

COMPUTERIZED CREEL CENSUS SYSTEM FOR USE IN FISHERIES MANAGEMENT¹

*James R. Zuboy, Robert T. Lackey,
Department of Fisheries and Wildlife Sciences
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061*

*Norville S. Prosser, and Raymond V. Corning
Fish Division
Commission of Game and Inland Fisheries
Richmond, Virginia 23230*

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-PUNCH² 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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²PORT-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.

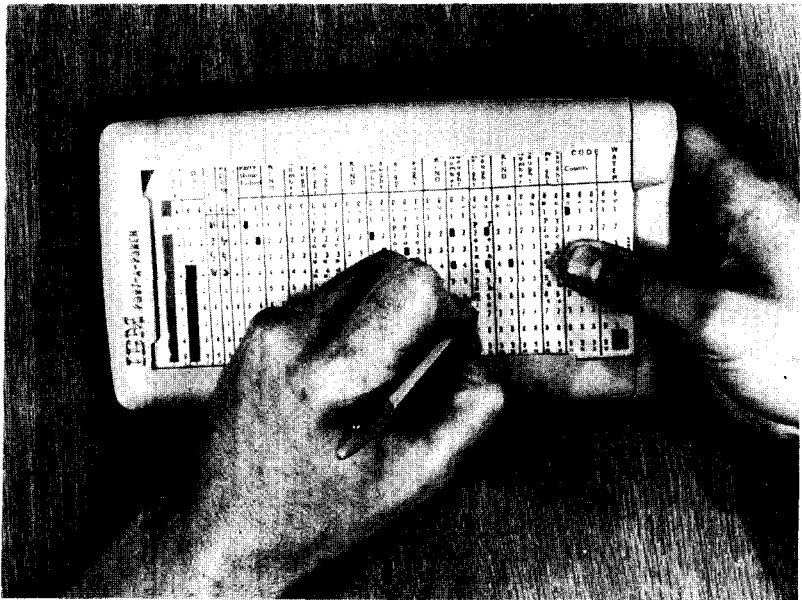


Figure 1. Creel data being punched onto a PORT-A-PUNCH card under field conditions.

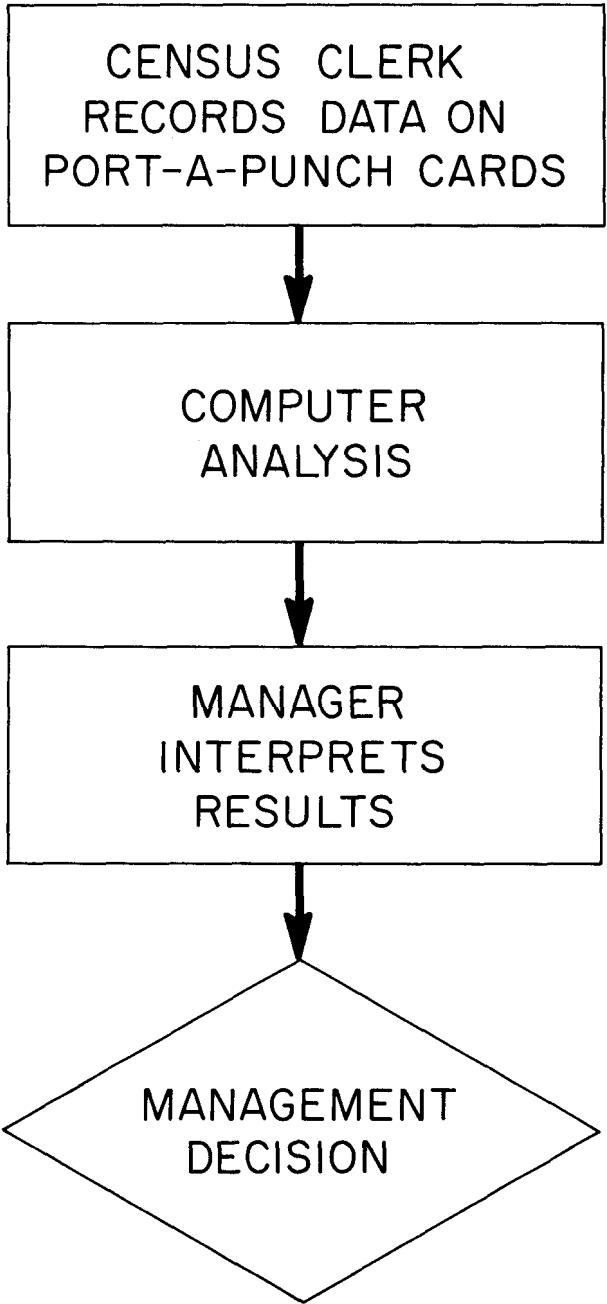


Figure 2. Data flow from field collection to its use in decision-making by the fisheries manager.

VIRGINIA CREEK SURVEY - TOTAL ALL FISHING TYPES

SUMMARY FOR AUG 1973 LAKE BRITTLE FAUQUIK COUNTY
 TOTAL PARTIES = 523 TRIPS/ACRE = 17.143 EXP. FACTOR = 1.000
 NU. FISHERMEN = 1320 NU. HOURS FISHED = 4915 HC. HOURS FISHED/ACRE = 65.851

SPECIES	NU. CAUGHT	NU. PER ACRE	NU. PER HOUR	LBS. CAUGHT	LBS. PER ACRE	LBS. PER HOUR
BLUEGILL	915	11.57	0.186	256.599	3.258	0.653
PUMPKINSEED	135	1.753	0.027	35.706	0.404	0.607
CHANNEL CATFISH	170	2.212	0.036	426.599	5.258	0.687
LARGEMOUTH BASS	20	0.065	0.001	5.000	0.065	0.001
BLACK CRAPPIE	105	2.195	0.034	62.300	0.109	0.013
WARWOUTH SUNFISH	20	0.026	0.000	0.400	0.002	0.000
BROWN BULLHEAD	15	0.234	0.004	13.000	0.164	0.003
REDFEAR SUNFISH	10	0.013	0.000	0.300	0.004	0.000
GREEN SUNFISH	30	0.039	0.001	0.600	0.006	0.000
TOTAL	1425	18.93	0.290	802.290	10.415	0.165

*****UNO OF ANALYSIS*****

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

LITERATURE CITED

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AN EVALUATION OF CATCHABLE TROUT MOVEMENT USING TWO MARKING TECHNIQUES

Randy E. Bailey

*Department of Fisheries and Wildlife Sciences
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061*

O. Eugene Maughan

*Virginia Cooperative Fishery Unit
Department of Fisheries and Wildlife Sciences
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061*

Carl B. Schreck

*Department of Fisheries and Wildlife Sciences
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061*

ABSTRACT

Two marking techniques, freeze branding and subcutaneous tags, were used to evaluate movement of catchable rainbow trout (*Salmo gairdneri*) stocked into Rich Creek, West Virginia. These marks proved to be a valuable tool in studies requiring both rapid recognition of marked fish and identification of individuals. In general, there was a marked movement of trout downstream from the point of release, even during periods of low water conditions. Mean distances moved in both directions were 465 meters downstream and 197 meters upstream, respectively.