

BEAVER MANAGEMENT SYSTEM AND DATABASE

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PART I. - BEAVER MANAGEMENT SYSTEM

INTRODUCTION

This document describes the current system by which biologists of the Maine Department of Inland Fisheries and Wildlife (MDIFW) make beaver (Castor canadensis) management decisions on an annual basis. Part I outlines the decision-making process by which biological information indicates management options. Part II details techniques for estimating biological parameters used as inputs in the decision-making scheme presented in Part 1. Goals, population and allowable harvest estimates, and habitat information were detailed in the 1985 beaver assessment.

This document addresses biological factors of current beaver management only. Social, political, and economic factors and goals are addressed in the 1985 beaver assessment.

MANAGEMENT GOALS AND OBJECTIVES

Goals and objectives for beaver management were established in the 1985 beaver species plan to guide management through 1990. Goals and objectives were based on recommendations made to MDIFW by a working group composed of individuals representing public groups interested in beaver management.

Management Goal

Maintain beaver populations at current level (near carrying capacity) and increase harvest.

Abundance Objective

Maintain beaver population at 1985 levels (estimated at 44,000 to 67,000 or near carrying capacity) through 1990.

Harvest objective

Increase average harvest of beaver to 15,000 statewide per year (or whatever level is needed to maintain population near carrying capacity) and maintain at that level through 1990. Minimize beaver mortality due to nuisance control.

Assumptions

Habitat is capable of supporting beaver at the proposed level if the population is locally proportional to the habitat capability. Habitat damage may occur in areas of continued low beaver harvest.

Increasing beaver harvest may be difficult if pelt demand drops. At 1985 demand levels (prices), increasing harvest is feasible only in accessible areas.

MANAGEMENT DECISION PROCESS

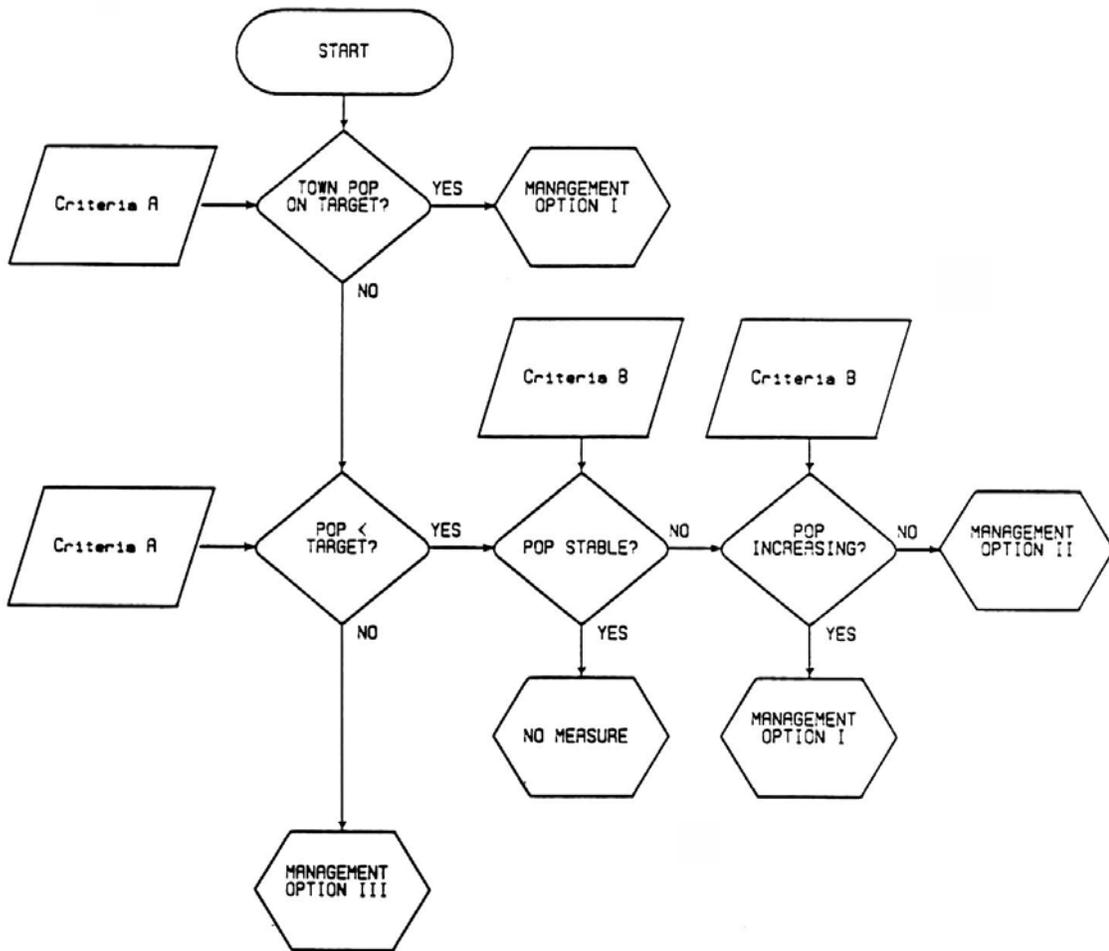
Management decisions primarily address the goal of maintaining a stable beaver population while providing opportunity for use of the resource.

Decision-making is a series of yes or no answers to questions related to beaver population status (Figure 1). Responses to questions are based on evaluation of all input criteria and the flow chart guides the manager to the appropriate and/or current management option.

Input Criteria for Beaver Management

The following criteria currently are used in evaluating beaver population size and stability. These inputs indicate the proper route through the decision-making flow chart and subsequently, the best currently available management options.

Beaver are managed in Maine by township based on a model that calculates township carrying capacity. Habitat variables and population limiting factors are considered to estimate potential township populations. Harvests are adjusted within an allowable range based on estimated sustainable yield levels. The following discussion outlines the components of the beaver harvest model. Outputs are expressed as the allowable harvest range for each town and the relationship of harvest to allowable harvest as detailed below:



Full Utilization

1. Previous year's catch was within objective range ($\pm 5\%$) and harvest was not under or over utilized.

Under Utilization

1. Latest three year average catch below range, latest three year average open season at least .3 months, and catch has not exceeded range (+ 10%) during previous 5 years.

Over Utilization

1. Latest three year average catch below range, latest three year average open season at least .5 months, and catch has exceeded range by 10% or more at least once in last four years.
2. Previous year's catch exceeded range by 30% or more.
3. Catch of two years ago exceeded range by 50% or more.
4. Catch has shown decline three of last four years.
5. Catch during any of past three years exceeded range by 50% or more, town remained open (if excessive catch was two or three years ago), and catch remained below the range during any remaining years.

Recovered

1. Season closed for past 2 years.

Questionable Status

1. Habitat information is inadequate to estimate kill goals or do a management evaluation for the town.
2. Closed previous year; local information should be sought to determine to what degree the beaver have recovered.
3. Does not fit any of the above. Evaluate the data carefully to insure that over-exploitation has not occurred.

The beaver model places each township into one of the above categories, based on past harvest data. The hierarchy of categorization (or "Keying") follows the order shown below:

Model Step	Category
1.	E.1
2.	D.1
3.	E.2
4.	A.1
5.	B.1
6.	C.1
7.	c.2
B.	C.3
9.	c.4
10.	c.5
11.	E.3

A township is placed into the first category for which it meets all conditions.

Criteria A

This input attempts to answer the question "Is the population on target?" based on evaluation of carrying capacity and harvest.

Carrying capacity is estimated from various habitat components (Appendix IV), but factors that may limit beaver populations are subtracted from habitat estimates. Harvest (including nuisance mortalities) is considered the primary limiting factor to beaver. Therefore, it is assumed that if harvest is within an allowable range, the beaver population is near carrying capacity (see A.1 above) and at the township target.

If the harvest falls into section B.1 the population is assumed above target. The population is assumed to be below target if any part of section (C) applies.

Criteria B

Township beaver populations are assumed to be stable if harvest remains within allowable ranges. If C.4 or C.5 apply, the population is assumed to be declining. If a town is closed to trapping, the population is assumed to be increasing and, generally, is thought to be recovered after 2 years of closed trapping.

The only other measure of population stability is the assessment of habitat. Habitat and limiting variables can be updated by regional or forbearer personnel at any time to reflect changes that affect carrying capacity. For example, a steady decline of habitat or increasing limiting factors will cause population declines.

MANAGEMENT OPTIONS

Management options are dictated by the route followed through the flow-chart based on the rating received by the town (C.2, A. etc.). options are exercised on a township basis. Statewide management actions are indicated only if the sum total of township situations deviate from statewide beaver management goals. Because statewide goals were derived from township objectives, township management should ensure that statewide goals are being met. Thus, on y social issues of season timing, length, etc. need be considered on a statewide basis. There is also the option of closing specific watersheds and/or flowages to trapping based on biological or social concerns, such as local pressure or landowner desires.

Management Option I

Maintain current harvest levels as indicated by town rating.

Management Option II

Decrease harvest by closing township to trapping. This option is indicated in townships receiving any (C) rating. Exceptions are allowable based on regional concern over excessive legitimate nuisance problems.

Management Option III

Increase harvest by opening township to trapping, if closed. This option is indicated in townships receiving a (B) or (D) rating. Exceptions are allowable based on regional or landowner concern for specific flowages.

Any township listed as a category (E) town requires additional local information before any management option is exercised.

CHRONOLOGY OF BEAVER MANAGEMENT ACTIVITIES

Beaver pelts tagged	December-April
Pelt price survey	November-April
Harvest data entered	April-May
Harvest, license, and other data analyzed	May
Biologist, warden and trapper meetings	May-August
Regional recommendations	August 1S
Proposed rules and closures	August 25
Meet with MTA	September
Final rules	October
Mail rules	October

PART II. - BEAVER MANAGEMENT DATABASE

BEAVER DATA COLLECTION SUMMARY

Beaver Harvest Data

Law requires that each harvested beaver be tagged by an agent or personnel of MDIFW (Appendix 1). Data recorded at the time of tagging includes trapper license number, month of capture, township of capture, seal number, and whether the pelt measured over or under 60 inches. These data are recorded in registration booklets (Appendix II). Books are inspected by the Warden Service and submitted to the Data Entry Section of the Bureau of Resource Management. There, data are entered on the IBM mainframe computer of the Bureau of Data Processing. Harvest data are analyzed and summarized by a series of computer programs (Appendix 111) that provide information on total catch by township, WMU, and statewide, number of trappers catching beaver, harvest and average harvest by trapper, and historical harvest summary.

Allowable Harvest

The beaver management system assumes that beaver will remain at carrying capacity if harvested at some level, as long as potential nuisance habitat is eliminated from the estimate of suitable habitat within a town.

The allowable harvest is specified as a range for each town. it is calculated as:

Upper limit = $.42 \times (\text{carrying capacity})$

Lower limit = $.25 \times (\text{carrying capacity})$

The allowable harvest is affected by the proportion of adult beaver removed from an area and is assumed to be as high as 42% when few adults are taken, down to about 25% when a higher proportion of adults are removed. This range is estimated: effects of actual adult-juvenile ratios in the harvest on recruitment are not known.

Carrying Capacity

The calculation of carrying capacity for beaver in each township is critical to the operation of the management system. It is based on measurement of several habitat variables and deletion of some habitat based on several population limiting variables.

Township carrying capacity is calculated as follows:

$$\text{Carrying Capacity} = [(V_s + V_p - (V_1 + V_2 \dots V_{19}))] * V_f * 4$$

where: V_s = total stream miles

V_p = number of lakes and ponds > 10 acres including partial ponds
on town lines

V_1 to V_{19} = limiting feature variables

V_f = average food density index (0.0 to 1.0)

4 = density of beaver at carrying capacity per mile unit of habitat
with food index of 1.0

A description of each variable is given in Appendix IV.

Effort

There is no system in use to quantitatively evaluate effort. However, several indices are used to gain insight into possible upward or downward trends in effort expended on beaver trapping. The trend in the number of trappers tagging beaver in a township may indicate changes in effort. Beaver pelt price changes may cause trends in effort to shift. From November to April each year, a monthly mail survey of furbuyers is conducted (Appendix V) to estimate the average price paid to trappers for beaver pelts. Weather adverse to trapping efficiency during the season may also cause a downward shift in effort.

Regional and Trapper Observations

When harvest analyses and summaries have been completed, copies are sent to regional biologists and to the Maine Trappers Association (MTA). Meetings are held to discuss regional and trapper observations in conjunction with harvest analysis information. These meetings provide supplemental information from people that spend time in the field to help support or refute conclusions drawn from harvest data.

LIST OF APPENDICES

- I. Rules governing the tagging of beaver pelts.
- II. Sample page from pelt tagging registration book.
- III. Summary of computer programs and analyses applied to beaver pelt tagging and trapper data.
- IV. Description of variables used in the calculation of beaver carrying capacity by township.
- V. Monthly pelt value mail survey form.

APPENDIX I. – Rules governing the tagging of beaver pelts.

H. Tagging Procedure

It shall be unlawful for any person to sell, give away, buy, accept as a gift, offer for transportation or transport any raw fox, bobcat, marten, fisher, coyote, raccoon, beaver, mink, or otter skins unless each skin is tagged.

All raw skins of these species must be presented to a warden, or other agent designated by the Commissioner, and each raw skin legally presented shall be tagged. All information requested relating to the taking of each skin shall be accurately and truthfully reported. A fee of 25¢ shall be paid for each skin tagged.

All raw fox, marten, fisher, coyote, raccoon, bobcat, beaver, mink and otter skins shall be presented for tagging within 10 days after the closing of the open season thereon, except the raw skins of all bobcat taken during the open bobcat hunting season shall be presented, by the person who killed said bobcat, for tagging within 72 hours of killing said animal.

Any raw skins of these species that come into this State in any manner from any other state, country, or province shall bear the official stamp, tag, or seal of such other other state, country, or province. Any such skins that come into this State from any other state, country, or province which does not require an official stamp, tag, or seal, shall be tagged in accordance with this section by the person possessing such raw skins. The fee for tagging such imported raw skins shall be 25¢ for each tag so issued. Licensed

taxidermists who import raw skins for the purpose of taxidermy are exempt from the provisions of this paragraph.

I. Raccoons

Raccoons may be hunted at night during the open season only when the hunter (i) is accompanied by a dog, (ii) uses an electric flashlight to locate raccoons that are treed, or held at bay, by a dog or dogs, and (iii) is in possession of, and uses a rifle, pistol, or revolver of no greater power or caliber than one which uses .22 caliber long rifle ammunition; said rifle to be loaded only when being used to dispatch a raccoon that is treed or held at bay by a dog or dogs.

APPENDIX II. Sample page from pelt tagging registration book.

FUR TAGGING SHEET

(see instructions outside and inside front cover)

License Type ¹	License Number ²	Seal Number ³	Species ⁴	Month ⁵	Year ⁶	Town Caught (use complete Township ID) ⁷	County ⁸	Beaver Size			
41	75717	047187	Beaver	03	88	TW 16	Hancock				
41	75717	047188	}	03	88	}	}				
41	75717	047189		03	88						
41	75717	047190		03	88						
41	75717	047191		03	88						
41	75717	047192		03	88						
41	75717	047193		03	88						
41	75717	047194		03	88						
41	75717	047195		03	88						
41	75717	047196		Beaver	03			88	TW 16	Hancock	

**APPENDIX III. Summary of computer programs and analyses applied to
beaver pelt tagging and trapper data.**

Description of furbearer data analysis and information system.

Program	Input Data	Outputs	Users
TRAPLIST SAS	License data (tape)	Alphabetical listing by county of trapping license holders.	Requests from outside sources.
LISTTRAP SAS	License data (tape)	Numerical listing by license and alphabetical listing by name of trapping license holders.	1) Furbearer Project 2) Warden Service
LICSUM SAS	License data (tape) Township data (disk)	Summary of licenses by type by region and WMU.	1) Furbearer Project 2) Regions 3) Administration
PRELIMHV SAS	Harvest data (tape)	Summary of harvest by WMU for each species.	1) Furbearer Project 2) Regions 3) Administration 4) Public
COUNTYHV SAS	Harvest data (tape)	Summary of harvest by county for each species.	Requests from outside sources.
TAPEFIX1 SAS	Harvest data (tape) License data (tape)	Correct license type in harvest file and create disk file.	
TAPEFIX2 SAS	Harvest data (tape)	Write corrected harvest file back onto tape.	

Continued

Program	Input Data	Outputs	Users
FURTAG SAS	Harvest data (tape) Township data (disk)	Harvest data are summarized by township in data set on disk (FURBEAR, TWNHRVnn). Harvest and harvest/mi ² listing is produced by township, WMU, region, WMU within region, and statewide.	1) Furbearer Project 2) Regions 3) Public
TOWNSUM SAS	FURBEAR, TWNHRVnn data sets (disk) Township data (disk)	Harvest and harvest/mi ² listing is produced for all years since 1976. Long term and short term averages are computed for all groupings. Summary data set is produced (FURBEAR, TOWNSUM).	1) Project 2) Regions 3) Administration
TOWNSUM2 SAS	FURBEAR, TWNHRVnn data sets (disk)	Harvest listing is produced for last 2 years by township within region.	Lists are used by regional biologists and public in providing information to Wardens.
LICTAG SASNEW	Harvest data (tape) License data (tape) Township (disk)	Harvest by WMU by harvester (trapper, hunter and combined) data set is created (FURBEAR, TRPHRVnn). Trapper listing by WMU is produced. Summary of harvest in WMU by region of residence (carpet-bagger) is produced to monitor trapper movement.	1) Regions 2) Project

Continued

Program	Input Data	Outputs	Users
TYPETAG SASNEW	FURBEAR. TRPHRVnn data set (disk)	Listing of harvest, catch/successful harvester, and successful harvesters by license type and general category by WMU and statewide is produced. Summary data set is created (FURBEAR. TYPHRVnn).	Project
HARUSUM SAS	FURBEAR. TRPHRVnn data sets (disk)	Tables of historical harvest and success rate by general category and produced by WMU and statewide and plots of harvest, successful users, and success rate statewide.	1) Region 2) Project 3) Administration
WARDNTAG SAS	Harvest data (tape) License data (tape) Township data (disk)	Summary of harvest by individual within each warden district is produced. A summary of pelts tagged by warden district and division is produced.	Warden Service
TGSEARCH SAS	Harvest data (tape)	Search for all information on specific tag number.	Warden Service
TRSEARCH SAS	Harvest data (tape)	Search for all information on specific trapper.	Warden Service
BIOLIST SAS	Biological data (tape) Township data (disk)	Biological data file for all years is created on tape (FURBEAR. BIODATA). A listing by ID number within township is produced.	1) Project 2) Regions 3) Public (age requests)

Continued

Program	Input Data	Outputs	Users
BIODATA SAS	FURBEAR.BIODATA (disk)	Complete tables of sex and age data are produced. Reproductive data are summarized.	Project
HRVWEEK SAS	FURBEAR.BIODATA (disk)	Tables of frequency of juvenile harvest by sex by date are produced. Tables of sex and age breakdown by week of fall season are produced.	Project
HRVCHRON SAS	FURBEAR.BIODATA (disk)	Bar graphs of chronology of harvest and produced by WMU and statewide.	1) Project 2) Regions
MCIRMOD SAS FCIRMOD SAS MCIRJUV SAS FCIRJUV SAS	Biological data output Warden data output License data output (data form)	Change-in-ratio model to estimate exploitation rate for males and females of juvenile and older age classes	Project
POPMODEL SAS	Biological data output Harvest data output Exploitation rate output (data form).	Life equation type population model used to evaluate management options.	Project
TRAPLONG SAS	Trapper Longevity File	Updates longevity file with current year's license sales.	Project

Continued

Program	Input Data	Outputs	Users
TRAPLONG PRINT	Trapper Longevity File Trapper Listings	Update longevity file when license number is unknown.	Project
TRAPLONG MODEL	Trapper Longevity File	Life equation type population model of trappers.	Project
QUESTnn SAS	Trapper Questionnaire File	Analysis of trapper questionnaire data.	1) Project 2) Administration

BEAVER MANAGEMENT COMPUTER SYSTEM

Introduction:

The Beaver Management Computer System is used to produce a printout once a year showing the past ten year's beaver management data for each town in the state. It was developed in 1975 and has undergone a number of changes since that time. The system was developed by Inland Fisheries and Wildlife. The Bureau of Data Processing was requested to document an overview of the processes involved so that knowledgeable Inland Fisheries and Wildlife personnel will be able to produce necessary printouts each summer.

Inputs:

The final reports are performed by a Honeywell Fortran program, Beaver 2. This program uses five main sources of data to produce its-report, as well as a control card with various options.

1. Habitat and geographic location data - file code 10.

This file is FWPLAN/BC0599K. It is in BCD format, so to edit the file, convert it to ASCII, make any changes, and convert it back to BCD format.

File format (starting in column 1)

Field	Format
Constant - 599K	A4
Town Code	IS
Stream Miles	F5.1
Food Index*	F4.2
Wildlife Mgmt-Unit	II
Warden District	I3
Wildlife Region	AI
Warden Division	AI
Town Name	A20

*Food index in this file is set to 0.50. In 1986, a value was assigned to each wildlife management unit for food indices. These values were programmed right into Beaver 2.

The geographic references in the file will generally remain constant. As better habitat information becomes available, the stream and/or food values may have to be changed.

The town codes in this file are the master codes used by the Beaver 2 program to match up data in the other 4 data files.

The order the town/habitat file is sorted will determine the order in which the printout is arranged. The program is usually run in three different sequences: wildlife management unit and town code; wildlife region and town code; and warden division, warden district, and town code.

2. Regulation file - File code 12

These data used to be old Midas file 101K. It is now punched as 107K under the Falcon system, and loaded onto an IBM tape. This tape is read by program Beavseas SAS to create a SAS data set of the latest data. Program BVSEAS2 SAS can be used to write all years data back to an IBM tape, but if all the current year's season data was punched at once and is already on the Falcon generated tape this step is not necessary.

The IBM tape must be converted to Honeywell BCD format - use CVTIBM. If the tape comes from BVSEAS2, the record length is 15; if the Falcon tape is used, the record length is 40. In either case, only the first 15 bytes are read by Beaver 2. The file layout is:

<u>Field</u>	<u>File Position</u>
Constant "107K"	1-4
First Year	5-6
Second Year	7-8
Town Code	9-13
Exceptions To Season	14
Season Length Code	15

3. Complaint File - File Code 14

This file is generated from warden complaint records. It is punched via Falcon and updated in SAS data sets (see the MOTLK documentation). Program BEAVCOMP SAS is used to create (an IBM tape of beaver complaints, which must be converted to Honeywell format BCD) using CVTIBM. Complaint data is always summarized (by Beaver 2) from the previous calendar year. For example, for a run summarizing the 1986-87 season, beaver complaint records for calendar year 1986 are used.

The file layout (Lrecl = 12) is:

<u>Field</u>	<u>File Position</u>
Year	1-2
Original/Continuation Code	3
Constant '03' complaint Type	4-5
Town Code	6-10
Visits	11-12

4. Current catch data file - File code

Current year pelt tag data is key entered using Falcon and off-loaded onto IBM tape. Once the tape is converted to Honeywell Midas* format, use program Beaver 1 to summarize the raw data into a tape file with thL following layout, with one record per town for the current year:

<u>Field</u>	<u>Position</u>
Town Code	1-5
P Beaver Trapped	6-9
f Beaver Under 60' Size	10-13
0 Beaver where size is known	14-17
# Successful Beaver Trappers	18-21

Beaver 1 is a COBOL program, and can be found on Honeywell TSS userid FWPLAN. Two changes are necessary each year:

1. Change the tape numbers on-the \$ TAPE JCL cards. File code MA is the pelt tag file, file code F1 is the summary data.
2. In the procedure division. S-MOVE paragraph, there is an IF statement which selects records based on the species code, year, and month. Change the year values to reflect the current situation.

Submit program Beaver 1 via the JRN command. When it executes successfully, the tape file needed for file code 13 is the result.

*Important - the layout of the pelt tag file as punched under Falcon is entirely different from the layout required in Beaver 1. However, Alan Clark (Wildlife Planner, formerly of the Furbearer Project) has-written a SAS program which corrects a license type problem and writes a tape in the necessary Midas 316K format. It is this tape which should be converted from IBM (EBCOIC) format to Honeywell (BCD), with the BCD version used as input to Beaver 1, file code MA.

5. Historical Management File - File code 11

This tape file contains a summary of the past 9 years of beaver management data for each town. It is updated onto a new tape each year by program Beaver 2, if the option to do so is requested. It contains the following:

<u>Field</u>	<u>Position</u>
Blank	1
Town Code	2-6
Ending Season Year (19XX)	7-10
Months Open	11-12
Number Exceptions	13

Beaver Catch	14-17
i Under 60 inch size	18-21
# Where Size is Known	22-25
# Successful Beaver Trappers	26-29
f Complaints	30-33
# Visits to Handle Complaints	34-37

6 . Card Control Options - File code 05

There is a single card input to Beaver 2 which specifies the options used by the program to produce the desired results.

Col. 1-2 Initial year for run.

Col. 3-4 Final (usually current) year for run.

The year for a season is specified by the last year; for example, the 1986-87 season is year 87.

Col. 5 Tape update option.

Value 0 = do not create a new historical tape.

Value 1 = creates a new historical tape.

The program is usually run three times a year, but a new historical tape creation should be specified only once each year.

Col. 6 Report print option.

Value 0 = do not print the report.\

Value 1 = print the report.

Usually, a report is requested, but occasionally. the only goal of running the program is to get a new historical tape and a report is not necessary.

Col. 12 Three year average option.

Value 0 = do not calculate 3 year options.

Value 1 = calculate 3 year options.

Col. 13 Management evaluation option.

Value 0 = do not perform management evaluation or summarize results by W.M.U.

Value 1 = perform the above.

NOTE: This option must be 0 if column 12 is set to 0.

Col. 15 Region print option.

Value 0 = print wildlife region for the regional variable.

Value 1 = print warden division for the regional variable.

Outputs:

There are two optional outputs produced by the program Beaver 2.

1. Report by town, one page per town. This is spooled to temporary disk file 06, and printed using the Xerox high speed printer. The DJOE file is HSPBEAV2. Change the number of copies as needed for the sorted printout. In the past, these are:

<u>Sort</u>	<u>Copies</u>	<u>Distribution</u>
W.M.U.	2	1-Main office, 1-Bangor office
Region	1	The 7 wildlife regional offices
Warden Division	1	The 5 warden divisional headquarters

Note- HSPBEAV2 is a BCD file. To change it, convert it to ASCII, edit the file, and convert back to BCD.

2. Historical Tape Update - File code 23.. If column 5 on the option card is 1, include a tape in the JCL so that the program can write the data.

A third output option, data for mapping, has not been used recently, and has been turned off in the program for the sake of simplicity.

Summary of Steps:

1. Reformat pelt tag tape to Midas format and convert to BCD (Honeywell).
2. Run Beaver 1 to get current catch summary tape.
3. Get complaint data from SAS data set to Honeywell tape.
4. Get seasonal data from SAS data set to Honeywell tape.
5. Change options, sort parameters, and JCL on Beaver 2 as necessary and run 3 times.

APPENDIX IV. Description of variables used in the calculation of beaver carrying capacity by township.

DESCRIPTION OF VARIABLES

Regional biologists are encouraged to provide all local information possible to update township variable values initially set in Bangor.

V_s Total Stream Miles

Linear measure (miles) of all flowing waters, including ponds 5 10 acres, is found in MIDAS file 905Z. An adjustment to exclude rivers is code 17 in MIDAS file 593K. Files were created by the Fisheries Division and were measured from the most recent U.S.G.S. 15 minute series maps.

V_p Lakes and Ponds

A count of all lakes and ponds > 10 acres, taken from MIDAS file 906Z. Initially, the assumption was made that each lake or pond supported at least one colony of beaver. This depends on shoreline configuration, number of islands, and human development and, as such, should be adjusted at the regional level.

V_f Food Density Index

This is an index value between 0.0 and 1.0 to reflect the availability of foods suitable to beaver in each town as noted below:

1.0 = As good a beaver town as is possible to have. Probably resulted from the whole town being cut and/or burned.

0.5 = Average town with some cutting, some old growth, some mixed woods.

0.1 = Poor beaver town with waters bounded by a fringe of alders with softwood or non-woody lands behind.

0.0 = A treeless area. Most of this type of habitat would be eliminated by the limiting variables.

Initially, all towns were set at an average index value of 0.5. Regional plot surveys, aerial work or even subjective judgments can improve the accuracy of this index in each township.

V₁ through V₁₉ Limiting Features

Linear measure of shoreline or habitat features that may eliminate or seriously detract from the value as suitable beaver habitat. These are recorded in MIDAS file 593K; Limiting Features. Initial data entries were made in Bangor from USGS and DOT maps. Regions are encouraged to alter or update all variables to better reflect local conditions in each town.

- V₁ Culvert with permanent public road or railroad. Set to 0.0 unless changed to reflect situation where no beaver will be maintained.
- V₂ Culvert with permanent private road. Set to 0.0 unless as above.
- V₃ Culvert with temporary private road. Set to 0.0 unless as above.
- V₄ Urban area designated by a shaded or lined-off area on a DOT highway map.
- V₅ Developed non-urban area. Shown on the DOT highway map as a series of permanent or temporary dwellings.- set to 0.0 unless changed to reflect situation where no beaver will be tolerated.
- V₆ Agricultural area where beaver may flood crops, hay, or pastures. set to 0.0 unless changed to reflect situation where no beaver will be tolerated.
- V₇ Public or private water supplies. Set to 0.0 unless changed to reflect situation where no beaver will be tolerated.
- V₈ Underground streams; may be part of the stream record (V s) in some cases.

- V₉ Pollution in areas at levels high enough to exclude beaver.
- V₁₀ Excess slope. Assumed to be > 5.5% or 1.5 or more 20 foot contours occurring in 1/10 mile. This is lower than reported elsewhere, but Maine snow conditions may cause excessive velocity at spring runoff time that may damage lodges and food caches.
- V₁₁ Tidal waters included in stream inventory.
- V₁₂ Boundary waters < 5 miles in the state. Set to 0.0.
- V₁₃ Waters included in stream record (Vs) that have low or intermittent flow. Set to 0.0 unless changed to reflect situation where beaver cannot live.
- V₁₄ Fluctuating water levels due to dams.
- V₁₅ Waters receiving priority for brook trout management that would warm excessively if occupied by beaver.
- V₁₆ Priority spawning areas for cold water fish.

- V₁₇ River situations that differ from streams. Consider effects of shoreline shape, oxbows, backwaters and islands. Set initially as 1 mile beaver habitat for each river in a township.

- V₁₈ State parks and sanctuaries that are closed to trapping.

- V₁₉ Indian tribal lands (not lands purchased by Indians) that are outside state wildlife management authority.

APPENDIX V. Monthly pelt value mail survey form.



n R. McKernan, Jr.
Governor

William I. Vail
Commissioner

DEPARTMENT OF INLAND FISHERIES AND WILDLIFE

Telephone (207) 289-3371

Wildlife Resource Assessment Section
P. O. Box 1298
Bangor, ME 04401-1298
Telephone (207) 941-4472

November 23, 1987

Dear Maine Furbuyer:

We need your help again this year to keep our fur value information up-to-date. As in previous years, we will mail monthly Furbuyers Report Forms to you throughout the 1987-88 furtaking seasons.

Please report the average pelt price you pay to trappers and hunters each month. We do not need to know about the prices of fur you buy from other sources. The enclosed forms are for the month of October and November; each has a self-addressed, stamped return envelope attached. You will receive a Furbuyer Report form at the end of each of the coming winter and early spring months.

Each completed Furbuyers Report Form is destroyed as soon as the price information is transcribed. Only price information is retained in our files; no names are recorded to ensure your confidentiality.

We appreciate your cooperation in our efforts to monitor prices paid for Maine fur. Please feel free to contact us in writing or by telephone (941-4471) if we can be of assistance.

Sincerely,

Ken Elowe, Leader
Furbearer/Bear Project

Beaver Management System Procedures

1. Prepare data file of last year's season dates and township status and upload to Augusta computer according to attached instructions. This requires copying the ASCII file (BVRTWN.DAT) on the Beaver diskette. (any time January-May)
2. Get model output from Jim Connolly and distribute to Regions with diskette of WordPerfect file containing last year's listing of township closures (from trapper mailing) for them to edit and return. This file will be on the Furbearer diskette held in the Secretaries' file. (late May-early June)
3. Get diskettes returned from Regions and see that the final WordPerfect file of township closures is prepared (normally done by the Secretaries).
4. Distribute the proposal for township closures to Regions, Bangor, Augusta, and MTA for comments prior to the September meeting of the Advisory Council.

PROCEDURE FOR ENTERING BEAVER CLOSURE DATA

1. Copy file BVRTWN.DAT to create a new file for the current year (e.g., BEAVER89.DAT).
2. Edit the new file using WordPerfect as follows (use Text In to load the file and Text Out to save it):
3. Change the years in columns 5-8 to reflect the current season (e.g., 8990 becomes 9091).
4. Enter closures and exceptions in columns 14 and 15 as follows:

Closed Towns:	00	
Closed with exceptions:	10	
Open with exceptions	1#,	where # indicates the season length (1-8) as shown below.

5. Print the file for proofing.
6. Change asterisks in columns 14 and 15 according to the length of season for that WMU:

01 = 1 month	04 = 1.5 months	07 = 4 months
02 = 2 months	05 = 2.5 months	08 = 5 months
03 = 3 months	06 = 3.5 months	

for all towns that were open with or without exceptions. This can be done easily in several steps, using the Replace option, starting with WMU 8 and working backwards.

7. Save the new file in ASCII text format.
8. Use DOS "TYPE" command to display the new file to verify the proper format.
9. Upload the new file to the Augusta computer using Kermit.
10. Notify J. Connolly that the file is there and the name used to save it.

PROCEDURES FOR FILLING OUT BEAVER SEASON CODE FORMS

1. Obtain a copy of the current years beaver trapping closures soon after the regulations have been finalized (usually in Oct - Nov).
2. Obtain a set of blank photocopied beaver season code forms that contain all 8 Wildlife Management Units (WMU's).
3. Code the current years closures using the following criteria:

- a. If the town falls under the section of: "The following towns in Wildlife Management _____ shall be completely closed with no part of the town open."

Code as:

Exception = 0 Season Length = 0

- b. If the town falls under the section of "The following towns in Wildlife Management _____ shall be closed but with the excepted part of the town open."

Code as:

Exception = 1 Season Length = 0

- c. If the town falls under the section of: "The following areas in Wildlife Management Unit _____ shall be completely closed but with the rest of the town open."

Code as:

Exception = 1 Season Length = * (See below)

- d. If the town is on the code form but not in the beaver closure pamphlet, assume that the town is completely **OPEN**.

Code as:

Exception = 0 Season Length = *

***Fill in the blank with either a 1,2,3,4,5,6 or 7 depending on the length of the season for that WMU for that particular year.**

AFTER ALL CODE FORMS HAVE BEEN FILLED OUT AND SPOT CHECKED, MAIL THEM TO AUGUSTA TO BE PROCESSED BY THE DATA ENTRY CREW. COPIES WILL THEN BE RETURNED TO BANGOR TO BE CHECKED ONE FINAL TIME AGAINST THE ORIGINAL CLOSURE LISTINGS.

MONTHLY FURBUYERS REPORT (VOLUNTARY)

Please record the average price you paid for the pelts of each of these species bought in Maine from trappers and hunters during the month indicated. This price information will be combined with information from other buyers to develop an average statewide price. To protect your confidentiality, this report will be destroyed after recording the prices given. If you did not purchase any pelts during the month, check "NO" and return the form anyway. If you have any questions, please contact us by mail or phone. A stamped, addressed envelope is enclosed for this report. This form will be mailed to you monthly through April, 1988.

Thank you for your assistance.

Wildlife Division
 Maine Dept. Inland Fisheries & Wildlife
 P.O. Box 1298
 Bangor, ME 04401-1298
 (941-4471)

Name of Furbuyer: _____

Month: December

Did you buy pelts during this month: YES ___ NO ___

<u>Species</u>	<u>Average Price</u>	<u>Species</u>	<u>Average Price</u>
Beaver	_____	Bobcat	_____
Coyote	_____	Grey Fox	_____
Red Fox	_____	Pine Marten	_____
Fisher: Male	_____	Mink: Male	_____
Female	_____	Female	_____
Muskrat	_____	Otter	_____
Raccoon	_____	Skunk	_____
Weasel	_____		