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Entry User's Guide

v2.0

The CACTOS / CRYPTOS Stand Description
Entry and Edit Program

By

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INTRODUCTION

Entry is designed as a utility program for users of the CACTOS and CRYPTOS (Wensel, Daugherty, and Meerschaert, 1986; Wensel, Krumland, and Meerschaert, 1987). The program is designed to allow the user to create or edit stand description files without having to deal with intricate code and format specifications. Records can be viewed, entered, and edited by using one-letter commands that are displayed on the computer screen.

The executable computer code is designed for use with MS-DOS computers. While the vast majority of the source code for the program is written in standard FORTRAN-77, it uses machine-dependent screen and keyboard control to allow full screen editing instead of the traditional scrolling display. This allows Entry to be intuitive and easy to use, but complicates migration to other host systems, such as mini-computers and mainframes.

For examination of stand descriptions in a concatenated file, STAG (Biging and Meerschaert, 1987) or GENR[†] (Krumland and Wensel, 1980) is recommended. These programs have the ability not only of displaying tree lists, but also of displaying diameter distributions, stand profiles, and stock tables. Entry should be reserved for manipulating the numbers in the files and entering new data.

STAND DESCRIPTIONS IN THE CACTOS AND CRYPTOS SYSTEMS

Both CACTOS and CRYPTOS operate on a sample tree list which describes the forest stand on which the simulator operates. Frequently, this stand description is only one of many from an inventory or growth study. For this reason, both of the simulators have a batch processing mode where multiple concatenated files can be run through the simulator using the same or several alternate prescriptions. Entry has the ability to work with a file containing any number of concatenated stand descriptions.

The basic format of the stand description is the same for both CACTOS and CRYPTOS. The only difference is in the species codes, which range from 1 to 14 for CACTOS and 1 to 8 for CRYPTOS. The basic layout of the individual stand description is shown below. Note that a concatenated stand description would have this structure repeated for each of the samples in the file, one right after the other with no blank lines.

Line(1) Stand description label (20 characters), tree record count, elevation, number of years to grow in the first growth cycle, and a number which indicates the file type. These indicators are shown in the following table:

<u>code</u>	<u>meaning</u>
0 or 1	raw data file with all heights measured in feet to the tip of the tree
2	heights are in feet to the merchantable top
3	heights are in 16.5 foot logs above a 1.5 foot stump
4	heights are in 1/2 logs

The indicator is set to 100 by CACTOS or CRYPTOS when an external save is performed in order to distinguish these from stand descriptions without pseudo-stochastic

[†] STAG is used for CACTOS files and GENR is used for CRYPTOS files.
Entry Manual

quintupling (see *Initialization Routine and Program Defaults* in the CACTOS or CRYPTOS User's Guide).

- Line(2) Fifty-year (breast height) site indices for all of the species present on the plot in order of their species codes, shown below. Zeros or blanks may be entered for species not present on the plot.
- Line (3) Optional breast height ages for the species in the order given for site index in line 2. Zeroes or blanks may be entered if actual values are unknown. (Age is a descriptive variable only and is not needed for the simulator to function.)
- Line (4-end) Individual tree records follow, one per line. Each tree record has the following five items:
- V species number (see below)
 - V DBH in inches
 - V total height in feet[†]
 - V live crown ratio (decimal fraction) or height to the base of the live crown[†]
 - V per-acre expansion (i.e. the number of trees per acre represented by this tree record)

The species and species codes used in CACTOS include the following:

<u>Species</u>	<u>Code</u>	<u>Abbreviation</u>
ponderosa pine	1	PP
sugar pine	2	SP
incense cedar	3	IC
Douglas-fir	4	DF
white fir	5	WF
red fir	6	RF
lodgepole pine	7	LP
white pine	8	WP
Jeffrey pine	9	JP
miscellaneous conifer	10	MC
chinquapin	11	CO
black oak	12	BO
tan oak	13	TO
miscellaneous hardwood	14	MH

[†] If height or crown ratio are not available, they can be filled in using STAG or GENR.

The species and species codes used in CRYPTOS include the following:

<u>Species</u>	<u>Code</u>	<u>Abbreviation</u>
young growth redwood	1	RW
young growth Douglas-fir	2	DF
young growth other conifers	3	OC
tanoak	4	TO
red alder	5	RA
other hardwoods	6	OH
residual redwoods	7	RR
other residuals	8	OR

EDITING STAND DESCRIPTIONS

When you first start Entry you are greeted with the welcome screen shown below:

```
ENTRY
v2.0
by
Walter J. Meerschaert and Lee C. Wensel
```

After this screen disappears, you are asked to enter the name of a file containing the stand description data. If you are entering new data, you may wish to create a new file. If you enter a file name which does not exist, you will be asked if you want to create a new file. If you simply misspelled the file name, you have the opportunity to start over.

Entry uses two screen formats, one for header information (lines 1 to 3 of the stand description) and another for tree information. These are described below.

HEADER RECORDS

After you start the program and successfully load a file of stand descriptions, the program automatically goes into header-edit mode. The following will then appear on the screen (with data from the file you specified):

```
File Name: demo.ed
File Type: CACTOS/STAG standard input

Label: Demo file 1          Number of Trees: 23  Elevation: 0000
                          Growth Years: 7.30

code  Species      Site  Age
  1   Pond. Pine   85.  0.
  2   Sugar Pine  83.  0.
  3   Cedar misc  70.  0.
  4   DouglasFir  84.  0.
  5   White Fir   75.  0.
  6   Red Fir     66.  0.
  7   L.P. Pine   0.   0.
  8   White Pine  0.   0.
  9   Jeff. Pine  0.   0.
 10   Con. misc   0.   0.
 11   Chinquapin 0.   0.
 12   Black Oak   0.   0.
 13   Tan Oak     0.   0.
 14   H.W. misc   0.   0.

EDIT COMMANDS
E/A   Edit/Add plot
[TAB] Move to next field
[BACKTAB] Move to prev. field
[RIGHT] Move right in field
[LEFT]  Move left in field
[DOWN]  Move down to next field
[UP]    Move up to prev. field
[HOME]  Move to beg. of field
[END]   Move to end of field
[F1]    Restore curr. field
[F2]    Move to COMMAND line
[ESC]   ABORT to COMMAND line
2       List FILE commands
\       Toggle tree screen
B       Branch to DOS

COMMAND: _____ FILE:001/002 PLOT:001/008
```

On the line following COMMAND, you can enter any of the one-letter commands listed in the box on the right side of the screen. The edit commands that allow you to move around inside of a field are available in the COMMAND line. Moving out of the COMMAND line into the data area is

accomplished only through use of the one-letter commands. The current plot number is displayed in the lower right of the screen along with the number of plots in the file. Type [E] at the COMMAND prompt to start the actual editing process. The cursor will move to the label field and you can now edit or enter the label for the current plot. Hit return or **Tab** to move to the next field. Hit shift - **Tab**[†] to move to the previous field. Hit the **F1** function key to restore the field you are entering to the condition it was in when you entered the edit command. Hit the escape key **ESC** to restore all the edit fields and return to the command line. Hit the **F2** function key to move back to the COMMAND line, recording your changes.

In addition to these editing commands, Entry has a full set of file management commands that allow you to open, close, and save files; move through the current file; list the stand description labels in the current file; and copy stand descriptions from one file to another. The FILE command set can be viewed by entering a [2] at the command line. This brings up the following list of commands in the command window:

FILE COMMANDS	
F	name Open another file
S	{name} Save file {as name}
Q	{name} Quit file {as name}
Q!	Quit file {no save}
X	Exit to DOS, save all
X!	Exit to DOS, save none
=n	Move to file number <i>n</i>
+n	Move ahead <i>n</i> plots
-n	Move back <i>n</i> plots
L	List plots in this file
C	Copy curr. plot to another file
K	Kill curr. plots
!	List FILE commands
\	Toggle to tree screen
B	Branch to DOS

If the file contains several concatenated stand descriptions you can move around within the file to different stand descriptions using the plus [+n] and minus [-n] commands. Entering a plus with no arguments moves forward one stand description, while the command +12 moves ahead 12 stand descriptions (or to the last one in the file).

You can use the branch command [B] to return to DOS while Entry is temporarily suspended. This allows you to run other programs, delete files, get a current directory list, etc. without having to exit the program and re-load your input file. To return to Entry from a branch, type EXIT at the DOS prompt. Entry will return to the working directory from which it started.

To edit the tree records, enter a backslash [\]. This command toggles between tree and header record edit modes.

TREE RECORDS

[†] Backtab is Shift-tab on most PC-compatible machines.

The first line of the tree screen, shown below, contains the current plot label and file name. The file, plot, and tree index are shown at the bottom of the screen. The tree records are listed in the order that they were read in from the input file:

Label: <u>Demo file 1</u>		File name: <u>demo.ed</u>		
SPECIES	DBH	HEIGHT	LCR	EXPANSION
5. (WF)	13.2	61.	.279	5.000
5. (WF)	19.6	92.	.565	5.000
5. (WF)	23.0	102.	.422	5.000
5. (WF)	19.2	94.	.500	5.000
5. (WF)	18.3	94.	.574	5.000
2. (SP)	34.0	121.	.430	5.000
2. (SP)	26.2	99.	.545	5.000
5. (WF)	18.0	95.	.463	5.000
3. (IC)	44.4	105.	.476	5.000
2. (SP)	34.4	130.	.462	5.000
5. (WF)	18.0	83.	.494	5.000
3. (IC)	33.5	110.	.618	5.000
4. (DF)	30.4	116.	.655	5.000
5. (WF)	12.5	56.	.304	5.000
5. (WF)	13.5	78.	.500	5.000
5. (WF)	9.2	40.	.300	10.000
5. (WF)	10.1	68.	.309	10.000
5. (WF)	10.5	53.	.434	10.000
5. (WF)	9.4	48.	.667	10.000

EDIT COMMANDS	
E	Edit tree list
A	Add tree records
K	Kill current tree
[TAB]	Move to next field
[BACKTAB]	Move to prev. field
[RIGHT]	Move right in field
[LEFT]	Move left in field
{DOWN}	Move down to next fld
{UP}	Move up to prev. fld
{HOME}	Move to beg. of field
{END}	Move to end of field
[F1]	Restore current field
[F2]	Move to COMMAND line
[ESC]	ABORT to COMMAND line
2	List FILE commands
3	List SPECIES commands
\	Toggle header screen
B	Branch to DOS

COMMAND: FILE:001/002 PLOT:001/008 TREE:003/024

The commands available in tree editing mode differ from those available in header mode in the following respects:

- (1) moving up and down through the tree list is permitted through use of the ↑ and ↓ keys.
- (2) the kill command [K] deletes the current tree record (highlighted on the screen), moving all following tree records up in the list.
- (3) the add command [A] adds tree records to the end of the tree list, and
- (4) the file command [F], used for opening more files to edit, is not available in tree edit mode.

Note that the various commands denoted as upper case letters in the command list, can be entered as lower or upper case.

The command list shows the EDIT commands when tree mode is first entered. File and utility commands can be viewed by entering a [2] at the COMMAND line. It is often necessary to see a list of species codes, especially when entering new trees. The applicable species codes can be displayed by typing a [3] at the COMMAND line. The edit commands can then be viewed again by typing a [1] at the COMMAND line. The screen displayed when the [2] and [3] commands are shown below:

FILE COMMANDS		
S	[name]	Save file [as name]
Q	[name]	Quit file [as name]
Q!		Quit file, no save
X		Exit to DOS, save all
X!		Exit to DOS, save none
= n		Move to file #n
+ n		Move ahead n plots
- n		Move back n plots
Dn		Move ahead n trees
Dn		Move back n trees
C		Copy this plot to another open file
!		List EDIT commands
3		List SPECIES codes
\		Toggle to header scrn
B		Branch to DOS

CODE	SPECIES NAME
1	Pond. Pine
2	Sugar Pine
3	Cedar misc
4	Douglas-Fir
5	White Fir
6	Red Fir
7	L.P. Pine
8	White Pine
9	Jeffrey Pine
10	Con. misc
11	Chinquapin
12	Black Oak
13	Tan Oak
14	H.W. misc

Type 1 or 2 to see commands

NOTE: The various commands denoted in upper case (E, A, B, K, etc.) in the above lists can also be entered in lower case (e, a, b, k, etc.)

A TYPICAL ENTRY SESSION

To understand the general flow of events in the use of Entry, we'll construct a file containing two stand descriptions, one we will enter by hand, and one we will copy from another stand description file. To follow this on your own computer, have a copy of the stand description file "demo.sd" from the release disk of the CACTOS or CRYPTOS system.[†] We will copy this stand description to our new file. We will start our tutorial with these steps:

1. Start the program by typing "ENTRY" at the operating system prompt.
2. Since you are creating a new file, type in a file name that does not already exist.

To see a list of the files on the disk, type a question mark "?" . Use the name "NEWFILE.SD" for the new stand description file. (The ".sd" suffix is the standard ending for stand description files used by CACTOS and CRYPTOS.)

The message

File does not exist, open new file (y / n)?

Type "y" to create a new file.

3. You should now see the prompt
ARE YOU ENTERING (0)LCR OR (1)HTCB:Q

Type to accept the default (live crown ratio).

4. When asked
WHAT KIND OF FILE ARE YOU CREATING: 1

type to accept the default ("1" for CACTOS).

5. You now have a blank stand description file and the screen shows the list of 14 species codes possible. You can now enter the site index and age (optional) for each species present. To begin adding header information, type "A" at the command prompt. This puts the cursor at the LABEL field. Enter a label for this stand description. Any label up to 20 characters may be entered. Then hit

[†] Please enter the commands as listed in this example, but do not enter the quotes (").

or <tab> key to move to the next field. You can go backwards as well by using the shift- keys. Use the and shift- keys to move to the ELEVATION and GROWTH YEARS fields, and enter suitable information in those fields (e.g., 3000 for elevation and 4.5 for growth years). You can also move to the SITE and AGE fields using the same keys. The and keys work for moving in the vertical direction just as the tab and backtab keys work in the horizontal. You can move through the site and age fields, entering site indices and ages for those species that you plan to enter tree records. Hit the key at any time to stop editing and return to the command line.

6. Type "\ " to toggle to the tree editing screen, where you will find the stand description label, file name, tree information column headings and a list of commands. Type "3" to see the species codes. We are now ready to enter the tree data.
7. Type "a" to add tree records. Now, use the tab and arrow keys to see what happens and to find out how to move about and enter data. Fill in tree species number, DBH, total height, live crown ratio, and tree expansion.
8. To edit an entry, simply move back to it using the tab, backtab, and/or arrow keys and correct the entry.
9. When finished entering 4 or 5 trees, use the key to go to the command line.
10. We now create a second stand description on the file "newfile.sd" by copying the stand description from the file "demo.sd" First, toggle back to the header screen by typing "\ " and type "f demo.sd" . You now have two files open, "newfile.sd" and "demo.sd" and the file counter will show "FILE 002/002", that is there are two files loaded and you are looking at the second file.

11. Start the copy procedure by typing "c" . Now select the number of the file that you want to copy the current stand description to by entering " 1" . The copy process is very fast, so you are probably now back in the header screen of demo.sd.

12. Type "=1" to move back to file #1, "newfile.sd", and you will see the information entered in the first few steps. Type "+" to move forward to the next stand description. You should see the same header information from demo.sd. Note also that the file and plot counters have changed in the lower right corner of the screen.

13. Type "q" to save and quit our new stand description file. (If you do not want to save this file, type "q!"). Now type "x!" to exit the program entirely, not saving demo.sd (it wasn't changed, and will not be deleted). You can now use the new stand description in batch mode of either CACTOS or CRYPTOS. See the appropriate user's guide for information on batch operation.

SAMPLE STAND DESCRIPTION FILE

The following stand description example is of the format used in both CACTOS and CRYPTOS. It can be used in either since the species codes are all less than 8. Follow this example line by line with the description in the main text above.

Columns:		1	2	3	4	5
line	123456789000000
1	Mixed conifer demo			27		
2	100.	0.	80.	90.	90.	
3	30.	0.	30.	30.		
4	5.000	1.200	10.000	0.770	40.000	
5	5.000	7.400	41.000	0.780	10.000	
6	4.000	5.000	26.000	0.680	10.000	
7	5.000	9.900	41.000	0.240	10.000	
8	5.000	9.100	43.000	0.540	10.000	
9	3.000	7.800	35.000	0.880	10.000	
10	5.000	9.500	60.000	0.730	10.000	
11	3.000	9.700	43.000	0.530	10.000	
12	3.000	7.500	30.000	0.460	10.000	
13	5.000	8.500	39.000	0.410	10.000	
14	5.000	7.600	40.000	0.850	10.000	
15	1.000	14.900	82.000	0.560	5.000	
16	3.000	21.900	84.000	0.450	5.000	
17	4.000	19.600	97.000	0.540	5.000	
18	4.000	12.600	66.000	0.510	5.000	
19	1.000	25.500	107.000	0.350	5.000	
20	3.000	21.500	85.000	0.450	5.000	
21	1.000	12.400	79.000	0.630	5.000	
22	4.000	20.100	103.000	0.500	5.000	
23	4.000	22.500	96.000	0.500	5.000	
24	4.000	26.100	108.000	0.230	5.000	
25	3.000	17.400	61.000	0.430	5.000	
26	1.000	28.100	112.000	0.600	5.000	
27	4.000	20.600	105.000	0.570	5.000	
28	1.000	26.400	117.000	0.520	5.000	
29	4.000	20.200	100.000	0.650	5.000	
30	4.000	16.200	88.000	0.600	5.000	
	-----	-----	-----	-----	-----	-----
	SPECIES	DBH	HEIGHT	CROWN	PER ACRE	
	CODE	(INCHES)	(FEET)	RATIO	WEIGHT	

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