Hazard Tree Database User's Guide

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Introduction

Welcome to the world of hazard tree inspection and documentation. The Hazard Tree Database has three primary functions. They are:

- Entering, editing, and storing data gathered in the field (Section I)
- Importing data gathered in the field with electronic devices (Section II)
- Summarizing and reporting data; checking for discrepancies (Section III)

The database uses the hazard tree rating system of the US Forest Service, Rocky Mountain Region. It is preloaded with information on developed sites in the Region. The site names, the organizations that administer them (such as district and forest) and the number of units or campsites in them are included in the database. Sites not in the database can be added (see Section IV – Advanced).

The database comes with a small dataset from "Example CG." Several reports from Example CG can be found at the end of this document. You can play with these data if

you want to reproduce the reports or try other features of the database before you enter your own data.

Installation

You should receive the following files (bundled as a zip file):

- HazardTreeDB.accde (contains both the database application and data)
- HT Database Users Guide (this file)
- Tree_poi.xlsx (an example of data from an electronic device, ready for import)

Make a folder C:\Hazard Tree DB\ on your computer and extract the files to that folder. The import and export functions will not work if this folder is not at the root of the C:\ drive. You may want to put a shortcut on your desktop to make it easy to open.

Microsoft requires that a database be in a "trusted location" in order to function. Start Microsoft Access and designate the folder as a trusted location as follows:

1. Got to **File** > **Options** > **Trust Center**
2. On the right, click **Trust Center Settings**, and then click **Trusted Locations**
3. Click **Add new location**
4. In the **Path** box, type C:\Hazard Tree DB\, or click **Browse** to locate the folder
5. Click **OK**

Startup

Following installation, open the database (HazardTreeDB.accde) by double-clicking its icon. The first screen that you encounter is the Main Switchboard, which gives you access to the 3 primary functions of the database. Always return to this form when you have accomplished one function and wish to start another, or when it is time to close the database.

There are 5 buttons:

I. Enter Data
II. Import Data
III. Prepare Reports
IV. It's Quittin' Time
V. Advanced – Edit Sites

Important Tips!!

- Follow these instructions carefully the first few times you use a screen to avoid problems.
- When exiting any screen (other than a report), always use the custom button provided, as these may activate needed macros. Do not close such screens using the window close button at the upper right corner of the window.

I. Enter/Edit Data

The screen encountered after choosing the Enter Data button is “Data Entry.” There are 2 sections. At the top, with gray background, you choose your site. The second, with blue background, is the individual tree data. You must choose a site before entering data.

Choose a Site

1. Use the first drop-down menu to choose a national forest or equivalent level.
2. Use the second to choose a ranger district or equivalent level. The list will be restricted to those in the national forest you chose.
3. Use the third to choose a developed site (e.g., a campground), restricted to those in the district you chose.
4. In any of these menus, you can just start typing and it will autocomplete.
5. If you wish, you can skip the first menu, or the first two, and the next menu will contain all available entries.
6. If a menu does not contain a needed entry, you may be searching for one that is not already in the database. Under Prepare Reports, see the list of all site names.

Once you have chosen a desired site using this process, it becomes the default site for each tree entered, until changed.

Tree Data

The blue section of the screen enables you to either enter new tree data or edit existing tree data in the database, all for the site displaying in the top (gray) section.

Entering new tree data

1. Click on the “New” button (the one with +!) in the bottom of the screen. The cursor will automatically go to the Tree# field.
2. The date field defaults to that of the last tree entered. Be sure you enter it correctly for the first tree.
3. Begin entering tree data, using the TAB key to move through the data fields.
4. Enter the appropriate defect level for any defects that are not 0, using the text in the colored sections on the right as a guide for defect severity level.
5. At the “Sound shell” defect, if there was an increment core or drilling, enter the depth (depth to decay if decay was encountered) and check the box if decay was encountered at that depth. If there was no core you can skip these boxes.
6. At the “Dead” defect, if the whole tree is dead, click the corresponding box on the right. The default is “Live” so it only needs to be checked for dead trees.
7. At the bottom, enter the hazard rating given in the field and any notes.
8. To continue with more trees, you can continue tabbing past the Notes box or click the New Tree button again.
9. If you are done entering trees for the site displayed, but would like to enter more data for another site, return to the beginning of the Section I instructions.
10. If you are done entering data altogether, click on the Done button in the top section. The form will close and you will be returned to the main switchboard.

Editing existing tree data

1. **Choose site**. Follow the instructions above to choose a site for which you wish to edit tree data.
2. **Navigation buttons**. To navigate through all of the existing tree records for the site, go to the Record navigation buttons that are uppermost, just below the blue data entry area (the lower set will advance through the *sites*). To advance the records one tree at a time, click on the *single right-facing button*.
3. **Sorting**. If you find the trees are not in order of tree number, right click in the Tree# field and choose a sort option.
4. **Deleting**. To delete a record, navigate to that record, then right-click ABOVE or BELOW the blue area of the form and choose Delete Record.
5. **Editing**. When you have found your desired tree to edit, click in the desired field, use the backspace and delete keys to erase what is there or enter new information.
6. **Next**. To edit another tree, return to step 2. If you are done with this site and would like to edit trees for another site, return to step 1. If you are done editing tree data, click on the Done button.

Direct Access to the Tree Data Table

If you wish to directly view or edit your data in a datasheet view, a button at the top right of the Data Entry screen provides access to that table. Data entry directly in this table is not recommended, as you cannot see all the fields at once and you have no help text. However, this may be useful if you just want to quickly scroll through the data or delete many records at once. Back up your database (see last section of User's Guide) before doing anything in this table.

II. Import Data

The second button enables you to import data taken from a field device, or data that you entered manually into a spreadsheet if you find that easier than entering it directly into the Hazard Tree Database. Either way, follow these instructions carefully.

Preparing the Data

If you entered data on a smartphone or other device using a Survey123 app, download and edit the data file as directed in the *Survey123 Hazard Tree Evaluation Guide*, included in the *Hazard Tree Management Training Supplement* or at:

http://www.fs.usda.gov/goto/r2/fh/hazard.

Forest Health Protection also provides a data definition file (DDF) for Trimble dataloggers. The DDF can be used to record hazard tree inspections electronically in the field, and will export a file meeting these specifications. See the *Trimble Hazard Tree Evaluation Guide* for the export steps in the *Hazard Tree Management Training Supplement* or at the above link.

In both cases, once you get it into Excel, you may need to add or populate the SiteID field. You can get the correct SiteID for a developed site from the Hazard Tree Database by choosing "Prepare Reports > List all sites names and IDs by Forest and District". The Excel file must meet the specifications below.

A. The first row should be the field names as follows. Any other fields may be present, but they will not be imported. If required entries are missing, or text is present in a number field, the record may not be imported.

Field name	Description
Date	Required
SiteID	numeric code identifying the site[1] Required
Unit	text up to 18 characters, campsite # or other area of the site
Tree_numbe	numeric, you can use a decimal if you have to insert trees between two others Required
Ref_point	text up to 18 characters, reference point for azimuth/distance mapping
Azimuth	numeric only (0-360)
Distance	numeric, one decimal place allowed
Tree_speci	4- or 5-digit code, text
DBH	DBH, numeric, one decimal place allowed
Target	Target value, 1 or 2 only Required
Wound_cank	Wound or canker, 0-3
Lean	Lean, 0,1,3
Fork	Fork, 0-2
Crack_ligh	Crack or lightning scar, 0,1,3
Root_disea	Root disease, 0, 3
Roots_expo	Exposed roots, 0-3
Conk_punk_	Conk or other fruitbody, 0, 3
Open_cavit	Open cavity, 0, 1, 2, 3
Sound_shel	Sound shell, 0, 2, 3
Core	Depth of increment core or drill, numeric, can have 1 decimal
Decay_enco	Was decay present at the end of the core? 0=no, 1=yes
Dead_part_	Dead part, 0-3
Live_	Live/dead status of the tree, 0=dead, 1=live
Hazard_rat	Hazard rating assigned in the field, 0-6 except 5 Required
Notes	Up to 255 characters

B. The defect fields must have zeroes where the trees do not have a given defect. Allowable values vary among the defects.

C. The file must be named Tree_poi.xlsx and placed in C:\Hazard Tree DB\. The database is supplied with such a file. It contains the same trees for Example CG that are already in the database, and can be deleted or renamed.

Duplicates: During the import process, the program will first compare the imported data to existing data. If any records match simultaneously on site number, date, and tree #, the existing record will be deleted before appending the imported records. This will allow you to correct errors and import again, as long as the corrections do not affect those three fields. If they do, you will have to delete the old records first, manually in the Data Entry screen.

[1] Number corresponding to campground or other site; get this from "Prepare Reports > List all sites names and IDs by Forest and District."

When you have an Excel file that meets the criteria above, you may proceed with the import. All operations are completed automatically. You will be returned to the main switchboard after clicking on the import data button. Go to the Reports screen and prepare a full tree list (trees with hazard rating ≥ 0) to examine and make sure your data were imported correctly.

III. Prepare Reports

From the Main Switchboard, choose Prepare Reports. This allows you to view and analyze data in several formats.

General reports. The three reports across the top are not related to individual sites:

1. "Summary of all tree counts by site and date" summarizes all tree records in your data, giving counts of trees by month and site.
2. The second report is a list of all the developed sites available in the database, with Site ID, organized by Forest and District.
3. The third is a list of all the tree species available in the database (including most of the tree species in the Region), with latin name, common name, and 4- to 5-letter code.

Site-specific reports. These reports help you work with data and understand the hazard tree situation on an individual site. After choosing a site, there are three sections:

4. "Overall Site Report" produces a summary of the site with various severity indices and defect summaries. There are additional summaries of the 4- and 6-rated trees.
5. "Tree List" produces a formatted printout of all trees at or above any hazard rating value.
6. "Trees with Rating Discrepancies" produces a report of discrepancies between field hazard ratings and the ratings calculated by the database.

Choose a Site

You must choose a site before site-specific reports are generated. Choose your site in the Select Site field by (a) typing the first few letters of the site name and letting it autocomplete, or (b) choosing from the drop-down menu. Ensure you choose the correct site, using the site name and District information in the drop-down list. To see the example data, choose Example CG.

Overall Site Report (Fig. 1)

This report summarizes site information, such as the total number of recorded trees, their mean defect & number per campsite, the number of 4- and 6-rated trees, and the total number of trees with severe defects. It also provides details on the specific defects that contributed to trees with ratings of 6 and 4.

View and print the site analysis report

1. Click on the Overall Site Report button.[2]
2. Either print the report or just close the report window (upper right X).

[2] The first time you choose a report after installing, you may get a message that a printer is not available. Click OK. Then, when you are ready to print, just choose your printer.

It is a good idea to view this report first. It will give you a good overview of the hazard tree status of the site.

View detailed 4 or 6 rated tree data by defect and species:

This section enables you to view more detailed information on 4- and 6-rated trees. There are two reports that vary only slightly.

1. These reports require that you first view the Overall Site Report so that the necessary calculations are made.
2. Choose the button corresponding to the desired rating level (4 or 6).
3. An Access datasheet will open with the information. It is not a formatted report because campgrounds with a lot of species would not fit easily on a page. You can view this report in place, print it, or export it to a variety of other programs (External Data tab, Export group).

Tree List (Fig. 2)

This report provides a list of trees with basic tree and defect data.

1. Be sure you have first chosen a site, as described above.
2. Choose a hazard rating from the drop-down menu. All trees at or above that hazard rating in the chosen site will be in the report. Choose '0' to list all trees.
3. Choose to create a formatted report, or export data to Excel.
    a. You can choose to print the formatted report and then close it.
    b. If you export to Excel, all tree data fields will export to a file called ExportData.xlsx in C:\Hazard Tree DB.

Rating Discrepancies (Fig. 3)

This produces a list of the trees that have a field-recorded hazard rating that is different from the hazard rating calculated by the database based on defect and target values. These trees may warrant additional investigation. You may be able to resolve the discrepancy by viewing and editing the tree data in the Enter Data screen, especially if there are good notes.

1. Be sure you have first chosen a site, as described above.
2. Click the button and view or print the report. When you close the report, you will be returned to the reporting screen.
3. To return to the Main Switchboard, click the DONE button in the lower right hand corner.

IV. It's Quittin' Time

When you have done all of your good deeds for the day and returned to the main switchboard, click on this button to close the database.

V. Advanced – Add New Sites to the Database

If a developed site you are working with is not in the prefilled list of sites, it can be added. To be safe, you can ask your Forest Health Protection service center to do it for you. This functionality is new and has not been fully tested. If you accidentally edit existing entries, the connections between tables will be lost and HTDB won't work correctly.

Click the Edit Sites button on the main switchboard. Read the warning. The steps are different, depending on whether you are adding sites to an existing USFS Ranger District, or adding new higher-level locations, such as a different USFS Region, BLM Field Office, National Park, State Parks, etc.

Add Site to an Existing District

Do NOT enter information in the upper-level fields at the top (Region, National Forest, etc.). This will destroy existing relationships. Find the Record Locator at the bottom of the window, preceded by the word "Record:". Click the right arrow to scroll through locations until you get to your District. Then simply add your new site to the list of existing sites, on the "New" line. A SiteID will be automatically generated.

Add Higher-Level Locations and Sites within Them

If your new location is in an existing National Forest, scroll through the Record Locator to find and note the appropriate ForestCode. Then click the New Record button on the Record Locator and enter all information except DistrictID and SiteID, which will be created automatically. Then add sites as above.

If you area adding a completely new hierarchy (e.g., National Park Service > Intermountain Region > Rocky Mountain National Park), just click the New Record button on the Record Locator and enter the information in the fields Region, National Forest, and Ranger District, respectively. Enter a Nat. Forest Code unique to the National Forest Level (it can contain letters, e.g. ROMO). Then enter the sites below. Do not enter DistrictID or SiteID.

Backup and Maintenance

- Back up your data by occasionally copying the database (HazardTreeDB.accde) to a server or other storage device.
- Alternatively, you can back up through File > Save As > Save Database As > Back Up Database, then click the Save As button.
- You can reduce the size of the database and improve performance by occasionally compacting and repairing. This function is accessible under File > Info.
- It may occasionally be useful to directly edit tables in the database. However, you should first back up and be sure you understand what you are doing. There is a button to access the Tree data table in the Enter Data window. You shouldn't need to (and shouldn't) fiddle with other tables, but you can see them all and more by pressing F11.

Conclusions

Please let us know if you have trouble with the database or if you have any other comments. Administration and help are available from your Forest Health Protection service center.

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Special thanks to: Roy Mask, Bob Vermillion, The Peggys Schick & Dobie, Kathaleen, Lora, Asa, and Hambone.

Appendix – Sample Reports

Table 1. *Overall site report of data for Example CG. These data are preloaded in the database for you to experiment with.*

Example CG

№ of trees rated: 100
№ of units/campsites: 6

Site Severity Indices	*Count*	*Percent*	*Per unit/campsite*
Trees rated 6	15	15%	2.5
Trees rated 4-6	25	25%	4.2
Dead trees	2	2%	0.3
Trees with defect value = 3 (severe)	18	18%	3.0
Mean hazard rating (all trees)	1.82		

Haz. rating	***№ of trees***	***Mean DBH***
0	50	15
1	1	20
2	21	15
3	3	13
4	10	11
6	15	12

6-rated trees by defect

Defect	*№ of trees*	*Mean DBH*
Crack/lightning severe or with fork	4	11
Dead part >7 inch diameter	3	9
Root disease	5	16
Sound shell < 33% tree radius	1	20
Uncorrected (unnatural) lean	1	17
Wounds/cankers > 50% circumference	2	9

4-rated trees by defect

Defect	*№ of trees*	*Mean DBH*
Cavity < 30% circumf., inaccessible	1	11
Exposed roots < 50% decay	2	7
Fork - weak (included bark)	8	11

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Table 2. *Tree list for Example CG. For this report, the option was chosen to include only trees with hazard rating ≥ 6.*

Example CG

Unit	Tree	Hazard Rating	Live?	Species	DBH	Target	Wound	Lean	Fork	Crack	Root Dis.	Exp. Roots	Conk	Cavity	Shell	Dead	RP	Azim	Dist	Notes
1	6	6	Y	PIEN	7.0	2	3	0	1	0	0	0	0	0	0	0	big rock	360	50	multiple u-shaped forks, long wound, severe boy scout damage
3	25	6	Y	PIEN	16.0	2	0	0	0	0	3	0	0	0	0	0				Armillaria, much basal resinosis
toilet	35	6	NO	PIEN	10.0	2	0	0	0	0	0	0	0	0	0	3				snag
4	40	6	Y	PIEN	20.0	2	0	0	0	0	0	1	0	0	3	0				
4	45	6	Y	PIEN	17.0	2	0	3	2	0	0	0	0	0	0	0				
5	47	6	Y	PIEN	14.0	2	0	0	0	0	3	0	0	0	0	0				Armillaria
parking	67	6	Y	ABBI3	10.0	2	3	0	2	3	0	0	0	0	0	0				
6	76	6	Y	ABBI3	7.0	2	0	0	0	0	0	0	0	0	0	3				insect activity, tree mostly dead
6	80	6	NO	ABBI3	7.0	2	0	0	0	0	0	0	0	0	0	3				snag
6	85	6	Y	ABBI3	9.0	2	0	0	0	3	0	1	0	0	0	0				crack w/fork
6	86	6	Y	ABBI3	11.0	2	0	0	0	3	0	0	0	0	0	0				crack w/fork
6	94	6	Y	ABBI3	14.0	2	0	0	0	3	0	0	0	0	0	0				long crack
gd. sta.	101	6	Y	ABBI3	16.0	2	0	0	0	0	3	0	0	0	0	0				
gd. sta.	102	6	Y	PIEN	14.0	2	0	0	1	0	3	0	0	0	0	0				
	103	6	Y	PIEN	15.0	2	0	0	0	1	3	0	0	0	0	0				

Table 3. *Error list for data from Example CG. These are trees for which the field-recorded hazard rating was different from the hazard rating calculated by the database, based on the recorded target and defect values.*

Hazard Rating Discrepancies

Site Name	*# of Errors*	*Tree #*	*Field-recorded rating*	*Calculated hazard rating*
Example CG	**8**			
		2	2	4
		23	0	3
		40	2	6
		55	4	2
		73	6	3
		99	2	1
		100	6	3
		101	4	6