

4. Dealers reports can give information on numbers of furs taken, value of furs taken, and seasonal variations in the value of furs. If studies are for total numbers and values of furs only, dealers reports permit a cheap and relatively easy method of getting fur-catch data.

SOME USES OF MARK SENSING IN COLLECTING GAME MANAGEMENT DATA IN THE FIELD

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Game management agencies are today faced with an ever-increasing demand for more accurate and reliable information. Hunting pressure, harvest, economic, and population surveys are firmly entrenched as essential tools of modern game management, and ecological surveys are of especial importance in evaluating large scale flood control and land use projects. Standards are steadily rising and it is necessary to search constantly for more efficient methods of collecting and processing data. Punched card methods have been used for several years by some game agencies, including the Florida Game and Fresh Water Fish Commission. These methods have provided a flexibility and rapidity of tabulation that has been particularly beneficial in research work involving a large volume of data. Standard procedures involve key punching the data from written records into cards, a step that is time consuming and must be verified for accuracy. The present paper describes two field applications of a procedure, mark sensing, in which the key punching step is eliminated.

Mark Sensing is a standard IBM (International Business Machines Corporation) procedure, and is an optional feature on their Reproducing Punch (513 and 514) and Electric Document Originating Machine (519). Details concerning mark sensing operations are readily available from the IBM, and this paper will be confined to a discussion of features and applications of the procedure.

Mark sensing is a recording procedure by which entries are made by a mark with a high graphite (electrographic) pencil or special ink in a designated space on an IBM card. These cards are "read" by machine and corresponding holes are punched in any desired card column at the rate of 100 cards per minute. Each card has a capacity of 80 punch columns, and each column has 12 punch positions, R, X, and 0-9 from top to bottom. The mark position for any digit lies just above the punch position for that digit.

A total capacity of 27 mark sense columns is provided for each card, although an additional 27 columns may be added by using the back of the card. One mark sense column is required for each digit position, a two digit number requiring two columns.

Simultaneously with the marking sensing operation, it is possible to perform one or more of the following operations:

1. Reproducing. Information from another deck of cards may be punched into the deck of cards being mark sensed. This has a very practical application in the Florida procedures, as will be discussed later.
2. Digit emitting. Information common to a group of cards may be wired to punch into each card.
3. Gang punching. Information common to a group of cards may be read from one card and punched into the one following, from that one into the next, etc.
4. Intersperse gang punching. Information being gang punched may be controlled on master cards interspersed throughout the deck. Intersperse gang punching may be done from master marked cards or from master punched cards. Each master card is the first card of a group having common information, and is identified by a master punch or mark.

In addition, standard features with mark sensing are the "off-set stacking device" and the "double punch and blank column detection device." These features allow detection of all cards with incomplete information or double or

faulty marking. Such cards may be off-set $\frac{3}{8}$ inch in the stacker, or the machine may be stopped when one is detected.

CHECK STATION RECORDS

The first Florida test of mark sensing was conducted on the Gulf Hammock Wildlife Management Area during the 1955-56 hunting season. The procedures of collecting and analyzing these data were the same used in prior years and on other areas—only the recording and punching procedures were different. Report of game killed was not mark sensed, but written in the blanks provided. Information on "IN or OUT," number in party, month and day was marked sensed (Figure 1). To the extreme left of the card are the designated columns for punching. All columns were marked on each card, no attempt being made to use master cards.

FLORIDA WILDLIFE MANAGEMENT AREA CHECK STATION RECORD																				
REPORT OF GAME KILLED																				
SPECIES																				
NUMBER																				
NUMBER IN PARTY																				
HOUR																				
MONTH																				
DATE																				
CHECK STATION																				
0	0	0	0	0	0	0	0	0	0	0	0	QUAIL								
1	1	1	1	1	1	1	1	1	1	1	1	CAT SQUIRREL								
2	2	2	2	2	2	2	2	2	2	2	2	FOX SQUIRREL								
3	3	3	3	3	3	3	3	3	3	3	3	DUCKS								
4	4	4	4	4	4	4	4	4	4	4	4									
5	5	5	5	5	5	5	5	5	5	5	5									
6	6	6	6	6	6	6	6	6	6	6	6									
7	7	7	7	7	7	7	7	7	7	7	7									
8	8	8	8	8	8	8	8	8	8	8	8									
9	9	9	9	9	9	9	9	9	9	9	9									
1	1	1	1	1	1	1	1	1	1	1	1									

Figure 1. The mark sense card used on the Gulf Hammock Management Area in 1955-56.

Operators were typical of part-time labor available during the hunting season. Many were elderly, with poor eyesight, and most had some difficulty in mastering the procedure. Once they had grasped the principles, however, records were kept with greater accuracy than with the former system of written records.

Plastic card boxes were used as card holders in the checking stations. These boxes are available in four sizes (220 to 450 card capacity) and are equipped with a changeable top slide that may be cut out in any pattern to allow marking. The top card is marked, removed from the box, and inserted in the bottom by way of a slot. Construction is such that cards are easily removed and replaced, but will not fall or shake from the box.

Because of the favorable results obtained from this test, all of Florida's Management Areas will use mark sensing procedures during the 1956-57 hunt. One major change will be made—a master card system will be used. Month, day and station will be recorded only once each day, and all cards from that day kept in sequence behind the first card. This will cut in half the amount of marking necessary for each party.

VEGETATION STUDY

A vegetation study by the point transect method was set up on mark sensing during the summer of 1956 in the Kissimmee Valley and on the northwest shore of Lake Okeechobee. The transect procedures will be reported later by Sincok, and the present discussion will be limited to the use of mark sensing. Transects totaling nearly 34 miles were conducted, with a five-point "set" taken every five paces. Nearly 12,000 sets were recorded during the study. One card (Figure 2) was filled out at each "set", and information common to an entire transect was recorded only on the first card of the transect. Plant species were coded, and the codes affixed to the card box for easy reference.

Figure 2 illustrates the use of master card marking designed for this survey. In practice, a slightly different system was used, one involving major and minor master cards. The minor master data includes "land or water" and "elevation", leaving only the information pertaining directly to each individual "set" to be filled out on each detail card. The master mark for these minor masters was made in the space immediately to the right of the major master mark. It is

Figure 2

SEC	MARK HERE WHEN FIRST CARD IN TRANSECT				TEAM	MO	DAY	AREA	TRANS	PT	EL	SOIL	VEG	POINTS									
	DAY	AREA	TRANSECT											1	2	3	4	5					
NOV	02	02	02	02										02	02	02	02	02	02				
DEC	12	12	12	12										12	12	12	12	12	12				
JAN	22	22	22	22										22	22	22	22	22	22				
FEB	32	32	32	32										32	32	32	32	32	32				
MAR	42	42	42	42										42	42	42	42	42	42				
APR	52	52	52	52										52	52	52	52	52	52				
MAY	62	62	62	62										62	62	62	62	62	62				
JUN	72	72	72	72										72	72	72	72	72	72				
JUL	82	82	82	82										82	82	82	82	82	82				
AUG	92	92	92	92										92	92	92	92	92	92				
SEP																							
DATE	MO	DAY	HR	MIN	SEC	PLANT SPECIES AT PT																	
						1	2	3	4	5	IM 892698MS												

Above: First card in transect is both master and detail card.

SEC	MARK HERE WHEN FIRST CARD IN TRANSECT				TEAM	MO	DAY	AREA	TRANS	PT	EL	SOIL	VEG	POINTS									
	DAY	AREA	TRANSECT											1	2	3	4	5					
NOV	02	02	02	02										02	02	02	02	02	02				
DEC	12	12	12	12										12	12	12	12	12	12				
JAN	22	22	22	22										22	22	22	22	22	22				
FEB	32	32	32	32										32	32	32	32	32	32				
MAR	42	42	42	42										42	42	42	42	42	42				
APR	52	52	52	52										52	52	52	52	52	52				
MAY	62	62	62	62										62	62	62	62	62	62				
JUN	72	72	72	72										72	72	72	72	72	72				
JUL	82	82	82	82										82	82	82	82	82	82				
AUG	92	92	92	92										92	92	92	92	92	92				
DATE	MO	DAY	HR	MIN	SEC	PLANT SPECIES AT PT																	
						1	2	3	4	5	IM 892698MS												

Above and below: Following cards have less marking, will be punched with master data.

SEC	MARK HERE WHEN FIRST CARD IN TRANSECT				TEAM	MO	DAY	AREA	TRANS	PT	EL	SOIL	VEG	POINTS									
	DAY	AREA	TRANSECT											1	2	3	4	5					
NOV	02	02	02	02										02	02	02	02	02	02				
DEC	12	12	12	12										12	12	12	12	12	12				
JAN	22	22	22	22										22	22	22	22	22	22				
FEB	32	32	32	32										32	32	32	32	32	32				
MAR	42	42	42	42										42	42	42	42	42	42				
APR	52	52	52	52										52	52	52	52	52	52				
MAY	62	62	62	62										62	62	62	62	62	62				
JUN	72	72	72	72										72	72	72	72	72	72				
JUL	82	82	82	82										82	82	82	82	82	82				
AUG	92	92	92	92										92	92	92	92	92	92				
DATE	MO	DAY	HR	MIN	SEC	PLANT SPECIES AT PT																	
						1	2	3	4	5	IM 892698MS												

possible to control on only one master mark at a time, and a separate run was necessary for each.

Simultaneously with the first mark sense run, a consecutive number was reproduced into the mark sense deck from a consecutively numbered deck. The presence of this number allows cards to be removed from the deck for correction and replaced in proper sequence. This is an important step in the procedures involving intersperse gang punching from marked cards, particularly when more than one master mark is used, as it is essential that cards be processed in the sequence in which they are recorded. In addition, many obvious errors in recording may be corrected by reference to the cards immediately preceding and succeeding the error card.

Field use of the cards in the plastic box was very satisfactory. Even though the weather was hot and personnel perspiring, and the work was conducted on and around water, the cards were kept in excellent shape for processing. Survey personnel are, without exception, enthusiastic over the system, both as a means of field recording and as a means of processing. Wooden pencils were found to be more satisfactory than mechanical pencils, and the 220 card box was sufficiently large for the operation.

SUMMARY

Mark sensing is a very versatile recording technique that has a high potential of application in wildlife work. Card holders are available that are very practical for field use, and much routine collection of data can be greatly facilitated by the use of this system. Bag checks, creel census, call counts, quadrat studies—all collection that is done on a large scale by standardized procedures—can be set up on a mark sense system.

Mark sensing was used in Florida during the 1955-56 hunting season in collecting hunting pressure statistics on the Gulf Hammock Wildlife Management Area and during the summer of 1956 in collecting field data in a vegetation study of the Kissimmee Valley and Lake Okechobee. In each case the procedure has facilitated both collection and processing of the data.

A mark sense card form for a quadrat study of vegetation has been designed, but the cards have not been received to date. This study is being conducted by Charles M. Loveless, Ft. Lauderdale, Florida, and inquiries should be addressed to him. Inquiries regarding the check station procedures referred to in this paper should be addressed to Overton, Leesburg, Florida and those regarding the point transect vegetation study to Sincock, Sebastian, Florida.

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NICOTINE SALICYLATE FOR CAPTURING DEER ¹

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AN ABSTRACT

Since the turn of the century the need for a simplified method of capturing wild animals has been recognized. Although various trapping procedures have been successfully employed under a variety of conditions, the potentialities of a drugged dart have warranted considerable speculation.

During the past decade extensive investigation has been directed toward perfecting a technique which would immobilize a deer until the proper measures of restraint could be inaugurated. For the acquisition of this aim, two major

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