SNIPE FIELD MANAGEMENT IN THE SOUTHEASTERN STATES

By WILLIAM W. NEELY
Biologist, Soil Conservation Service
Walterboro, S. C.

Snipe shooting has been a popular sport in the Southeastern states for many years. Some of the old plantation records mention "snipe bogs." However, it appears that the shooting has largely been provided on areas where the accidental combination of land condition and water made an attractive spot for snipe. The effect of yearly variation of weather upon these land and water conditions probably account for fluctuations in the numbers of snipe reported by ornithologists (Robbins, 1951).

Formerly known as Wilson's Snipe, its name has been changed to Common Snipe in the fifth edition of the American Ornithologists' Union check-list (1957). It is widely known among sportsmen as Jacksnipe. Some of its attributes as a game bird can be found in a translation of its scientific name: *Capella* (a frolicsome leaper) *gallinago* (a hen) *delicata* (delicate).

During the past six years, studies and field trials have been made by the Soil Conservation Service in South Carolina to determine practical methods of managing land and water *specifically* for snipe. The results have been extremely successful. Several techniques are now available to farmers who want to use a part of their land for this purpose. These methods have encouraged snipe in numbers which have been satisfactory to landowners and at the same time have wintered large numbers of snipe both before and after the open season. Although snipe may sometimes use fields planned for other purposes, this presentation deals only with lands managed primarily for snipe.

There is a great deal more to be learned about snipe management than what is presented. It is hoped that this paper will suggest leads to research biologists to further perfect land management methods for this game species.

This study, of methods to establish and manage fields for snipe, followed the conventional pattern of other forms of game management: (a) The determining of ways of providing suitable habitat and (b) providing especially a dependable supply of choice of food.

To provide choice food for snipe agriculturally, a real challenge arose as animal material comprises about 83 percent of the diet of this species (Sperry, 1940; Martin, Zim and Nelson, 1951). Insect larvae, crustaceans, earthworms, and mollusks are the principal animal foods. Of this group, it was decided that earthworms could be most dependably produced with land and water management. Even so, it was observed that the same management which favored earthworms apparently was favorable to some univalves and insect larvae. This undoubtedly contributed to the success of the techniques described, but an attempt to evaluate all of these factors was considered too complex for the field trial methods undertaken. For those interested in research study, ground sampling methods (Davison *et al.*, 1955) could easily be adapted for such determinations.

The abundance of animal life in the soil is closely related to the amount of organic material present. Commercial producers of earthworms for fish bait employ the introduction of corn meal, cottonseed meal, or wheat shorts into the soil beds in which the worms are grown. In growing red worms, they use mounds of cotton-gin wastes kept moist by various spraying systems.

In the early part of the study to develop management methods for snipe fields, consideration was given to these worm-production procedures of commercial producers. These methods were abandoned after cost estimates showed it would be impractical to treat any appreciable acreage. Further studies might be made to determine whether this would be feasible for very small snipe fields or for fields of other than marshland soils.

The type of soil will also influence the abundance of animal life in it. Earthworms, which must ingest soil in obtaining food, apparently prefer loams and sandy loams rather than sands. From observation, this is true even though soil types as Rutlege sand contain considerable organic material.

A source of organic material was in ample supply at all of the locations planned in this study for snipe fields. All were wetlands which produced a luxurant natural growth of grasses, sedges and rushes during the spring and summer. Two problems remained: (1) to devise a method of working this plant growth into the soil or reducing it to a litter on the surface, and (2) the installation of a suitable water control system to permit water removal when needed so that farm machinery can operate on the marshy lands, and that the right amount of water can be retained during the winter season.

Two methods were used to reduce the summer's growth of vegetation to the desired humus for worm production. Both methods left the field in a close-cropped condition which is required by snipe. It was found that snipe will not use fields covered with tall-growing vegetation.

The least expensive method is to use a rotary chopper. This equipment is a metal drum about three feet in diameter, having a series of metal blades welded on its outer surface parallel to the axis. The drum is partially filled with water to increase its weight for better cutting action. A draw-bar attachment permits the device to roll behind a tractor. This same kind of equipment is used for hardwood brush cutting on many of the plantations in the Southeast.

When used in the snipe field, three desired results are produced: (1) It effectively cuts up the vegetation; (2) the blades depress part of the vegetation into the soil for a source of humus for another year; (3) the series of corrugated rills left by the cutter blades make an ideal topography for snipe—some exposed land, some inundated land when the field is shallowly flooded with water.

The use of disk plows is somewhat more expensive but is more effective. Several types of disking equipment were tried but, in general, those which turned the soil the deepest were best. More organic material was turned under and less litter was left on the surface. The clods turned up by disking leave a pattern of rills above water when the field is shallowly flooded as with the rotary chopper. However, in the case of disking, more of the soil surface is bare and thus makes it easier for snipe to use their probing bill to secure food. To use the disking method of management requires a better drainage system in the field than with the chopper because of the greater pulling power required from the tractor. Late September or early October is the best time for disking or chopping.

Although actual counts have not been made, several observations indicate that snipe are more abundant and use the disked fields in preference to those managed with the rotary chopper.

Some of the primary plant foods of snipe such as sedges, smartweeds, razor-sedge, sawgrass, bullrush, witchgrass, barnyardgrass, and bogbean (Sperry, 1940; Martin, Zim and Nelson, 1951) will occur naturally on almost any wetland field selected for snipe management. Although such plant foods usually are a minor part of the diet of snipe (*ibid.* above), both the disking and chopping methods reduce the duff so that these seeds are readily available to the birds. Thus this may add to the success of this kind of management. The seeds of some of these plants are extremely resistant to deterioration and a build-up of volume of them both in and upon the surface of the soil can be expected over a period of years with these methods.

DESIGN OF SNIPE FIELDS

The more level a field is, the better it is adapted for snipe management. Coastal Plains wetlands and freshwater marshes are ideal. Fields of small size are not worthwhile—about five acres is the minimum for reasonably good hunting. The larger snipe fields in this study (about 30 acres in size) produced the best hunting.

Besides a drainage system, a low dike is required to impound shallow water in the field during the fall, winter, and early spring months. Although only a few inches of water will be imopunded, the dike should be two or three feet high in order to protect it from flash rains. A large field with a slight slope will require several cross-dikes or low levees to make it possible to evenly flood the entire field.

A source of water for flooding the field and a suitable method of controlling the depth of flooding are very important items in planning a snipe field. Depending upon runoff water from rainfall for flooding is not satisfactory. Fall and winter months in the Southeast are usually periods of low rainfall. The shallow flooding of snipe fields requires a source of water available at any time to replace evaporation and absorption losses. However, rainfall often supplements dependable methods of flooding and thus reduces maintenance cost.

The best source of water is a pond or reservoir constructed at a higher elevation than the snipe field. Water can thus be stored ready for use as needed to keep the field properly flooded. Since the amount of water required is relatively small, a well and pump makes a reliable source of water for a snipe field.

Tidal action in freshwater streams in coastal areas can also be used to flood snipe fields constructed adjacent to the streams. Although this would seem a convenient and economical source of water, the advantage is outweighed in that fields in such locations require larger and more expensive dikes. Also a flap gate is necessary on the river side of the water control structure to prevent the field from flooding too deeply. Often this flap may have to be operated manually to let off excess water from rainfall when the head of water in the field is too small to open it mechanically.

The success of the field will largely depend upon the correct depth of flooding. The snipe cannot probe into the soil if it is dry and firm, and consequently they will not use such fields. Flooding the entire surface of the field for an extended time either drowns the worm crop or produces conditions less attractive to snipe. Correct flooding is with the water puddled in the field with much of the area in exposed clods and ridges.

The most practical device for controlling the water level in snipe fields is a flashboard riser structure. These have an open-front chimney-like affair which is located on the field side of the dike. Flashboards can be dropped into the slots of the riser, to a height to impound the correct depth of water in the field. Any water over this depth will spill over and go out through a connecting pipe laid under the dike. The correct depth is automatically maintained even though a heavy rain may bring considerable amounts of water into the field. Soil Conservation Service engineers can give technical assistance in determining the size of riser and pipe needed for a particular field.

Prefabricated flashboard risers are now commercially available at reasonable price. They are made of asphalt-coated corrugated metal and are easily installed.

The method of harvesting a wildlife crop is a part of management. Without adequate planning for harvest, the landowner may become so discouraged with results that he doesn't consider it worth while to continue the practice for another year. Or he may overshoot the field, with the result that the birds stop using it for that season or even for several years following.

Southeastern snipe fields are somewhat similar to duck fields insofar as the amount of shooting which can be permitted. Most small fields will stand only once-a-week shooting if the birds are to use it regularly. Larger fields, and those with better land and water management, will permit twice-a-week shooting and, more rarely, three times a week.

Two methods of shooting are used in these managed snipe fields. The hunter can wear boots, walk through the field, and flush the birds ahead of him. Or hunters can take stands along the sides of the field or in blinds and have someone walk through the field to flush the birds.

To those who try snipe shooting for the first time, it quickly becomes an outstanding game species. Sperry states it well: "The popularity of the bird for sport is due partly to the excellence of its flesh but chiefly to the fact that its swift and irregular flight makes it an uncertain target and taxes the skill of the marksman."

The experiences of producing habitat for snipe suggests that suitable wintering grounds may well be the limiting factor for this species. Nature does not provide many areas suitable to their requirements. Man-made and managed snipe fields can contribute to their abundance.

SUMMARY

Although snipe shooting has been a popular sport in the Southeastern states for many years, it appears that the accidental combination of land and water conditions have been solely responsible in providing an attractive spot for snipe.

Several techniques are now available to farmers who want to use a part of their land for this purpose. The methods described have been extremely successful in producing snipe fields satisfactory to landowners. However, there is more to be learned about snipe field management. It is hoped that this paper will serve to encourage research biologists to further studies.

Specific management for snipe requires the production of vegetation left in a close-cropped condition, and a dependable supply of food. Since snipe diet is about 83 percent animal food, methods to favor earthworms and other animal life must be used. Natural vegetation is a ready source of humus.

Water control for depth-of-flooding is of utmost importance in a snipe field. A puddled field condition is the most desirable. Flashboard risers, along with a suitable water source, best serve the water control needed.

The manner of shooting is an influence in snipe field management. The size of field and the frequency of shooting must be considered.

Nature alone does not abundantly provide areas suitable to snipe requirements. Lack of suitable wintering grounds is suggested as the limiting factor for this species.

LITERATURE CITED

American Ornithologists' Union. 1957. Check-List of North American Birds. 5th ed., Lord Baltimore Press, Baltimore, Md.

Davison, Verne E., L. M. Dickerson, Karl Graetz, W. W. Neely and Lloyd Roof. 1955. Measuring the Yield and Availability of Game Bird Foods. Jour. Wildl. Mgt., 19(2):302-308.

Martin, A. C., Herbert S. Zim and Arnold L. Nelson. 1951. American Wildlife and Plants. McGraw-Hill, N. Y., pp. 86-87.

Robbins, Chandler S. 1951. Wilson's Snipe Wintering Ground Studies, 1950-51. USDI F&WS Special Rpt., Wildlife No. 14, pp. 47-49.

Sperry, Charles C. 1940. Food Habits of a Group of Shorebirds: Woodcock, Snipe, Knot, and Dowitcher. USDI Bur. Biol. Survey, Wildl. Research Bulletin 1.

WINTER FOODS OF MALLARDS IN ARKANSAS

By THOMAS WAYNE WRIGHT
Biologist, Soil Conservation Service
Lonoke, Arkansas

INTRODUCTION

Food habits of mallards in the Mississippi River Valley have been the subject of study by several authors. Martin and Uhler (1939) collected 382 stomachs from all species of ducks in Arkansas, five of which were collected from the same area covered in this report. McAtee (1918) examined 1,725 gizzards, many of which came from Arkansas. Both authors included Arkansas data with that from several other states. Farming methods have changed considerably since these papers were published, and analytical methods have been improved, too.

The present study depends primarily on gullet contents rather than gizzards; and is limited to the winter foods of the mallard population in Arkansas. Several gizzards were collected along with well-filled gullets for comparison of food content. The collections were made from fresh-killed mallards brought to be dressed at business houses in Stuttgart and Little Rock. The methods of collection and analyses were suggested by Davison (1940).