students from Louisiana State University School of Forestry. Special appreciation is extended to J. B. Kidd, Robert E. Murry, Leroy E. Hovell, Carl Taylor, John D. Newsom, and Victor Lambou for their keen interest, hard work and loyalty. The Louisiana State University Agricultural Experiment Station provided financial assistance. Technical help has been provided by the Louisiana State University School of Forestry, Baton Rouge, Louisiana, and the Texas Cooperative Wildlife Research Unit, College Station, Texas. Data for the winter of 1952 - 1953 were obtained by J. D. Newsom, J. B. Kidd, and R. E. Murry of the Pittman-Robertson Section of the Louisiana Department of Wildlife and Fisheries.

MIGRATION

Woodcock are present in Louisiana throughout the entire year. Since the resident breeding population is low, a minimum number of birds is present during the summer. Reports of nests and young birds, although not common, are not rare.

The arrival and departure of migratory woodcock follow a fairly well defined chronological sequence which may be modified by climatic influences. Migratory birds are noticeable in the northern parishes by October 15.

It is believed that the population in this section of the state continues to build up at an accelerated rate until a peak is reached the latter part of November. As climatic conditions become more severe, the birds move southward and an increase can be detected in the population in the vicinity of Baton Rouge by the

last week of November. The birds continue to increase in numbers and are very common by December 15. The population level then remains somewhat stable through January. A sharp decline occurs the first week in February and by the 10th of the month practically all migratory woodcock are gone. Variations of 7 to 10 days from the above dates occur as climatic conditions fluctuate. A delay in departure occurred in 1951 when a rather severe ice storm accompanied by low temperatures swept over the state the last week in January. As a result, woodcock were present in large numbers until the 10th of February. However, in 1953 when January temperatures were very mild nearly all woodcock had left the state by the end of the month.

COVER

Woodcock show a preference for certain types of daytime cover, provided there is sufficient moisture in or near it to permit feeding. Brushy areas of small trees, shrubs, vines, briars and weeds such as those associated with thickets, fence rows, creek banks, swamp hummocks, bayou banks and forest edge provide excellent cover. Small timber in open second-growth stands or thickets is preferable to mature dense forest because of the brushy understory.

The two major ecological types which support high woodcock populations in Louisiana are 1) the lowland swamp hardwoods and 2) the upland piney woods. The large hardwood bottoms are found on the alluvial flood plains along the main rivers and in the extensive swamps. The most common vines, shrubs and small trees in this type are berry briars, smilax, pepper vine, supplejack, poison ivy, green haw, rough leaved dogwood, water elm, button bush, swamp privet, hollies, palmetto and switch cane. The major tree species are oaks, cypress, tupelo, elm, ash, hackberry, soft maple, honey locust, cottonwood, willow, sycamore, pecan and red gum.

The upland cover consists of pine with a brushy understory. The species most often found in the understory are yellow jessamine, Japanese honeysuckle, grape, poison ivy, berry briars, yaupon, French mulberry, wax myrtle, rose, blueberry and southern crabapple. The major tree species in the piney woods are pines, red gum, oaks, hickory, sassafras and persimmon.

The uplands are invariably traversed by drainage channels which support a growth of hardwoods, brush and vines. These sites contain several species which are common to the bottom lands. The characteristic shrubs are bays, sweetleaf, magnolia, azalea, silverbell, titi, viburnum, and witch hazel. The main trees of this sub-type are usually hardwoods such as beech, magnolia, oak, and hickory. As the pine woods dries out woodcock move to the upland creek bottoms and seepages on hillsides. It is in these concentration areas that most legal woodcock hunting is done in Louisiana.

A third type which is occupied by woodcock is the prairie section of southwest Louisiana. Although numerous reports have been received of woodcock concentrations there, no investigations were carried out in this type of habitat.

During the past few years drainage canals have been cut into many swamps. As the land becomes better drained, extensive clearing follows. Therefore, much former woodcock habitat has been converted to pastures and agricultural fields. There is no end to this relentless drainage in sight. In the not too distant future practically every swamp which can be drained will have vanished. Pasture

improvement, particularly the clipping of fields in late summer, is detrimental to woodcock since it removes the protective overhead cover from nocturnal feeding sites.

To offset this destruction of woodcock habitat, much denuded former forest land is being put back into timber production. When compared on an equal basis, it is believed that swamp land will carry more woodcock than the upland pine forests. If this is correct, woodcock are losing winter habitat in Louisiana.

NOCTURNAL FEEDING SITES

In the lowland swamp hardwood type habitat woodcock frequently move from daytime cover to feed at night in pastures, fallow fields, burned-over weed fields, corn, cotton or cane fields and occasionally freshly plowed fields. In the piney woods they often move to burned areas or seepy hillsides to feed.

Pastures which serve as nocturnal feeding sites usually contain Bermuda grass, carpet grass, Dallis grass or broom sedge. Those that are regularly occupied are grazed rather intensively with much of the grassy vegetation being reduced to one or two inches or less in height. Also present in these pastures is an overhead canopy which may be Yankee weed, ragweed, cocklebur or other weeds which are two to four feet in height. Some pastures are characterized by shallow drainage ditches which are usually less than 8 inches deep and 24 inches wide. These ditches contain weeds of various types. Woodcock often concentrate in and along these shallow depressions, especially when the field begins to dry out.

The actual feeding is done in areas in which vegetation is very short and where the ground is practically bare. Birds concentrate to feed in sections of fields in which there is sufficient moisture and in which the soil contains considerable humus. Sites of former haystacks, or livestock feeding areas, rotted brushpiles, rotted manure piles and areas around abandoned buildings such as gardens are favorite feeding grounds. Moisture, humus and soil fertility are necessary for high earthworm populations. Therefore it is probable that the high earthworm population in these areas causes woodcock to seek them out for feeding sites. Areas of intensive grazing are often utilized. Sites of high fertility not only produce succulent vegetation which is eagerly grazed by cattle but also high earthworm populations. Therefore, the intensive grazing results in conditions favorable to woodcock feeding.

Agricultural fields have much bare ground and an overhead cover of corn, cotton and rice stalks or weeds. Fallow fields are improved by grazing since bare areas are exposed and the dense overhead canopy of weeds is opened up. Although cane fields and plowed fields have little vegetation, the high crop rows offer some protection. These fields are more often used on dark, rainy nights than at other times.

Fields are burned to remove the weeds and "rough" to improve them as pastures, but occasionally a field is purposely burned to attract woodcock. Burning often produces ideal nocturnal feeding sites by removing the ground cover and leaving an overhead cover of scattered weeds. It may also improve the site for earthworms. These burns may be utilized by woodcock in as little time as three days but more often they are not used until after the first rain.

Movement and Activity at Nocturnal Feeding Sites

Under favorable conditions woodcock fly at dusk from their daytime cover to their nocturnal feeding sites. Normally they fly just above the trees and then drop low over the fields to an elevation of approximately 10 feet and go directly to the feeding site. They often "beep" once or twice just before or after alighting. They tend to concentrate in the favored sections rather than scattering over a field. Woodcock normally feed up to 11 or 12 o'clock at which time they frequently move to clumps of cover and become inactive. Any cover three or four inches high and up seems to be satisfactory. During this period of inactivity the birds apparently sleep, for it is difficult to pick up a reflection from their eyes unless they are disturbed. They remain in this resting cover until three or four in the morning when they resume feeding. On fair days they return to their daytime cover about dawn, but on cloudy days they remain on their nocturnal feeding sites until 9 or 10 a.m. It is the occupancy of these nocturnal feeding sites which makes it possible to catch woodcock by the method which will be discussed later.

BANDING

The capture of birds at night with a light and a net is a very old practice and was regarded as a great sport in Europe, Asia and North Africa as early as the 15th Century. English literature records that in 1528 woodcock and several other species of birds were caught by this method for the markets of England. These early night hunters used lights which burned wood or straw or they used a rag torch which had been dipped in tallow. This practice was prevalent through France, Spain, Italy, Germany, Russia and other Old World countries.

Because of their ancestry, it is only natural that the early French descendants who settled in Louisiana considered night hunting a good sport in addition to the fact that it provided much fresh meat. Therefore the "fire lighting" of woodcock in Louisiana is as old as the first clearings along the Mississippi River, which date back to the early 18th Century when fire hunting was a very common form of recreation on the early plantations. The early settlers used pine knot torches which were later replaced by carbide lights and battery head lights. It will be apparent that the method of capturing woodcock which was used in this study is nothing more than the modernization of an old practice.

Some banding had been done on the wintering ground. According to the Bird Banding Office of the U. S. Fish and Wildlife Service, Merovka et al. banded 65 in 1937 and 1939; Norris banded 104 in 1940 and 1941; and McIlhenny banded some at Avery Island in 1940 - 42. From 1920 to 1949 the total continental woodcock banding consisted of 1520 birds with only 26 band recoveries reported outside the state of banding. Since so little information concerning migration was available, it seemed advisable in this study to band as many birds as possible.

Equipment

The most satisfactory light is a 6-volt night-hunter's headlight. Sealed beam and carbide lights were tried but none proved as effective as the night-hunter's head light. Since the size of the spot and the brightness of the beam are important, lights must be selected carefully. A medium sized spot is preferable to

either a small one or a large one. With a large spot the beam of light is too broad and diffused. With a small one the beam of light covers such a small area that it is difficult to search a field thoroughly unless the searcher moves his head excessively.

Nets were constructed from material which was cut in the vicinity of Baton Rouge. Handles were 12 foot lengths of bamboo. The hoops, which have a snowshoe shape, measure approximately 30 inches wide by 40 inches long. They are formed from split bamboo, and are covered with black nylon netting which has a one-inch mesh and a bag of 6 to 8 inches at the center. Since nylon is strong, offers little wind resistance and does not hold moisture, it is preferable to other materials for netting. The handle and hoop should be painted a dull black. Proper equipment is essential to successful banding.

Factors Influencing Banding

Experience in night hunting is a most important asset to a woodcock bander. Students who have had experience in shining rabbit eyes are usually good woodcock catchers while those that have had no experience more often than not proved to be a liability.

Moisture conditions may be the determining factor in local distribution of woodcock since they cannot subsist in an area which becomes dry. During periods of drouth, earthworms go deep into the soil or cement themselves into small earthen cells where they remain inactive and are thus not available to woodcock. At this time the birds do not come out to the nocturnal feeding sites nor can they be found with dogs in their daytime cover. At the same time they are plentiful in adjacent areas where moisture conditions are suitable. Rainfall at the proper times contributes to banding success. The ideal condition is for rain to fall all day, let up about 4:00 p.m., then resume falling about 7:00 p.m. Birds hold exceptionally well when this condition exists during the dark of the moon.

Light intensity influences the success of the banding operation. The darker the night the better. The darkest nights are those on which rain falls during the dark of the moon. On light nights, fewer birds come to the nocturnal feeding sites and they are extremely wary.

Normal winter temperatures appear to have little influence on banding operations. However when extremely low temperatures freeze the ground woodcock concentrate on southern exposures, along streams, seepy hillsides or in areas which remain unfrozen or they are forced to move or die. During such extremes, temperature is an important factor. In the winter of 1940, high woodcock mortality occurred during a 14-day freezing period. In 1951 a week of freezing weather over much of Louisiana forced large numbers of woodcock to concentrate in the southern part of the state late in the season, but because the cold spell was of short duration it resulted in the death of relatively few birds. During these cold periods unusual numbers can be caught in areas of concentration.

Wind influences banding success by drying the vegetation so that much noise is made by a bander as he approaches a bird. Nets are difficult to manipulate under windy conditions. Birds are always wild and do not hold well to a light on windy nights.

Searching for woodcock eyes is quite difficult in a field in which the ground cover exceeds 8 to 12 inches. The width of the strip which can be searched is

inversely proportional to the height of the ground cover. Since the worker's eyes are under a severe strain and he must turn from side to side and around to locate birds, it is very tiring. A tall person has a distinct advantage over a short one when ground cover is high.

The clothes of the operator should be of material which makes little noise. Woolen clothing and rubber soled shoes reduce the noise to a minimum. Coughing, talking and all other noises should be kept to a minimum.

On nights when optimum conditions prevail, woodcock are sometimes too numerous. As the operator attempts to catch a bird, he may excite nearby birds and as they flush, they alert other woodcock which are then difficult to catch. Thus when woodcock are too dense, the capturing success decreases.

Banding Procedure

The banders walk abreast systematically back and forth across a field. The distance between them varies with the height of cover in the field. When the cover is over 8 inches high, the distance rarely exceeded 300 feet but when it is sparse and birds scarce distances between workers may be as great as 500 to 600 feet. Since corn, cane and cotton fields usually have elevated crop rows it is necessary to walk across them in order to locate birds. Lights are worn on the forehead so that the beam of light falls as near as possible along the natural line of sight. Birds are carried in cloth sacks which have a capacity of 5 to 8 woodcock. When these are filled, or at the end of each sweep across the field the birds are sexed, banded and released.

The optimum size of a banding party is three men. With this number the men can coordinate their movements without difficulty and yet cover the large territory in a night. Above four, coordination becomes difficult. Communication between workers is by light signals rather than by voice.

Woodcock are located by a reflection from their eye which appears orange-red to most workers. Many other eyes and objects reflect light in a similar manner and thus cause great confusion to the novice. Among them are skunks, raccoons, opossums, mice, rats, nutrias, muskrats, rabbits, flying squirrels, foxes, bobcats, domestic animals, owls, whip-poor-wills, killdeer, toads, spiders, drops of water and objects such as pieces of paper or glass.

Once a woodcock is located the net is held forward and above or to the side of the beam of light. No shadows should be cast on the bird. The approach should be as stealthy and quiet as possible in order not to alarm the woodcock. When within netting distance, the bander should lower the net rapidly over the bird.

On light nights birds may stand up and run when approached. Some of them can be caught but many fly away. When a bird flushes, it will sometimes return to the ground if light is kept on it as it rises into the air. When a bird is flushed and alights again it is often a good practice to "mark it down" and return later to capture it. If not caught on the second attempt it usually leaves the area.

As in all banding operations, some mortality is unavoidable. The mortality rate for the five years of banding ran between one and two percent and usually occurred when birds were struck with the rim of the net breaking a wing or the neck.

Banding Success

As indicated in Table 1, the catch for each year is as follows: 1948 - 49: 33; 1949 - 50: 252; 1950 - 51: 589; 1951 - 52: 1254; and 1952 - 53: 681 for a total of 2809 birds. To date a return of 3.5 percent (75 bands) has been received on the first four banding seasons. Eighty-eight percent of these were returned the first season while 12 percent were returned the second season. Sixty-one percent (46 bands) were recovered in Louisiana while 39 percent (29 bands) were returned from outside the state. The following out-of-state recoveries have been received: Mississippi 3; Arkansas 3; Ohio 1; Pennsylvania 1; Wisconsin 3; Michigan 6; New York 1; Massachusetts 1; Vermont 1; New Hampshire 1; Ontario 1; Quebec 1; and Nova Scotia 1. These data are not sufficient to show flight routes. When the above returns are combined with 11 returns from other southern banders it gives no more indication of migratory routes. The only conclusion that can be drawn to date is that woodcock wintering in Louisiana fan out in their northward migration to nearly all parts of the breeding range. This combination results in the following returns: Michigan 8; New York 4; and Nova Scotia, Wisconsin, Mississippi and Arkansas 3 each.

Table 1. Woodcock banding data 1948 - 1953.

Year	No. Banded	Return	Percent Return	Repeat	Percent Repeat
1948-49	33	2	6.06	2	6.06
1949-50	252	8	3.17	12	4.76
1950-51	589	19	3.22	40	6.79
1951-52	1254	46	3.66	127	10.12
1952-53	681			65	9.37
1948-52	2128	75	3.50		
1948-53	2809			246	8.46

Band recovery resulted from the following: recapture and release, 42.6 percent; shot, 33.3 percent; found dead, 17.3 percent; killed by cats, 2.6 percent; killed while netting, 2.6 percent and caught in animal trap, 1.3 percent.

As revealed in Table 1, the percent of repeats (based on yearly catch) rose from 4.76 (12 birds) in 1949 - 50 to 10.12 (127 birds) in 1951-52. This increase is largely due to increased experience. The percent of repeats for the five year period is 8.46 (246 birds).

Sex Ratio

Woodcock sex ratios from hunter's bag checks on the breeding ground show a predominance of females. Of 1897 woodcock which were sexed in Louisiana by beak-length measurement, 35 percent were males; 45 percent were females and 20 percent could not be sexed. The interpretation of sex ratios is complicated by sex segregation which apparently occurs during migration and by the fact that females are perhaps easier to catch than males. The sex ratio for the early part of the winter is about equal but as the season progresses it gradually becomes unbalanced in favor of the females. By late spring the majority of the birds being handled were

females. Therefore the data presented may not represent the natural sex ratio of woodcock population. Based on these findings there is some indication that males arrive and depart earlier than females.

Banding of Other Species

During the course of woodcock banding several other species of birds were observed in woodcock fields. Many could have been banded but since woodcock are usually plentiful, little time was spent in catching other birds. When sufficient water was present in the depressions in pastures, Wilson's snipe were common. Although a snipe's eye has a red reflection few of them are seen. They are generally asleep and not active. Even though the eye is very small, it can be seen when the bird is awake. They hold, under a light, similar to woodcock.

Doves often sleep in huge flocks on the ground. Their eyes reflect a dark-purplish glow which can be seen only a short distance. Since doves are wary birds they usually flush before the eye is detected. On drizzly nights large drops of water which collect on a dove's back are easily visible. Occasionally a dove holds well under a light and can be caught.

Meadow larks are plentiful and although there is very little reflection from their eye, many can be captured. Since they frequently fly 50 - 75 feet and then alight, it is easy for a person to "mark them down." Killdeer are common in moist fields. Since their eye has a bright red glow, it is easily seen. The bird can sometimes be captured but they are usually wary. American pipits roost in large flocks in clumps of grass. Their eye does not shine but since they hesitate to fly, many could be caught. Other species which frequently roost on the ground and which can be captured easily on dark nights are robins, blackbirds, cowbirds and several species of sparrows.

SUMMARY

1. Woodcock become plentiful in the vicinity of Baton Rouge about December 15 and leave the first week of February. These dates may be modified slightly by weather conditions.
2. Woodcock occupy three ecological types in Louisiana: a) hardwood bottoms, b) piney woods and c) prairie land.
3. Woodcock cover is being destroyed by drainage in the swamps and is being restored in the pine uplands through reforestation.
4. Woodcock frequently feed at night in pastures, fallow fields or agricultural fields.
5. Woodcock eyes show a red reflection when shined and are therefore easily located at night. Since they hold well to a light, the birds are readily caught with a long handled net.
6. Factors influencing banding success are: a) equipment, b) experience of operator, c) moisture and rainfall, d) light intensity, e) temperature, f) wind, g) height and density of cover, h) clothes worn by bander and, i) density of woodcock.
7. In five years of work, 2809 woodcock have been banded.

8. A return of 3.5 percent has been received on the first four years of banding with 61 percent being recovered in Louisiana and 39 percent outside the state. Michigan leads in the number of out-of-state band returns. Band returns were due to the following causes: recapture and release, 42.6 percent, shot, 33.3 percent, found dead, 17.3 percent, other causes, 6.5 percent. The percent repeats was 8.46.
9. Of the 1897 woodcock which were sexed, 35 percent were males, 45 percent females and 20 percent unknown. Sex ratios indicate that males may arrive and depart earlier than females.