

# Computerized Creel Census System for Use in Fisheries Management

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## COMPUTERIZED CREEL CENSUS SYSTEM FOR USE IN FISHERIES MANAGEMENT<sup>1</sup>

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### ABSTRACT

A computerized creel census system that is nearly automatic after initial field data recording is described. Partially prepunched computer cards are used to record creel data. Cards are processed directly by computer and a detailed tabulation provided to the fisheries manager. The entire system is designed for ease of use in that no programming knowledge is required of the user.

### INTRODUCTION

Creel census data are often of paramount importance in developing and implementing optimum fisheries management strategies. The inordinate amount of time usually required to tabulate creel census data limits a manager's time, which should be allocated to such vital operations as analysis and interpretation of data, management strategy development, report preparation, and attendance at professional meetings.

All fisheries managers are aware of the general analytical potential of modern computers, but many applications to fisheries problems may be more obscure. The general area of creel census is ideal for efficiently using computers to assist management. Proponents have long espoused the potential of computer analysis to creel census problems (Lambou, 1959; Leeper, Stern, and Lambou, 1958; Mansueti, 1959). The trend toward increased computer use in creel census and other areas of fisheries has continued. Bibliographies of various fisheries-oriented computer programs provide a good review of the state of the art (Goodson, 1966).

This paper describes a computerized creel census system that is nearly automatic after initial data recording in the field. Tabulated results are returned to the fisheries manager within several days of card receipt.

### SYSTEM DESCRIPTION

The creel census system is structured for a permanently located, continuous census, but this does not preclude use with other types of creel census. The basic recording instrument is a partially prepunched computer card into which the census clerk punches appropriate data in the field. The PORT-A-PUNCH<sup>2</sup> card is held in a special board to insure accurate punching and minimize damage to the cards (Fig. 1). PORT-A-PUNCH card format and application in this system have been previously developed by Virginia Commission of Game and Inland Fisheries personnel in cooperation with the staff of the Institute of Statistics, North Carolina State University.

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<sup>2</sup>PORT-A-PUNCH is a registered trademark of International Business Machines Corporation.

Data are recorded directly on PORT-A-PUNCH cards by the creel clerk (Fig. 2). Cards are sent on a regular basis directly to a computer processing center. The processing center runs the program and returns tabulated results to the manager. The manager receives monthly status reports on the fishery and a summary at the end of the year.

The system described here includes three computer programs. One program converts the PORT-A-PUNCH cards to a new data set on permanent cards because PORT-A-PUNCH cards have a tendency to warp and, in time, some of the pre-punched tabs may fall out. Also, data are recorded on the PORT-A-PUNCH card in every other column and are not usable by the creel census program in this format. The second program is for listing data cards to check for errors. If the cards have been punched by a reliable clerk, there is no need to list the data set. The third program is the actual creel census data tabulation program. It, as with the other two programs, is written in Fortran IV for the IBM System 370. The program provides tabulated results of creel census data, including monthly summaries by type of fishing, an overall summary by type of fishing, and a grand total (Fig. 3).

The entire system is designed for ease of use. Little or no actual programming knowledge is necessary on the part of the manager. Any questions or problems the manager might have can readily be answered by computing center consultants.

All three programs, with instructions, can be obtained from the authors at the Department of Fisheries and Wildlife Sciences, V.P.I. & S. U. Information concerning other current applications of PORT-A-PUNCH cards in fisheries management in Virginia will be provided on request by the authors at the Fish Division, Virginia Commission of Game and Inland Fisheries.

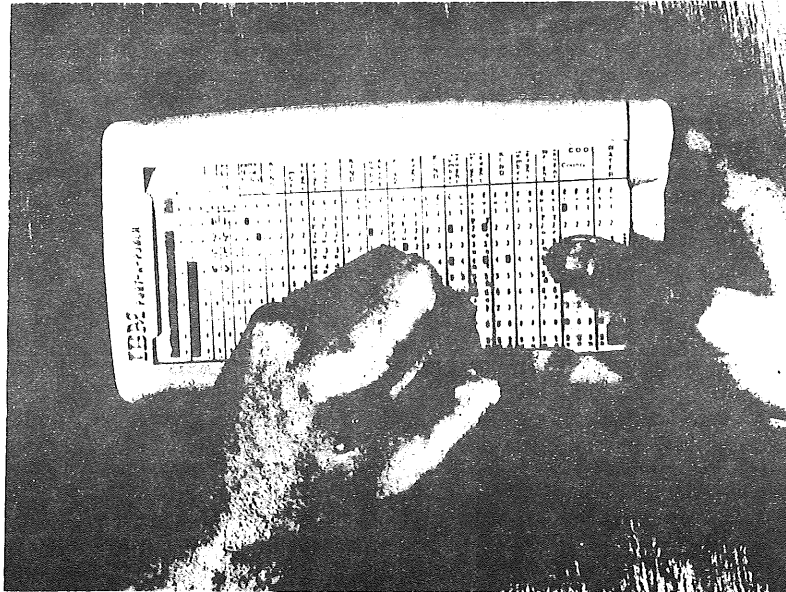


Figure 1. Creel data being punched onto a PORT-A-PUNCH card under field conditions.

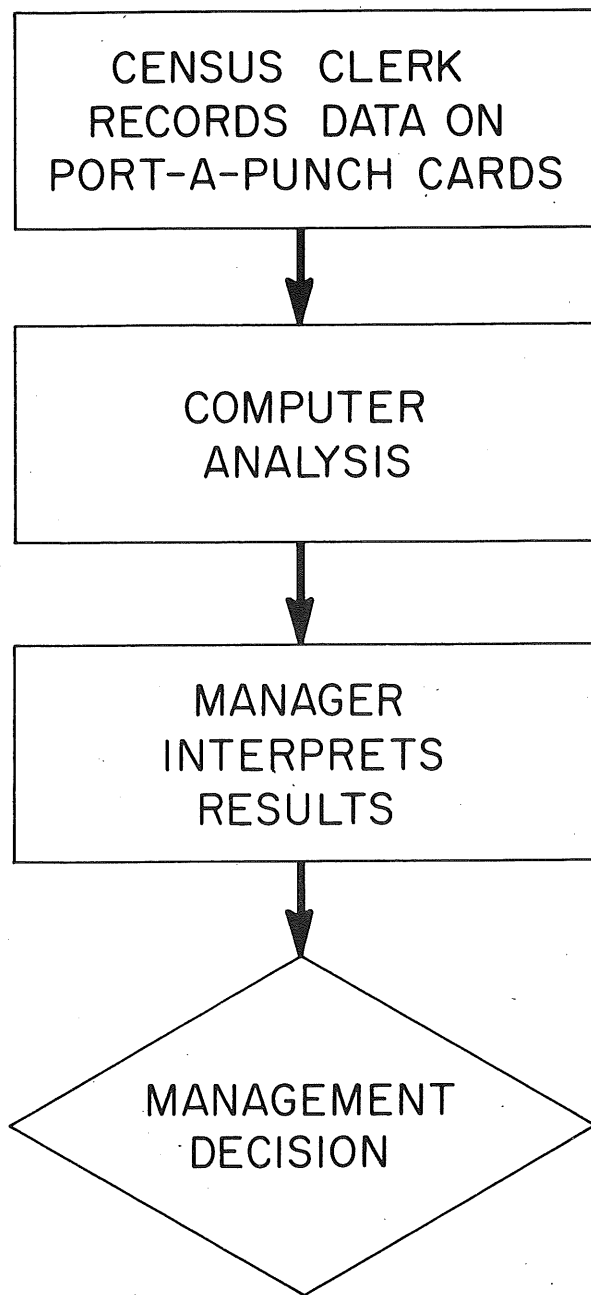


Figure 2. Data flow from field collection to its use in decision-making by the fisheries manager.

VIRGINIA CREEEL SURVEY - TOTAL ALL FISHING TYPES

SUMMARY FOR AUG 1973 LAKE BRITTE FAUQUIN COUNTY  
 TOTAL PARTIES = 50. TRIPS/ACRE = 17.143 EXP. FACTOR = 1.000  
 NO. FISHERMEN = 1320. NO. HOOKS FISHED = 4915. NO. HOOKS FISHED/ACRE = 69.831

SPECIES	NO. CAUGHT	NO. PER ACRE	NO. PER HOOK	LBS. CAUGHT	LBS. PER ACRE	LBS. PER HOOK
BLUEGILL	415.	11.457	0.160	256.599	3.258	0.053
PUMPKINSEED	132.	1.753	0.027	35.700	0.404	0.007
CHANNEL CATFISH	170.	2.312	0.036	420.399	5.558	0.087
LARGEMOUTH BASS	3.	0.065	0.001	5.000	0.065	0.001
BLACK CRAPPIE	105.	2.195	0.034	62.300	0.809	0.013
WARWOUTH SUNFISH	2.	0.026	0.000	0.400	0.000	0.000
BROWN BULLHEAD	10.	0.254	0.004	13.000	0.169	0.003
REPEAK SUNFISH	1.	0.012	0.000	0.300	0.000	0.000
GREEN SUNFISH	3.	0.009	0.001	0.600	0.000	0.000
TOTAL	1420.	16.493	0.290	802.290	10.419	0.165

\*\*\*\*\*END OF ANALYSIS\*\*\*\*\*

Figure 3. Typical output provided to the fisheries manager within several days of card receipt by the computer center.

#### LITERATURE CITED

- Goodson, Lee H. Jr. 1966. Fisheries oriented computer programs. p. 534-537.  
*In* Alex Calhoun (ed.), Inland fisheries management. The Resources Agency, Department of Fish and Game, California.
- Lambou, Victor W. 1959. A contribution toward a bibliography on use of machine methods in processing fishery data. Louisiana Wild Life and Fisheries Commission, Dingell-Johnson Project F-1-R (mimeo), Baton Rouge, Louisiana.
- Leeper, B., H. Stern, Jr., and V. W. Lambou. 1958. Some uses of punch card methods in the tabulation and analysis of fishery research data. Proc. 11th Ann. Conf. Southeastern Assoc. Game and Fish Comm.: 226-232.
- Mansueti, Romeo. 1959. Comments on the need for critical fishery research planning and electronic data processing. Proc. 13th Ann. Conf. Southeastern Assoc. Game and Fish Comm.: 107-113.