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## OBSERVATIONS ON WINTERING WOODCOCK IN NORTHEAST GEORGIA<sup>1, 2</sup>

by

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### ABSTRACT

During 5 consecutive hunting seasons (1969-1974), 57 hunters made 136 woodcock hunts at 27 sites in northeast Georgia. In 728 man-hours of hunting, 1,132 woodcock flushes occurred. Hunters fired 1,171 shots and bagged 308 woodcock. Forty-three birds were shot down but lost and 20 were feathered but kept flying. Overall, 1.56 woodcock were flushed per man-hour of hunting, and hunters bagged approximately one bird of every four flushed. Crippling loss (in relation to total kill) was computed to be 17 percent. Although hunting opportunity and hunter success compared closely with results of previous hunter surveys undertaken in northern areas, crippling loss was much higher than previously indicated.

Using flushing rates, river or creek floodplains were preferred diurnal sites as opposed to beaver pond, upland, and mixed habitat locales. Swamp privet appeared to be favorite cover.

Climatic conditions were the probable cause of decline in woodcock abundance in most sites during the 1971-72 season. Additional observations were given on seasonal variations in woodcock abundance, arrival and departure dates, and other information regarding woodcock wintering in the area.

### INTRODUCTION

Recent studies suggest that the south Atlantic region serves as the major wintering ground for most woodcock hatched east of the Appalachian Mountains (Clark 1972, Krohn 1973, Martin et al. 1970, Sheldon 1967). Little information is available, however, on abundance, distribution, habitat preferences, and other factors affecting woodcock wintering in the region.

In conjunction with collections for parasite and disease studies on woodcock, Pursglove and Doster (1971) found 13 wintering populations in the Southeast, including surprisingly dense concentrations in several south Atlantic states. Diurnal habitat utilized by these birds was characterized, and suggestions were given to aid woodcock hunters in the region.

The occurrence of numerous woodcock at two sites in Greene and Oglethorpe Counties, Georgia (Pursglove and Doster 1971), led to the discovery of additional locales in these and nearby counties.

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<sup>2</sup> Results of this study were presented previously at the 5th American Woodcock Workshop, Georgia Center for Continuing Education, Athens, Georgia, December 2-5, 1974.

Hunters subsequently utilizing each newly located hunting site were asked to record certain data on each hunt. Information derived from these data included: (1) overall hunting opportunity (flushing rates) and hunter success (bag rates); (2) crippling loss in relation to total kill; (3) diurnal habitat preferences; (4) annual fluctuations in woodcock abundance and distribution; (5) seasonal fluctuations in woodcock use of sites; and (6) arrival and departure times of woodcock.

Results of these data obtained from December, 1969, through January, 1974, are the subject of the present report. The author wishes to thank the many hunters who cooperated in the study. Appreciation is also expressed to William R. Davidson, Gary L. Doster, and Lovett E. Williams, Jr., for their helpful reviews of the manuscript.

#### METHODS

Woodcock hunting sites were sought in three general localities within five counties of northeast Georgia (Figure 1). By January, 1974, 27 individual sites were hunted successfully for woodcock (Figures 2 and 3). Fourteen hunting sites (Nos. 1-4, 6-9, 12-13, 17, 19, 21, and 24) consisted of a similar type habitat, designated herein as river or creek floodplain. Five sites (Nos. 11, 14-15, 23, and 25) were considered "beaver pond locales," and three sites (Nos. 5, 10, and 16) were upland habitat. Five of the 27 sites (Nos. 18, 20, 22, 26, and 27) were identified as a combination of all 3 habitat types.

Hunting sites along river or creek floodplains consisted of narrow strips of cover usually comprising 10-25 acres. Sites generally had a high, dense overstory of bottomland hardwoods and a thick, dense undergrowth of swamp privet (*Forestiera acuminata*) and/or switch cane (*Arundinaria tecta*). Additional habitat characteristics of river and creek floodplains have been presented previously (Pursglove and Doster 1971).

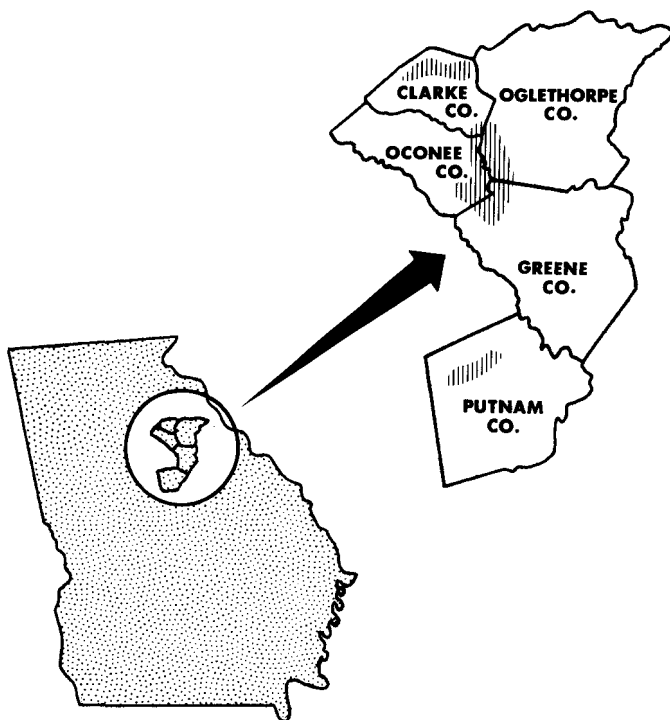


Figure 1. Map of northeast Georgia counties where American woodcock hunting sites were sought.

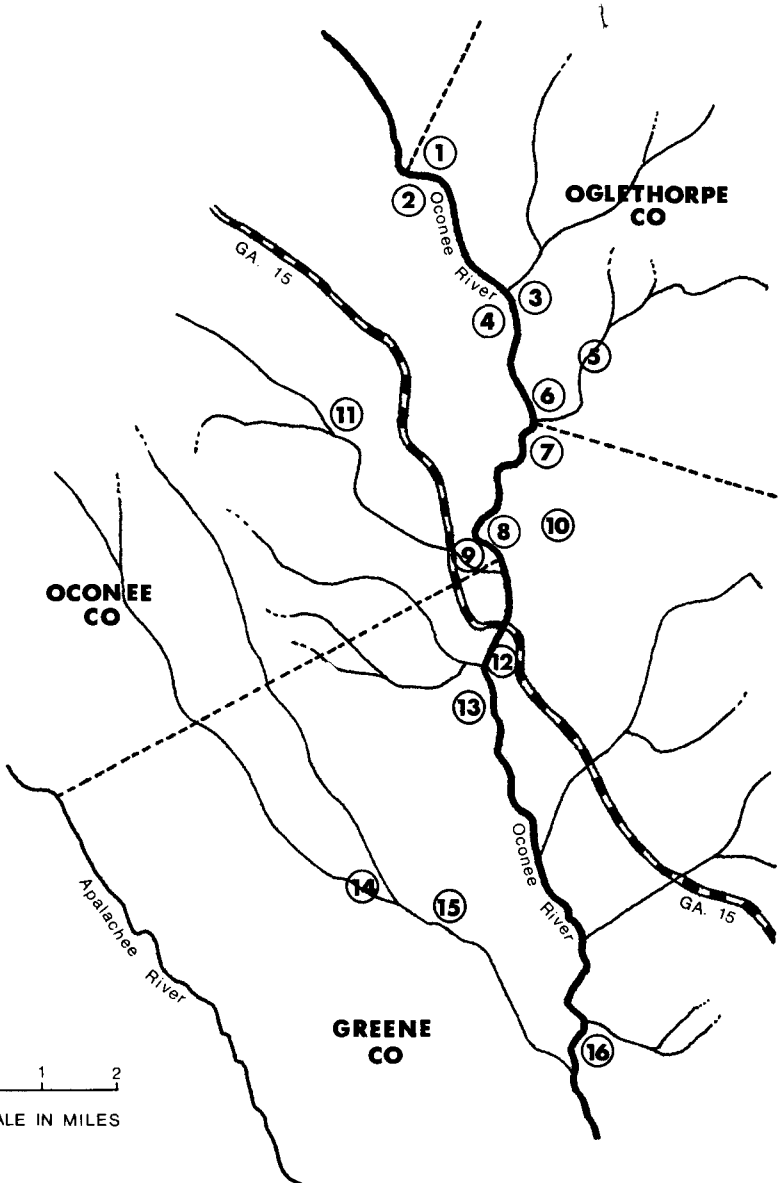


Figure 2. Approximate locations of American woodcock hunting sites in Greene, Oconee, and Oglethorpe Counties.

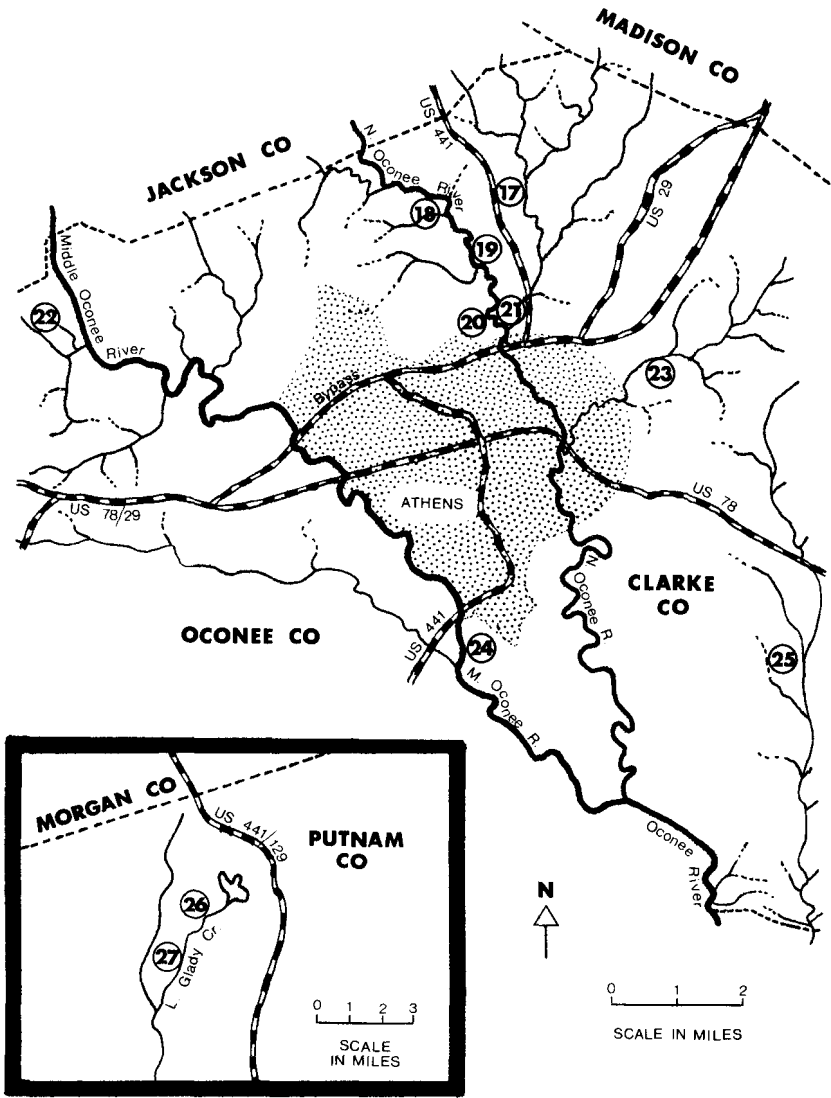


Figure 3. Approximate locations of American woodcock hunting sites in Clarke and Putnam (inset) Counties.

Beaver ponds were on small streams and creeks. Water oak (*Quercus nigra*), sweet gum (*Liquidambar styraciflua*), tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), and other hardwoods predominated. Scattered loblolly pine (*Pinus taeda*) occurred in most sites. Undergrowth primarily consisted of switch cane, willow (*Salix* spp.), honeysuckle (*Lonicera* spp.), blackberry (*Rubus* spp.), and sparse patches of alder (*Alnus* spp.) and swamp privet. Sites were narrow bands of woodcock habitat wedged between ponds and surrounding fields and/or hillsides.

Upland locales were usually on slopes and hilltops near streams or seepages. The sites were primarily dense timberland composed of mixed hardwoods and pines. Pines were short leaf (*P. echinata*) in drier areas and loblolly in more moist sites. Undergrowth usually was sparse, consisting mainly of honeysuckle and greenbrier (*Smilax* spp.), with occasional small patches of swamp privet.

Data for the present paper were obtained during five consecutive hunting seasons (late November to late January), beginning with the 1969-70 season. Fifty-seven different hunters of varying experience and skill participated. Although most common gauges of shotguns were used, 12 gauge guns predominated. Hunting parties consisted of from one to six people and usually two dogs. Dogs varied widely as to breed and experience.

During each hunt, data were recorded on number of hunters participating, hours hunted, number of woodcock flushes, number of shots fired, number of woodcock bagged (retrieved), number of birds downed but not found, and number of birds feathered (hit) but kept flying. Records of number of hunters and hours hunted were computed later to man-hours of hunting.

On most hunts no effort was made to reflush woodcock that were unharmed following their initial rise. However, wounded birds were sought again whenever possible.

For the purposes of this paper, hunting opportunity (flushing rate) was defined as the number of woodcock flushes (F) per man-hour (MH) of hunting. Hunter success was defined as the number of woodcock bagged per number flushed, expressed as a percentage. Crippling loss, also indicated as a percentage, was interpreted as the sum of the number of birds shot down but lost and the number of birds feathered but kept flying, determined in relation to total kill. Overall flushing rates, hunter success, and crippling loss values were compared with previous investigations. Woodcock habitat preferences, annual fluctuations in woodcock abundance and distribution, and other information relative to wintering woodcock, were aided by hunting opportunity and/or hunter success computations.

## RESULTS AND DISCUSSION

From December, 1969, through January, 1974, a total of 136 hunts were undertaken in the various sites. Results revealed that in 728 man-hours of hunting 1,132 woodcock flushes occurred; a total of 1,171 shots was fired; 308 woodcock were bagged; 43 were shot down but lost; and 20 were feathered but kept flying.

Overall, 1.56 woodcock were flushed for each man-hour of hunting. Hunter success over the five-season period was 27 percent, which indicated that hunters bagged approximately one bird out of every four flushed. Hunters averaged 3.8 shots fired for each woodcock bagged.

### *Hunting Opportunity and Hunter Success*

An overall flushing rate of 1.56 F/MH and a hunter success of 27 percent compared closely with results of previous investigations. Blankenship (1957) tabulated hunter data in Michigan for the years 1954-55 and recorded an average flushing rate of 1.7 F/MH and a hunter success of 27 percent. Ammann (1969), in a more recent survey of Michigan cooperators, found overall hunting opportunity to be 1.2 and 1.4 F/MH for 1967 and 1968 respectively. Goudy et al. (1970), in a study of a heavily hunted woodcock population in West Virginia, tabulated hunter data from 1966-69 and found hunting opportunity to be approximately 1.3 F/MH and hunter success to be approximately 34 percent. Liscinsky (1972) determined corresponding values to be 0.7 F/MH and 40 percent for Pennsylvania hunters during 1952-56.

Considering the many variables involved, such as local abundance of birds, dog ability, hunter techniques, amount and density of cover, and gunner's skill, similarities in hunting opportunity and hunter success among widely scattered areas of the range were surprising. These variables may tend to average out with broad sampling over long periods. In any event, woodcock hunting in northeast Georgia would appear to be equal with that in several northern areas.

### *Crippling Loss*

The numbers of woodcock bagged (308), shot down but lost (43), and feathered but kept flying (20), represented 83.0 percent, 11.6 percent, and 5.4 percent of the total kill (371) respectively. Combined

crippling loss, therefore, was 17 percent, indicating that the hunter lost approximately one woodcock for every four retrieved.

This figure is considerably higher than previously indicated. Bruce S. Wright, a New Brunswick hunter, reported a crippling loss of approximately 2 percent (Sheldon 1967). Results of the 1972-73 woodcock wing collection survey conducted by the Office of Migratory Bird Management (FWS, USDI) indicated a weighted crippling loss of 5 percent of the retrieved bag (Owen 1974).

Results from the present study were not surprising considering cover and terrain characteristics. Dense undergrowths of swamp privet and switch cane, always in full foliage and where intense shooting occurred, rendered constant difficulty to the hunter attempting to mark down fallen birds. Much hunting also took place along river banks, and a number of woodcock were not retrieved when they fell into the water. Furthermore, waterways often represented barriers for hunters attempting to find crippled woodcock that had reached the opposite side.

Losses appeared to increase with greater local abundance of woodcock. Hunters reported a number of instances where several birds were down, multiple flushes were occurring, and dogs were pointing new birds in the vicinity. The loss of a downed bird usually resulted.

The relationships of cover and bird density to crippling loss is evidenced by a comparison of floodplain and beaver pond habitats. In the former, overall crippling loss was greater than 20 percent, while in the latter, it was approximately 7 percent (Table 1). Shooting was more "open" and fewer woodcock were encountered around beaver ponds than in floodplain sites.

Table 1. Crippling loss percentages in relation to habitat type.

| <i>Habitat Type</i> | <i>Number Bagged</i> | <i>Number Lost</i> | <i>Number Feathered</i> | <i>Number Crippled</i> | <i>Total Kill</i> | <i>Percent Crippled</i> |
|---------------------|----------------------|--------------------|-------------------------|------------------------|-------------------|-------------------------|
| River/Creek         |                      |                    |                         |                        |                   |                         |
| Floodplain          | 198                  | 33                 | 17                      | 50                     | 248               | 20                      |
| Beaver Pond         | 38                   | 3                  | 0                       | 3                      | 41                | 7                       |
| Upland              | 4                    | 1                  | 0                       | 1                      | 5                 | 20                      |
| Combination         | 68                   | 6                  | 3                       | 9                      | 77                | 12                      |

Overall, losses may have been greater than the data indicated. Several cooperators reported dogs had retrieved woodcock that the shooter did not see fall because of the dense underbrush.

Investigators working on bobwhites speculated that among others, lack of trained dogs, greater numbers of and more competition among hunters, and participation by less skilled hunters increased crippling loss (Kellogg and Doster 1972). In the experience of this author, these factors added to woodcock losses.

#### *Preferred Diurnal Habitat*

Comparisons were made of flushing rates for each habitat type which was hunted. Hunting opportunity was best at floodplain hunting sites (Table 2), and in a number of these locales, flushing rates of 3 to 10 woodcock per man-hour of hunting were not uncommon. These rates are more impressive considering time spent hunting for downed birds and taking breaks.

Table 2. Comparison of hunting opportunity (F/MH) tabulations for each woodcock habitat type.

| <i>Habitat Type</i> | <i>Total Flushes (F)</i> | <i>Total Man-Hours (MH)</i> | <i>Hunting Opportunity (F/MH)</i> |
|---------------------|--------------------------|-----------------------------|-----------------------------------|
| River/Creek         |                          |                             |                                   |
| Floodplain          | 766                      | 385.5                       | 1.99                              |
| Beaver Pond         | 112                      | 116.3                       | 0.96                              |
| Upland              | 18                       | 22.0                        | 0.82                              |
| Combination         | 236                      | 204.0                       | 1.16                              |

On floodplain sites, swamp privet appeared to be the preferred cover. Wherever a combination existed, most birds were found in privet rather than in switch cane and briers. Hunters reported expanses of pure privet as the most productive, except where it was extremely thick.

With few exceptions, hunts on beaver pond, upland, and combination sites entailed considerable effort for the returns. These sites usually involved as much area as floodplain locales, yet they harbored fewer birds. Interestingly, most local bird hunters have long considered this game bird primarily a beaver pond inhabitant. It would appear, however, that beaver pond locales represent secondary choices for area hunters seeking woodcock (Table 2).

Although the best hunting opportunity occurred in river/creek floodplain sites, hunter success was poorer at these sites than at beaver pond locales (Table 3). As noted earlier, cover was less dense at the latter sites, allowing for easier shooting. When woodcock were found in patches of swamp privet around beaver ponds, hunter success generally diminished.

#### *Annual Fluctuations in Woodcock Abundance and Distribution*

A comparison of annual flushing rates revealed a sharp decline in hunting opportunity during the 1971-72 season (Table 4). In fact, many sites hunted during 1971-72, especially floodplain locales, were practically devoid of woodcock throughout the season.

Table 3. Comparison of hunter success (B/F) percentages among woodcock habitat types.

| <i>Habitat Type</i> | <i>Total Flushes (F)</i> | <i>Total Bagged (B)</i> | <i>Hunter Success (B/F)</i> |
|---------------------|--------------------------|-------------------------|-----------------------------|
| River/Creek         |                          |                         |                             |
| Floodplain          | 766                      | 198                     | 26%                         |
| Beaver Pond         | 112                      | 38                      | 34%                         |
| Upland              | 18                       | 4                       | 22%                         |
| Combination         | 236                      | 68                      | 29%                         |

Table 4. Comparison of hunting opportunity (F/MH) tabulations by hunting season.

| <i>Hunting Season (Nov.-Jan.)</i> | <i>Total Flushes (F)</i> | <i>Total Man-Hours (MH)</i> | <i>Hunting Opportunity (F/MH)</i> |
|-----------------------------------|--------------------------|-----------------------------|-----------------------------------|
| 1969-70                           | 72                       | 28.0                        | 2.57                              |
| 1970-71                           | 319                      | 207.5                       | 1.54                              |
| 1971-72                           | 190                      | 285.3                       | 0.67                              |
| 1972-73                           | 293                      | 103.3                       | 2.84                              |
| 1973-74                           | 258                      | 103.8                       | 2.49                              |

This relative absence of woodcock may have resulted from the generally mild winter that occurred in the eastern United States that year since, for the most part, woodcock are believed to migrate short distances at a time as dictated by deteriorating weather conditions (Sheldon 1967). Due to the unusually mild conditions to the north, the more southern areas in the south Atlantic region probably received less than their usual complement of wintering woodcock. Supporting this supposition, one report (F. B. Barick, personal communication) indicated unusually good woodcock hunting in North Carolina throughout the season (December-January) in 1971-72.

Most woodcock found during the 1971-72 season came from just two locales (Figure 3, Nos. 26 and 27). The presence of birds on these sites cannot be adequately explained. It is possible that they harbored populations of resident woodcock. It is also possible that these sites represented the final wintering ground destinations of certain woodcock which sought them out regardless of acceptable coverts to the north and environmental influences. Homing ability has been demonstrated for some woodcock wintering in Louisiana (Sheldon 1967).

During the 1970-71 season, site 8 (Figure 2) was subjected to relatively heavy gunning in an attempt to "shoot it out." Although few birds were encountered during the 1971-72 season, such was the case for most floodplain sites. During subsequent seasons, numerous birds were found on this

site even as it continued to receive intense hunter pressure. This suggested that heavy hunting pressure could not produce annual declines in woodcock abundance.

Hunting opportunity dropped somewhat, however, at sites 26 and 27 (Figure 3) following the 1971-72 season when they had received considerable gunning. This decline would have been expected if these sites harbored resident woodcock. Similarly, subsequent declines would have been anticipated if they served as "predetermined" wintering locales for certain migrant populations.

#### *Seasonal Fluctuations in Woodcock Use of Hunting Sites*

Although woodcock generally were encountered throughout the hunting season when present on a site, numbers of birds fluctuated considerably. In some cases, fluctuations were directly attributed to harsh environmental changes. For example, site 8 (Figure 2) yielded 55 flushes on December 12, 1972. Several days later after extensive rains, the Oconee River flooded the area with 5 to 7 feet of water. A hunt in the general vicinity of the flooded covert yielded only a single woodcock, but a later hunt on the site after the water had receded yielded more than five woodcock flushes per man-hour.

These latter birds may have been some of the original wintering population which had temporarily abandoned the site for nearby coverts during the flood. However, the fact that a hunt in the general vicinity during the height of the flood was fruitless suggested that these woodcock had immigrated from other areas.

In addition to heavy rains and resultant floods, hard freezes and ice storms usually were followed by declines in number of wintering woodcock. Yet, each of these conditions was of short duration, and birds were found in most sites shortly thereafter.

Hunting pressure also appeared to cause some population fluctuations as the season progressed since intensive hunts generally were followed by reduced flushing rates 1 to 3 days later. Nevertheless, it was not unusual to encounter increased numbers of birds in the same locales later in the season.

In the author's opinion, most birds found early probably remained in the area throughout the winter unless forced elsewhere by environmental conditions and possibly hunting pressure. Many of the woodcock encountered later probably were recently-arrived migrants which had vacated other wintering grounds.

Some woodcock found during November-January might have been resident birds. Sightings of male woodcock singing displays in January have been fairly numerous. The author also is aware of one area brood report in March (J. H. Jenkins, personal communication). In addition, cooperators reported crepuscular woodcock flights in April, May, June, September, and October during the past 4 years. Considering the dates of the sightings, these birds were probably residents.

#### *Arrival and Departure Times of Woodcock*

Although concentrations of woodcock were observed at some sites during the last week in November, the majority were encountered during the first week in December. Departure times were more difficult to ascertain since hunting activity ceased annually by the end of the third week in January. Generally hunting was usually less productive as the season expired, suggesting many woodcock were vacating the area by late January. Quail hunts by cooperators in a number of the sites supported this contention. Sporadic sightings in late January and early February probably were indicative of woodcock migrating through the area during their northward flights.

#### *Additional Observations*

Hunters noted a number of findings relative to woodcock in the area. These observations are offered herein as contributions to the overall study and are listed as follows:

- (1) several woodcock were flushed from expanses of terrain devoid of underbrush and having ground cover only of dead leaves;
- (2) several woodcock were resting in tree branches;
- (3) flushed woodcock demonstrated apparent reluctance to cross rivers when not fired at;
- (4) woodcock were seen making crepuscular flights into cattle pastures and old fields directly adjacent to diurnal coverts;
- (5) woodcock remains were found twice along roadways at the base of telephone poles;
- (6) an emaciated woodcock (adult male, 90 grams) was retrieved which had previously suffered a broken upper mandible, probably from a shot wound;
- (7) one woodcock bagged from site 1 (Figure 2) had been banded 2 years previously in northeastern Massachusetts.



## CONCLUSIONS

Although hunter data are imprecise, the results of this study are rather decisive on several points, including: (1) large concentrations of wintering woodcock usually could be found in the area, and surprisingly, hunting opportunity and hunter success compared favorably with those from investigations in other parts of the bird's range; (2) crippling loss was considerable, primarily as a consequence of dense cover, close proximity of waterways, and heavy concentrations of birds; (3) river or creek floodplain terrain with widespread undergrowths of swamp privet were preferred wintering sites; and (4) both annual and seasonal fluctuations occurred in woodcock abundance, possibly resulting from harsh climatic influences and hunting pressure.

This study suggests that hunters can encounter annually large numbers of wintering woodcock throughout most of the south Atlantic region. However, differences would be anticipated in hunting opportunity, hunter success, habitat preferences, and other factors relative to woodcock wintering in other areas. For example, good habitat is probably more abundant in the Coastal Plain (Pursglove and Doster 1971). Therefore, birds would be expected to be less concentrated in this section. Furthermore, since the mountains are subjected to harsh climatic changes more than other areas of the south Atlantic region, migrant woodcock would be expected to remain in coverts for only short periods before having to migrate farther south. Thus, woodcock availability to the mountain hunter probably is of short duration.

Prior to the present study, woodcock hunting around Athens was practically nonexistent. Today, many area bird hunters actively seek this game bird and believe it provides the best shooting available. Ironically, some sportsmen now seek quail incidentally to woodcock. Yet, throughout most of the south Atlantic region, the ardent woodcock hunter remains an extremely rare breed. For these few that do exist, however, a veritable "gold mine" would appear to be at their disposal.

## ADDENDUM

As a consequence of Wallace Dam being constructed on the Oconee River near the Greene-Hancock County line, at least one site defined herein will be flooded by the resulting lake. As originally conceived, the lake would have covered all hunting sites adjacent to the river in Oglethorpe, Greene, and Oconee Counties. Eventually, plans were revised, and the lake will terminate approximately 1 mile below site No. 12 (Figure 2). Nevertheless, nearly 20 miles of prime floodplain terrain will be lost in the near future.

In addition to dams, other changes, such as channelizations and clear-cuttings, are currently taking place in many other areas of the region. Without additional information, however, assessments are impossible on the ultimate effects of these practices on wintering woodcock.

Necessary research and management investigations to help rectify this situation are not indicated for the south Atlantic region for the immediate future even though the need for work has been well documented (Owen 1974). Thus, a dearth of knowledge on woodcock in a significant portion of the wintering range will continue to exist. The inherent dangers in such a situation involving a migratory species are obvious.

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## WINTER GOBBLING IN WILD TURKEYS

*by*

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The purpose of this paper is to point out that the literature on wild turkeys (*Meleagris gallopavo*) fails to discuss fall or winter gobbling activity and this tends to leave the uninitiated with the idea that "pure wild" turkeys only gobble in the spring.

Domestic turkeys are known to gobble at all seasons, whereas wild turkeys gobble most frequently during the spring. This raises the question that wild turkeys heard gobbling in the fall or winter have at least some domestic ancestors. Turkey biologists presumably know that wild turkeys sometime gobble in the fall and winter but most written statements on gobbling activity describe gobbling only in connection with mating in spring (Mosby and Handley 1943, Wheeler 1948, Schorger 1966, Bailey 1967). McIlhenny (1914:172) states that in the fall and winter turkeys are in flocks and "do not gobble." Audubon (1967:43) mentions only that wild turkeys sometime gobble in October. Leopold (1944:158) said that the peak of gobbling activity in offspring of crosses between wild and domestic strains is slightly earlier in the spring but he does not mention fall or winter gobbling of such "hybrids." Thus the question of whether "wild" turkeys gobble in fall and winter.

Over the past 17 years I have heard wild turkeys gobbling in fall and winter on at least 50 occasions: 38 times in northern Florida during November or December and 12 times in conjunction with a radio telemetry study of wild turkeys in Putnam County, Georgia (Eichholz 1974: 79). According to Lovette E. Williams, Jr. (personal communication) of the Florida Game and Fresh Water Fish Commission, turkey populations in northern Florida are of pure wild strain. Georgia turkeys were progeny of restocked wildtrapped birds and are also "pure wild."

Most gobbling occurs when subadult gobblers (younger than two years) are separated from their flock and respond by gobbling at the calling of an unseen turkey or a turkey call imitated by the observer. Separation of a flock, unseasonably warm weather, and a lack of human activity tend to increase a turkey's susceptibility to the stimuli that initiate gobbling. Gobbling at sounds other than turkeys seemed to be a spontaneous or "excited" response.

It is probably true that "hybrid" strains are more prone to gobble year around; however, my observations indicate that completely wild turkeys also sometime gobble in the fall or winter and this is not necessarily associated with mating.

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