CALIBRATION OF DEER HUNTING EFFORT AND SUCCESS

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INTRODUCTION

The North Carolina Wildlife Resources Commission, through its Division of Game, manages the wildlife resources on nearly half a million acres of game lands throughout the State. These areas are either owned, leased, or managed through cooperative agreements with other state and/or federal agencies and private organizations.

Hunting comprises a major recreational use of these lands. Ingress and egress are controlled and hunters using these areas are required to check in and check out on a daily basis at designated checking stations located at major points of access.

During the 1964-65 hunting season, 49,079 hunting permits were sold with a value of $186,714.50. Nearly 74 percent of these permits were for deer hunting.

For some time now, we have been under pressure to abandon the daily permit check-in check-out type of hunt in favor of season permits with fewer controls over hunter movement. Before doing this we felt it would be wise to secure some basic data on the magnitude and nature of the hunting pressure on these areas.

We, of course, knew what the total hunting pressure was but we wanted to know also how many different people are using these areas and how many times each one hunts. We also wanted to know whether they are local people or whether they travel considerable distances to use these areas. Furthermore, we felt it would be helpful to know if there were any discernable differences in success rate as related to origin of the hunters, as well as time of day that most kills are made.

The purpose of this paper is to report findings in regard to these questions as determined by statistical analyses of participation and kills on wildlife management area deer hunts during the 1965-66 hunting season.

METHODS

Each hunter registering at a checking station was required to surrender his hunting license and to purchase a hunting permit. After all hunters were checked in, the checking station attendant recorded the license number, type of license and zone of residence. Zones of residence were arbitrarily established as follows:

Zone one — 0 to 20 miles from checking station
Zone two — 21 to 60 miles from checking station
Zone three — 61 to 100 miles from checking station
Zone four — 101 and more miles from checking station

Each checking station was issued a state highway map on which these zones were delineated as a series of concentric circles with that particular checking station at the center. The town of residence indicated on the license was used as reference from which the zone of residence for each hunter was established.

Hunting licenses were returned to the hunters when they checked out and data in regard to location and time of kill, if any, were recorded on the data stub containing the hunter's license number. Later, all pertinent information was transferred to electronic data processing cards and analyzed on an electronic data processing system which identified individual hunters and their hunting success through the license numbers.

The authors gratefully acknowledge the assistance of Mrs. Janice Dudek and Mrs. Mavis Guthrie in comiling and analyzing the data.

FINDINGS

Buck Hunts

Hunter Participation

Gun hunts for buck deer were conducted through 29 checking stations, most of which were open for 12 successive days of hunting. While we recorded a total of 23,771 hunter trips, we found that they were made by only 13,468 different hunters. Thus, the "average" buck deer hunter made 1.77 trips (Fig. 1).

The great bulk of participating hunters (75 percent) resided within 60 miles of the hunting areas (zones one and two). They also made about 75 percent of the hunting trips. Actually, number of trips per hunter was remarkably similar for all zones, with those traveling the greatest distances averaging 1.82 trips while those who lived close by averaged 1.78 trips.

TABLE I

Average Number of Trips per (Buck Deer) Hunter by Zone of Residence

Zone of Residence	Average Trips per Hunter
1	1.78
2	1.76
3	1.70
4	1.82
Over-all	1.77

Hunter Success

In the 23,771 buck deer hunting trips made by the gun hunters a total of 1,124 deer was taken, for an average of 21.03 trips per kill. Hunters living closest to the areas experienced the best success rate—18.86 days per kill. Others were as follows: zone 2—23.01 days per kill, zone 3—21.24, and zone 4—22.16.

Another measure of the relative success rate of local hunters is seen in the fact that while they made up only 35.71 percent of the effort (trips), they accounted for 40.04 percent of the kill. This "over-average" harvest by local hunters is reflected in "under-average" harvest by hunters from each of the other three zones (Fig. 1).

Time of Kill

The time of kill pattern (Fig. 3) varied somewhat between zones of hunter origin. While hunters were generally more successful during the morning hours, hunters living close to the areas made most of their kills earlier in the day than those who lived farther away.

Zone one hunter success peaked during the second hour of hunting and diminished gradually through the day. Zone two and three hunter success followed a similar pattern except that they peaked at successively later hours. Kills by zone four hunters did not show any distinct peak other than being more numerous before noon.

Either Sex Hunts

Hunter Participation

Either sex deer hunts were conducted through 24 checking stations. The hunts were of one, two or three-day duration, depending on the intensity of harvest that our management called for.

Analysis of license records indicated that the 11,696 hunter trips were made by 8,817 different hunters who averaged 1.33 trips per hunter.

We found an interesting contrast in source of hunters when comparing either sex and buck deer hunts (Fig. 2). Nearly half of the either sex hunters came from within less than 20 miles, with progressively fewer from more distant zones. In contrast, about two-thirds of the buck hunters came equally from zones one and two, and the other one-third was similarly equally divided between zones three and four.

While the average number of trips per hunter was about 25 percent less than on buck hunters (1.33 as compared to 1.77), there was relatively little difference when comparing hunters from different zones. Near-by hunters averaged 1.32 trips while hunters from the farthest distances averaged 1.54 trips.

TABLE II

Average Number of Trips per (Either Sex) Hunter by Zone of Residence

Zone of Residence	Average Trips per Hunter
1	1.32
2	1.31
3	1.32
4	1.54
Over-all	1.33

Hunter Success

A total of 779 deer was harvested in the course of the 11,696 either sex hunter trips, for an average of 14.88 hunter trips per kill. The disproportionate success rate of local hunters was even more marked than on the buck hunts. Hunters living within 20 miles of the checking stations averaged 12.85 days per kill while those living over 100 miles away averaged 19.06 days per kill. Success rate of zone two and three hunters fell midway between these points — 16.43 and 16.10 hunter days per kill, respectively.

Furthermore, while the zone one hunters made up 43.54 percent of the trips, they carried off 49.42 percent of the kill. No other group of hunters showed a higher percentage of kill than participation.

Time of Kill

As in the buck hunts, most of the kills were made in the early hours of hunting even though hunting began at 10:00 A.M. (Fig. 4). Also, hunters living close to the area made most of their kills earlier in the day with progressively fewer kills during each succeedng hour. The kill pattern of more distant hunters became more erratic in proportion to their distance from the area.

DISCUSSION

The ultimate measure of professional competence is the attainment of stated goals — calling your shots and making them — if you will. This calls for knowledge of the situation at hand in rather precise terms not only to determine whether it is good or bad but also to be able to determine the degree of change desired, and accomplished. Precision of knowledge implies measurement of values, for without measurement we cannot compare. It is for this reason that we in the Division of Game in the North Carolina Wildlife Resources Commission have been increasingly focusing our attention on calibration. We are finding in North Carolina an increasing acceptance, interest and even demand, for scientific management of wildlife resources. We are therefore convinced that calibration of wildlife management is not merely a matter of academic interest but rather the concrete base of public confidence required of a successful resource management program. The questions

which we have answered in this paper represent but a small portion of a program designed to provide guidance in the development of public hunting areas. One immediate goal is to determine the feasibilty of abandoning controls of wildlife management areas. Other goals include determination of public hunting area needs, game production capacity, and hunter capacity of various areas. Studies are in progress in regard to these questions and will be reported in future papers.

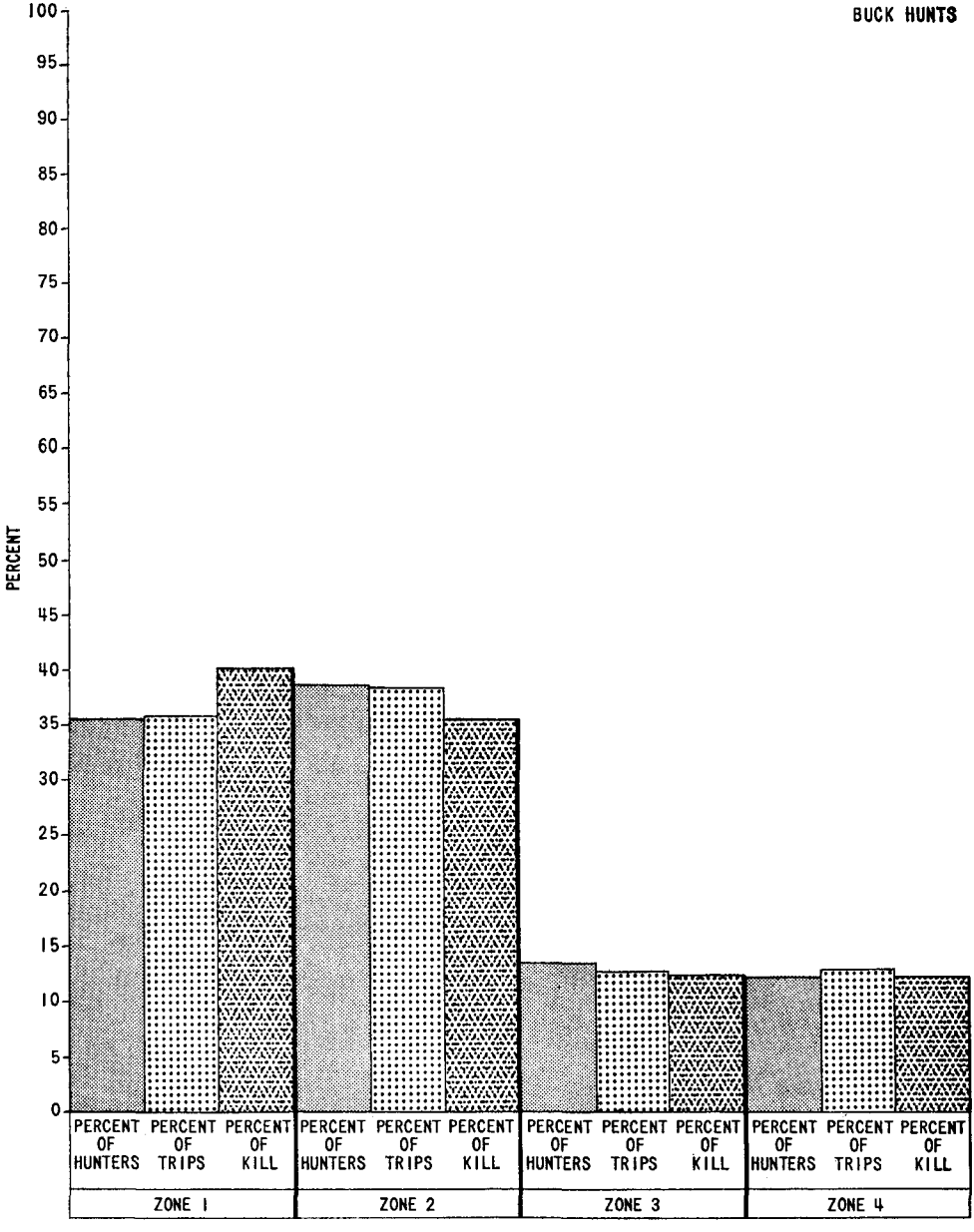

Figure 1. The Distribution of Buck Deer Hunters, Their Trips and Kill by Zone of Residence on Wildlife Management Areas, 1965-66 Season.

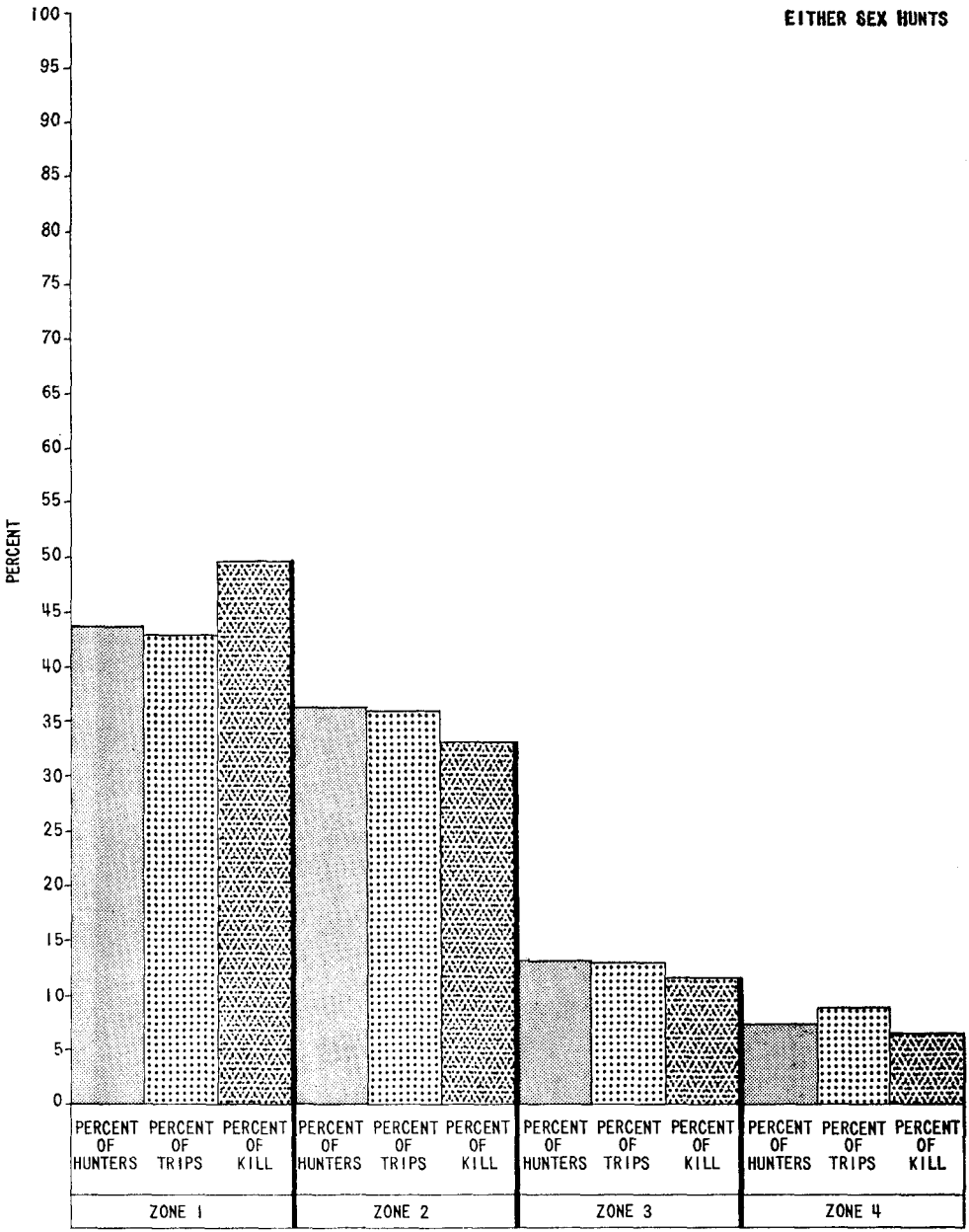

Figure 2. The Distribution of Either Sex Deer Hunters, Their Trips and Kill by Zone of Residence on Wildlife Management Areas, 1965-66 Season.

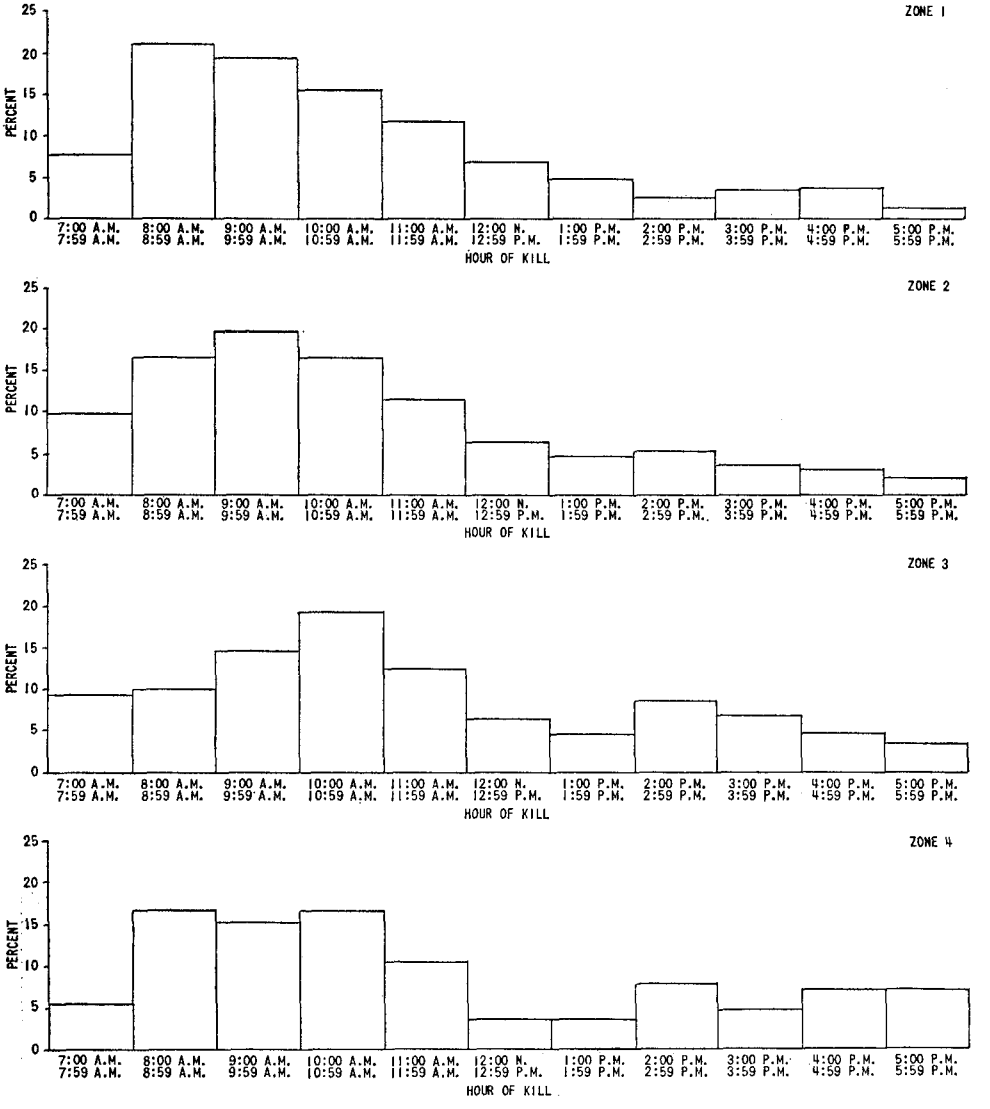

Figure 3. Distribution of Buck Deer Kill by Hour of Kill by Zone.

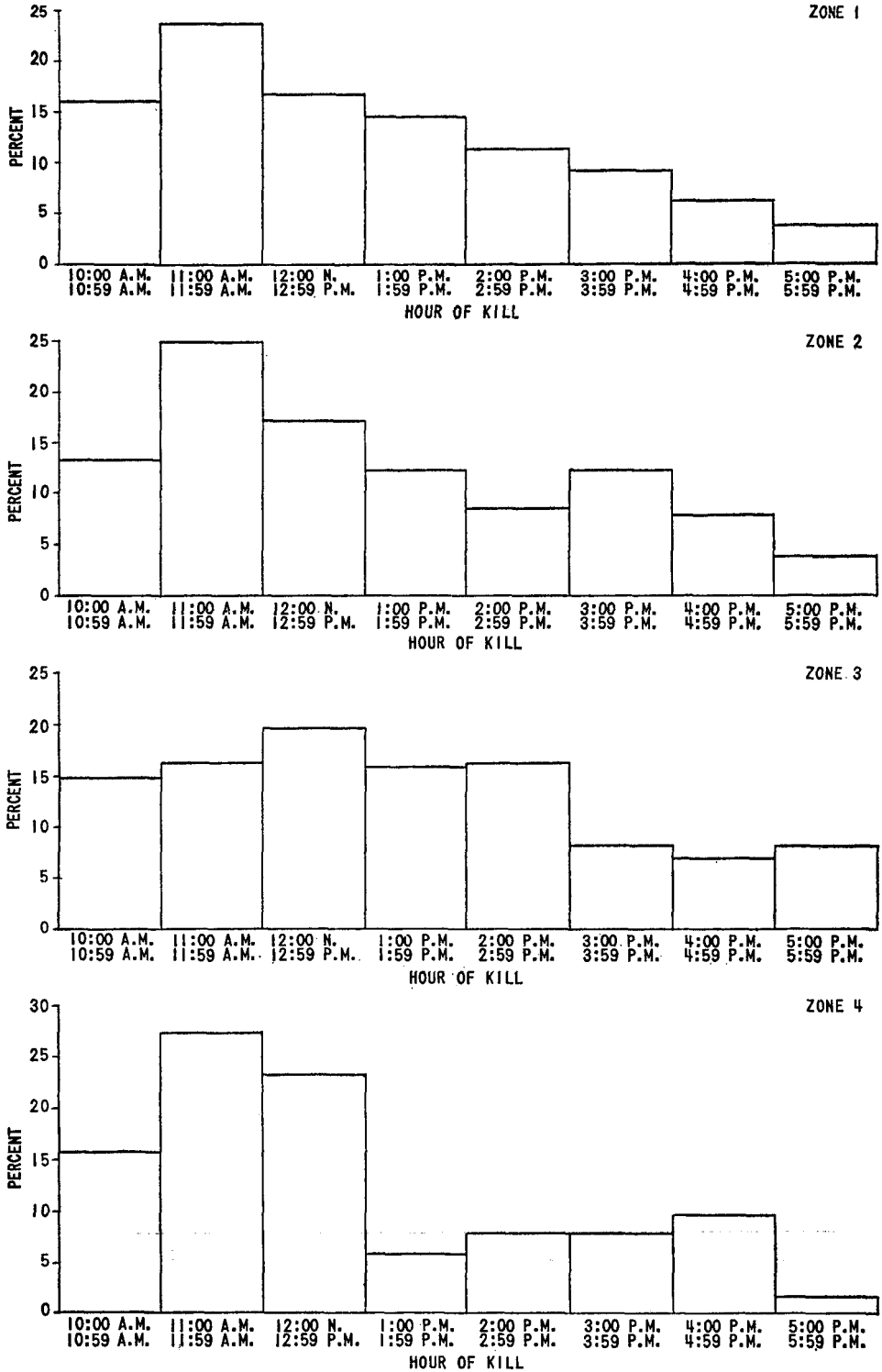

Figure 4. Distribution of Either Sex Deer Kill by Hour of Kill by Zone.

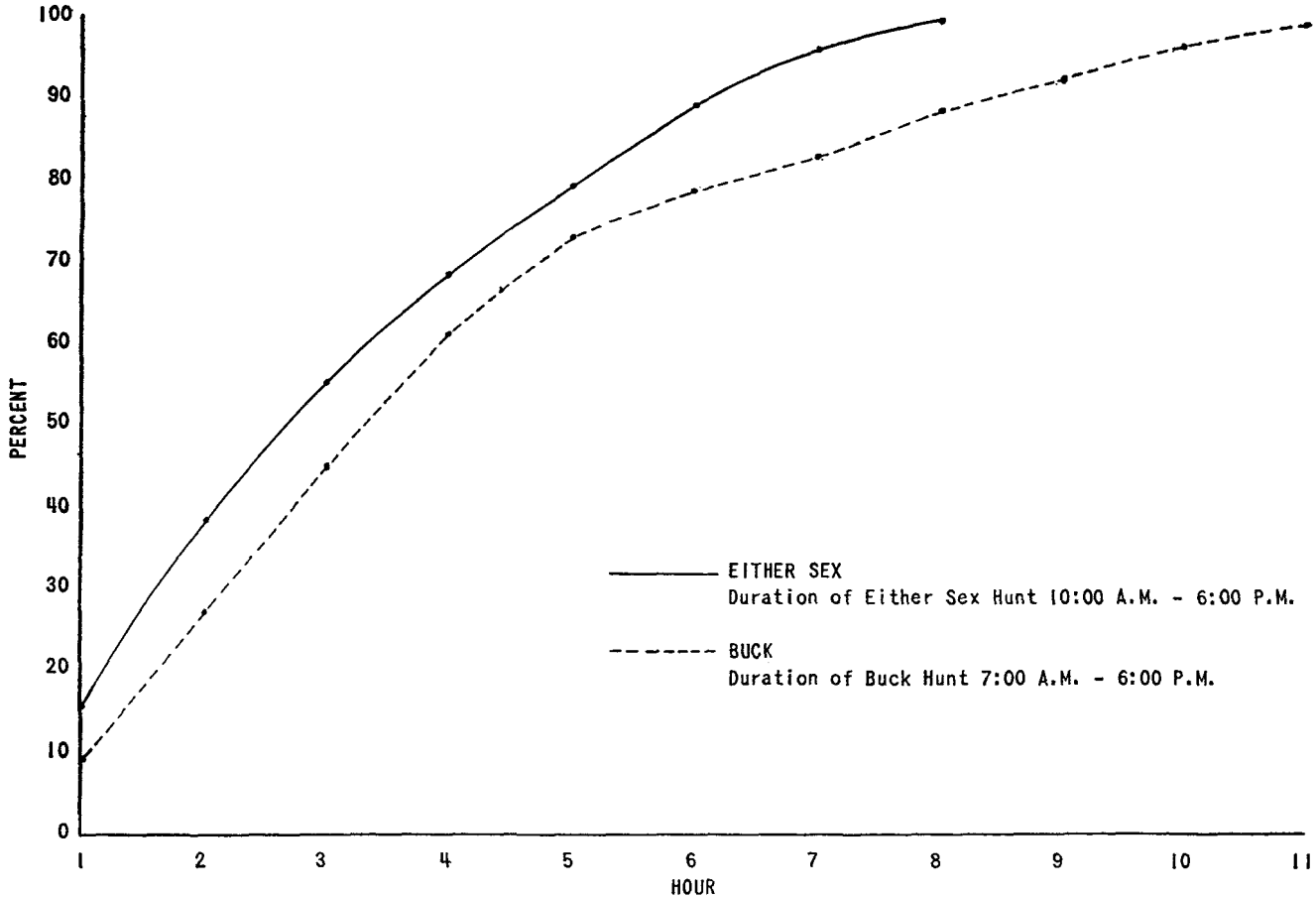

Figure 5. Cumulative Distribution of Either Sex and Buck Deer Kill by Time of Day.