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Forest Service

Northern

Research Station

NED-3 Documentation

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Acknowledgments

The NED software tools are being developed by the U.S. Department of Agriculture (USDA) Forest Service, Northern Research Station. Other Forest Service units collaborating in the development include the Southern Research Station and the Eastern Region of the National Forest System. Many state and educational institutions also are collaborating with the Forest Service on this project.

NED Contributors

The list of contributors for NED-2 is large and includes members from state and federal agencies, universities, and private industry. The list includes practicing foresters, wildlife biologists, landscape architects, hydrologists, and more. Development of NED-2 began with the formation of the following core team that consisted of representatives from each of several resource committees, as well as, several software developers. The original core team met two to three times annually to work out the details of NED-2.

Original NED core team members included the following:
Deborah Bennett, Biologist, Northeastern Research Station
Robert Bridges, Assistant Director, Northern Research Station, Retired
Helene Cleveland, Forester, Allegheny National Forest
David DeCalesta, Research Wildlife Biologist, Northeastern Research Station, Retired
Morgan Grove, Research Forester, Northern Research Station
Eric Gustafson, Research Landscape Ecologist, Northern Research Station
Robin Hoffman, Landscape Architect, State University of New York (SUNY) College of Environmental Sciences and Forestry
Jim Hornbeck, Research Hydrologist, Northeastern Research Station, Retired
R. Peter Kollasch, Computer Specialist, Northeastern Research Station
Neil Lamson, Research Forester, Northeastern Research Station, Retired
Donald Nute, Professor of Philosophy, University of Georgia, Retired
James F. Palmer, Landscape Architect, Retired, SUNY College of Environmental Sciences and Forestry
H. Michael Rauscher, Research Forester, Southern Research Station, Retired
Susan Stout, Research Forester, Northern Research Station

Early contributors to the NED development project included the following:
David A. Marquis, Research Silviculturist, Northeastern Research Station, Retired. We are most indebted for his vision and energy that conceived the project and sustained its early development.
Clay Smith, Research Silviculturist, Northeastern Research Station, Deceased.
Laura Alban, Forester, SUNY College of Environmental Sciences and Forestry.
Tom Schuler, Research Forester, Northern Research Station.
Brian Simpson, Forester, Northern Research Station.
Max McFadden, Assistant Director, Northeastern Research Station, Retired.

NED-2 Resource Committees

Early in the development of NED-2, many scientific and managerial concepts were incorporated into NED-2 as a result of input from several resource committees. Prior to 1998, committees provided guidance on desired resource conditions, rules and regulations, operational procedures, definitions, and other concepts based on scientific research and professional practice.

Ecology

Committee chair: Susan Stout

Committee members: Daniel Brauning, Daniel Devlin, Donald Gibbon, Emily Grafton, Katharine Hakala, Tina Hall, James Kotcon, Larry Master, James McGraw, John McKown, Rose Marie Muzika, Charles Smith, Steve Sutherland, Gary Wade, Paul Weigman, and Mary Hoffman, Jeff Knoop, Craig Martin, and Nancy Putnam

Economics

Committee chairs: Mike Rauscher, Gary Miller

Committee members: Bill Gardner, Karen Lee, Laura Lombardo, Mark Twery, David Wear, and Charlie Webb

Forest health

Committee chair: Jim Steinman

Committee members: Larry Abrahamson, Doug Allen, Barbara Burns, Mike Connor, Kurt Gottschalk, Robert Haack, David Houston, Steven Katovich, Paul Manion, Deborah McCullough, Max McFadden, Martin MacKenzie, Margaret Miller-Weeks, William Ostrofsky, John Quimby, Dennis Souto, James Stewart, David Struble, H. Brent Teillon, and Philip Wargo

Landscape ecology

Committee chairs: Eric Gustafson, Swee May Tang

Social ecology

Committee chair: Morgan Grove

Committee members: William R. Burch, Jr., Kenneth Cordell, Thomas Duffus, Shawn Dalton, Marla Emery, Tim Foresman, Marilyn Hoskins, Lloyd Irland, Pamela Jakes, Jerilyn Levi, Bernie Lewis, Gary E. Machlis, Max McFadden, Jean McKendry, Rob Northrop, Elinor Ostrom, James Palmer, J. Kathy Parker, Brian Payne, Steward Pickett, Mike Rechlin, Dianne Rocheleau, and James Thorne

Timber

Committee chair: Mark Twery

Committee members: John Brissette, Martin Dale, Robert Frank, Kurt Gottschalk, Matthew Kelty, Neil Lamson, William Leak, Monty Maldonado, Gary Miller, Ralph Nyland, Arlyn Perkey, Mike Rauscher, Chip Scott, Dale Solomon, Susan Stout, Robert White, and Dan Yaussy

Previous committee members: Bob Bloomquist, Joel Hockinson, David Marquis, William Shirley, and Clay Smith

Visual

Committee chairs: Jim Palmer, Robin Hoffman

Present committee members: Skip Echelberger, Paul Gobster, Steve Hollenhorst, Gary Kell, William Kerr, Tom Kokx, Tom More, Peggy Pings, and Bruce Reid

Previous committee members: Mary Anna Harrilchak and John Kuhr

Water

Committee chair: Jim Hornbeck

Committee members: Mary Beth Adams, Edward Corbett, Tony Federer, Donald Hair, James Kochenderfer, Harry Parrott, Doug Ryan, Robert Smith, and James Vose

Wildlife

Committee chair: Dave deCalesta (Linda Thomasma 1992 to 1995)

Committee members: Doug Blodgett, Robert Brooks, Alan Boss, Richard DeGraaf, Clayton Grove, William Healy, John Lanier, Brad Nelson, Ralph Nyland, Steve Pelletier, William Porter, Robert Szaro, and Mariko Yamasaki

Programming Support

NED-3 was programmed by Scott Thomasma. Earlier NED versions received additional programming from Pete Kollasch and Peter Knopp, along with support from many graduate students at the University of Georgia in Athens, GA, under the direction of Donald Nute and Donald Potter.

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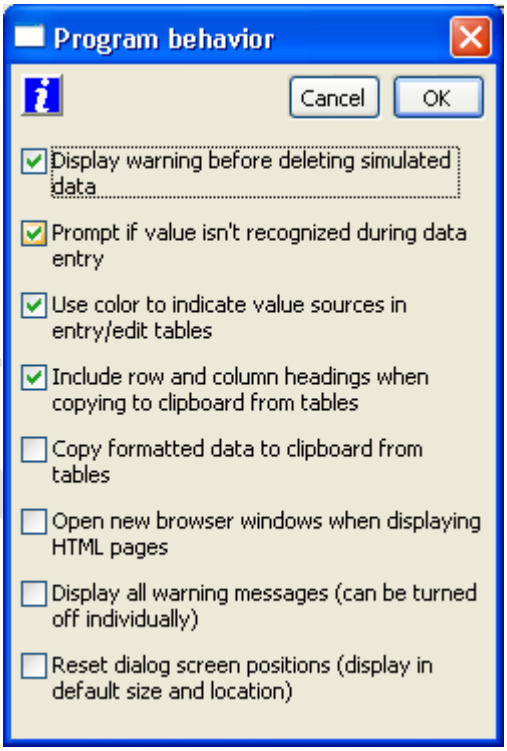
Program Behavior



Display warning before deleting simulated data- If you have simulated treatments and growth and you edit data in the inventory module, the simulated data will be deleted. The checkbox controls whether or not a warning will be displayed before the simulated data is deleted.

Prompt if value isn't recognized during data entry- As you enter data, if the value you enter is invalid a dialog can be displayed prompting you to select or enter valid data. This checkbox controls whether or not this dialog will be displayed.

Use color to indicate value sources in entry/edit tables- The data tables in the Enter/Edit Inventory Data, View Snapshot Data and other modules can be displayed using color to indicate the source of the data. This checkbox controls whether or not colors are used to indicate source.

Color	Source
Green	default or user-default value
Blue	Calculated
Light blue	Imported from
Black	User-entered
Brown	Generated by a model
Red	NED set this value and it cannot be changed

Include row and column headings when copying to clipboard from tables- When copying from a data table to the clipboard, you can include the row and column headings. This checkbox controls whether or not to include the headings.

Copy formatted data to clipboard from tables- When copying from a data table prior to the clipboard, you can copy either the values as they are being displayed, or copy the values to the maximum precision allowed. As a rule of thumb, when copying to a document (such as Word) copy the formatted values. When copying to a spreadsheet (such as Excel) copy un-formatted data. This checkbox controls whether or not formatted data is being copied to the clipboard.

Open new browser windows when display HTML pages- There are several places in NED-3 where HTML pages are displayed using the standard web browser. This checkbox controls whether or not the new HTML pages are displayed in separate browser windows, or as tabs within an existing browser window.

Display all warning messages (can be turned off individually)- Most message popups that are displayed in NED-3 can be turned off so they are not displayed the next time the program encounters the same conditions. A checkbox will be at the bottom of the those message-boxes. If this checkbox is checked when the "OK' is pressed, all message-boxes will be set to be displayed.

Reset dialog screen positions (display in default size and location)- NED-3 stores dialog locations in the Windows registry so that the same dialog is displayed in the previous location. If his checkbox is check when the "OK" button is pressed, the program will remove those entries from the Windows registry and dialogs will be displayed in their default locations and sizes.

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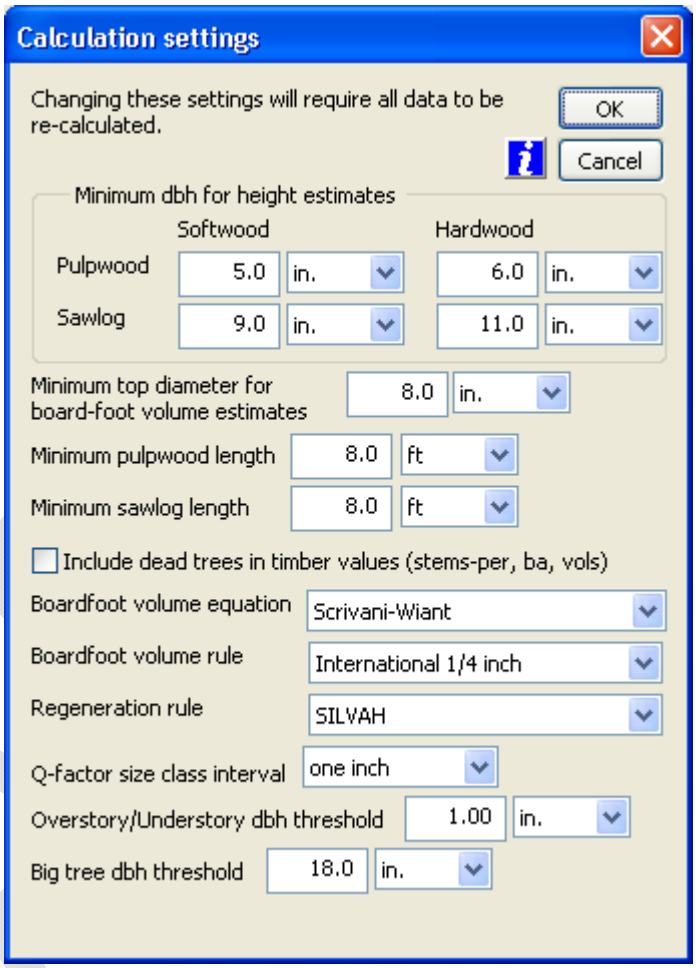
Calculation settings



Calculation settings offer some control over how NED estimates many values. Most of the settings apply to overstory and log data. They generally affect inventory data as well as simulated data. Any changes in this dialog will require NED to completely redo all calculations, and all simulated treatment plan data will be deleted, which means that you will need to re-simulate your treatment plans, if applicable.

Minimum dbh for height estimates- If you do not record merchantable height, NED can estimate merchantable height for sawtimber and pulpwood in hardwoods and softwoods. If the dbh is less than the minimum dbh you specify, sawtimber and/or pulpwood height is set to zero.

Minimum top diameter for board-foot volume estimates- You can specify a minimum top diameter for calculating board-foot volume. NED will calculate volume for logs only if the diameter of the top portion of the log is greater than or equal to the threshold.

Minimum lengths- When NED is estimating sawlog and/or pulpwood height, it will return zero for any value that is less than the minimum log lengths you specify.

Include dead trees in timber values (stems-per, ba, vols)- You can choose whether you want NED to include dead trees in its calculations. If this box is checked, all computations for timber values will include dead trees. When configuring vegetation tables and reports, you will again be given the option to include dead trees in those calculations as well as the ability to calculate values for dead trees only.

Boardfoot volume equation- There are several options for boardfoot volume equation

Scrivani—Wiant: uses Scrivani for logs greater than or equal to 16-feet, and Wiant for logs less than 16-feet.

Scrivani only: taken from Scrivani, John A. 1989. An Algorithm for Generating "Exact" Girard Form Class Volume Table Values. Northern Journal of Applied Forestry (6) p140-142.

Wiant only: taken from Wiant, H.V. Jr., and F. Castenada. 1977. Mesavage and Girard's Volume Tables Formulated. Resource Inventory Notes, USDI, BLM 4: 1-4, Denver, CO. Wiant, 1986 NJAF 3(1986)

Forest Service Eastern Region: from FSH 2409.12A - Timber Volume Estimator Handbook; Chapter 50 - Application page 12.

Wengert: see http://www.woodweb.com/knowledge_base/Measuring_Logs_and_Lumber.html

User table: this gives the user a chance to enter their own volumes. When this option is chosen the "Table" button is enabled which allows the user to build the board-foot table. Instructions for filling out that table are covered in another document.

Boardfoot volume rule- You can specify which rule you want NED to use in estimating board-foot volume. NED provides the three most commonly used equations, or log rules: International 1/4 Inch, Doyle, and Scribner.

Regeneration rule-

Silvah
McWilliams
Green Mountain National Forest

Q-factor size class interval- In calculating the q-factor for a stand, NED can use 1- or 2-inch diameter size-class intervals. Which one you choose depends on how you tallied your data.

Overstory/Understory dbh-threshold- NED-2 uses diameter at breast height (dbh) to distinguish between overstory and understory stems, with a default threshold value of one inch. This means that any woody stem with a dbh greater than or equal to one inch would be inventoried as overstory, and would be included in any subsequent analysis of the overstory. This setting may affect the default dbh when you enter a new overstory observation. If this threshold is greater than your default dbh value, NED will apply the overstory/understory dbh threshold as the initial dbh value for the new observation. This threshold does not affect calculations on stand metrics such as basal area, relative density, biomass, etc. However, during treatment plan simulation, stems less than the current dbh threshold would be considered understory. Once these stems grow to a dbh that is greater than or equal to the current threshold, they would be considered overstory.

Big tree dbh threshold- The big tree threshold is a specific diameter at breast height (DBH) that indicates whether a tree is considered large or "big". Perhaps you want to create or hasten the development of an old-growth or large tree appearance. If so, NED uses the big tree threshold to report on big trees in your forests.

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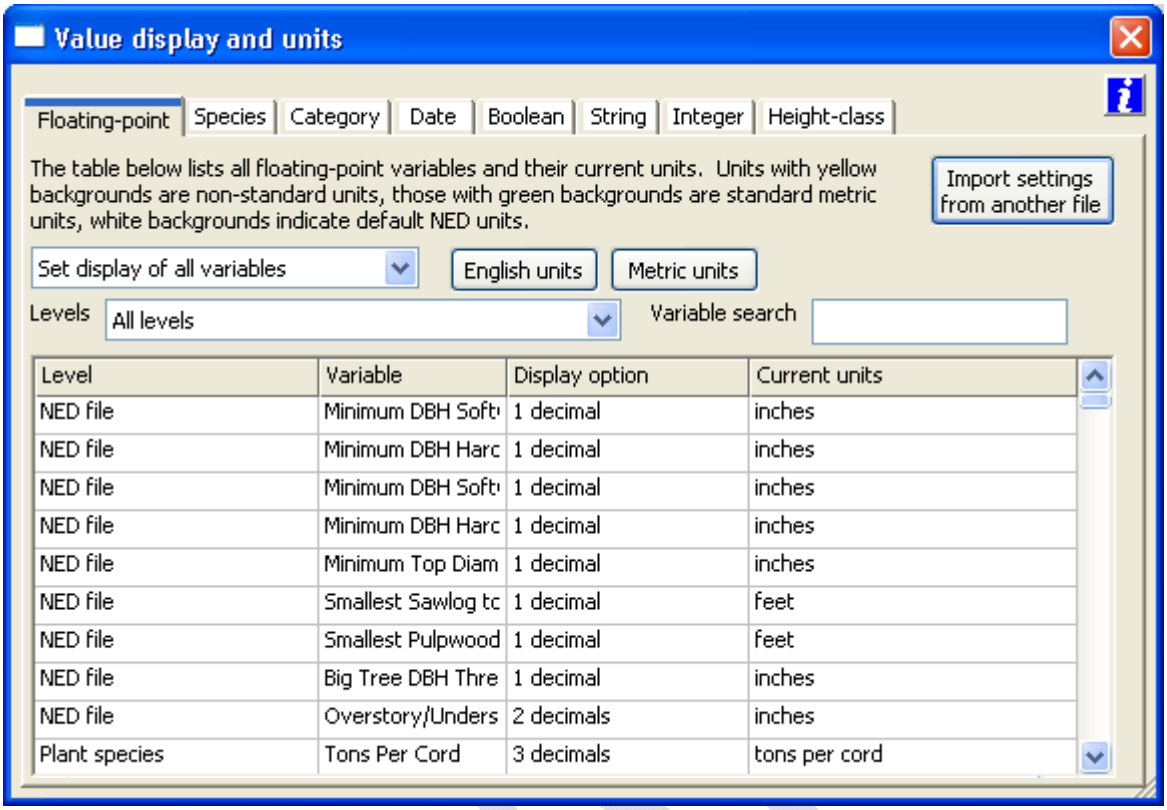
Value display and units

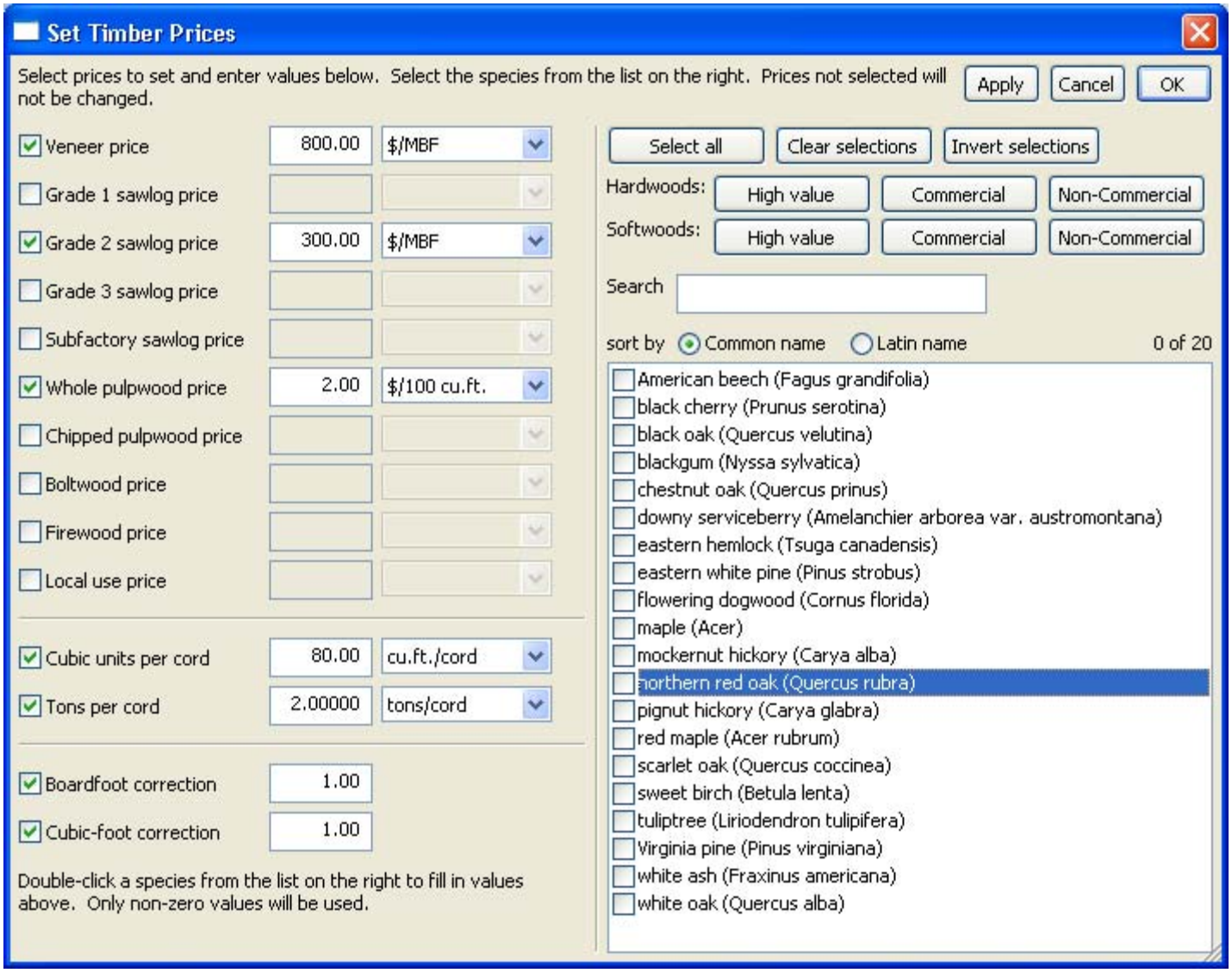


Use this dialog to choose display options for values throughout NED. Across the top there are tabs for each type of variable found in NED. The main table lists the variables of the type for the selected tab. You can use the “Levels” combo-box to limit the list to variables at specific data levels. The “Variable search” edit-box can be used to limit the variables that are displayed in the variable list. As you type in your string only the variables that contain that string are included in the list. If the edit-box is empty, all variables are displayed.

Right-click a row of the table for choices of display options for individual variables. The options available will depend upon which type of variables you are displaying. You can change the display option for all the listed variables using the “Set display of all variables” combo-box. The “Import settings from another file” button can be used to retrieve display settings from another NED-3 file. The Floating-point tab has two additional buttons: “English units” and “Metric units”. These buttons can be used to set the units to their standard English or standard Metric units.

Quick-set Prices dialog

The purpose of the quick-set prices feature is to provide an efficient way to establish timber prices for your species. While you can always directly modify timber prices for any species in the Work Pane (if you select Tree Species in the Options Pane), with the quick-set feature you can establish pricing information for one or more species at a time, and you can also copy pricing information from one species to another. You can choose to set prices for only specific products, leaving others alone. Even if you have specific prices for separate species, use the quick-set feature to establish "base" or common prices that most species will share. Then you can modify the prices for individual species as desired. The dialog looks like this:



The left half of the screen is where prices, and a few other parameters, can be set. To set a price, click the check-box and enter the price in the corresponding edit box. Only those parameters that have been checked will be applied to the selected species. You can use already entered prices from a particular species by double-clicking the species in the species list.

The choice of pulpwood price units includes dollars per cord and dollars per ton. Internally NED stores the pulpwood prices in dollars per 100 cubic feet. If you are entering pulpwood prices in dollars per cord or dollars per ton, the conversion to dollars per 100 cubic feet use the “Cubic units per cord” and/or the “Tons per cord” values displayed in

the dialog. You can change those conversion factors by temporarily enabling the edit-boxes (by clicking the checkbox) and entering a new value.

The right side of the screen is where the species are selected to apply the prices. To toggle an individual species, simply click the check-box in the species list. You can also use the buttons at the top of the list manipulate the selections. The first three buttons ("Select all", "Clear selections" and "Invert selections") affect the entire species list. The other six buttons will select corresponding species, but will not turn off any already selected species selections. The "Search" edit-box can be used to limit he species displayed in the list. As you type in a string, only the species that contain that string are included in the list. If the edit-box is empty, all species are displayed.

At the top of the screen is the Apply button that will temporarily go back to the main NED-3 screen, fill in the prices for the selected species and return to the dialog.

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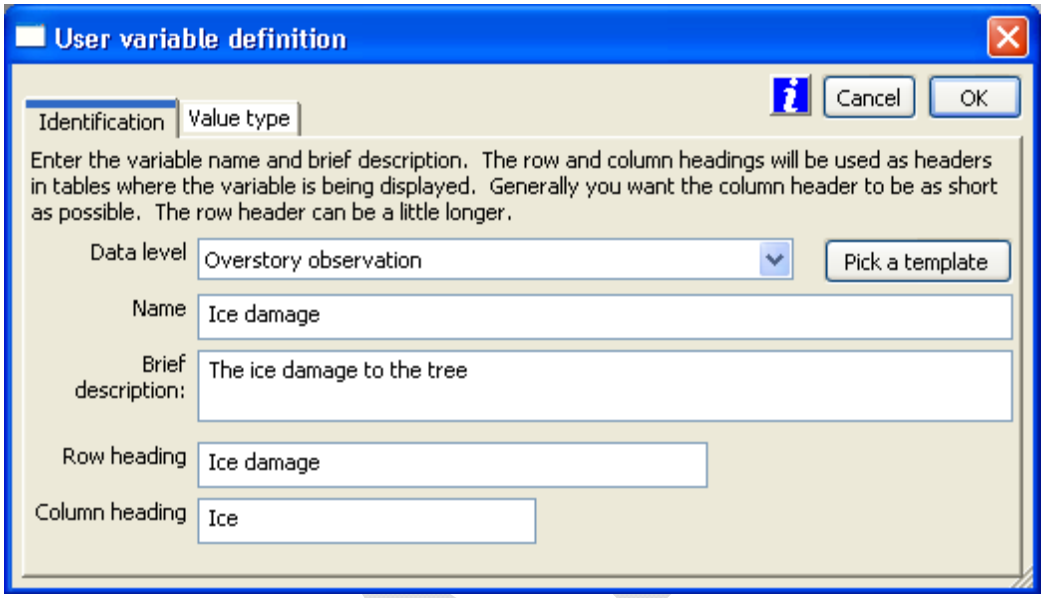
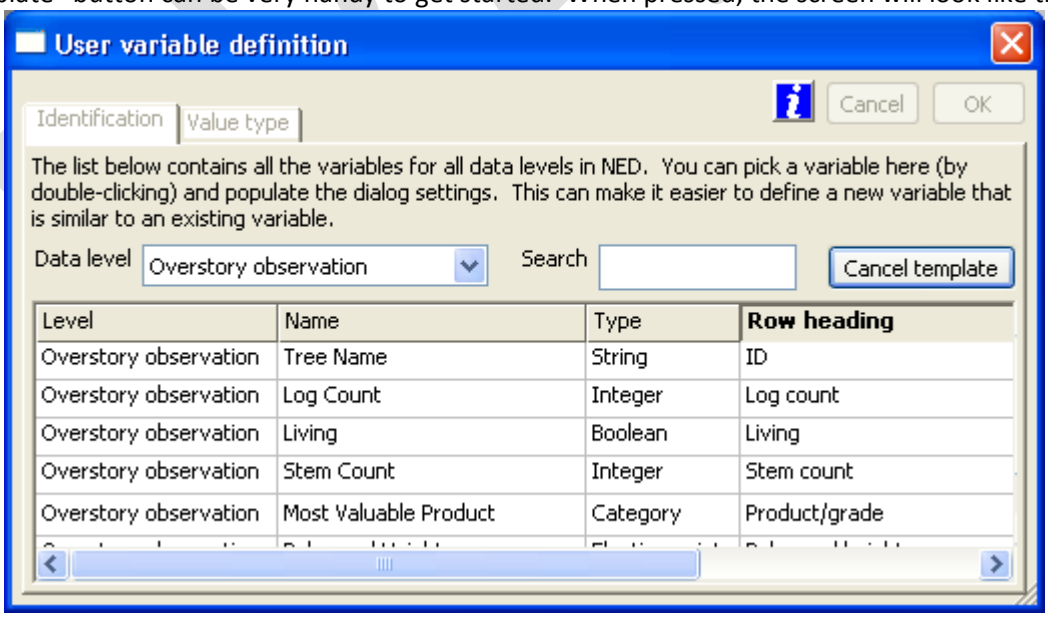
User variable definition

If your inventory includes other variables that do not have a counterpart in NED, you have the option of defining them as custom, user-defined variables. This is the dialog used to define a new variable:



Use the "Data level" combo-box to select the level for your new variable. In this example we're going to define a variable to record the damage on an individual tree, so we want the "Overstory observation" level. Enter a name, brief description, row heading and column heading.

The "Pick a Template" button can be very handy to get started. When pressed, the screen will look like this:

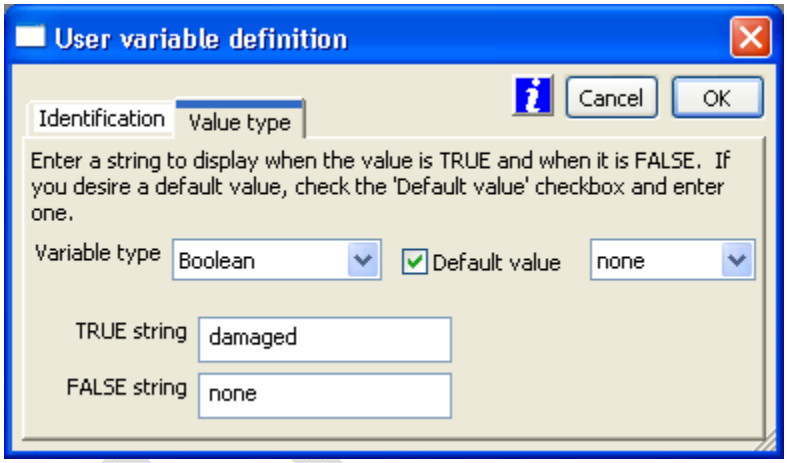


The "Data level" combo-box will default to the same level as on the main screen. All the variables at that data level will be listed. You can further limit the entries in the table by entering a string in the "Search" edit-box. If you find a variable that resembles your new variable, you may select it by double-clicking on the table. If you find a template variable, the name, description, row/column headings and data level will be copied to the main screen.

The second tab on the main screen allows you to select the variable type. The different variable types have different options, which will be covered separately below.

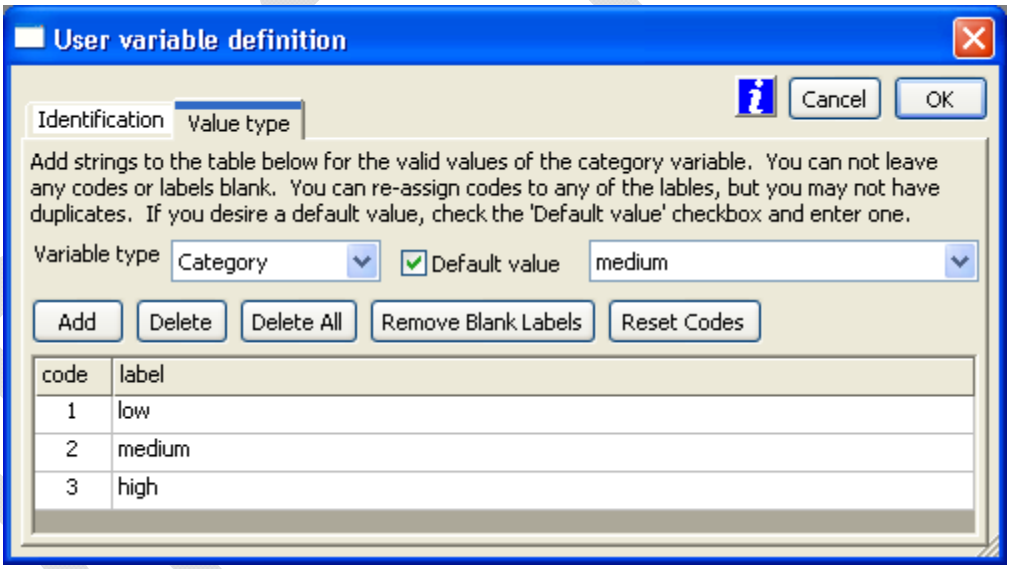
Boolean

Boolean variables always have one of two values: TRUE or FALSE. You can enter the strings to be displayed by entering them in the corresponding Boolean string. If you check the "Default value" check-box, select the default value from the combo-box.



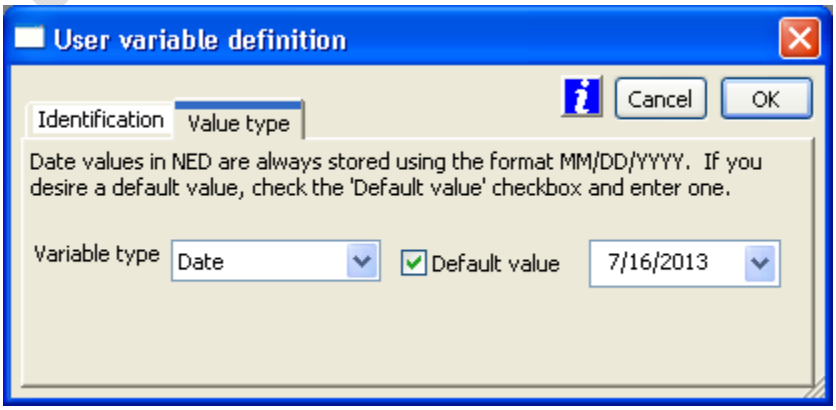
Category

Category variables take on one of several values. You can add the values on the table at the bottom of the screen. When entering data the data entry will be limited to one of the choice you provide in the table. If you check the "Default value" check-box, select the default value from the combo-box.



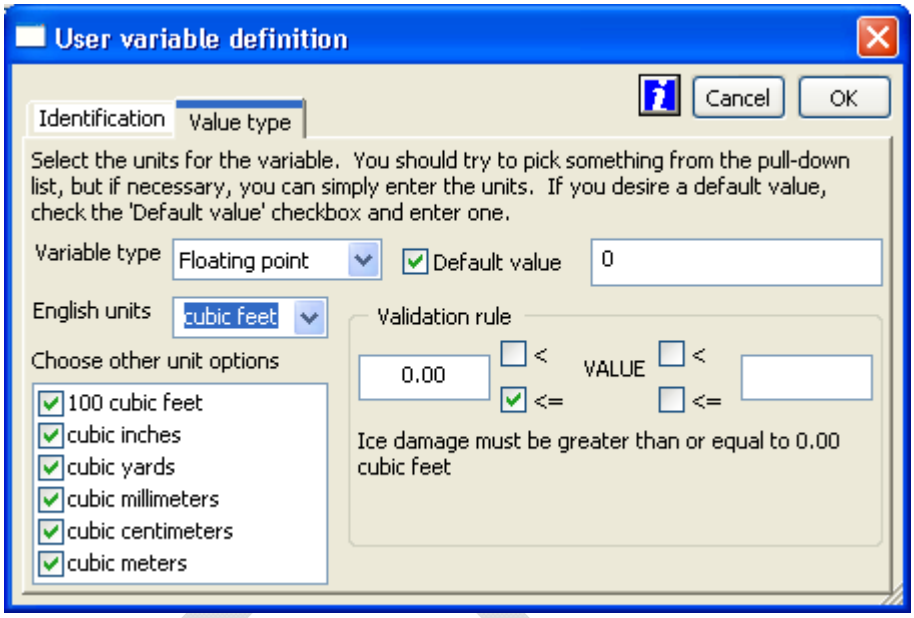
Date

Date variables are for the user to enter a specific date. If you check the "Default value" check-box, select the default date using the combo-box.



Floating-point

Most numeric data should be defined as Floating-point. NED always stores its values in English units. NED has a rich assortment of units and you should try to find something in the "English units" combo-box to suit your needs. In this example the English units are "cubic feet". The list-box at the lower left lists all the units NED can convert your values to from the chosen English units. You can un-check any of these other units If you do not wish to use them. In most cases you should also define a validation rule by entering a minimum and/or maximum and checking comparison rules ("<" or <="). If you check the "Default value" check-box, enter the default value in the edit-box.

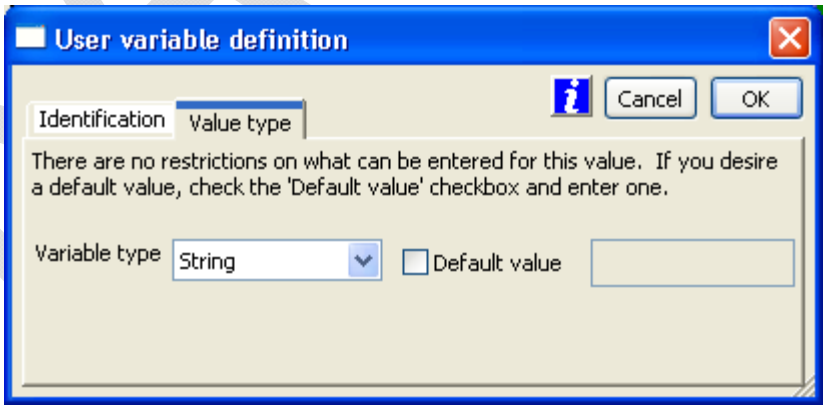


Integer

The integer screen looks pretty much like the floating-point screen, so I won't repeat it here. There is a more limited list of units to choose from for integers. Most numeric data should be defined as floating-point. If you don't see you units in the English units combo-box, you probably should be defining a floating-point value. If you are defining codes, it is suggested that you select "Category" as your variable type.

String

String values accept almost any value the user can type in. These types of variables are usually for names or sometimes comments.



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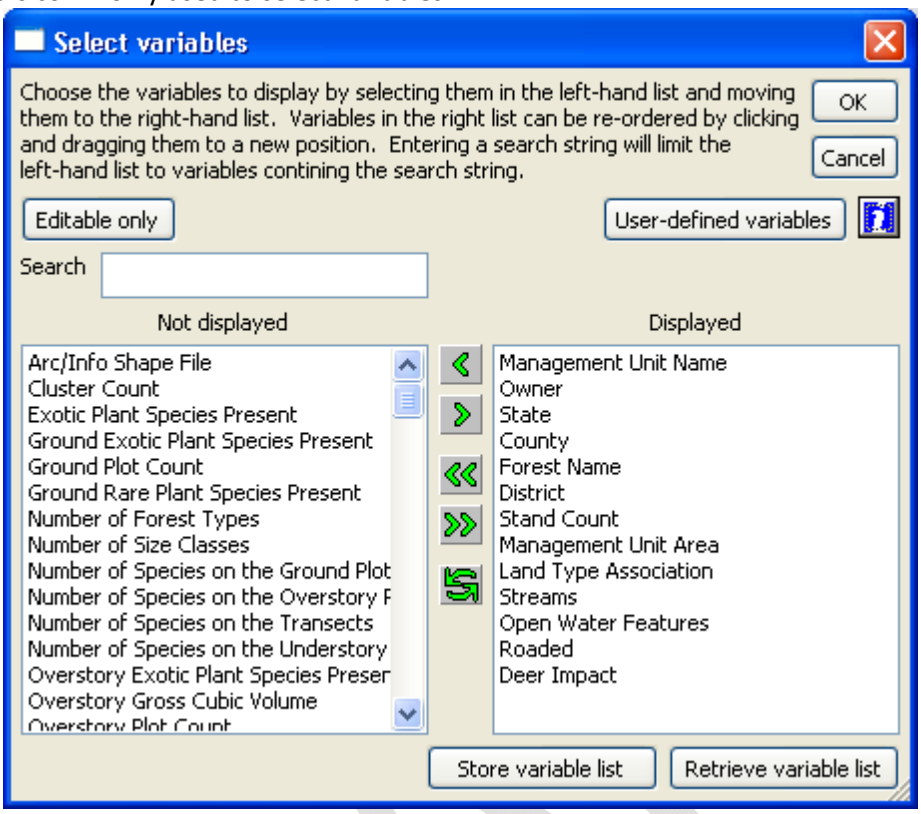
Selecting variables

Here is the dialog that is commonly used to select variables:



This is used in a variety of places and some options you see here may not be available all the time. There are two main lists, the left is the list of variables not selected, and the right list is the variables that will be selected. Between the two lists is a column of arrow buttons:

is used to move variables from the right-hand list to the left-hand list. You can also double-click a variable in the right -hand list to move it to the left. The variables in the right-hand list can be re-ordered by clicking and dragging them into new positions.

is used to move a variable from the left -hand list to the right -hand list. You can also double-click a variable in the left -hand list to move it to the right. You can select more than one variable on the left and the will be moved when you press the arrow button.

is used to move all the variables from the right-hand list to the left-hand list.

is used to move all the variables from the left-hand list to the right-hand list

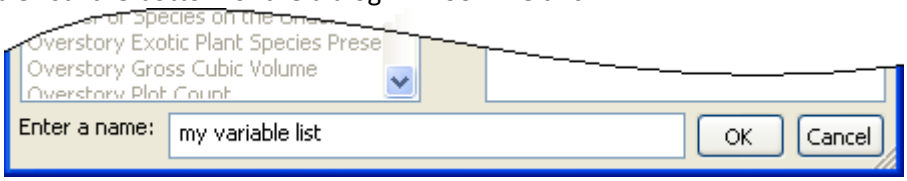
is used to swap the two lists. All the variables currently on the left will be moved to the right, and all the variables on the right will be moved to the left.

The "Editable only" button will add all editable variables to the right-hand list and remove any non-editable varaibles from the left-hand list. This button may not be present depending on what the program needs.
Over the left-hand list there is an edit-box for entering a search string. This is used to limit the variables that are displayed in the left-hand list. As you type in your string only the variables that contain that string are included in the list. If the edit-box is empty, all variables are displayed.

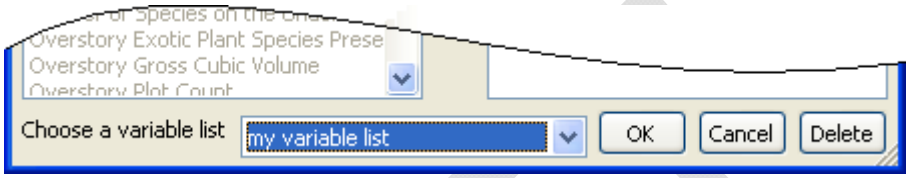
The "User-defined variables" button can be used to add variables that are required by the user, but are not normally

available in NED. This button isn't always available, depending on what NED is prompting for. Defining new variables is a complicated process and will be discussed in another document.

At the bottom of the dialog there are two buttons to store and retrieve the variables listed in the right-hand list. When you press "Store variable list" the bottom of the dialog will look like this:



Enter the name you want to associate with the variables. When you use the "Retrieve variable list" button the bottom of the dialog will look like this:



Use the combo-box to choose the desired variable list.

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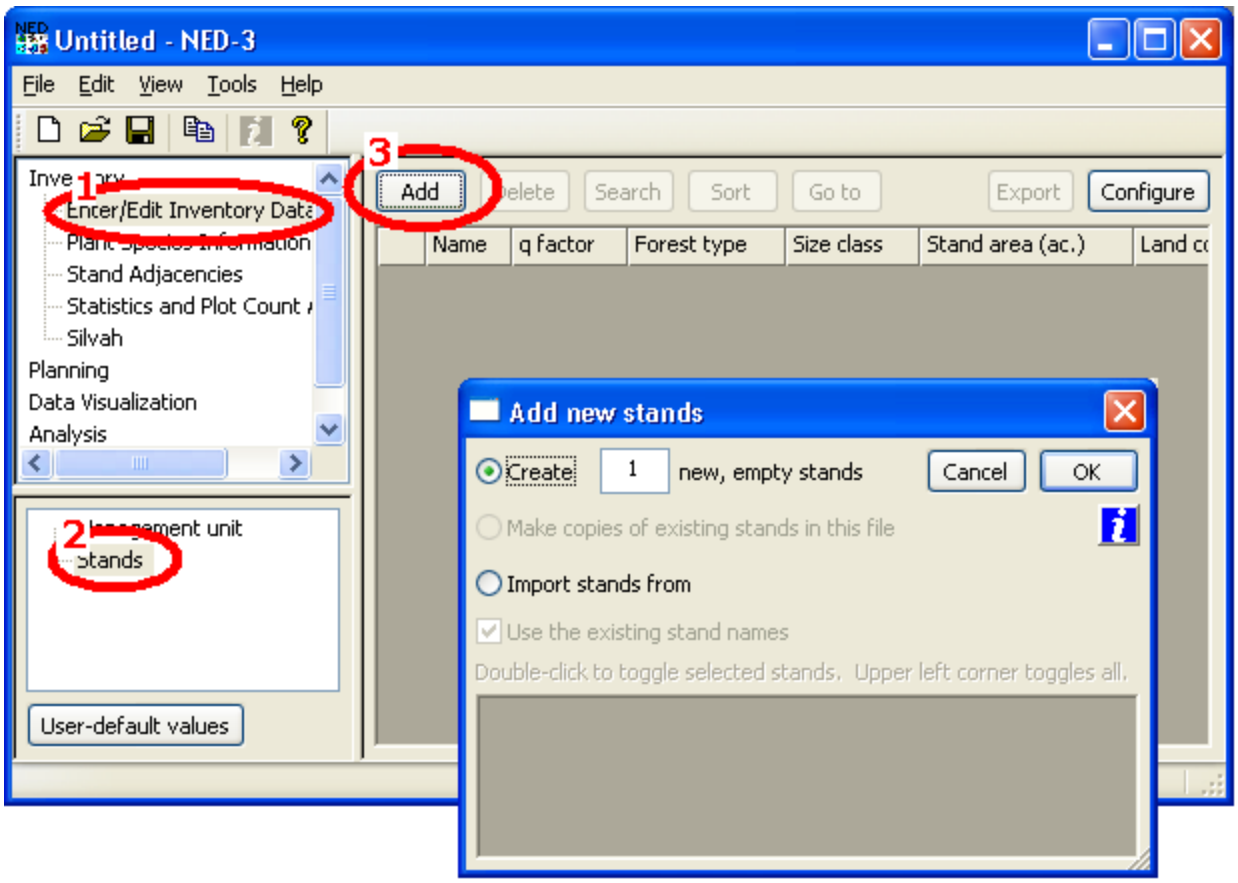
Add New Stands

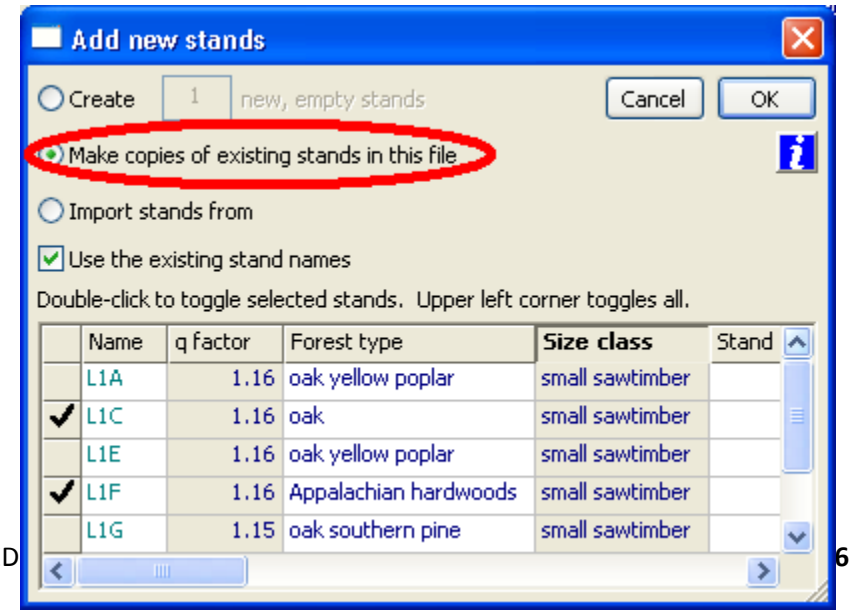
New stands, whether you are creating empty stand, importing stands or making copies of existing stands, are always added in the inventory module. To open the "Add new stands" dialog take the following steps:

1. Select "Enter/Edit Inventory Data" under "Inventory" in the A-pane.
2. Select "Stands" in the B-pane.
3. Use the "Add" button in the C-pane.



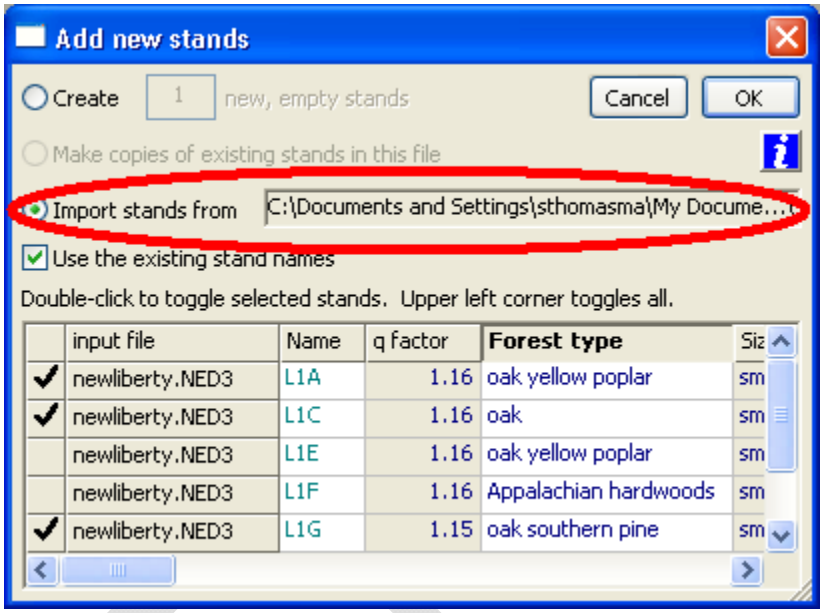
The first option is to create new, empty stands. You can enter any number in the edit-box; press "OK" and the stands will be added to the management unit.

The second option is to make copies of existing stands. This option will be disabled if you don't have any stands. The existing stands will be listed in the table at the bottom of the screen. A check in the first column indicates which stands will be copied. Double-click a row to select an individual stand to copy. The top-left corner of the table can be double-clicked to toggle all stands. When you press "OK" the stands will be copied.



The third option is to import stands from another file. Data can be imported from the following file types:

- NED-3 files
- NED-2 files
- NED-1 files
- SIPS files
- SILVAH files
- ASCII files
- NEDlite ASCII files



When the file dialog comes up, chose the type of files to import using the "Files of type" combo-box at the bottom of the screen. You can select more than one file in the file dialog. The stands will be listed in the table at the bottom of the screen. A check in the first column indicates which stands will be imported. Double-click a row to select an individual stand to import. The top-left corner of the table can be double-clicked to toggle all stands. When you press "OK" the selected stands will be imported.

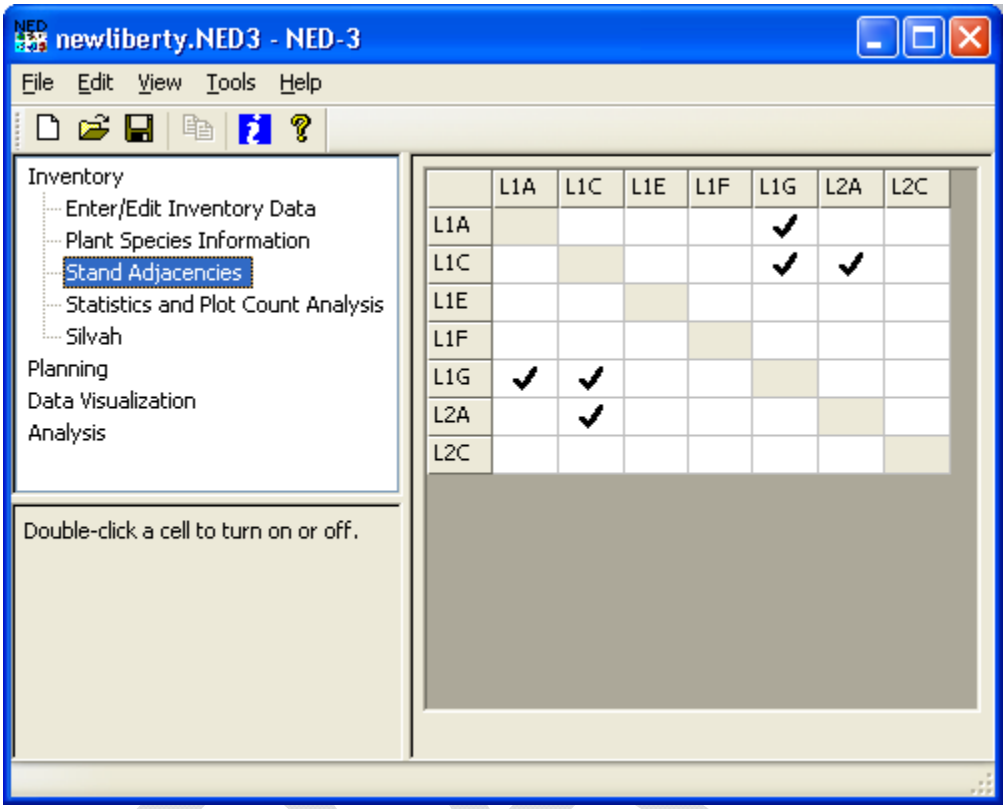
The file list table at the bottom of the screen contains the same variables as those displayed in the main NED-3 C-pane. If you wish to change the displayed data, go back to the C-pane and use the "Configure" button.

If the "Use the existing stand names" check-box is checked, the new stands are given the same name as the old stands. This can (and definitely will if you are coping existing stands) result in duplicate stand names, which is fine in NED, but you might want to give them unique names for your own sake.

DRAFT

Stand Adjacencies

Here is the Stand Adjacencies screen:

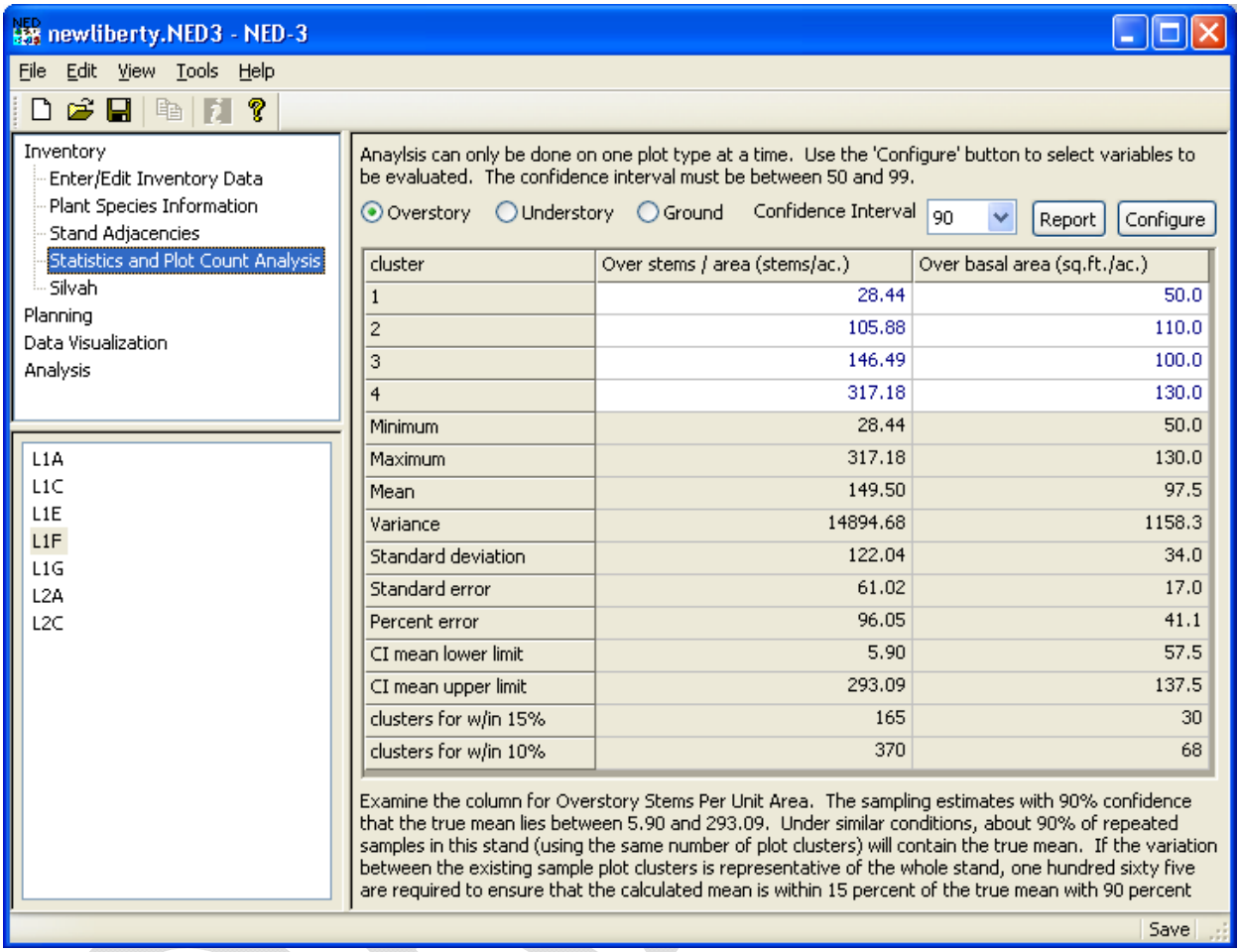


The stands are listed along the top and along the side. The cells with checks indicate that the two stands are adjacent to each other. Double-click a cell to toggle the check on or off.

The stand adjacencies are only necessary if the user is planning on running Patch Analysis reports. Other then those reports, NED does not use stand adjacency information.

Inventory Statistics and Plot Count Analysis

Here is the Inventory Statistics and Plot Count Analysis screen:



cluster	Over stems / area (stems/ac.)	Over basal area (sq.ft./ac.)
1	28.44	50.0
2	105.88	110.0
3	146.49	100.0
4	317.18	130.0
Minimum	28.44	50.0
Maximum	317.18	130.0
Mean	149.50	97.5
Variance	14894.68	1158.3
Standard deviation	122.04	34.0
Standard error	61.02	17.0
Percent error	96.05	41.1
CI mean lower limit	5.90	57.5
CI mean upper limit	293.09	137.5
clusters for w/in 15%	165	30
clusters for w/in 10%	370	68

Choose the stand you wish to analyze in the B-pane (the lower left).
You can choose the Overstory, Understory or Ground plots from the radio-buttons at the top of the screen. The statistical analysis can only be done on one type of plot at a time. The statistics calculations are made between clusters. The analysis is not made on individual plots because the plots within the cluster are not independent samples. It is assumed that the clusters are random, non-bias representation of the stand.
The Confidence Interval can be selected using the combo-box. This can range from 50 to 99. Changing this value will affect the Percent error, the mean limits and the required clusters to be within 10 and 15% of the mean.
The "Report" button can be used to create an HTML report of the screen contents.
The "Configure" button is used to choose which variables will be analyzed. The variables will be displayed in separate columns in the table. You can pick any floating-point variable at the stand level that is calculated by averaging clusters.

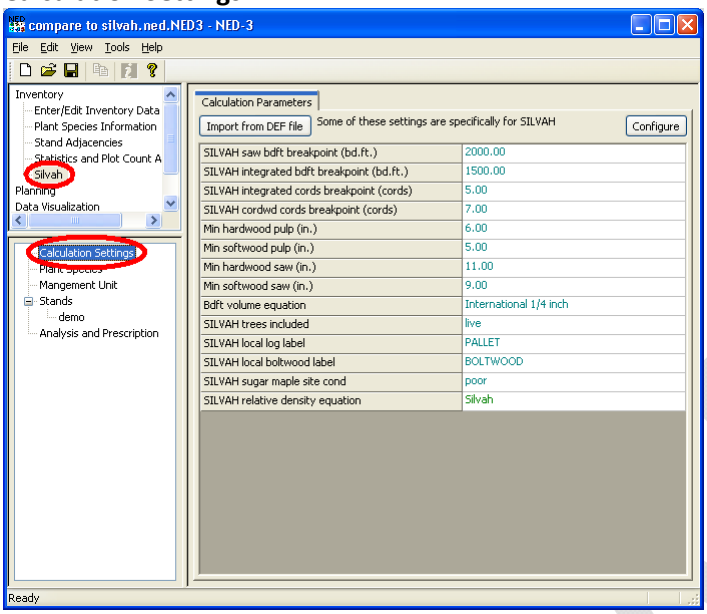
Here are the calculations for selected values in the table:

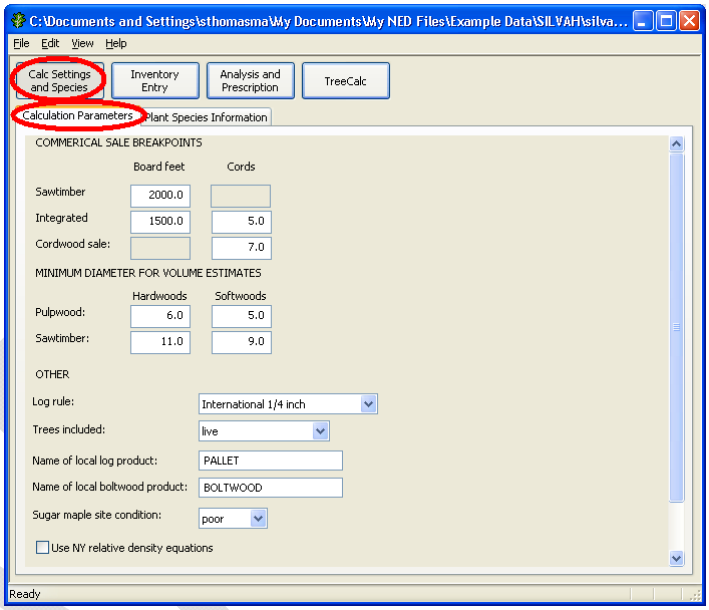
Mean	$\frac{\sum_{\substack{\text{plot}\\\text{clusters}}} \text{value}}{\text{count of plot clusters}}$
Variance	$\frac{\left(\text{cluster count} \times \sum_{\substack{\text{plot}\\\text{clusters}}} (\text{value} \times \text{value})\right) + \left(\sum_{\substack{\text{plot}\\\text{clusters}}} \text{value} \times \sum_{\substack{\text{plot}\\\text{clusters}}} \text{value}\right)}{\text{cluster count x (cluster count - 1)}}$
Standard deviation	$\sqrt{\text{Variance}}$
Standard error	$\sqrt{\frac{\text{Variance}}{\text{number of clusters}}}$
Percent error	$\frac{\text{Standard error} \times \text{t-value}}{\text{Mean}} \times 100$ the t-value is for a given p and degrees of freedom where: $p = \frac{100 - \text{Confidence Interval}}{100} \Big/ 2$ and degrees of freedom = (cluster count -1)
CI mean limits	lower limit = Mean + (Standard error × t-value) upper limit = Mean − (Standard error × t-value) where the t-value is described above
Number of clusters required to be within 15% of the mean	$\left(\frac{\text{Standard error} \times \text{t-value}}{0.15 \times \text{Mean}}\right)^2$ where the t-value is described above
Number of clusters required to be within 10% of the mean	$\left(\frac{\text{Standard error} \times \text{t-value}}{0.10 \times \text{Mean}}\right)^2$ where the t-value is described above

NED-3 and SILVAH

This document explains how to use the SILVAH functions in NED-3. It is primarily intended for users familiar with the SILVAH-6 program who want to learn how to use NED-3. Any instructions refer to steps taken in NED-3 to carry out actions normally done in SILVAH-6. NED-3 has a separate module under 'Inventory' for exchanging data with SILVAH-6. A side-by-side comparison of NED-3 and SILVAH will help illustrate the similarities and differences between the two programs. In all of the following screen dumps NED-3 will be on the left, and SILVAH-6 will be on the right.

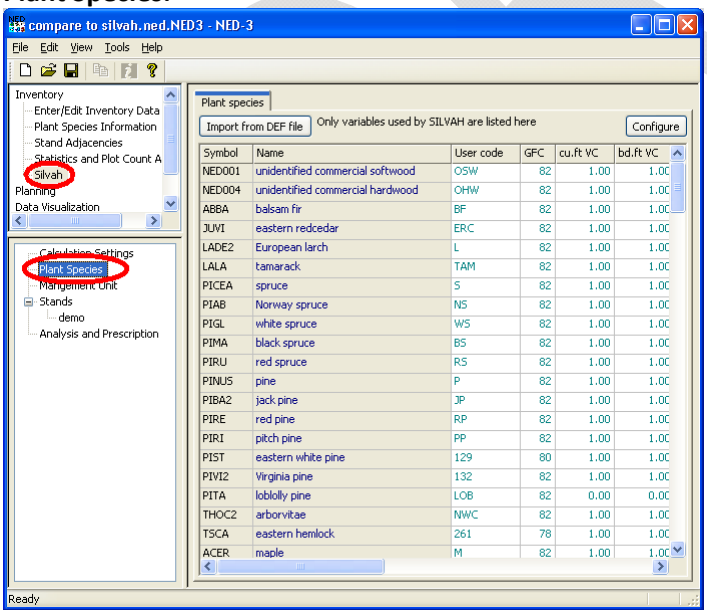
Calculation Settings:

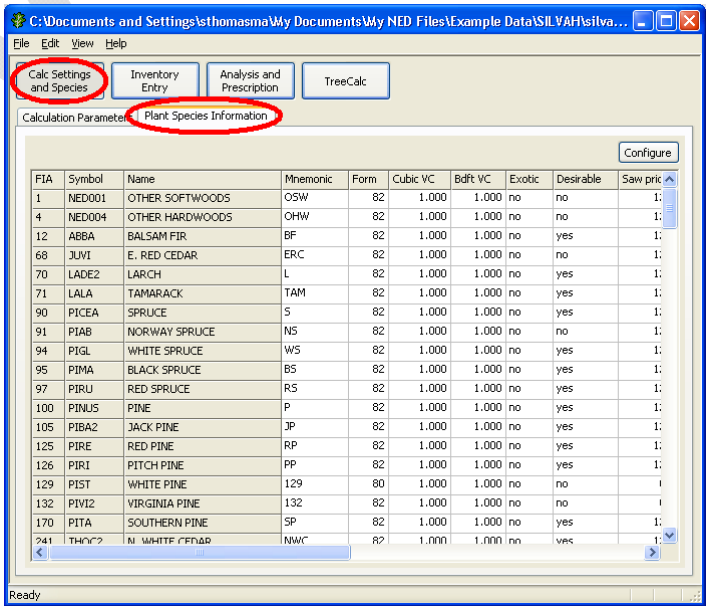




The NED-3 layout lists variables in a single column. The variables displayed can be modified by using the "Configure" button. The NED-3 variables starting with the term "SILVAH" are SILVAH specific variables and are not used by NED. You can import settings from a DEF file in NED-3 using the "Import from DEF file" button. In SILVAH, use the File|Open menu option to read settings from a DEF file.

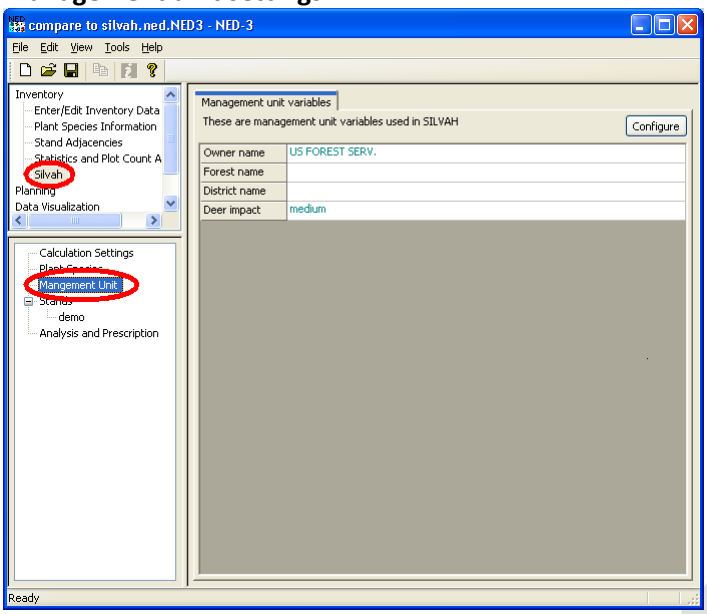
Plant Species:

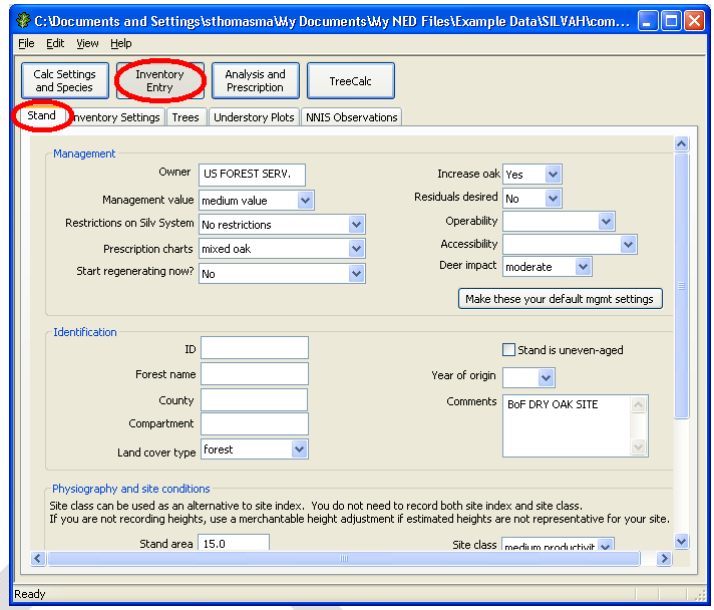




The programs have a very similar layout. The species are listed in rows of the table. Both programs have a "Configure" button which can be used to selected and re-order the display variables along the top, in columns. You can import a species list from a DEF file in NED-3 using the "Import from DEF file" button. In SILVAH, use the File|Open menu option to open a DEF file.

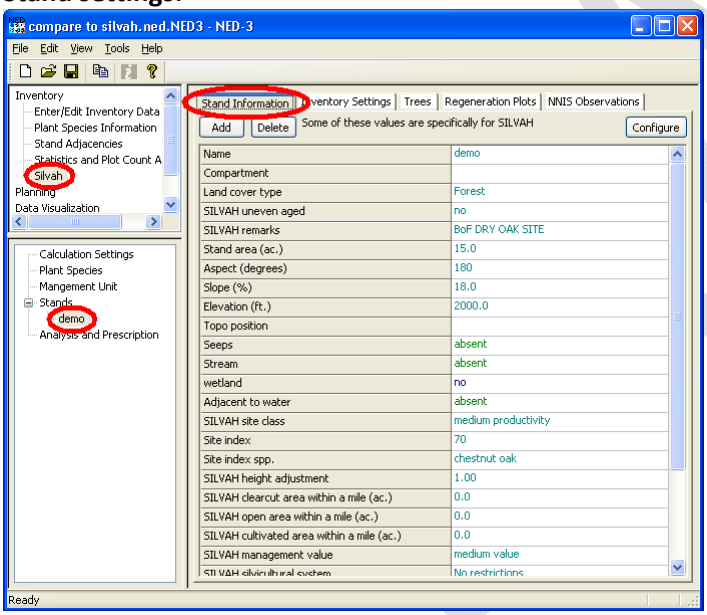
Management unit settings:

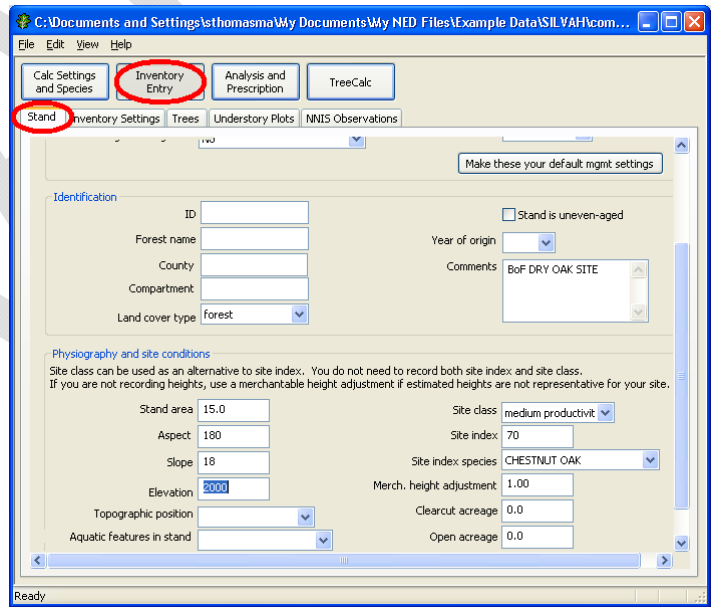




There are only four variables in SILVAH that NED considers to be Management unit level variables; the Owner, the Forest name, the District name and the Deer impact level. The rest of the SILVAH management variables are stand-level variables in NED. They will be covered next.

Stand settings:

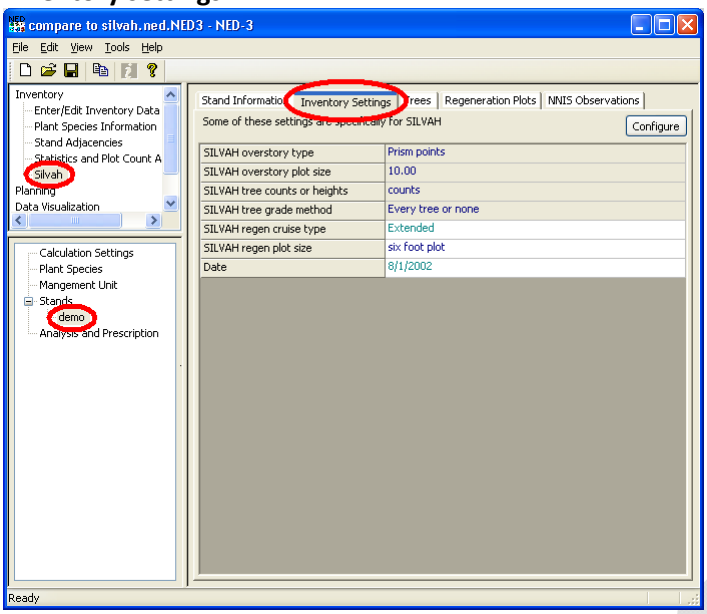


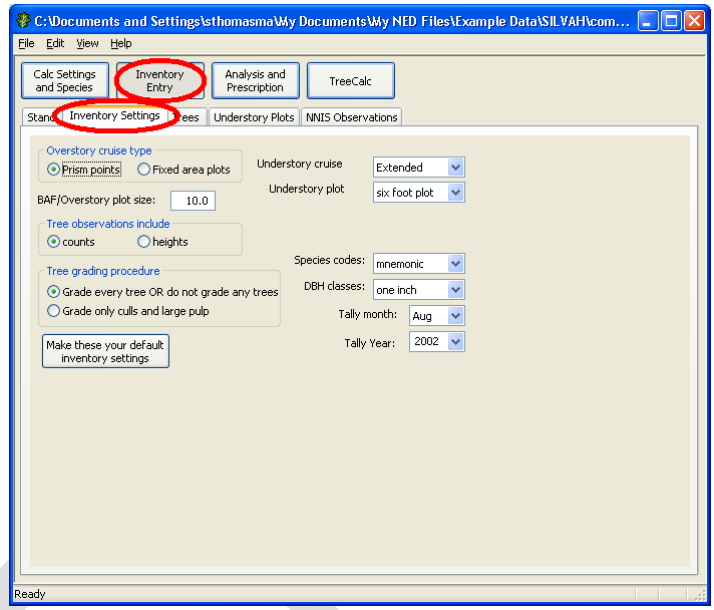


NED-3 is a multiple-stand program and SILVAH-6 handles a single stand at a time. NED-3 has two ways of displaying stand data. In the illustration above a single stand is selected so it can be compared to the SILVAH screen. You can display a table of stands in NED-3 by clicking “Stands” in the B-pane (just below the “Management Unit” selection). There are buttons in NED-3 for adding or deleting stands. When using the “Add” button, there is an option to import data from other sources, including SILVAH files.

The same variables are available in both programs. In NED, those variables starting with “SILVAH” are specific to SILVAH and are not used by NED. You can use the “Configure” button in NED to select which variables to display and in what order they will appear. If the stand ID in SILVAH is blank, the NED stand name will be the name of the file that was imported.

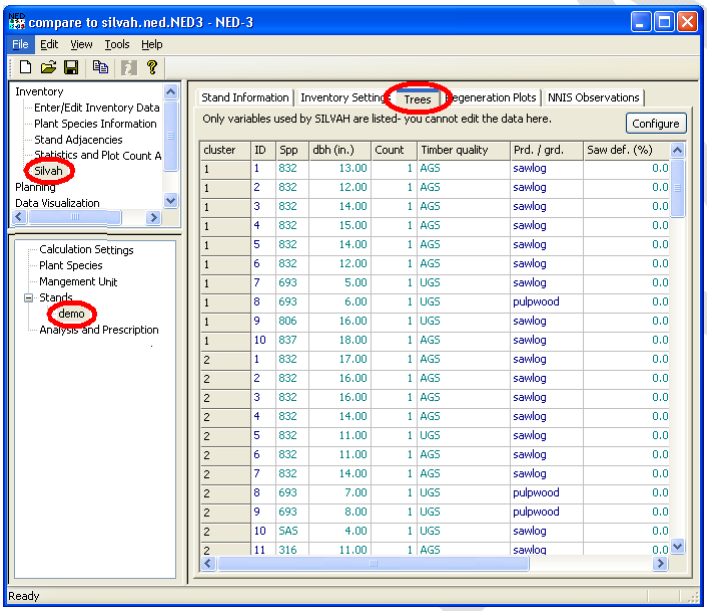
Inventory settings:

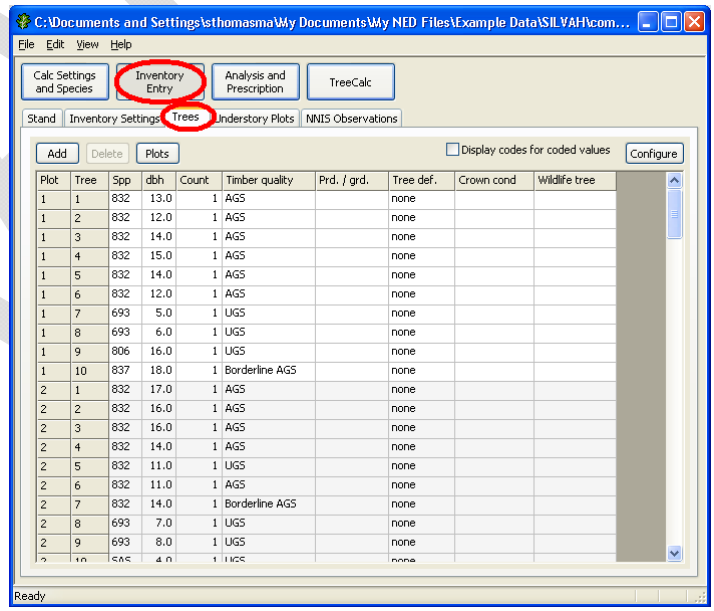




Most of the variables are available in both programs. In NED, those variables starting with "SILVAH" are specific to SILVAH and are not used by NED. You can use the "Configure" button in NED to select which variables to display and in what order they will appear.

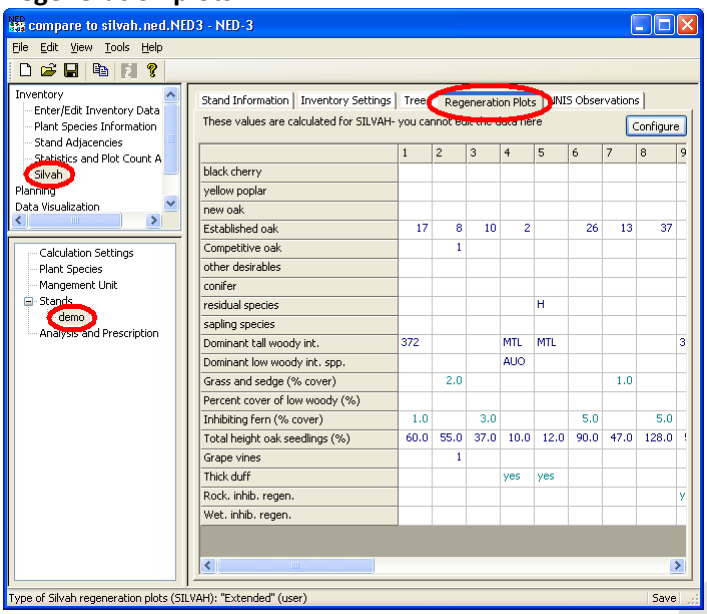
Trees:

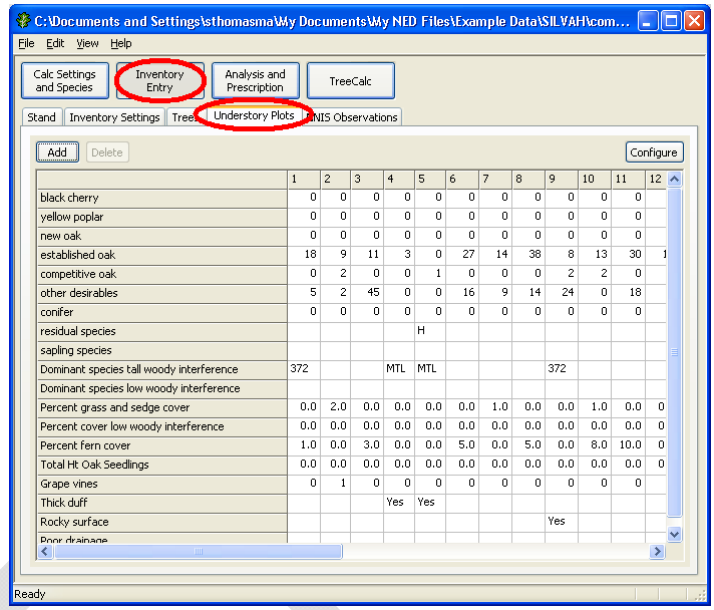




Only the variables used in SILVAH are displayed in the NED-3 screen. You cannot edit the NED data, but you can use the "Configure" button in NED to select which variables to display and in what order they will appear. NED does not have settings for the "Borderline" timber quality, so they are imported into NED as either AGS or UGS. NED calculates a value for the most valuable produce (Prd./grd.), whereas SILVAH leaves these value empty. The only variable in SILVAH that is not in NED is the wildlife tree settings. A specific variable has been added to NED to accommodate this for data imported from SILVAH, but NED does not use the variable for any of its analysis.

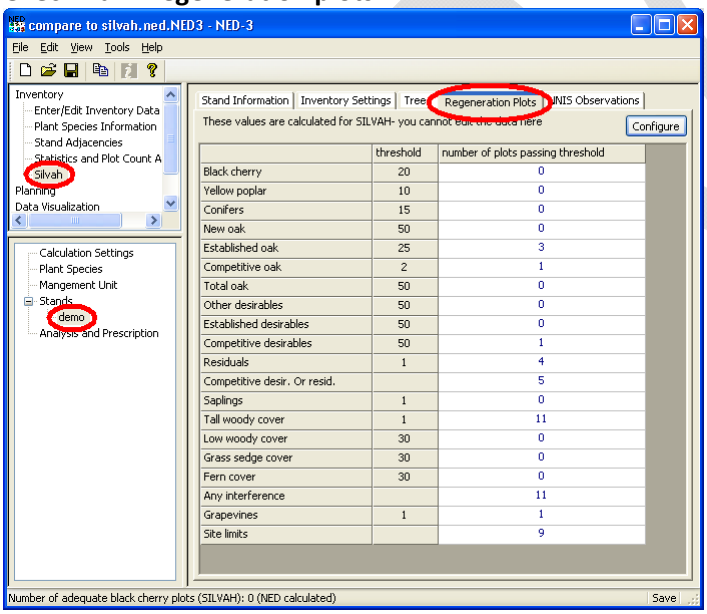
Regeneration plots:

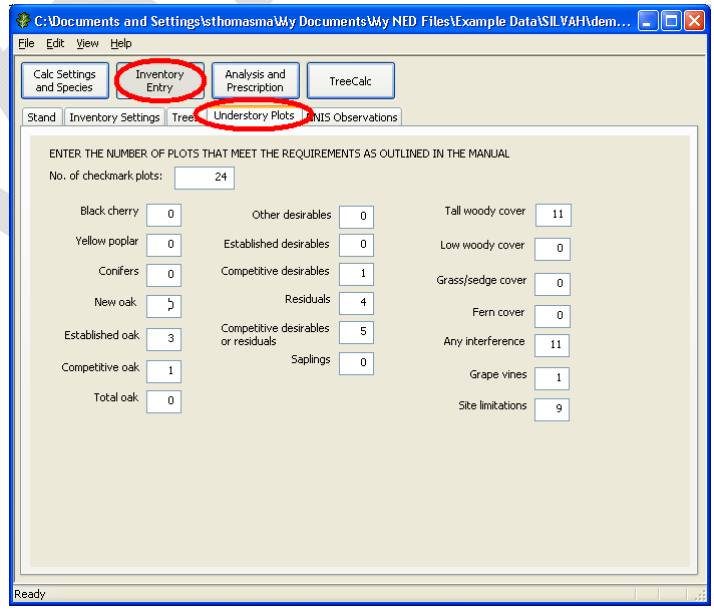




The Regeneration plot values displayed in NED-3 are calculated from the NED understory and/or ground plot data. They are not directly editable. If the data for the stand has been imported from a SILVAH file, the imported values will be stored in the NED file and will not be over-written by the NED calculations. Imported values will have a light blue (cyan) font. Calculated values have blue text. There may be some discrepancies between the two data sets, but the difference shouldn't affect analysis results. For the example above the heights of the oak seedlings are being calculated in NED-3, but not in SILVAH, even though the SILVAH data does show oak counts.

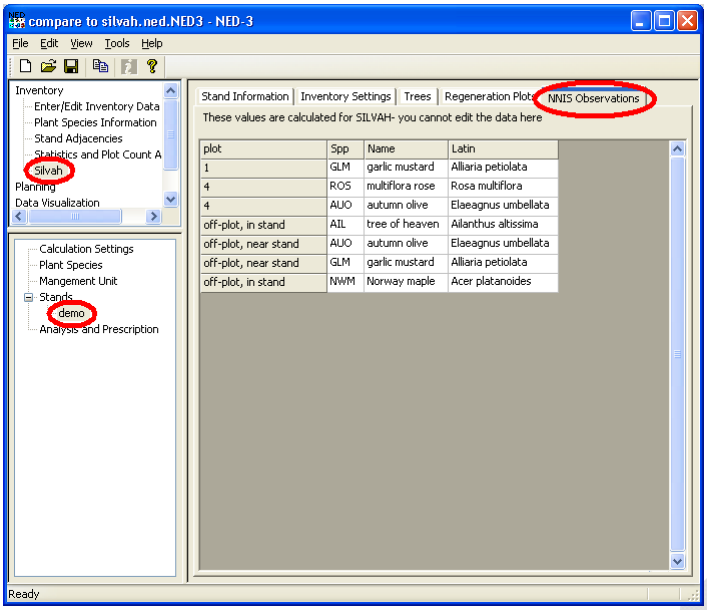
Checkmark Regeneration plots:

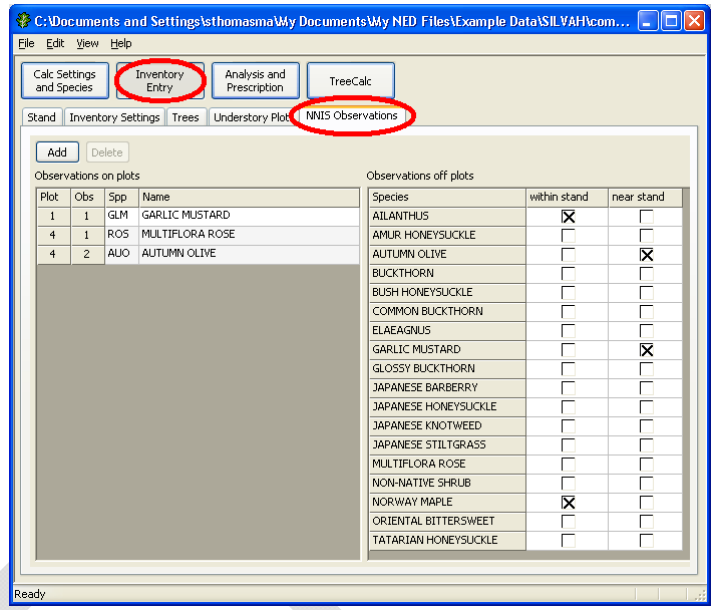




There is an alternative way of collecting regeneration data in SILVAH using a checkmark understory cruise. If you are using checkmark data you'll see these two screens for Regeneration Plots. The NED screen has two columns for each checkmark, one for the threshold value, which is the value that must be reached for a plot to be counted. The threshold values change depending on the level of deer impact selected for the management unit. The last column is the number of plots that had reached the threshold. The plot counts in NED are calculated from the understory and/or ground plot data. They are not directly editable.

NNIS observations:

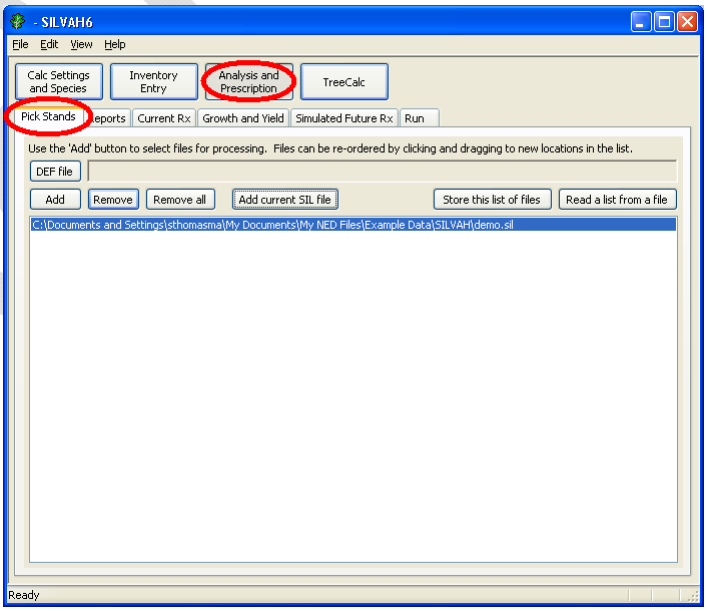




The NED-3 screen lists the observations it finds on the plots that are exotic species. There is nothing to edit on this screen in NED. The normal NED inventory does not accommodate observations made off plot. If the stand data has been imported from SILVAH there are special flags to indicate if the observation is off plot, and either in the stand, or near the stand.

Analysis and Prescription: Pick Stands

SILVAH-6 has an extra screen under Analysis and Prescription to select SIL files for analysis. This screen isn't needed in NED-3 because there can be several stands loaded into NED at a time. So in NED-3 the analysis will be done on all stands in the management unit. There is also no need to load a separate DEF file because all the DEF file settings reside in NED and can be set using the screens displayed above.



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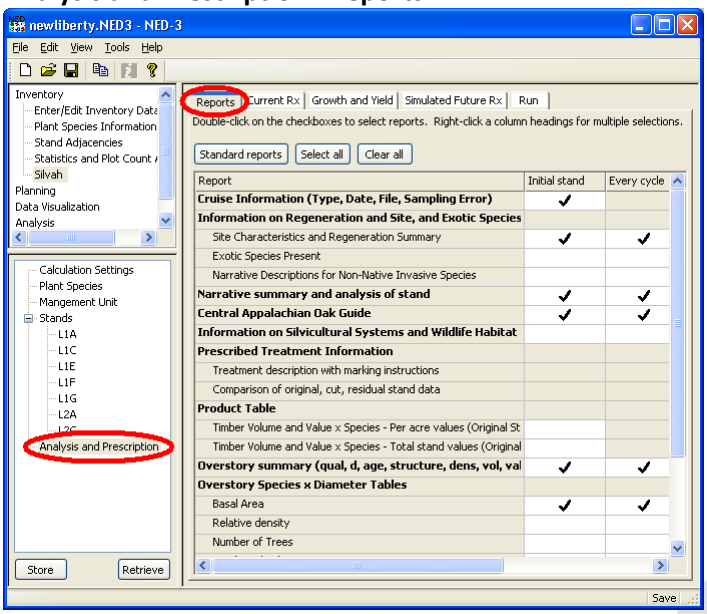
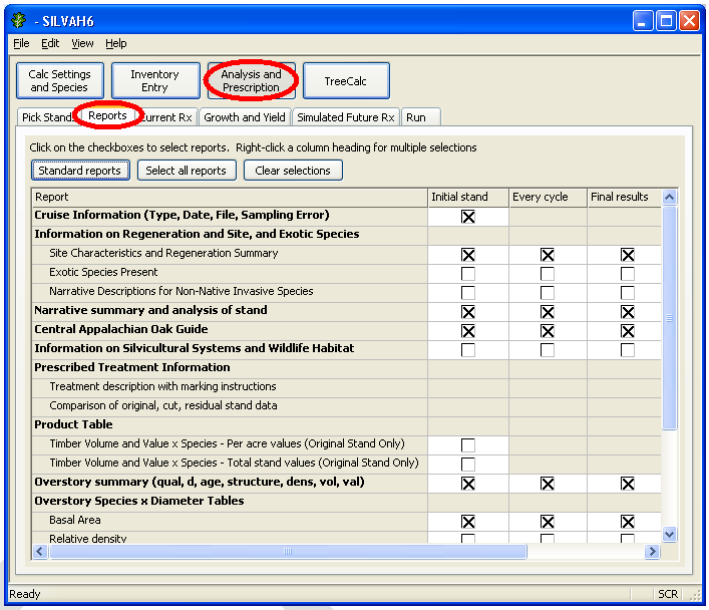
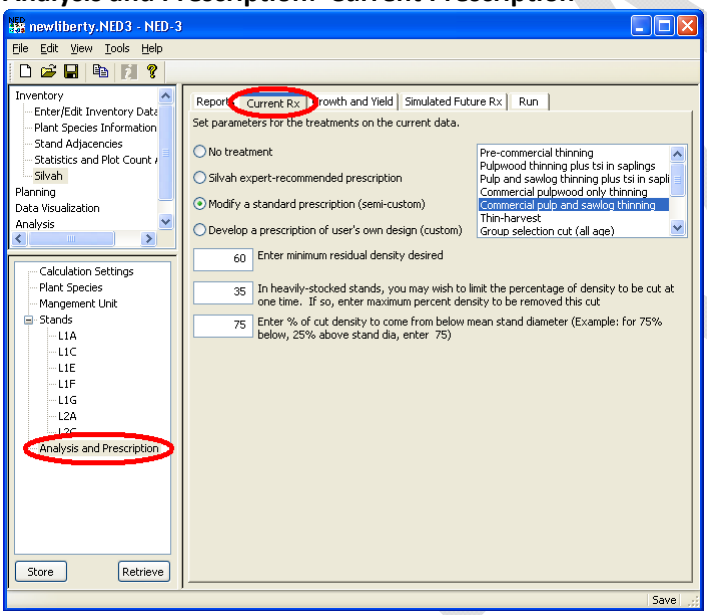
Analysis and Prescription: Reports

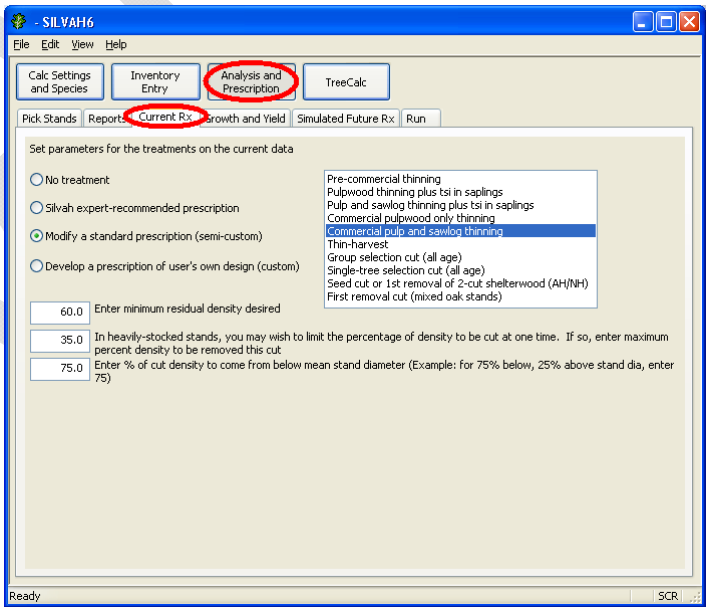




The screens for selecting SILVAH reports in NED-3 and SILVAH-6 are similar. Selections are made by double-clicking cells in the table. If you right-click a column heading (along the top) there is a menu to make selections for that column only. The buttons at the top of the grid affect the entire grid.

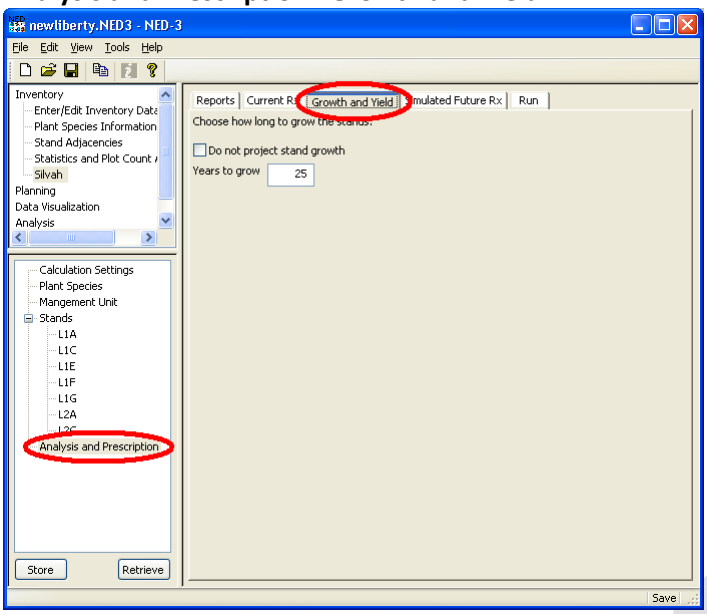
Analysis and Prescription: Current Prescription

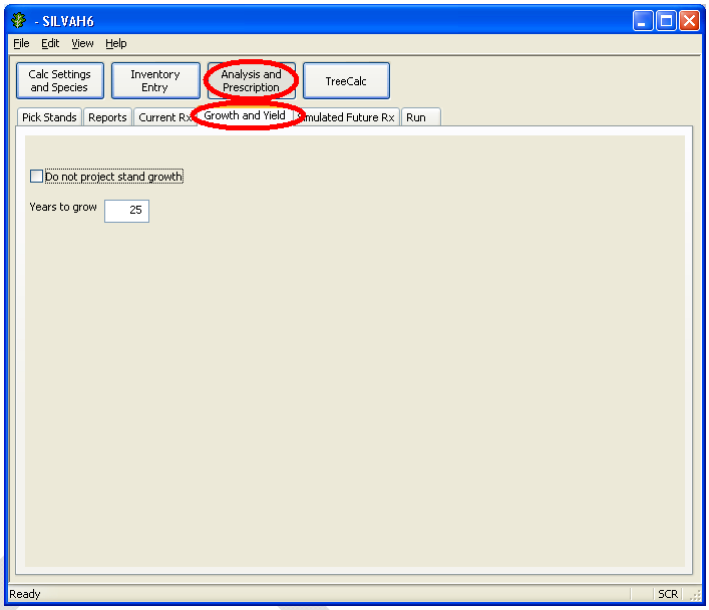




This screen is used to select the parameters for the treatments on the current data. It is not the intent of this document to review all the possible options. For a deeper explanation of the options here see the SILVAH manual.

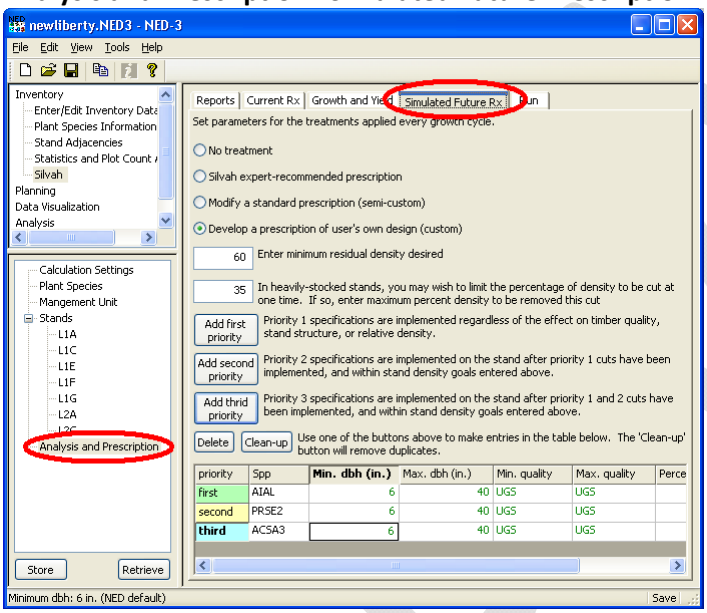
Analysis and Prescription: Growth and Yield

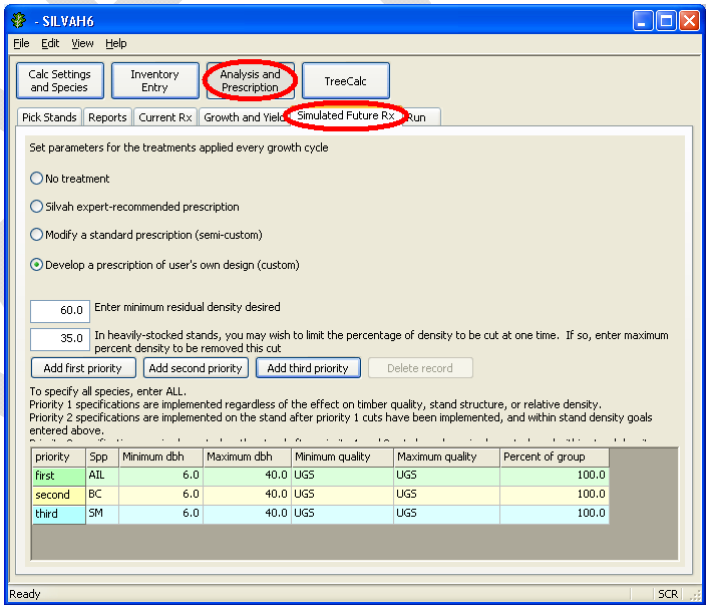




This screen is used to select how many years of growth you wish to simulate.

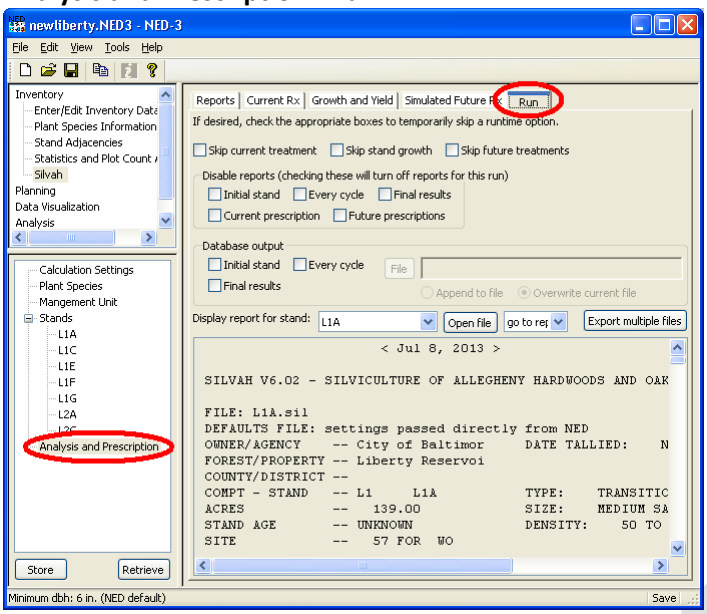
Analysis and Prescription: Simulated Future Prescription

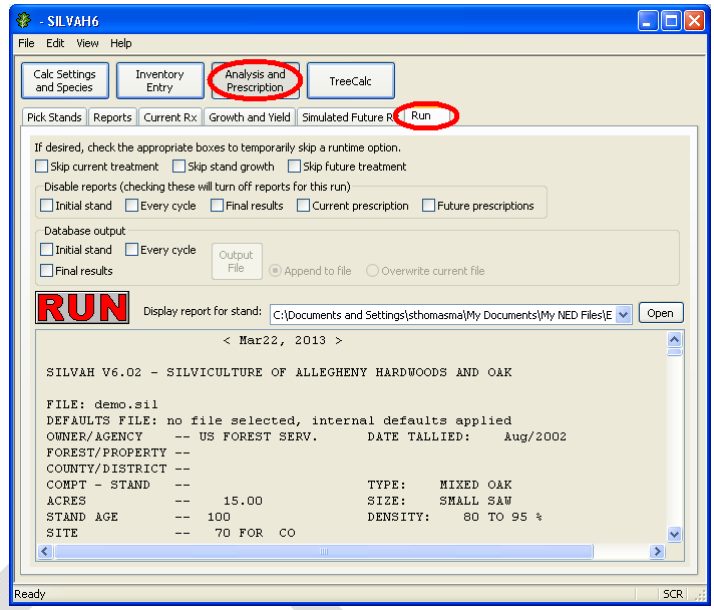




This screen is used to select the parameters for the treatments applied every growth cycle. It is not the intent of this document to review all the possible options. For a deeper explanation of the options here see the SILVAH manual.

Analysis and Prescription: Run



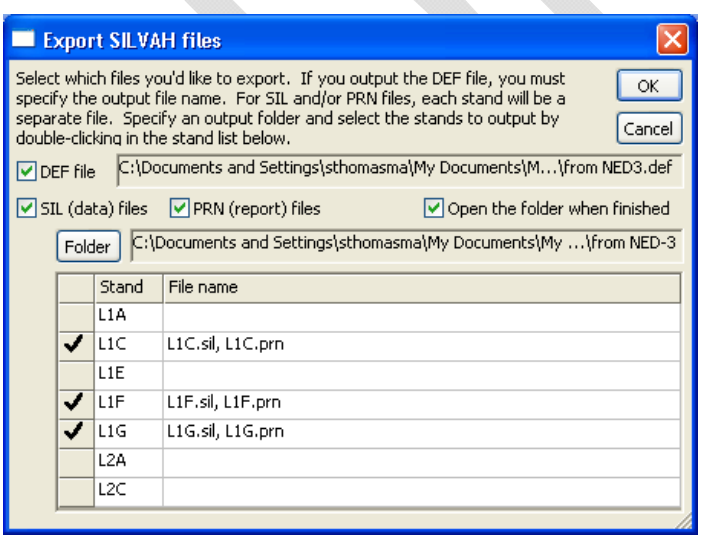


There are some differences between NED-3 and SILVAH-6. The checkboxes at the top of the screen are the same and have the same function, but after that, things are different.

SILVAH-6 has a single "RUN" button that, when pressed, does the SILVAH analysis for each stand listed in the "Pick Stands" list. It creates the PRN files in the same directory as the SIL file. You then select which PRN file to display by choosing a stand in the "Display report for stand" combo-box. You can open that file in a separate window using the "Open" button.

In NED-3 the analysis is not run until you select a stand in the "Display report for stand" combo-box. When you select a stand, analysis is run for that stand only, and the results are displayed. The actual PRN file is written to the user's Windows temporary folder. As in SILVAH-6, you can open that file in a separate window using the "Open" button. There is a combo-box just to the right of the "Open" button that allows you to jump to a specific report within the results.

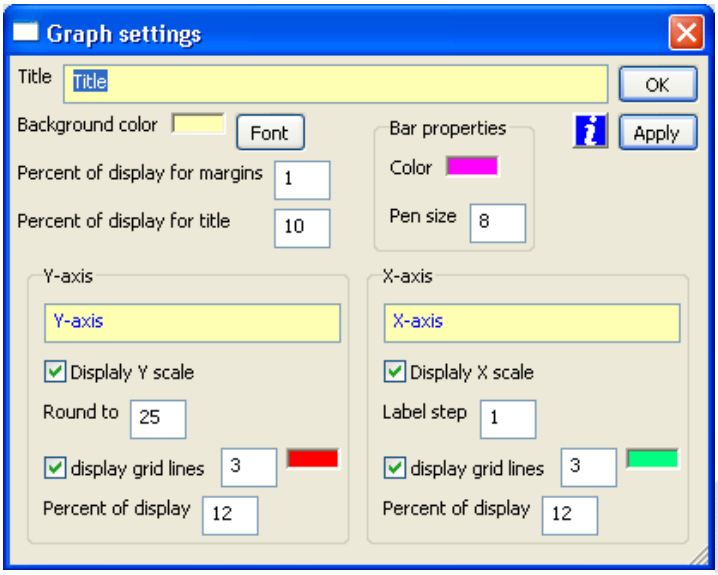
The button "Export multiple files" will display the following dialog:

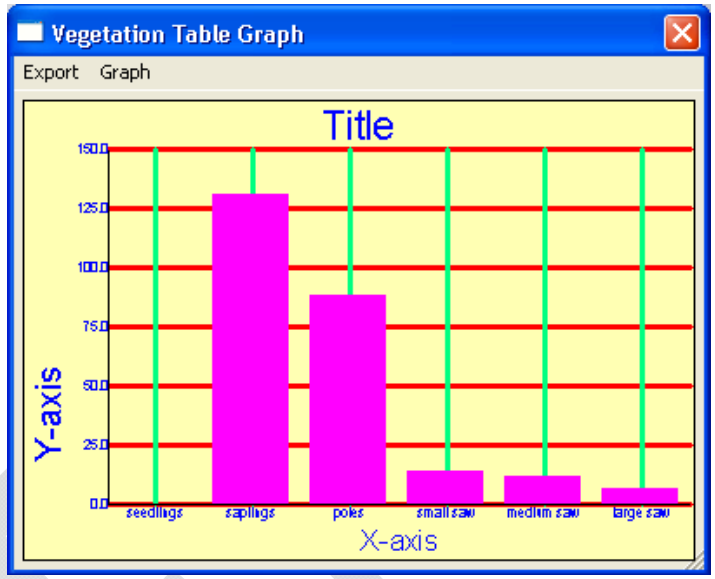


If you wish to export the DEF settings to a SILVAH DEF file, check the box and select an output file name. There are checkboxes for choices of exporting SIL (data) files and/or PRN (report) files. If either of those checkboxes are checked, the stand list at the bottom of the screen becomes enabled. Use the "Folder" button to select the output directory where the file should be written. Select the stands to export by double-clicking a row in the table. You can double-click the upper-left corner of the grid to turn on/off all the stands. The file names for the exported files will be listed in the third column of the table. When you press "OK" the file will be written to the desired folder. If you have the "Open the folder when finished" checkbox, the output directory will be opened.

How to use the Graph Settings dialog

Here is the dialog alongside the resulting graph:





General settings:

The "Title" edit-box is where you can edit the title at the top of the graph.

The background color is set by clicking the color-box. The background of the text edit-boxes will change so you can see how various text shows up against the background color.

The "Font" button allows you to select a font to use for all text on the graph. You can select the font, font style, font size and text color on the font dialog.

The "Percent of display for margins" is the buffer around the items in the graph and the edge. This is entered as a percent of the total graph size.

The "Percent of display for title" controls how large the title will be.

Bar properties:

Click on the color box to change the color of the bars.

The "Pen size" controls the width of the bars.

Y-axis:

The edit box is the text used to label the Y-axis.

The "Display Y scale" check-box controls whether or not the Y-axis will have labels along the scale

The "Round to" edit-box controls how many ticks on the Y-axis.

The "display grid lines" check-box will draw horizontal lines at each

The "display grid lines" edit-box controls the size of the horizontal lines.

The "display grid lines" color-box controls the color of the lines

The "Percent of display" controls how large the text is along the Y-axis.

X-axis:

The edit box is the text used to label the X-axis.

The "Display X scale" check-box controls whether or not the X-axis will have labels along the scale

The "Round to" edit-box controls how many ticks on the X-axis.

The "display grid lines" check-box will draw vertical lines at each

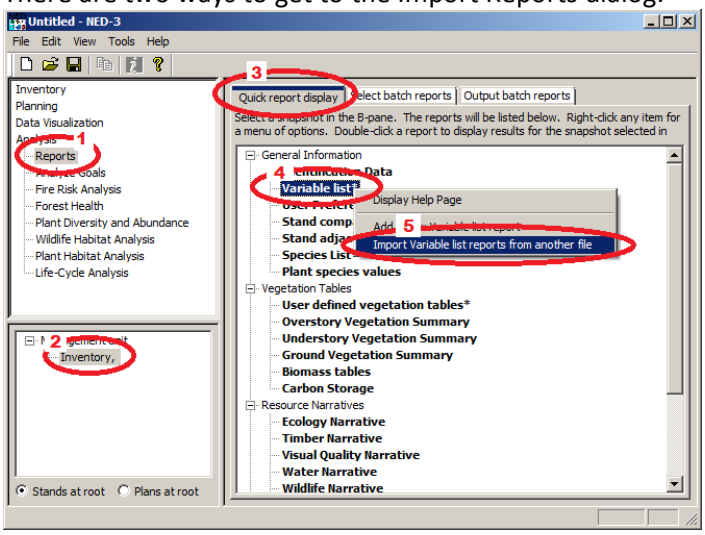
The "display grid lines" edit-box controls the size of the vertical lines.

The "display grid lines" color-box controls the color of the lines

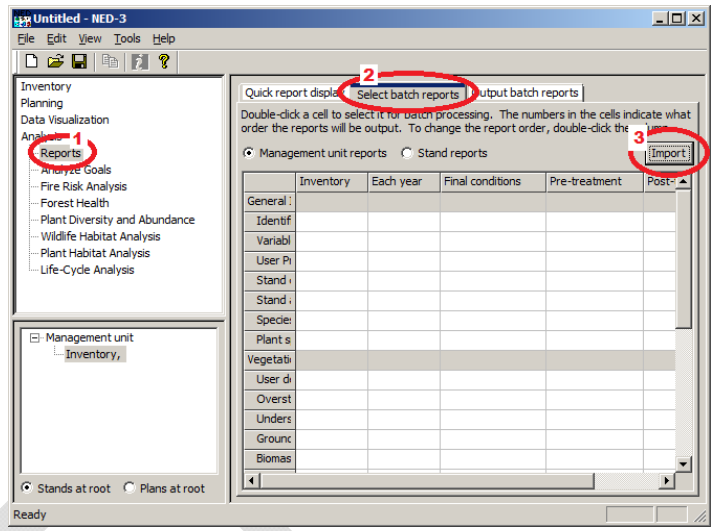
The "Percent of display" controls how large the text is along the X-axis.

Importing NED-3 reports

There are two ways to get to the Import Reports dialog:

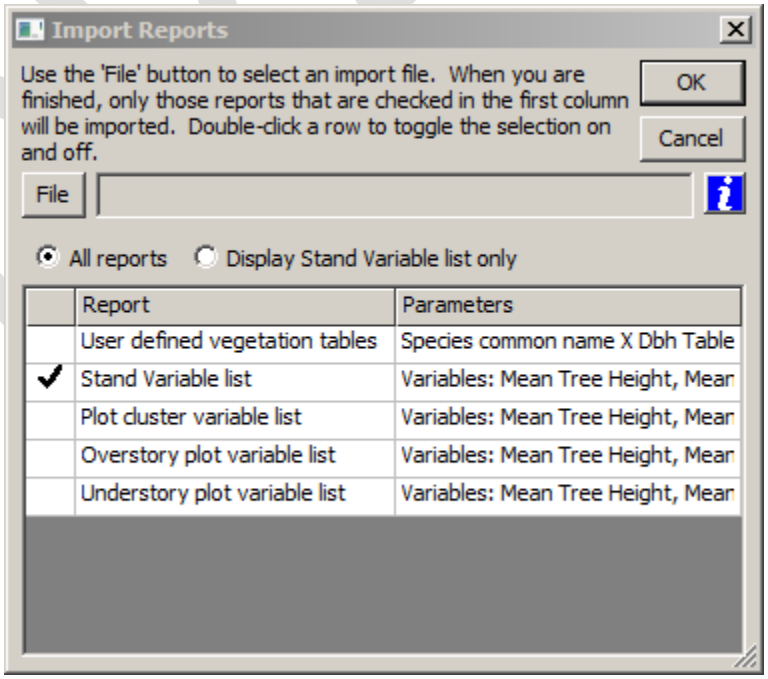


1. Select the Reports module in the A-pane
2. Select a snapshot in the B-pane to fill the C-pane with a report list
3. Use the Quick report display tab in the C-pane
4. Find a report that requires parameters (look for report names with an asterisks at the end)
5. Right-click the report and select the "Import" selection on the pop-up menu.



1. Select the Reports module in the A-pane
2. Use the Select batch reports in the C-pane
3. Click the Import button.

The dialog will look slightly different depending on the method above you use, but the dialog should look similar to this:

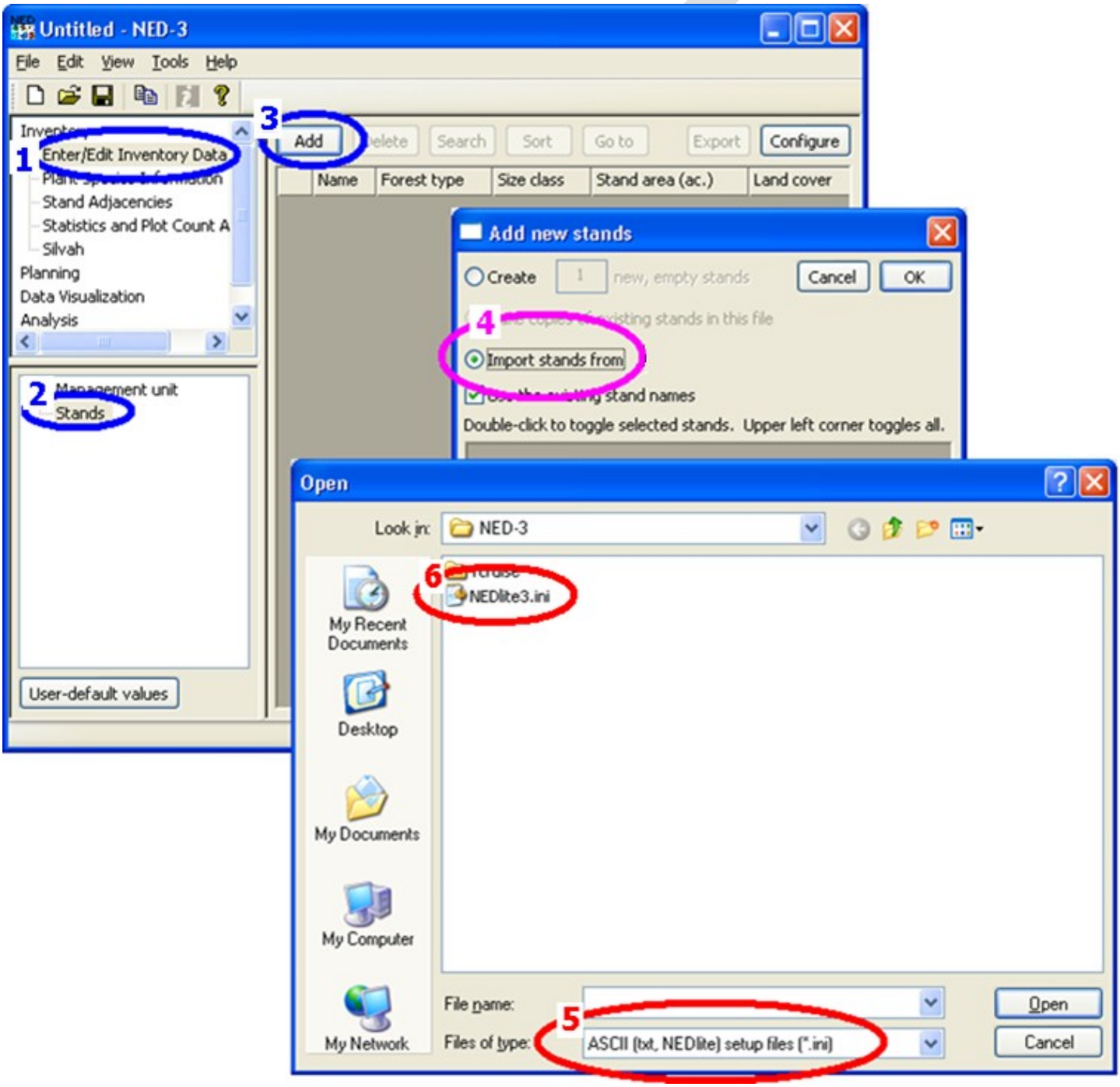


Use the 'File' button to select a NED-3 file to import from. If you right-clicked a report in the Quick report display tab in the C-pane, you have a choice whether to list all reports, or only those of the type you right-clicked. If you used the 'Import' button from the Select batch reports tab in the C-pane, all reports in the file will be listed. Double-click a report to check or uncheck which reports to import. Use the OK button when you've made your selections.

Importing NEDlite data into NED-3

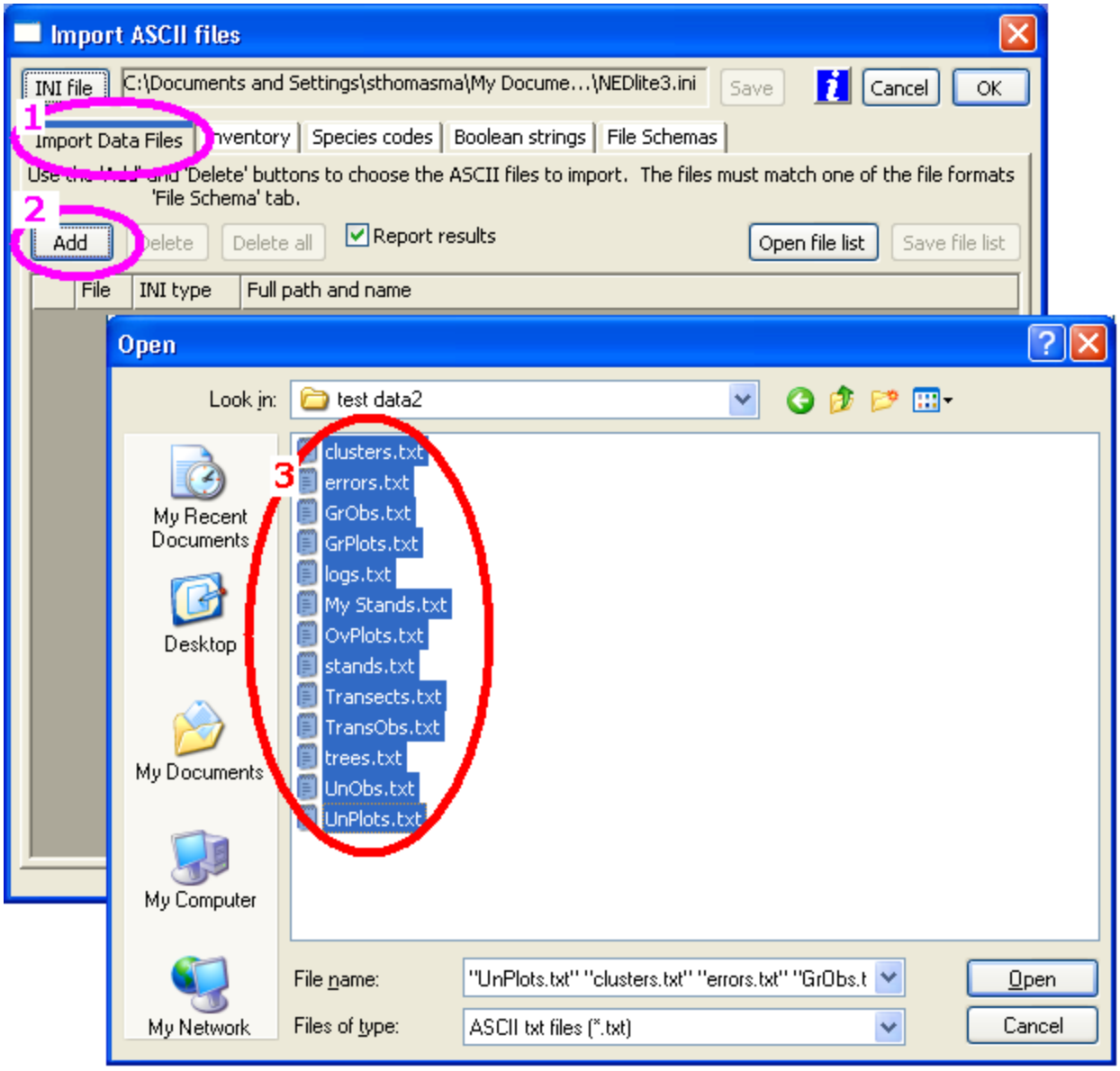
The "txt2mdb.exe" and "txt2mdbSetup.exe" programs are being phased out and can't be used by NED-3. One clue is the name of the program, since NED-3 files are not *.mdb files, they are *.ned3 files. The import of NED-3 files is built into NED-3 and doesn't exist as stand-alone separate programs. So, startup NED-3 and follow these instructions:

1. In the A-pane, under "Inventory" pick "Enter/Edit Inventory Data".
2. In the B-pane, select "Stands"
3. In the C-pane, use the "Add" button
4. In the "Add new stands" select the radio-button "Import Stands from…"
5. In the file dialog, select "ASCII (txt, NEDlite) setup files (*.ini)"
6. Select the NEDlite3.ini file.

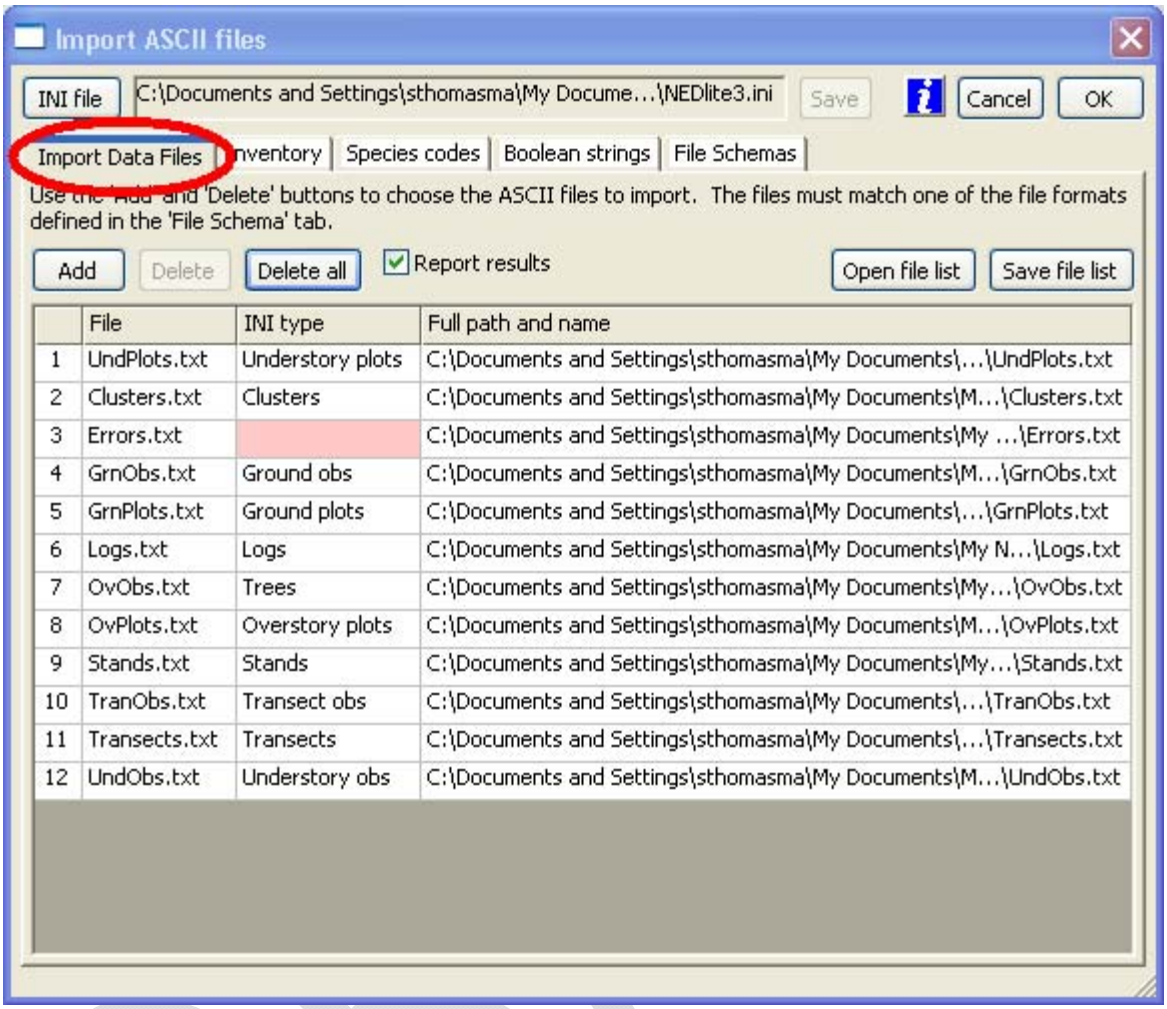


The first tab, “Import Data Files” is where you load the *.txt file that come from NEDlite. Here’s how to load them:

1. Make sure the “Import Data Files” tab is selected
2. Use the “Add” button.
3. Find and select all of your NEDlite *.txt data files. You can do this all at once if you use the shift key or the Ctrl key while you click on file names.



The files will now be in the “Import ASCII files” dialog.



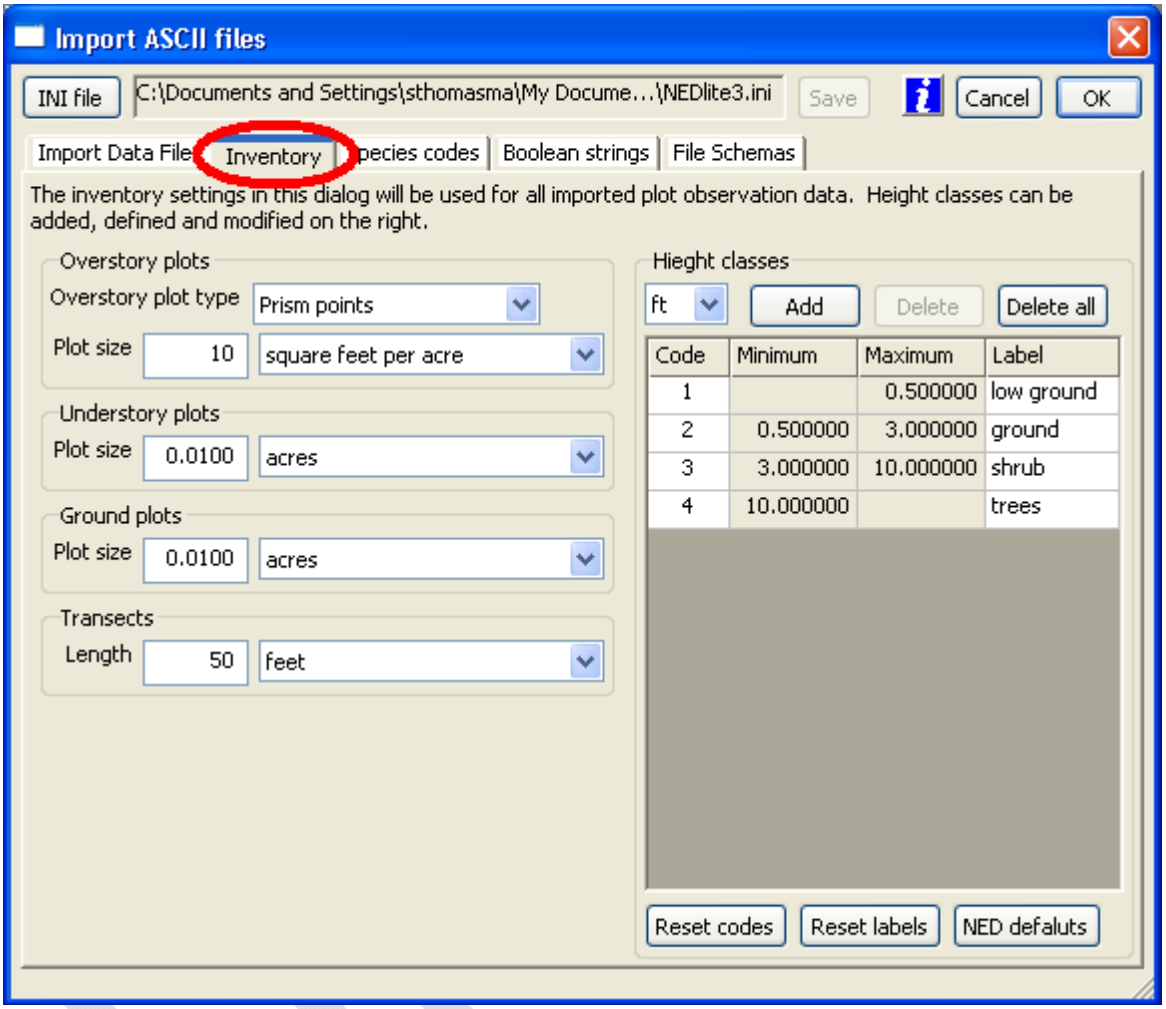
	File	INI type	Full path and name
1	UndPlots.txt	Understory plots	C:\Documents and Settings\sthomasma\My Documents\...\UndPlots.txt
2	Clusters.txt	Clusters	C:\Documents and Settings\sthomasma\My Documents\M...\Clusters.txt
3	Errors.txt		C:\Documents and Settings\sthomasma\My Documents\My ...\Errors.txt
4	GrnObs.txt	Ground obs	C:\Documents and Settings\sthomasma\My Documents\M...\GrnObs.txt
5	GrnPlots.txt	Ground plots	C:\Documents and Settings\sthomasma\My Documents\...\GrnPlots.txt
6	Logs.txt	Logs	C:\Documents and Settings\sthomasma\My Documents\My N...\Logs.txt
7	OvObs.txt	Trees	C:\Documents and Settings\sthomasma\My Documents\My...\OvObs.txt
8	OvPlots.txt	Overstory plots	C:\Documents and Settings\sthomasma\My Documents\M...\OvPlots.txt
9	Stands.txt	Stands	C:\Documents and Settings\sthomasma\My Documents\My...\Stands.txt
10	TranObs.txt	Transect obs	C:\Documents and Settings\sthomasma\My Documents\...\TranObs.txt
11	Transects.txt	Transects	C:\Documents and Settings\sthomasma\My Documents\...\Transects.txt
12	UndObs.txt	Understory obs	C:\Documents and Settings\sthomasma\My Documents\M...\UndObs.txt

A line with a blank cell under the “INI type” column with a red background (like the file “Errors.txt” in this example), indicates that the program cannot find a matching file schema and the file cannot be imported. If you have used the “NEDlite3.ini” file, and the *.TXT files that come from NEDlite, there shouldn’t be a problem. The “Delete” button can be used to remove an individual file from the list. The “Delete all” button can be used to remove all files from the list. You can use the checkbox “Report results” to produce a report on any warnings or errors that occur during the import process. The “Open file list” and “Save file list” buttons can be used to store the list of files currently displayed. These can be handy especially for NEDlite users since NEDlite writes its files to the same directory during the synchronization process. At this point when you press “OK” the data in the files will be imported.

If you are using the file “NEDlite3.ini” and are importing ASCII files (*.txt), you must also visit the “Inventory” and “Species codes” tabs described in the next two pages.

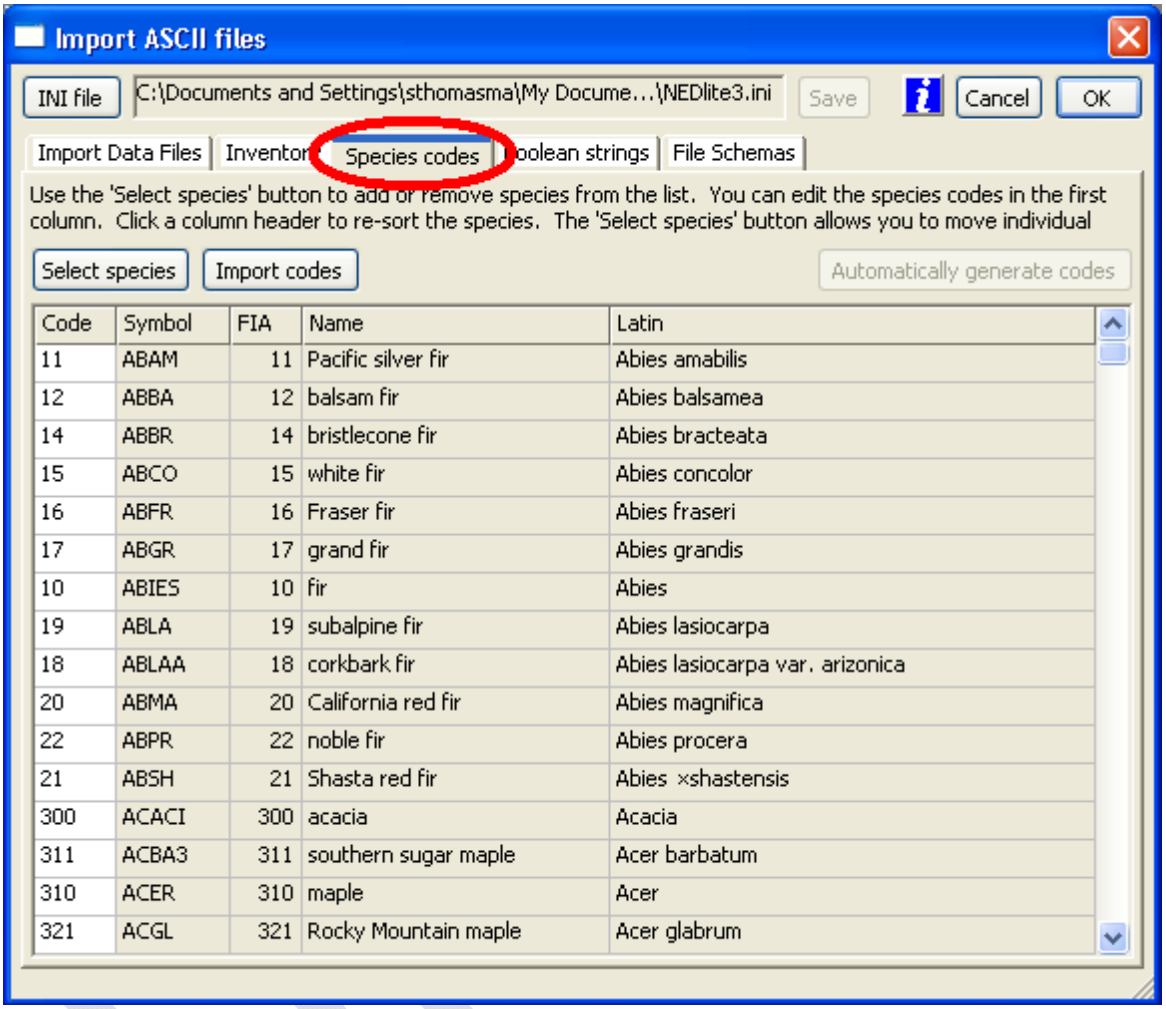
Inventory settings

One important step is to define the inventory settings for importing your data. Use the second tab "Inventory" for these settings.



Species codes

The import process will already recognize species FIA codes, PLANTS symbols, common names and Latin names for any species fields. But many users have their own codes for species. If this is the case a translation table must be setup so species can be imported correctly. This is done using the "Species codes" tab, which looks like this:



Code	Symbol	FIA	Name	Latin
11	ABAM	11	Pacific silver fir	Abies amabilis
12	ABBA	12	balsam fir	Abies balsamea
14	ABBR	14	bristlecone fir	Abies bracteata
15	ABCO	15	white fir	Abies concolor
16	ABFR	16	Fraser fir	Abies fraseri
17	ABGR	17	grand fir	Abies grandis
10	ABIES	10	fir	Abies
19	ABLA	19	subalpine fir	Abies lasiocarpa
18	ABLAA	18	corkbark fir	Abies lasiocarpa var. arizonica
20	ABMA	20	California red fir	Abies magnifica
22	ABPR	22	noble fir	Abies procera
21	ABSH	21	Shasta red fir	Abies ×shastensis
300	ACACI	300	acacia	Acacia
311	ACBA3	311	southern sugar maple	Acer barbatum
310	ACER	310	maple	Acer
321	ACGL	321	Rocky Mountain maple	Acer glabrum

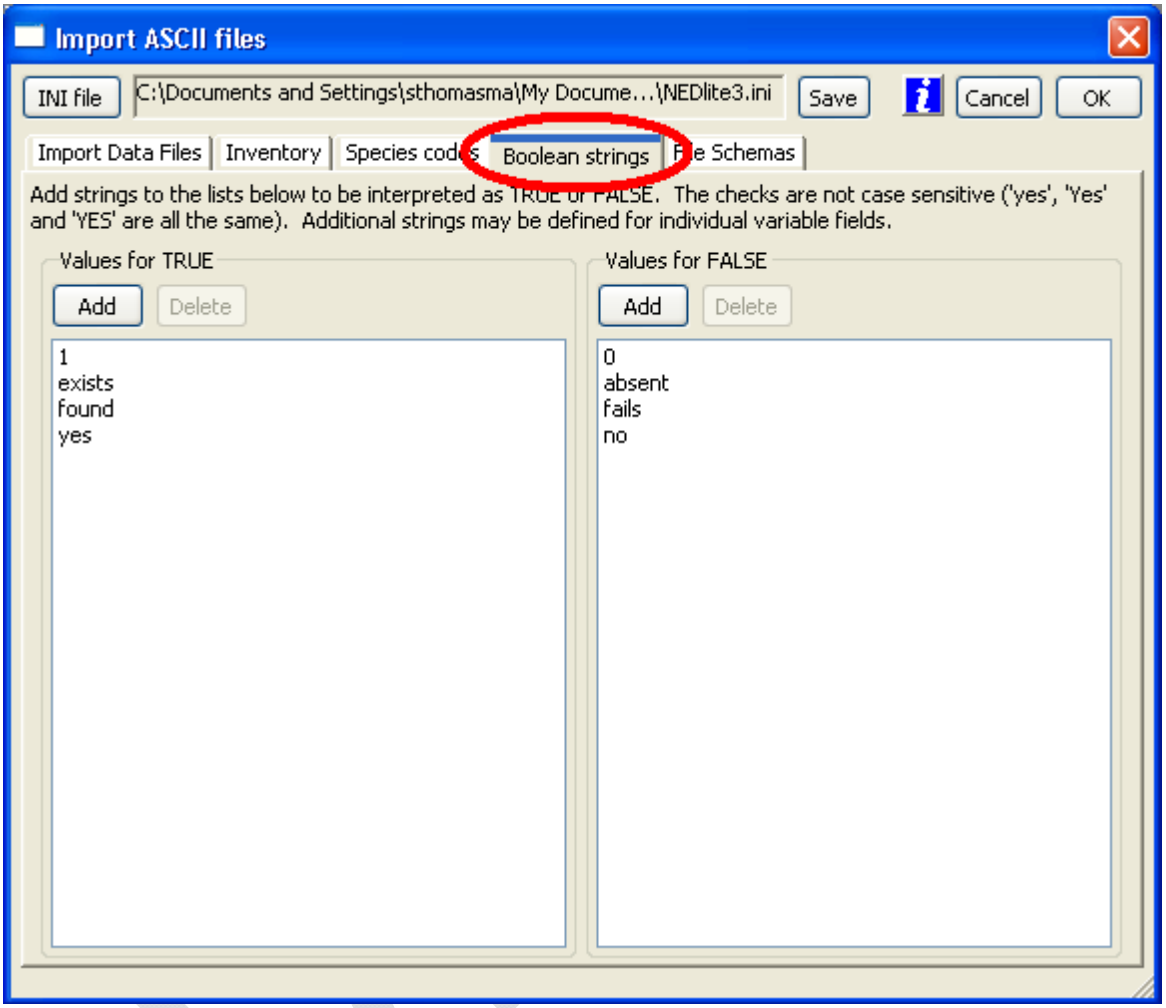
This list should contain any species your file is likely to contain. To add new species, use the "Select species" button. The species list can be sorted by clicking on a column heading at the top of the table. You may also manipulate the position of individual species using the "Select species" dialog.

Codes for the species can be entered in the first column of the table. The codes are case-insensitive, that is a code "WP" is the same as "Wp" or "wP" or "wp". Duplicate codes are not allowed. There must be a code for each species. If you add new species you can fill in the code column using the "Automatically generate codes" button. The button "Import codes" allow you to retrieve species codes from other files. There are a variety of import file types including NED files, Silvah files and ASCII (*.txt) files.[1]

[1] **NOTE FOR NED-LITE USERS: IF YOU ARE USING THE FILE "NEDLITE3.INI" AND ARE IMPORTING ASCII FILES (*.TXT), YOU DO NOT HAVE TO MAKE ANY OTHER CHANGES. WHEN YOU PRESS "OK" THE FILES WILL BE PROPERLY IMPORTED. MAKE SURE YOU SAVE THE INI FILE SO YOU DON'T HAVE TO REPEAT THE STEPS ON THE PRECEDING TWO PAGES AGAIN. IF YOU ARE BUILDING AN INI FILE FOR YOUR OWN ASCII FILE FORMATS YOU WILL NEED TO BE FAMILIAR WITH THE FOLLOWING STEPS.**

Boolean strings

Boolean variables can take a value of either TRUE or FALSE. By default the import program recognizes any string starting with ‘t’, ‘y’ or ‘p’ are interpreted as TRUE. Any string starting with ‘f’, ‘n’, ‘a’ or ‘0’ will be interpreted as FALSE. Your data files may use a variety of strings to represent either TRUE or FALSE. The “Boolean strings” tab is used to translate possible strings into Boolean values.

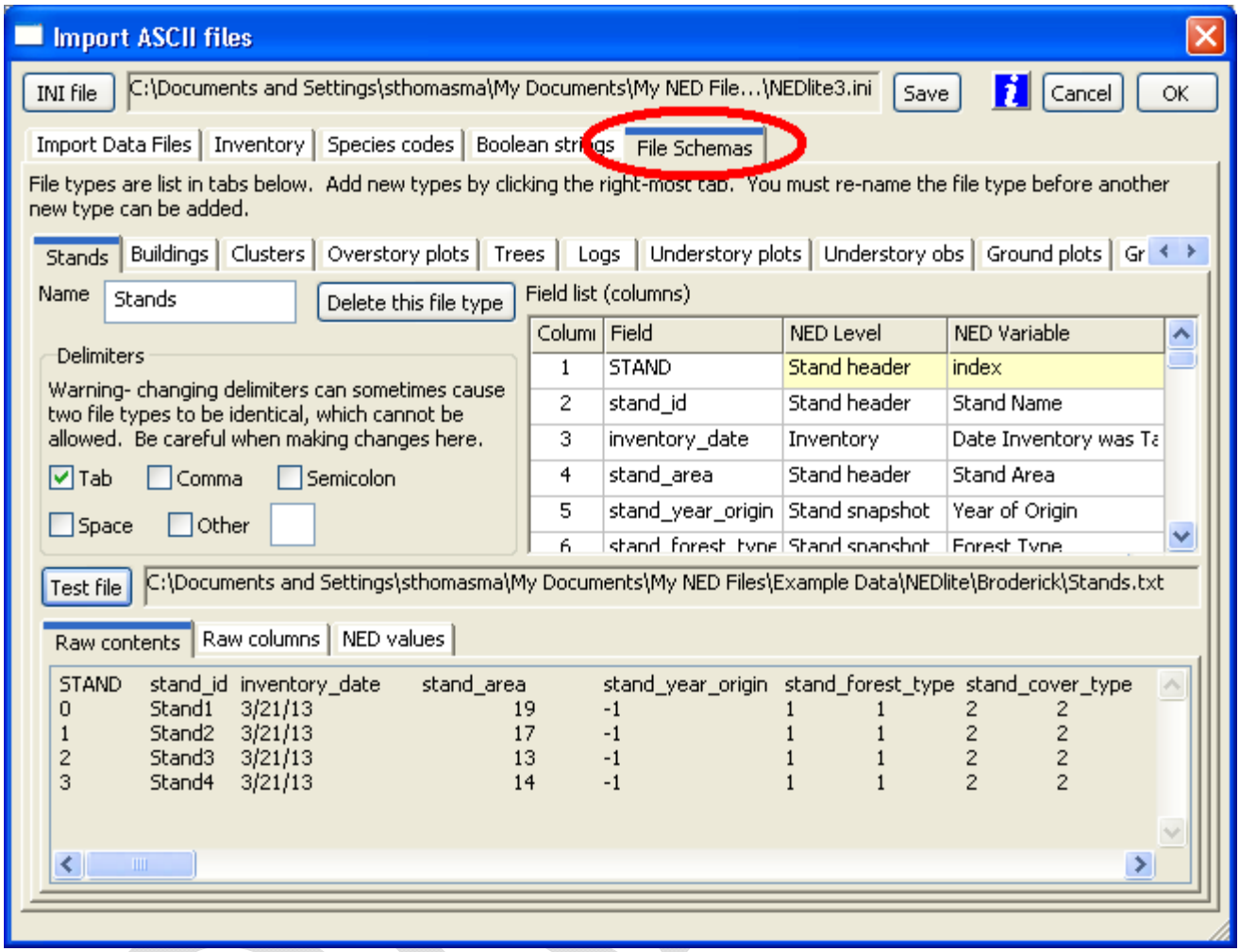


The strings representing a TRUE value are listed on the left, those meaning FALSE are listed on the right. To add a new string use the appropriate “Add” button and enter your string. You cannot have duplicate strings. The check for the Boolean value is not case-sensitive, so the strings “yes”, “Yes” and “YES” are considered all the same.

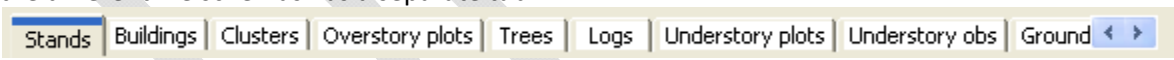
This table is meant for Boolean variables in general. You can define additional strings or reassign string meanings for individual variables as described below.

File Schemas

Let's look at the file schemas that are defined in NEDlite3.ini. Here is a look at that screen:



Each of the different file schemas has a separate tab:

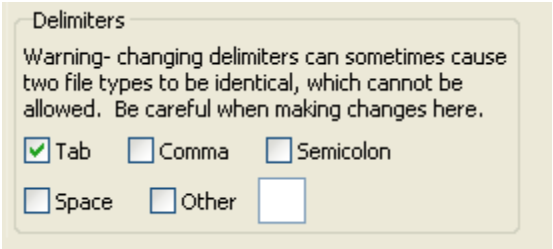


Click on a tab to display the file schemas for the TXT file. The arrows to the far right allow you to scroll to other tabs. At the far right there will be a tab called "+add+" that can be used to add an additional file type.

There is a place to change the name, and to even delete the file type:

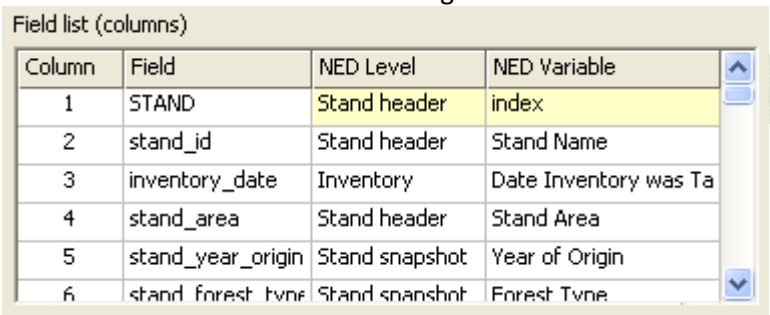
The names aren't really important except to you. You can even call two different file types by the same name. NED will match the TXT file to the correct file type based on the fields defined. The "Delete this file type" button can be used to delete a file schema.

There is a section to identify the field delimiters:



Delimiters are very important to indicate to the program how the different fields are separated. The NED-lite TXT files use a tab for the field delimiter.

The list of the fields in the TXT file is on the right:

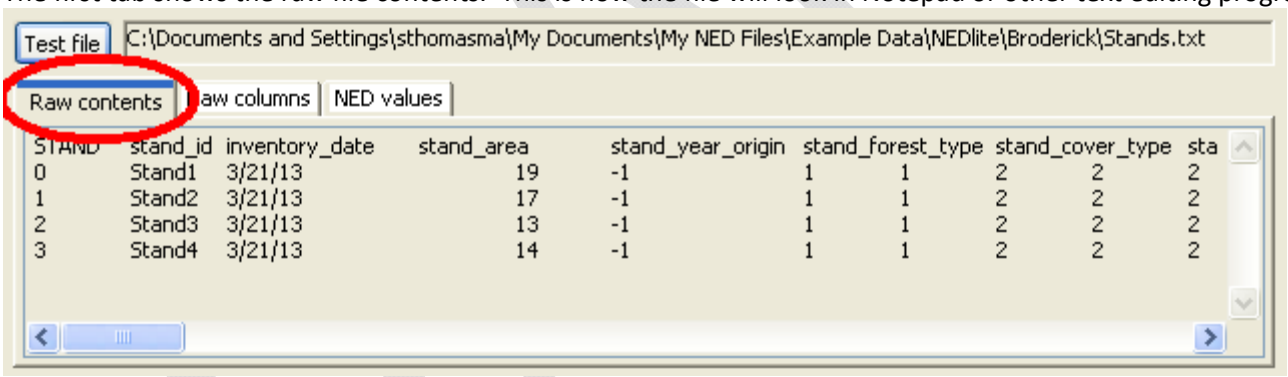


Column	Field	NED Level	NED Variable
1	STAND	Stand header	index
2	stand_id	Stand header	Stand Name
3	inventory_date	Inventory	Date Inventory was Ta
4	stand_area	Stand header	Stand Area
5	stand_year_origin	Stand snapshot	Year of Origin
6	stand_forest_type	Stand snapshot	Forest Type

These are the fields in the TXT file. The first line of the TXT file must match the list of Fields names found in the second column of the above table. The last two columns contain the NED level and variable for the column.

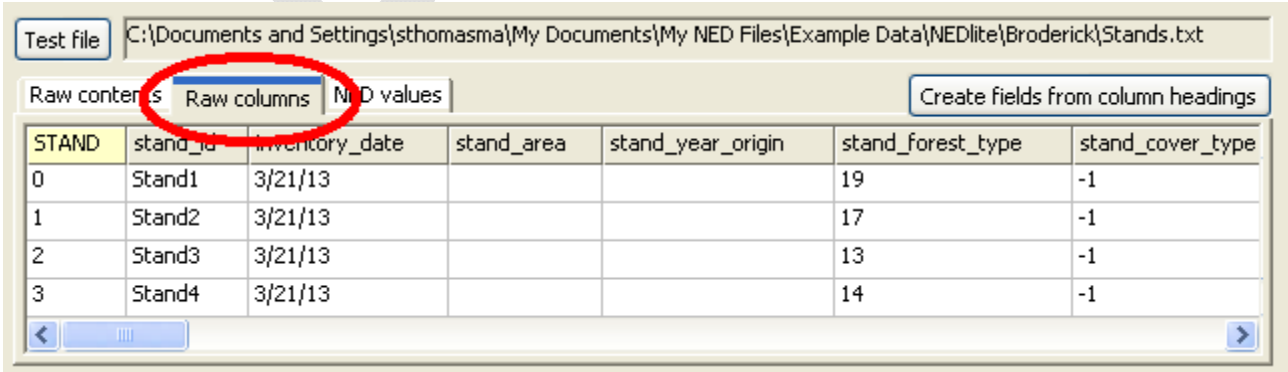
There is a place to look at a test TXT file. There are three tabs for different views of the file.

The first tab shows the raw file contents. This is how the file will look in Notepad or other text editing program



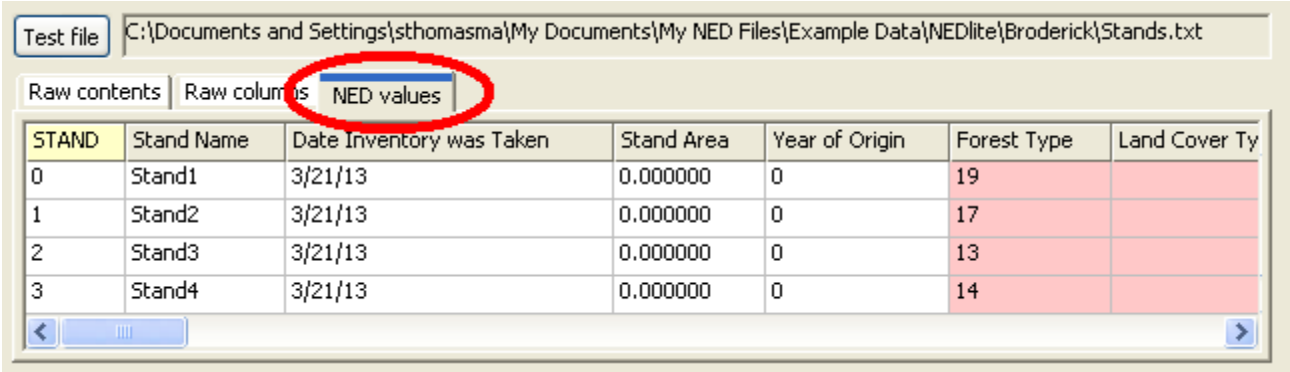
STAND	stand_id	inventory_date	stand_area	stand_year_origin	stand_forest_type	stand_cover_type	sta
0	Stand1	3/21/13	19	-1	1	1	2	2	2
1	Stand2	3/21/13	17	-1	1	1	2	2	2
2	Stand3	3/21/13	13	-1	1	1	2	2	2
3	Stand4	3/21/13	14	-1	1	1	2	2	2

The second tab shows the file contents organized into columns. This is still raw data, but it has been separated using the specified field delimiters (in this case a tab separates the fields).



STAND	stand_id	inventory_date	stand_area	stand_year_origin	stand_forest_type	stand_cover_type
0	Stand1	3/21/13			19	-1
1	Stand2	3/21/13			17	-1
2	Stand3	3/21/13			13	-1
3	Stand4	3/21/13			14	-1

The last tab select shows how the data will look when it is imported into NED.



STAND	Stand Name	Date Inventory was Taken	Stand Area	Year of Origin	Forest Type	Land Cover Ty
0	Stand1	3/21/13	0.000000	0	19	
1	Stand2	3/21/13	0.000000	0	17	
2	Stand3	3/21/13	0.000000	0	13	
3	Stand4	3/21/13	0.000000	0	14	

The TXT file

If you've gotten this far you are probably trying to read your own TXT files into NED. Let's start by looking at a typical ASCII file that will be imported. ASCII (American Standard Code for Information Interchange) files, or text files, are very handy ways of transferring data between programs. Usually these files have a TXT extension. They can be opened with Windows Notepad. Here's the contents of a small file that contains stand data:

```
STAND name  size  slope pond  site  spp   exotics
1     one   5     flat  exist low   WP    y

2     two   15    med   nope  med   WP    y
3     three 8.5   steep yes   high  WP    n
```

The files to import into NED-3 must have a couple of characteristics you can see in the file above:

The data is set up in columns that I'll usually refer to as "fields". In this case there are eight fields in the file.

The first non-empty line must have field headings. In this case the field headings are "STAND", "name", "size", "slope", "pond", "site", "spp" and "exotics". You normally want the headings to each have a unique name, but NED really doesn't care.

There must be a unique character that separates or divides the fields. In this case the <tab> character separates the different fields in an individual file line. Other commonly used characters include commas or semicolons.

Each line or row in the file is a record that should be imported as a single data structure in NED. In this case each line of data contains data for a stand. There is data for three stands in this file. Other files might have plot data where each line in the file is a separate plot, or another file might have each line be a tree observation.

The file can contain blank lines that NED will just ignore. The third line in the example is a blank line.

Because the different data files (i.e. stands, plots, trees) have different layouts with different headings for different variables, we need to set up file schema for each type of file. The headings on the first line are very important. These are used by the program when opening a TXT file to figure out which file schema to use to read the file. If a TXT file is opened, but there is no matching file definition, the file cannot be imported. This was the case with the file "Errors.txt" on the example screen-dump on page 3.

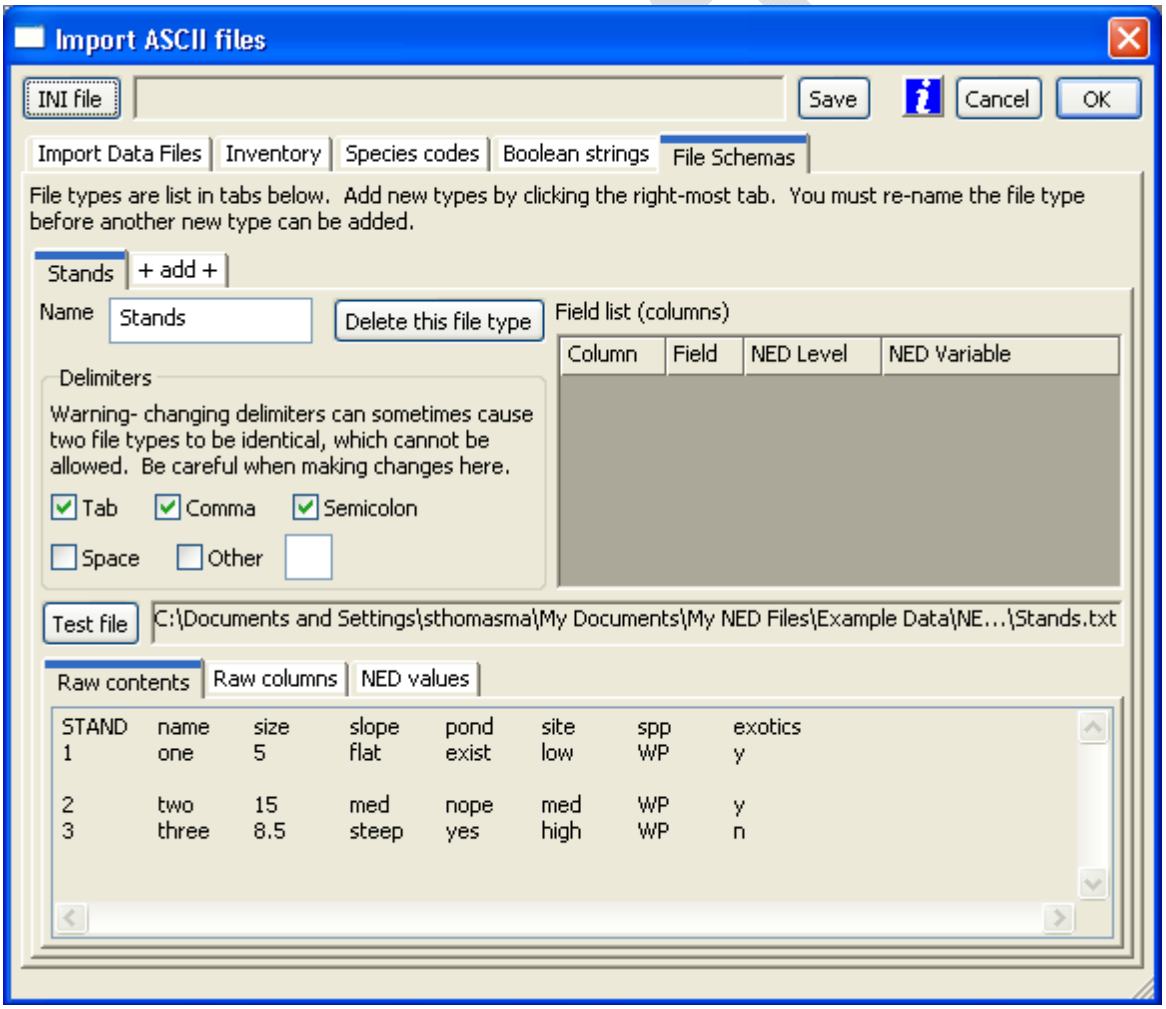
I'm going to use the file above as an example of how to build an INI file.

DRAFT

The first thing I should do is to try to open the new Stands.txt file that is displayed above. Follow the steps on page 1 (take note of the change in step 5):

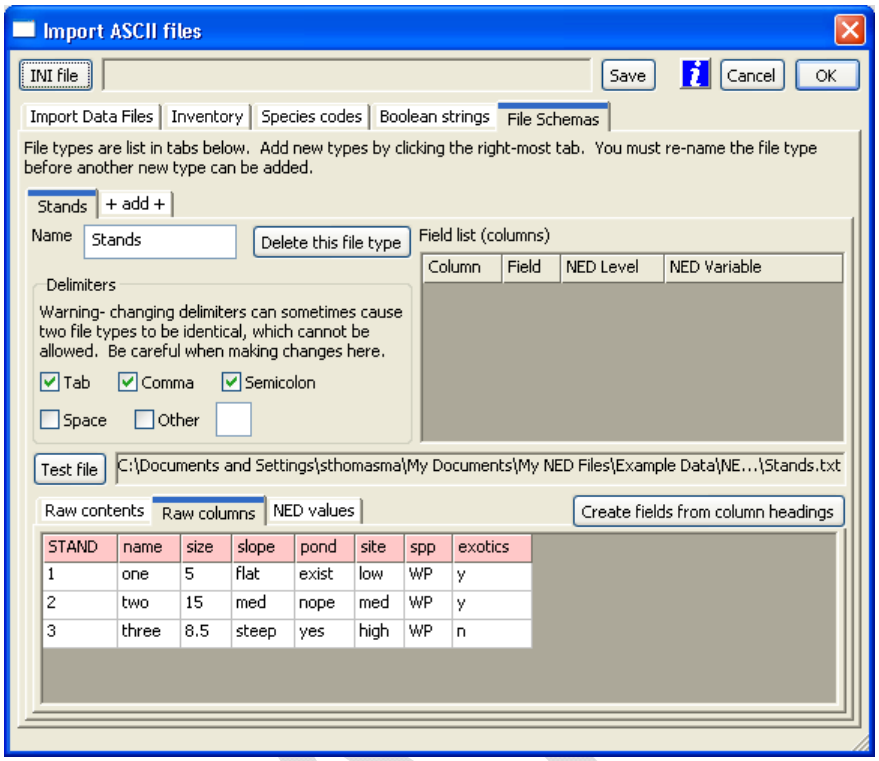
1. In the A-pane, under "Inventory" pick "Enter/Edit Inventory Data".
2. In the B-pane, select "Stands"
3. In the C-pane, use the "Add" button
4. In the "Add new stands" select the radio-button "Import Stands from…"
5. In the file dialog, select "ASCII files (*.txt)" (Note the change from the page 1 instructions)
6. Select your *.txt file. If you have more than one TXT file with different data, you can select several files using this dialog.

Your file (or files) should be listed in the Import Data Files table, with the third column empty (and red) indicating that there is not a matching file schema for this type of file. To set the schema for this file, double-click it in the file list. You will automatically be taken to the File Schemas tab and the raw file contents will be displayed near the bottom of the dialog:

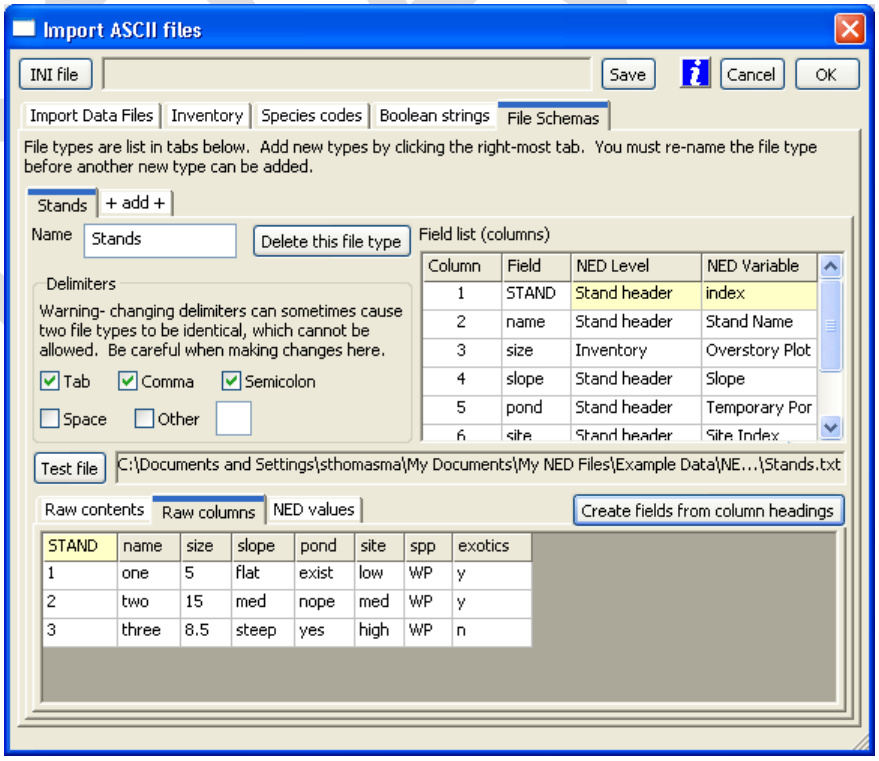


At this point you should indicate the delimiters that are used in the file to separate the data fields. By default, the tab, comma and semicolon are checked. These are the most common delimiters. It is a good idea to un-check any delimiters that aren't being used. Otherwise errors could occur if data contains a specified delimiter (i.e. a stand name such as "Stand 1,3"). If a field does contain a delimiter character, you can enclose the data within quotes and it will be read correctly.

The next step is to go to the “Raw columns” tab:

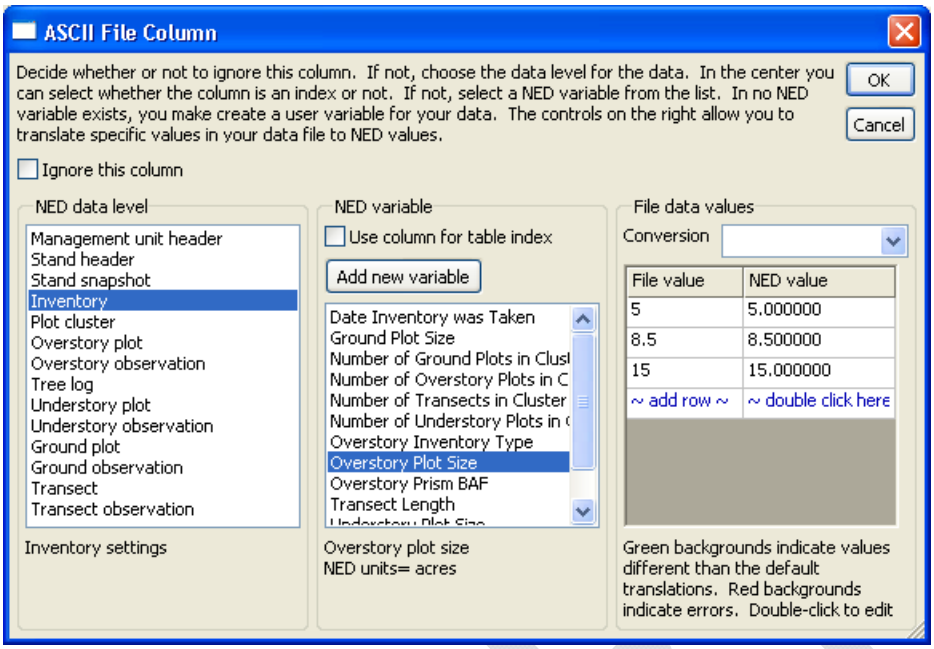


All of the columns have red headings, indicating that they do not yet have a matching field. Notice that the Field list (columns) is empty. Use the “Create fields from column headings” button to fill in the field list from the columns.

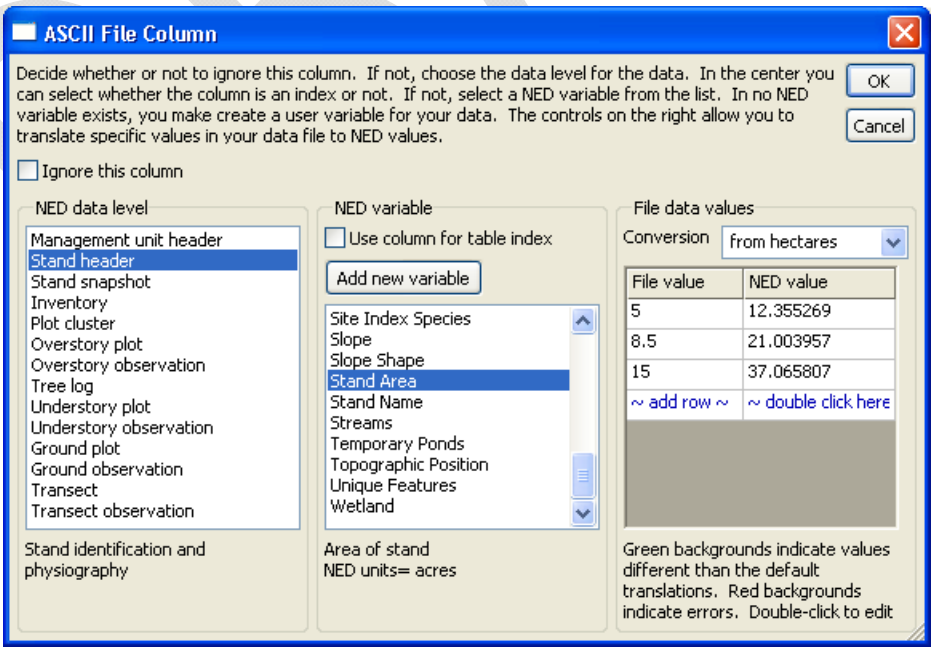


The program tries to figure out which NED variables you are trying to read. In this case it’s done a pretty good job, except it interpreted the field “size” to mean overstory plot size, instead of the stand area.

To change how a field is assigned to a NED variable, double-click the field in the Field list. In this example, the field "size" is being edited:



This is a pretty complicated, but a critical dialog. Work the dialog from left to right. First off, you can choose to ignore the column completely. The program will just skip over the field and no attempt to import the data. If you choose not to ignore the field, you must find a matching NED variable for this field. The first step is to choose the NED data level. It helps to have some familiarity with the NED data layout, but the levels are somewhat self-explanatory. As you select a level in the left-most column, the NED variables for that level will be listed in the center list. If you see the variable you want, select it from the list. So, let's fix this column. What we want is the stand area, which is a variable at the stand header level. So, choose "Stand header" in the left-most column, and "Stand area" in the center list. And let's go one step further. Suppose our data was in hectares. NED always stores data in English units, so we'll need to convert our values into acres. You can choose "from hectares" from the Conversion combo-box at the far right. The dialog will look like this:



You'll notice that with these selections the right-most column shows how the data in the file are going to be converted to acres when they are imported. We'll come back to this dialog later, but for now let's cover the other options when choosing a NED variable in the center: using the column as an index, or adding a new variable.

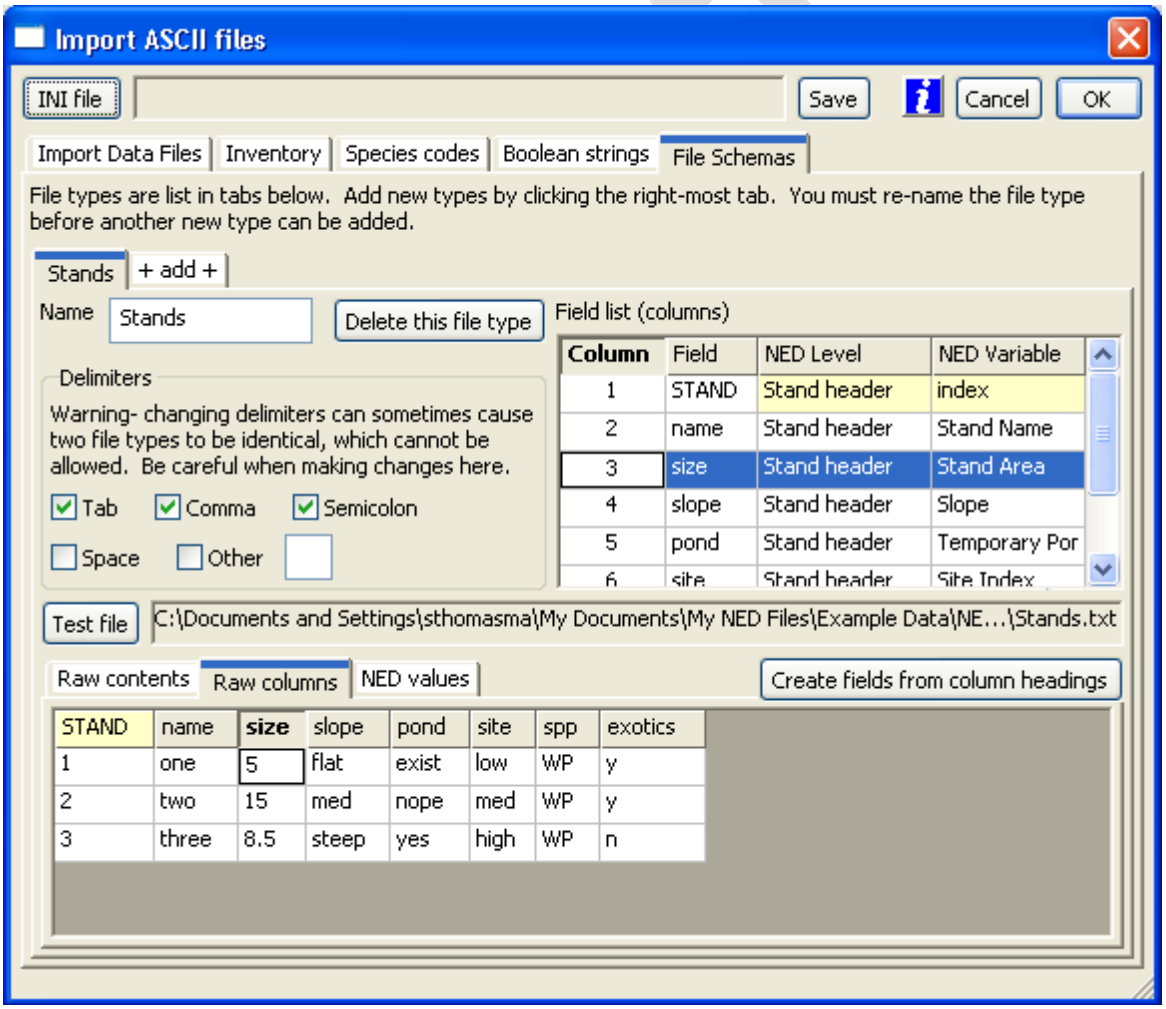
Using the column for a table index

We're only including a single file, but if you are importing things like plot or observation data, the program needs some way of linking the observations to plots and plots to plot clusters, and finally the plot clusters to individual stands. NED uses integer indexes to link the different data between different files. In this example, the first column "STAND" is the index for the different stands. In this simple case these were optional, but they are critical if data from other levels were going to be imported. In the main dialog, index columns will have a yellow background.

Add new variable

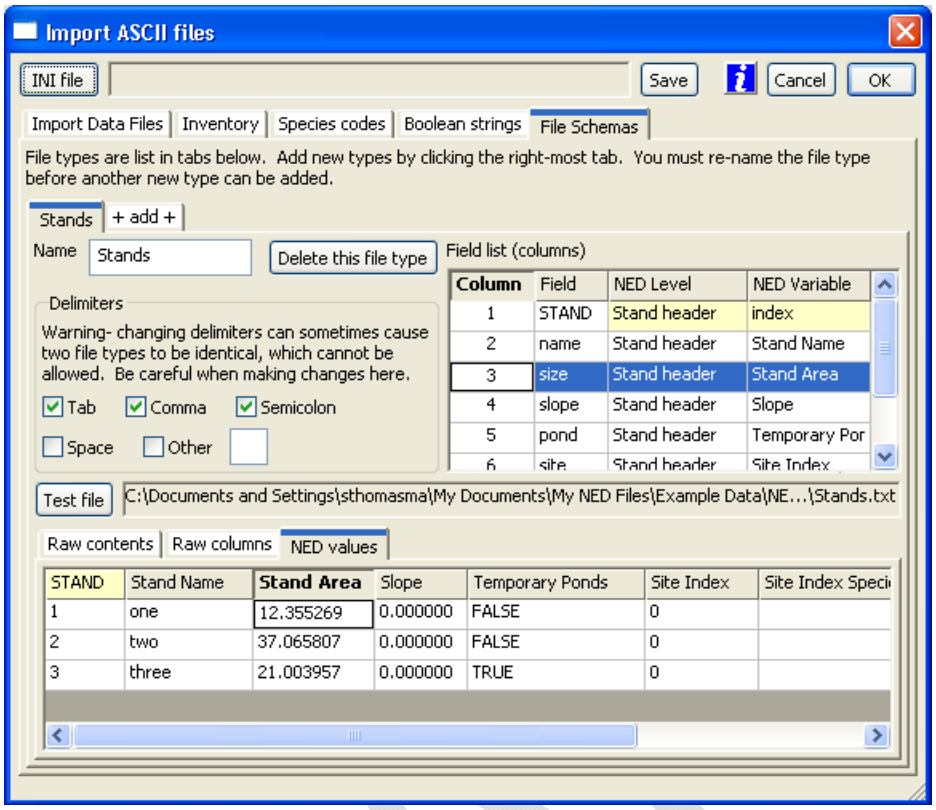
This is a way to define a variable that doesn't already exist in NED. These are also called "User-defined" variables. Defining a user variable is fairly complicated and I'll leave that explanation for another document. I do want to emphasis here that this should be a last resort. You really should, as much as possible, try to find a NED variable to match your data.

Let's get back to the main dialog:

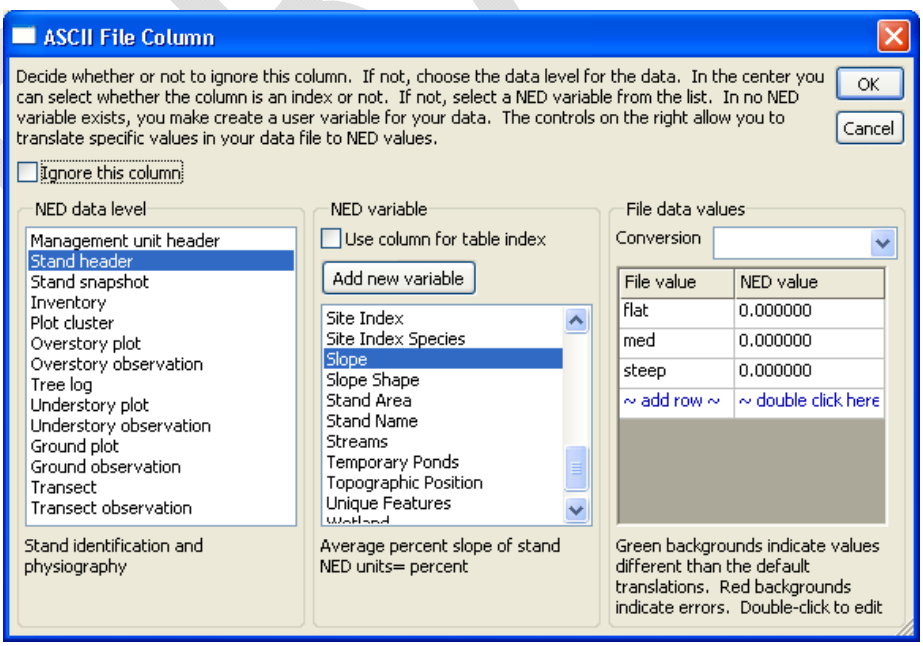


We've fixed the third column so that it now will import the values as the stand area.

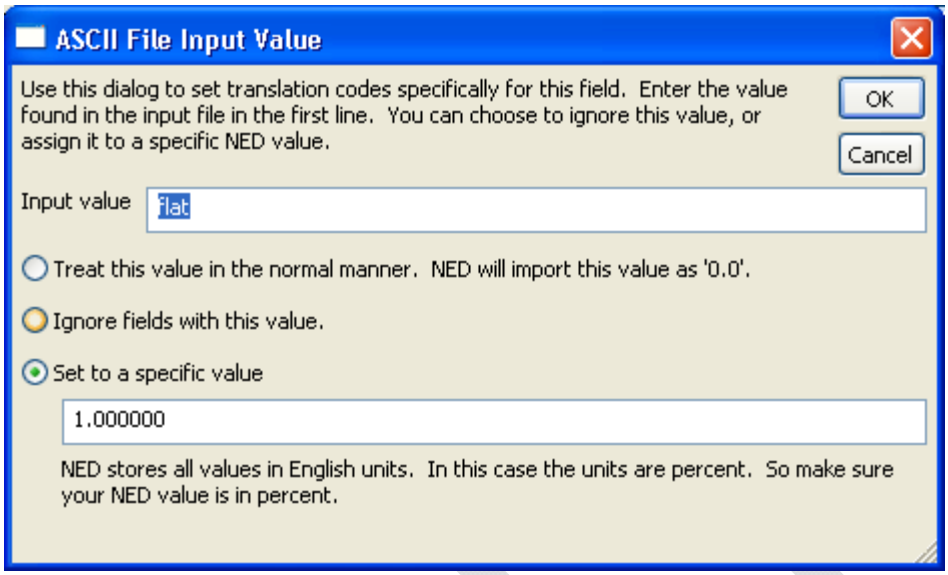
The third tab at the bottom displays how the values will be imported in NED:



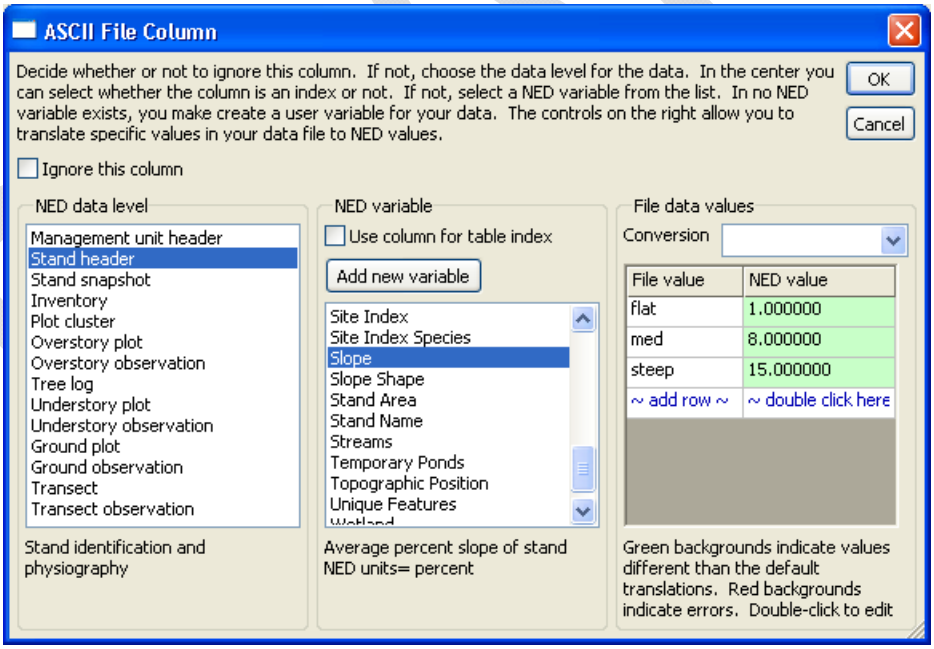
The area values have been converted to acres and everything else seems to be fine- at least for that column. The file has strings instead of values for the column "slope". Since NED expects floating-point values, we'd better fix those. Double-click the field to bring up the ASCII File Column dialog for this field.



The right-most table shows how the strings are currently being imported as zero. If you double-click on of the rows you'll get the following dialog:



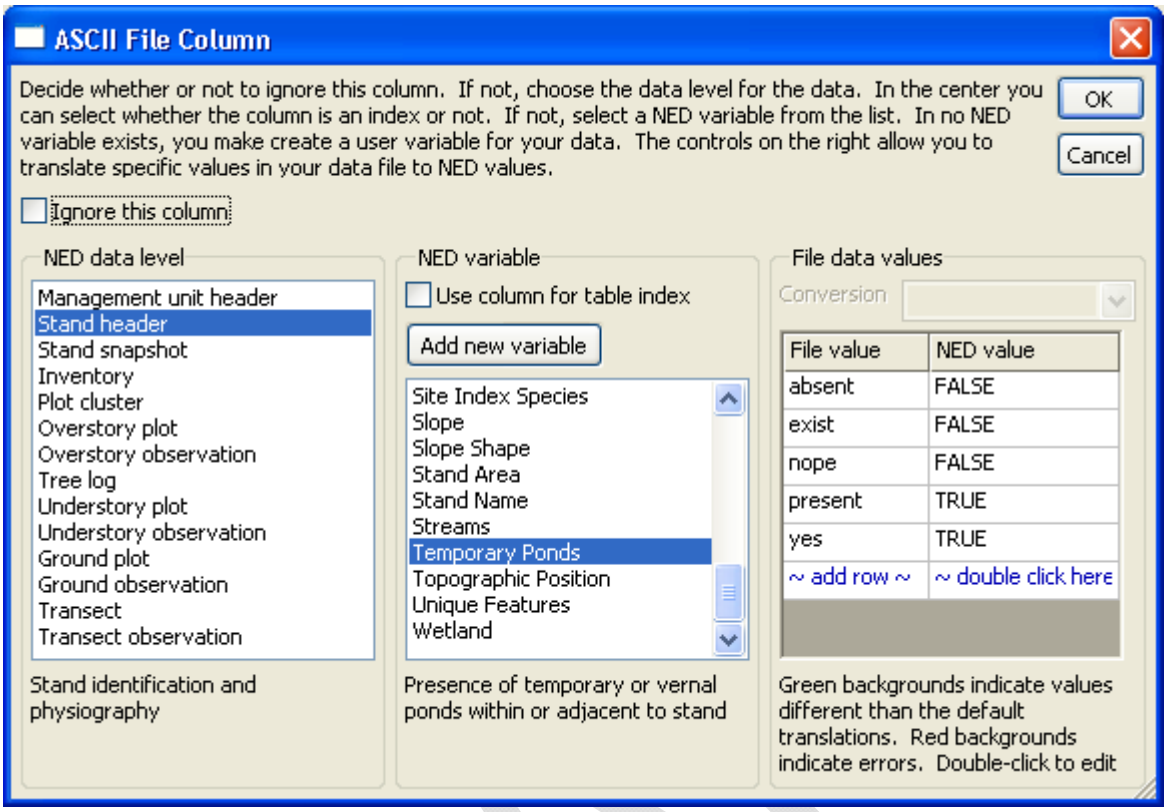
There are three choices for handling import values. You can treat them in the normal manner; in this case interpreting "flat" as zero. Or you can choose to ignore the value; in this case it will leave the value empty in NED. Or you can set it to a specific value, which is what I'm going to do here. I'll set the input value of "flat" to a slope of 1.0. Following the same steps, I'm going to set "medium" to 8.0 percent and "steep" to 15 percent. The results look like this:



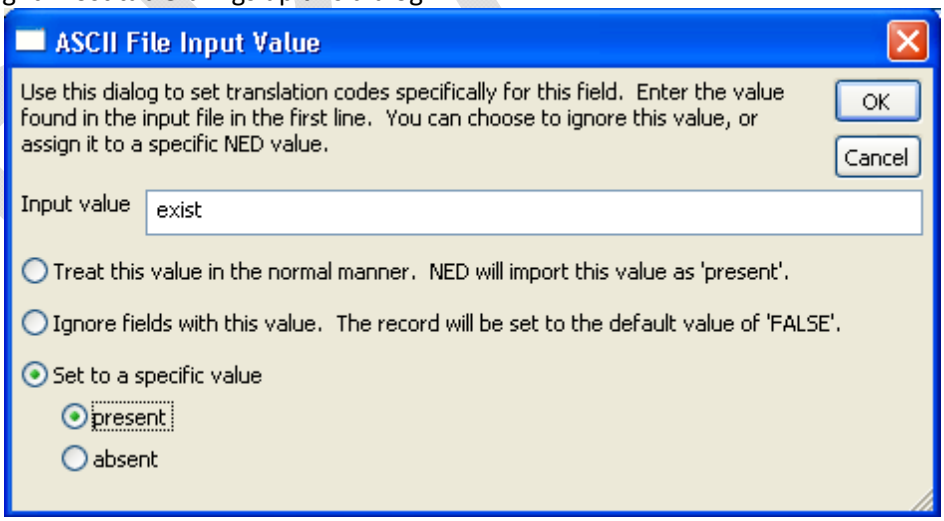
When you go back to the main dialog, you will see the raw file contents of "low", "med" and "high" correctly translated to 1.0, 8.0 and 15.0.

The field "site", for the site index also contains string instead of numeric values. Following the same steps we just followed I changed low to be 35, medium to be 50 and high to be 85. I won't repeat the steps here.

There was also a problem with the field “pond”. Double-clicking on that field brings up this dialog:



There is a string “exist” which was being imported as FALSE. So we’ll want to fix that too. You could add the string “exist” to the Boolean strings described on page 6, but you can also add this string for this particular field. Double-clicking the value “exist” in the right-most table brings up this dialog:

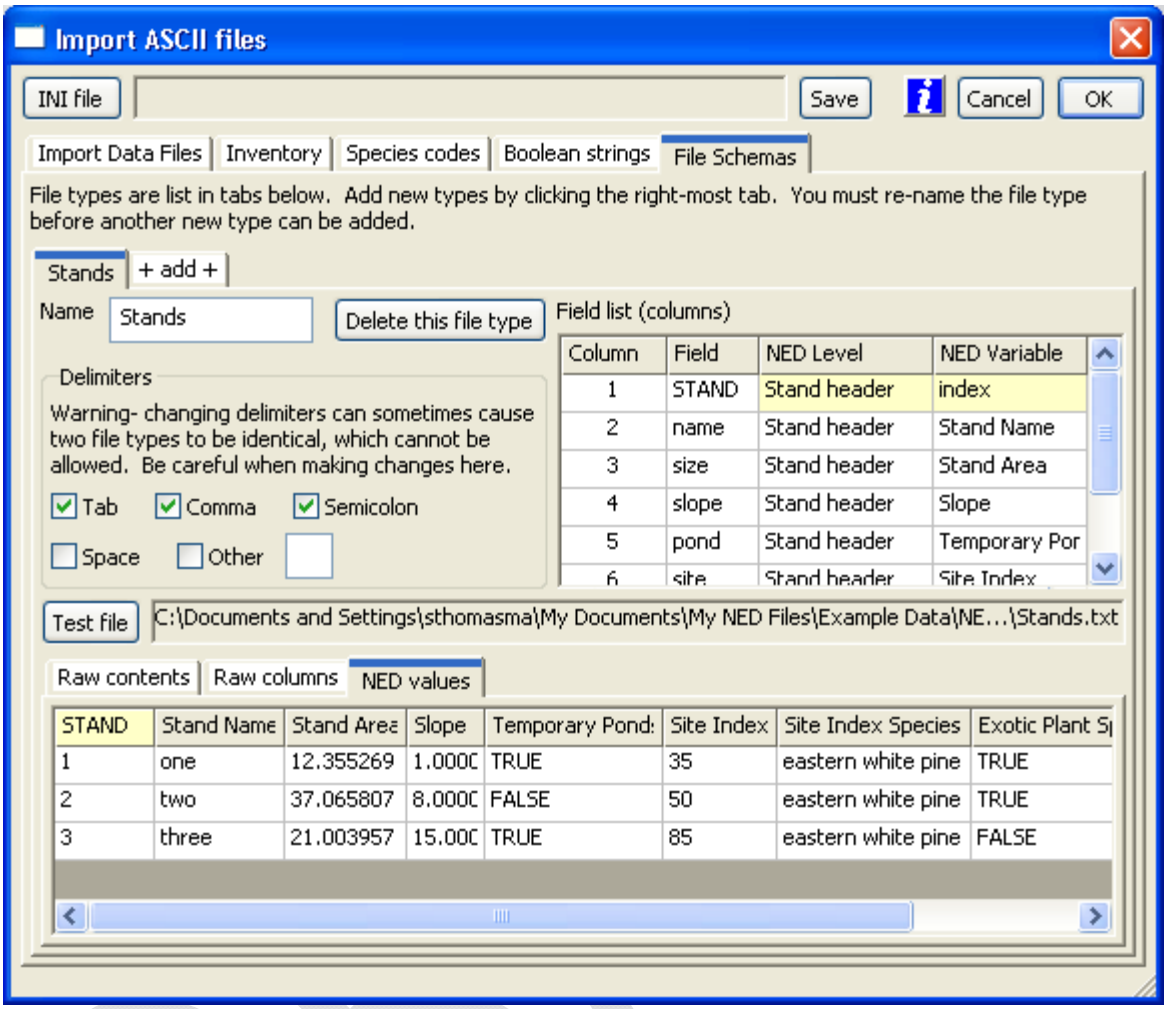


This allows you to assign the string “exist” to the correct “present” value.

The field “exotic” is also a Boolean field, but the entries are either ‘y’ or ‘n’, which the program already correctly interprets. So there is no need to make changes to that field.

The only other field that needs checking is the site index species. Setting up species codes is done in the “Species codes” tab and has already been discussed on page 5.

When all those changes are made, the final dialog looks like this:



The stand areas have been converted from hectares. The slopes are now the correct values. The “exist” string for the Temporary Ponds in the first stand is now TRUE. The stand indexes are correct, and the species code of “WP” is recognized as eastern white pine. If you have more than one file you’ll have to repeat all these steps for those other files. Now the original TXT file (or files) is ready to be imported. Make sure you save these settings in an INI file. Otherwise you’ll have to repeat all these steps again.

Importing data from ASCII files

File Format

ASCII (American Standard Code for Information Interchange) files, or text files, are very handy ways of transferring data between programs. Usually these files have a TXT extension. They can be opened with Windows Notepad. Before I get into importing data into NED-3, I should go over what your ASCII file should look like. Here's the contents of a small file that contains stand data:

```
STAND name  size  slope pond  site  spp   exotics
1     one   5     flat  exist low   WP    y

2     two   15    med   nope  med   WP    y
3     three 8.5   steep yes   high  WP    n
```

The files to import into NED-3 must have a couple of characteristics you can see in the file above:

The data is set up in columns that I'll usually refer to as "fields". In this case there are eight fields in the file.

The first line must have field headings. In this case the field headings are "STAND", "name", "size", "slope", "pond", "site", "spp" and "exotics". You normally want the headings to each have a unique name, but NED really doesn't care.

There must be a unique character that separates or divides the fields. In this case the <tab> character separates the different fields in an individual file line. Other commonly used characters include commas or semicolons.

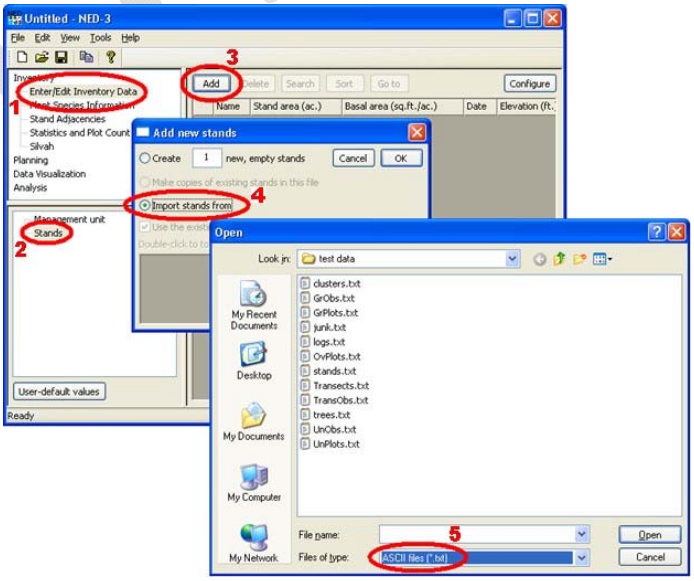
Each line or row in the file is a record that should be imported as a single data structure in NED. In this case each line of data contains data for a stand. There is data for three stands in this file. Other files might have plot data where each line in the file is a separate plot, or another file might have each line be a tree observation.

The file can contain blank lines that NED will just ignore. The third line in the example is a blank line.

How to get started in NED-3

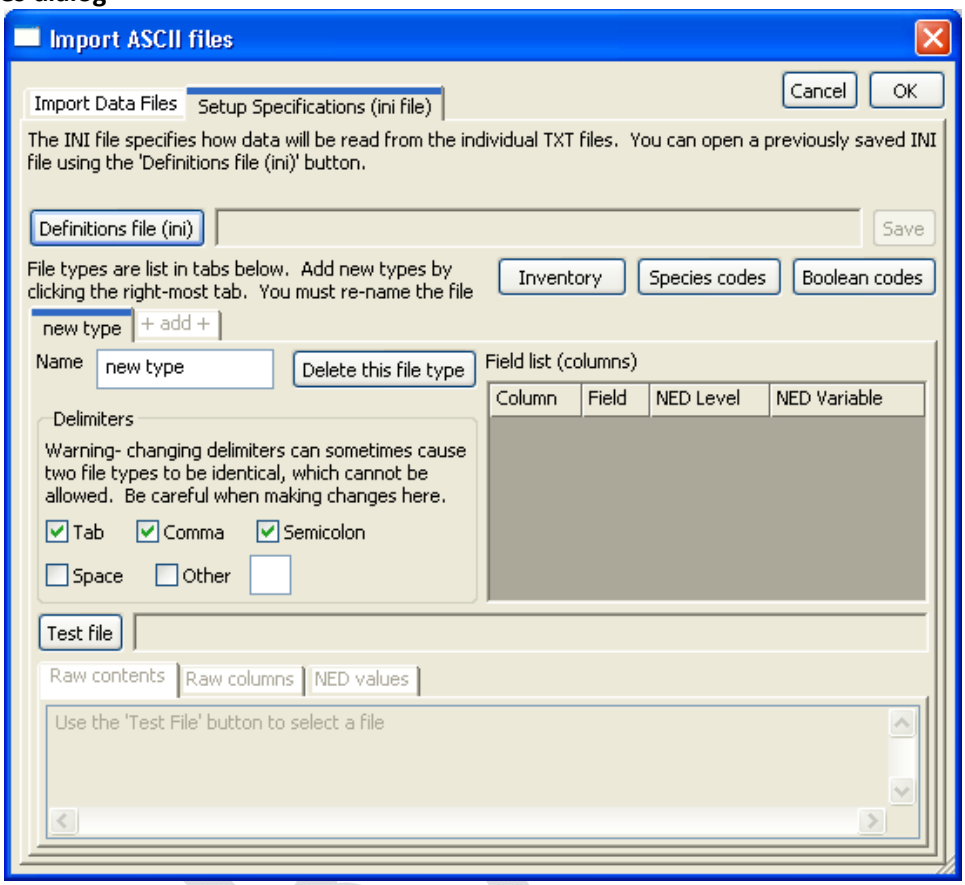
You can't just feed an ASCII file to NED and expect it to know what fields contain which data. A small file called a "TXT setup file" must be set up to define the layout of the file. These files have an INI extension. The main bulk of this document is to describe how to create an INI file.

It isn't obvious where to start up the TXT setup file interface. First off, set up a small test TXT file that will have the same layout as your data file. Then, in the NED interface go to the "Enter/Edit Inventory Data" module in the A-pane, click "Stands" in the B-pane and use the "Add" button to add a new stand. In the "Add new stands" dialog, select "Import stand from" and select "ASCII files (*.txt)" in the Open file dialog. Select your file.



Actually you can select multiple files here and define several file types within the INI file to read a variety of ASCII files. But I'm starting from scratch here to show you how to set up the INI file to read one file. You should get the main import dialog.

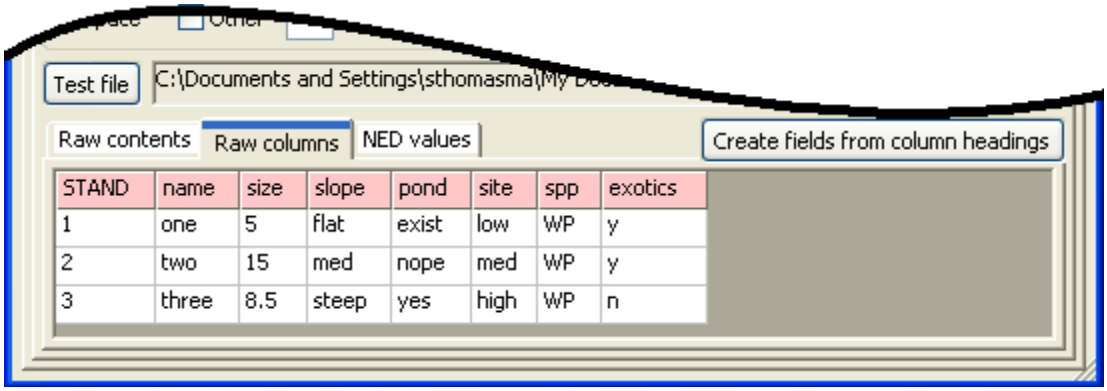
The Import ASCII files dialog



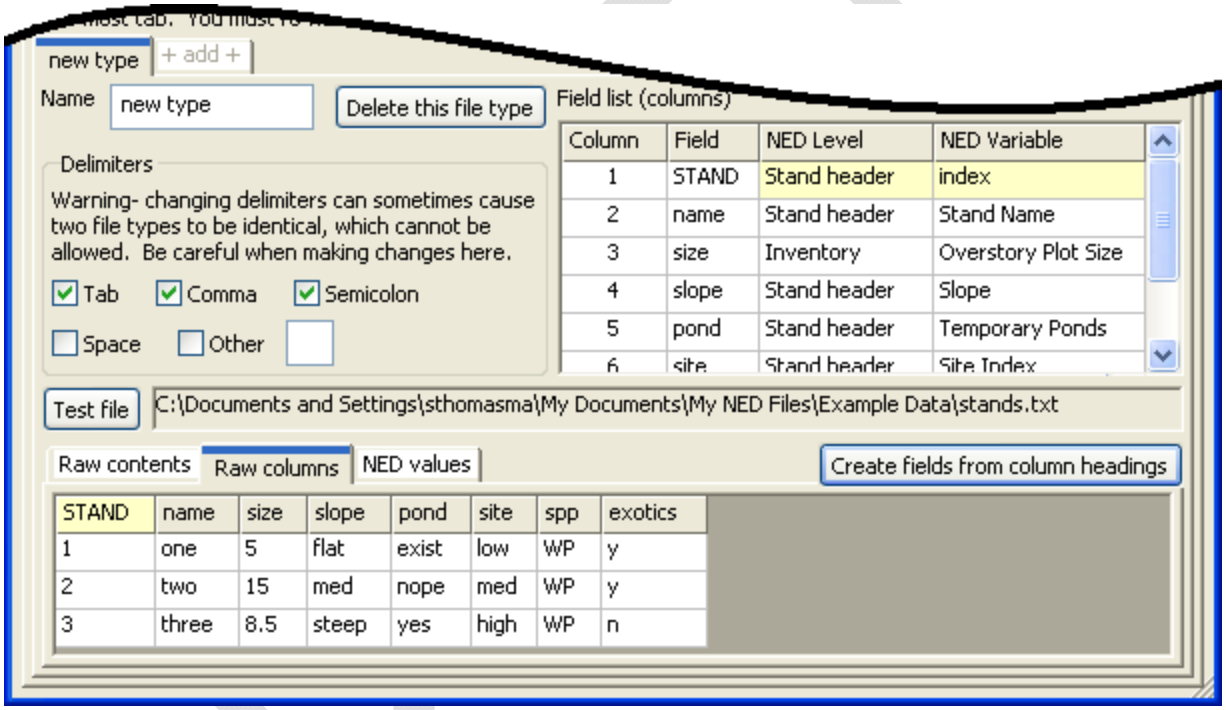
There are two main tabs at the top of the screen. Because you selected a TXT file from the previous dialog, the default tab selection is "Setup Specifications (ini file)". If you have a previously defined INI file for the selected ASCII files, you would use the "Definitions file (ini)" file button to load that file. But, I'm assuming you don't, so we'll have to create one. If you go to the "Import Data Files" tab, you'll see your TXT file selected in the previous dialog. But I'll cover that stuff later. Let's create a file definition for the example file displayed above.

The program is designed to read several TXT files at one time to import stand data. Depending on your needs you might have a file for stand information (like our example above), plus a file for plot clusters, plus files for overstory plot, understory plot, ground plot and transect data, plus files for the observations within the plots. The INI file must contain a file definition for each type of file you want to import. You should give each file type a unique name (there is an edit box for the name just below the file type tabs. The "+add+" tab can be used to add new file types. It will create a new type called "new type" The "+add+" tab will not be enabled again until you rename your file type. Our example is only going to include a single file type for the above TXT file.

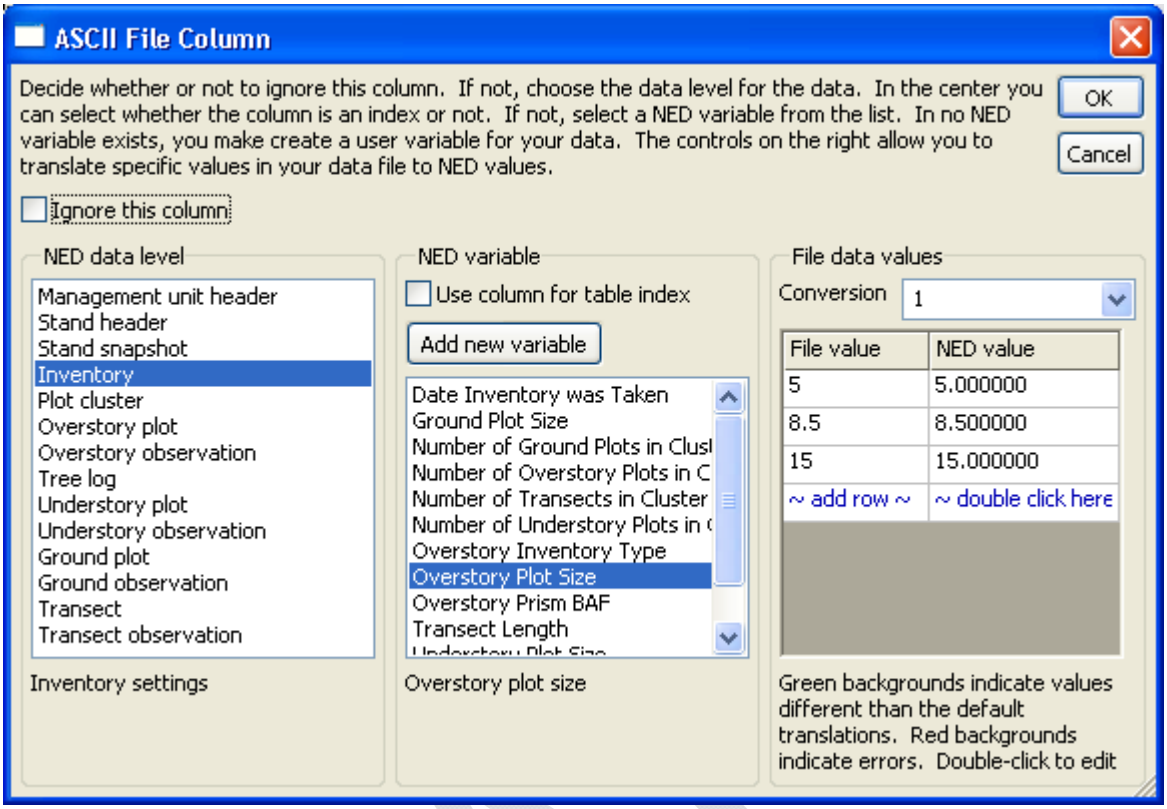
Use the "Test file" button and select your TXT file from the file dialog. Your file should be displayed under the "Raw contents" tab at the bottom of the screen. In our case, this is just looks like what I already have above. The "Raw columns" tab show the data separated into columns. The program knows how to do this based on the "Delimiters" section. In the small example we're using, there are <tab> characters between the fields. The dialog also has comma and semicolons selected, although I didn't use them here. In fact, it's generally a good idea to only select the column delimiters that you are using in your ASCII file. There could be confusion, for example, if I used a comma in one of my stand names. The program would think that would be another column. If you need to use a delimiter character in a data string, put the string in quotes. In our little example here, we'll be fine. Here's what the columns look like:



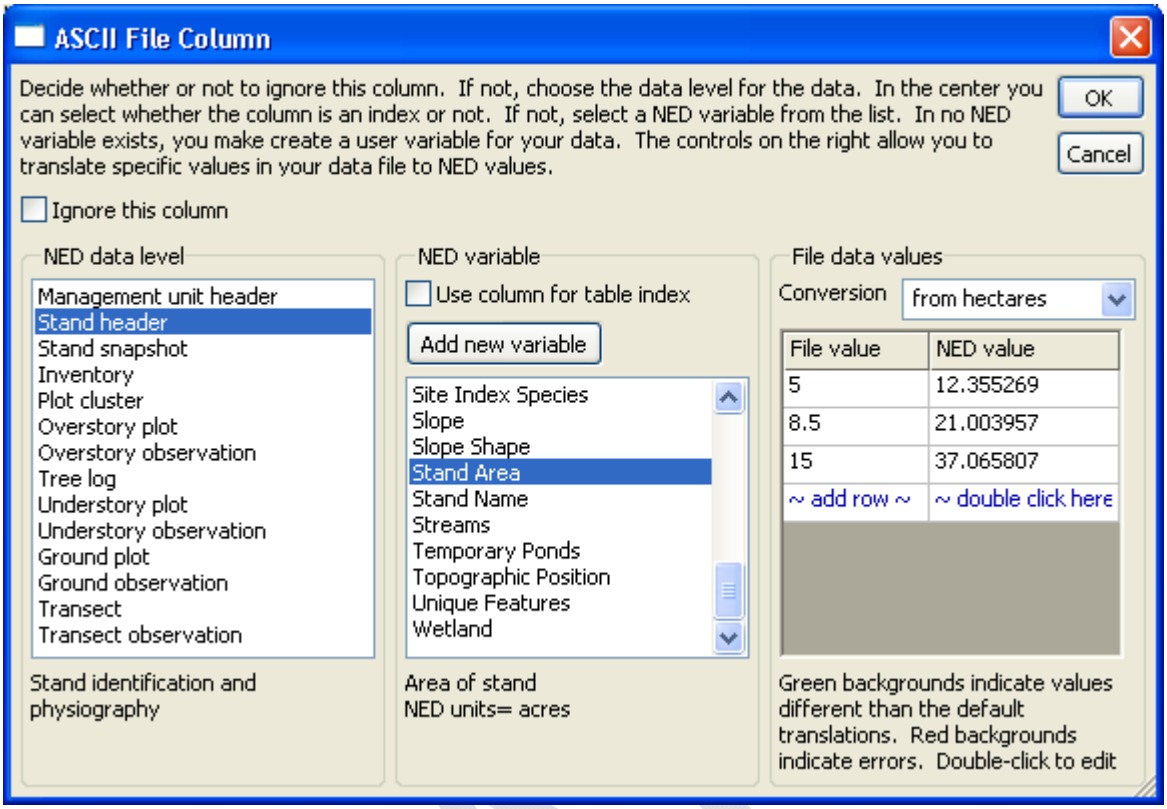
The column headers are read from the first line of the file, and the data lines appear as rows. You'll notice that that pesky blank line has been ignored. The column headers are all red, indication that there isn't a field defined yet for that column. Use the "Create fields from column headings" button to define fields for each one of the columns. After that, the dialog will look like this:



The fields are listed vertically on the right and if you click on either grid, the corresponding record will be selected. The program makes guesses for matching the columns to NED variables, and in this case it's done a pretty good job. But it did screw up the third column. It should have found the variable for the stand area. So we'll have to fix that. If you double-click that field you'll get the following dialog:



This is a pretty complicated, but a critical dialog. Work the dialog from left to right. First off, you can choose to ignore the column completely. The program will just skip over the field and no attempt to import the data. If you choose not to ignore the field, you must find a matching NED variable for this field. The first step is to choose the NED data level. It helps to have some familiarity with the NED data layout, but the levels are somewhat self-explanatory. As you select a level in the left-most column, the NED variables for that level will be listed in the center list. If you see the variable you want, select it from the list. So, let's fix this column. What we want is the stand area, which is a variable at the stand header level. So, choose "Stand header" in the left-most column, and "Stand area" in the center list. And let's go one step further. Suppose our data was in hectares. NED always stores data in English units, so we'll need to convert our values into acres. You can choose "from hectares" from the Conversion combo-box at the far right. The dialog will look like this:



You'll notice that with these selections the right-most column shows how the data in the file are going to be converted to acres when they are imported. We'll come back to this dialog later, but for now let's cover the other options when choosing a NED variable in the center: using the column as an index, or adding a new variable.

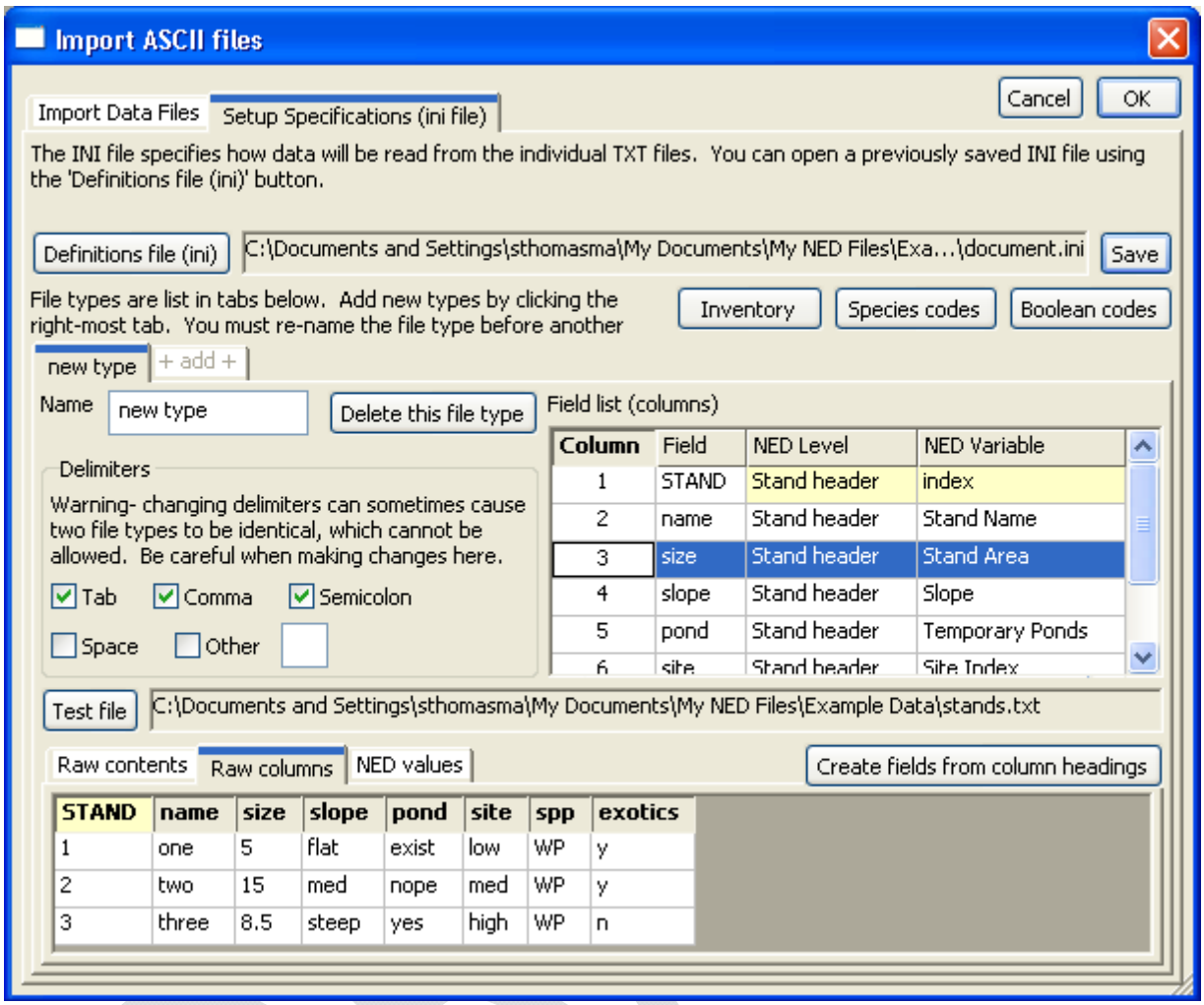
Using the column for a table index

We're only including a single file, but if you are importing things like plot or observation data, the program needs some way of linking the observations to plots and plots to plot clusters, and finally the plot clusters to individual stands. NED uses integer indexes to link the different data between different files. In this example, the first column "STAND" is the index for the different stands. In this simple case these were optional, but they are critical if data from other levels were going to be imported. In the main dialog, index columns will have a yellow background.

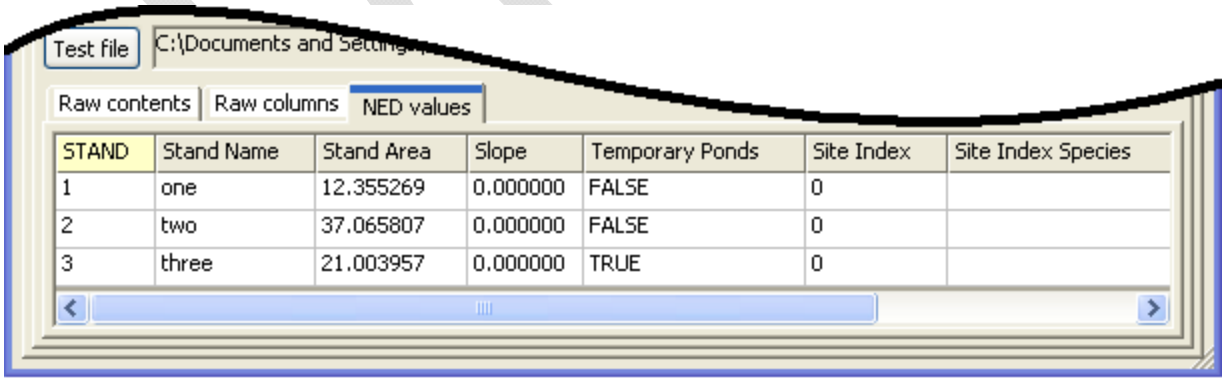
Add new variable

This is a way to define a variable that doesn't already exist in NED. These are also called "User-defined" variables. Defining a user variable is fairly complicated and I'll leave that explanation for another document. I do want to emphasis here that this should be a last resort. You really should, as much as possible, try to find a NED variable to match your data.

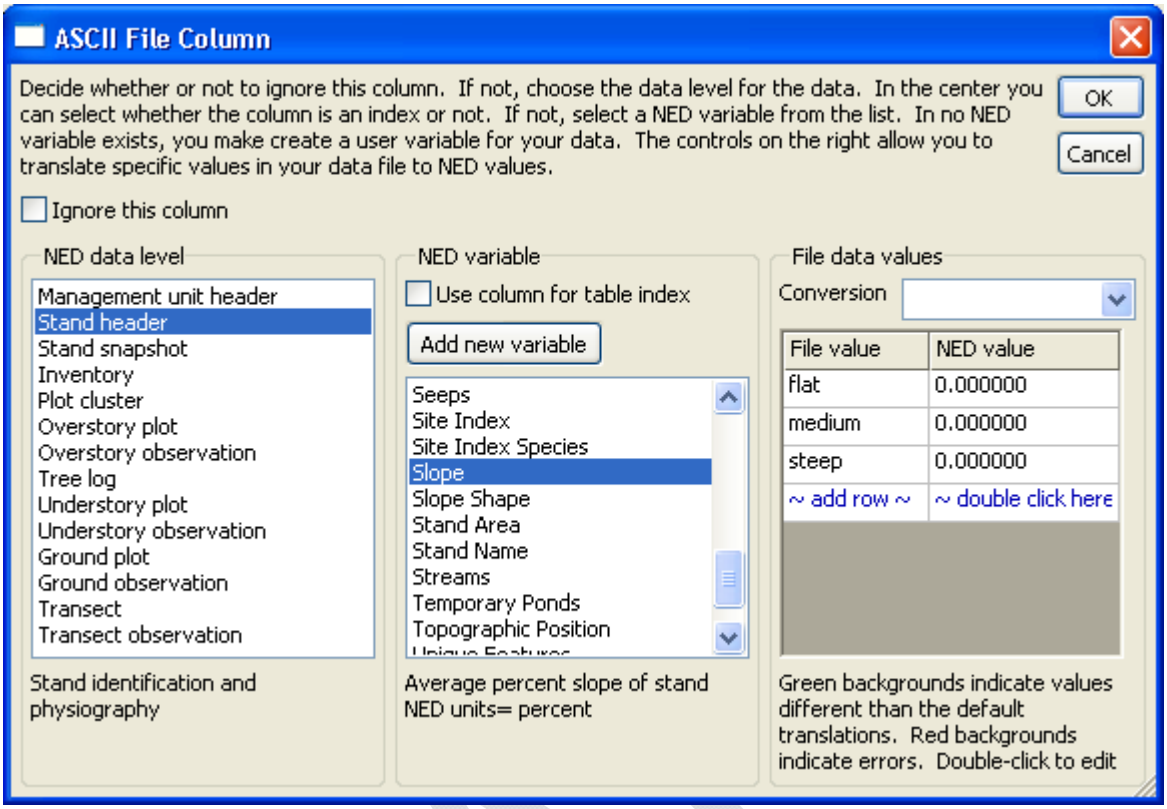
So, let's get back to our main screen.



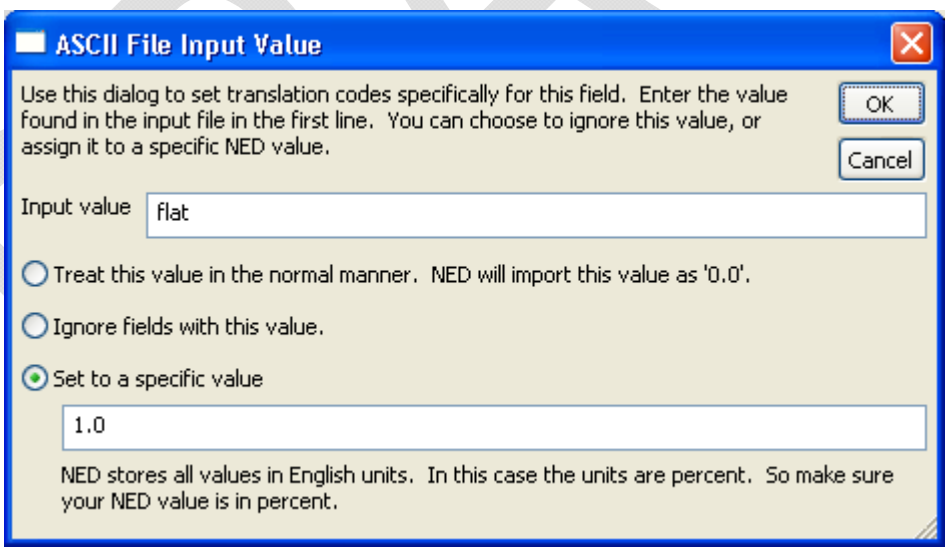
We've fixed the third column so that it now will import the values as the stand area. The last tab at the bottom will show the same columns, but will display the values as they will be stored in NED. Here's what that looks like:



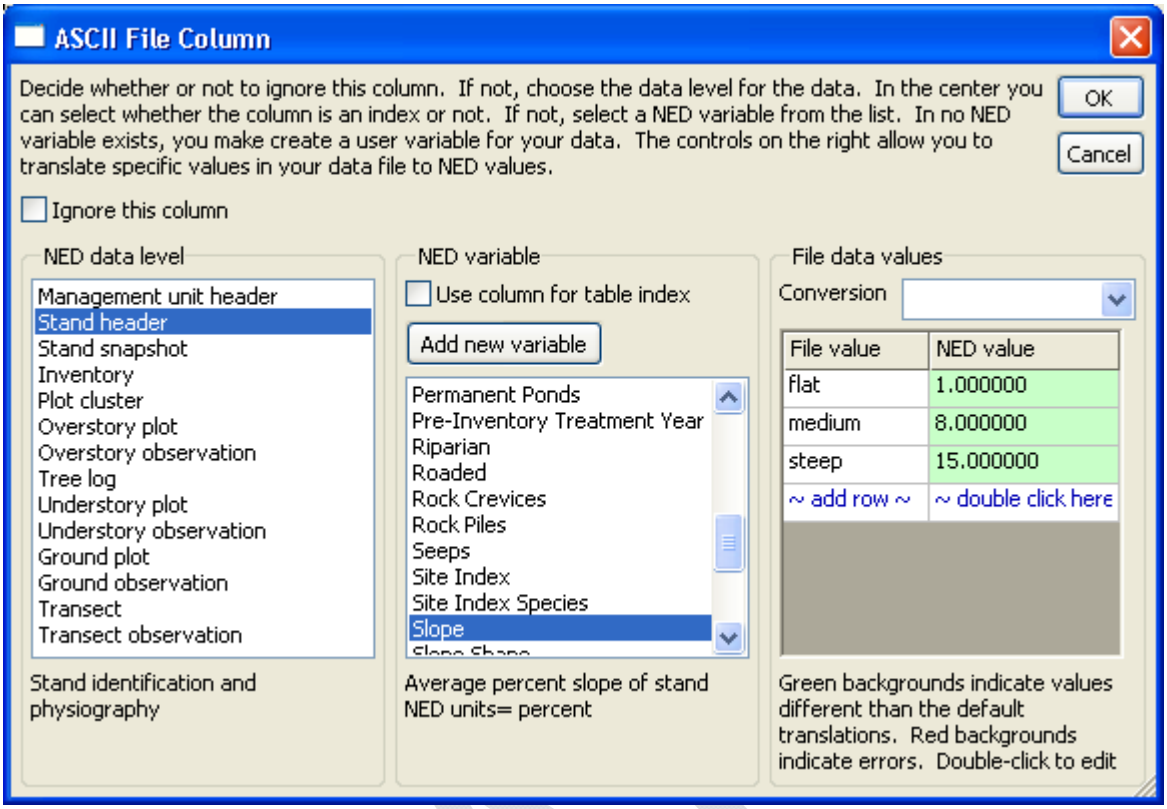
The area values have been converted to acres and everything else seems to be fine- at least for that column. The file has strings instead of values for the column "slope". Since NED expects floating-point values, we'd better fix those. Double-click the field to bring up the ASCII File Column dialog for this field.



The right-most table shows how the strings are currently being imported as zero. If you double-click on of the rows you'll get the following dialog:

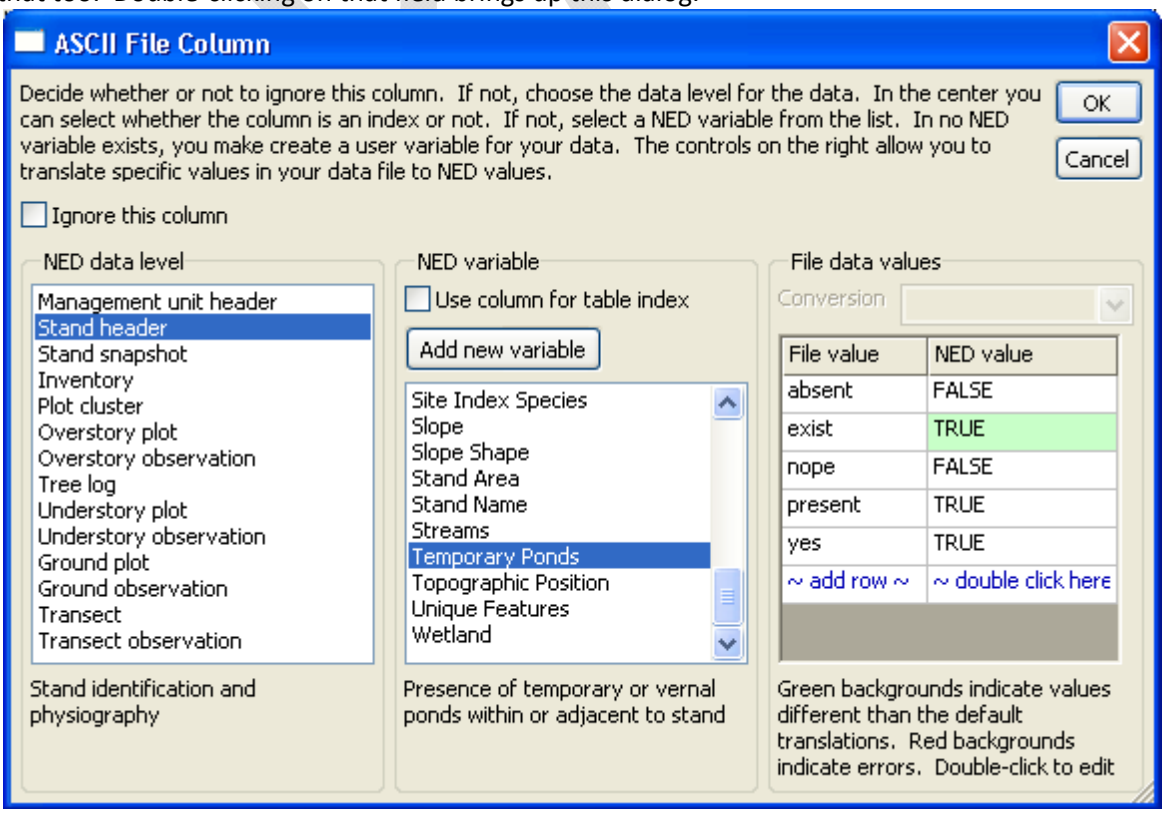


There are three choices for handling import values. You can treat them in the normal manner; in this case interpreting "flat" as zero. Or you can choose to ignore the value; in this case it will leave the value empty in NED. Or you can set it to a specific value, which is what I'm going to do here. I'll set the input value of "flat" to a slope of 1.0. Following the same steps, I'm going to set "medium" to 8.0 percent and "steep" to 15 percent. The results look like this:



The field 'site' is the site condition. The file has the values "low", "med" and "high". NED has a variable "Site index", which is a floating-point variable. So those strings need to be mapped to a floating-point value. The steps are the same as when we dealt with the slope field, so I won't repeat them here.

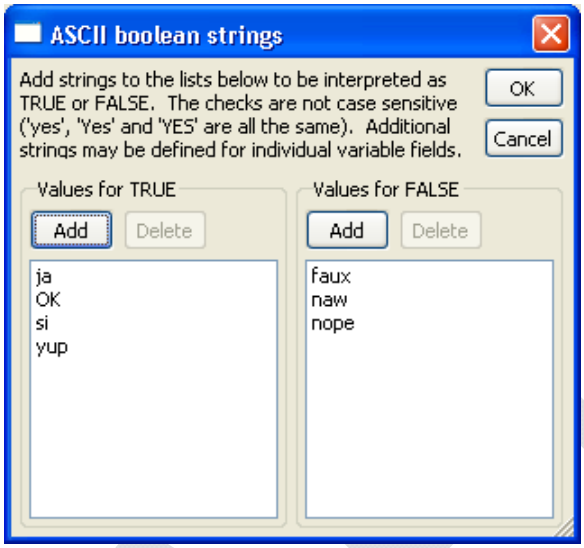
There was also a problem with the field "pond". There was a string "exist" which was being imported as FALSE. So we'll want to fix that too. Double-clicking on that field brings up this dialog:



This is a Boolean variable and there are several strings that NED will automatically recognize as TRUE or FALSE. But sometimes, like the string “exist”, is misinterpreted. In that case, double-click the value and select the value you want.

Boolean codes

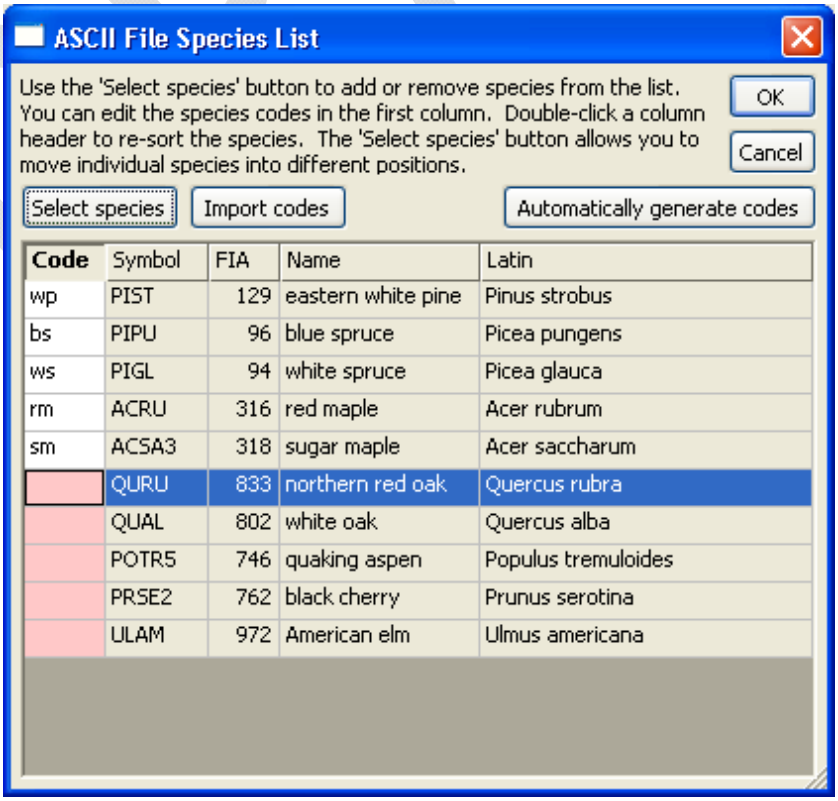
There is a button “Boolean codes” on the main screen for setting strings for Boolean values. That dialog looks like this:



Set strings to be treated as TRUE in the left-side list and those for FALSE in the right-side list. These strings will be used in all Boolean values being imported. Individual exceptions can be handled for each column as is described above.

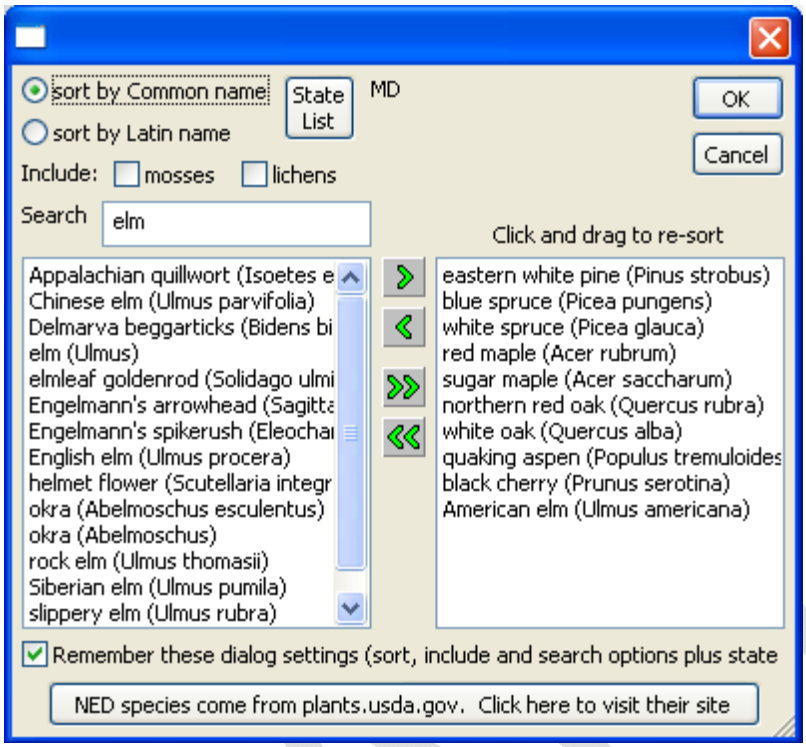
Species Codes

The field “spp”, which is the site index species, is another matter. This is a species where the file has “WP” for white pine. Back on the main dialog there is a button for Species codes. That button displays the following dialog:



Code	Symbol	FIA	Name	Latin
wp	PIST	129	eastern white pine	Pinus strobus
bs	PIPU	96	blue spruce	Picea pungens
ws	PIGL	94	white spruce	Picea glauca
rm	ACRU	316	red maple	Acer rubrum
sm	ACSA3	318	sugar maple	Acer saccharum
	QURU	833	northern red oak	Quercus rubra
	QUAL	802	white oak	Quercus alba
	POTR5	746	quaking aspen	Populus tremuloides
	PRSE2	762	black cherry	Prunus serotina
	ULAM	972	American elm	Ulmus americana

Now, if this is a brand new file your list will be empty. You can import species (using the “Import codes” button) from a variety of file types, but you can also manually add species using the “Select species” button. That dialog looks like this:



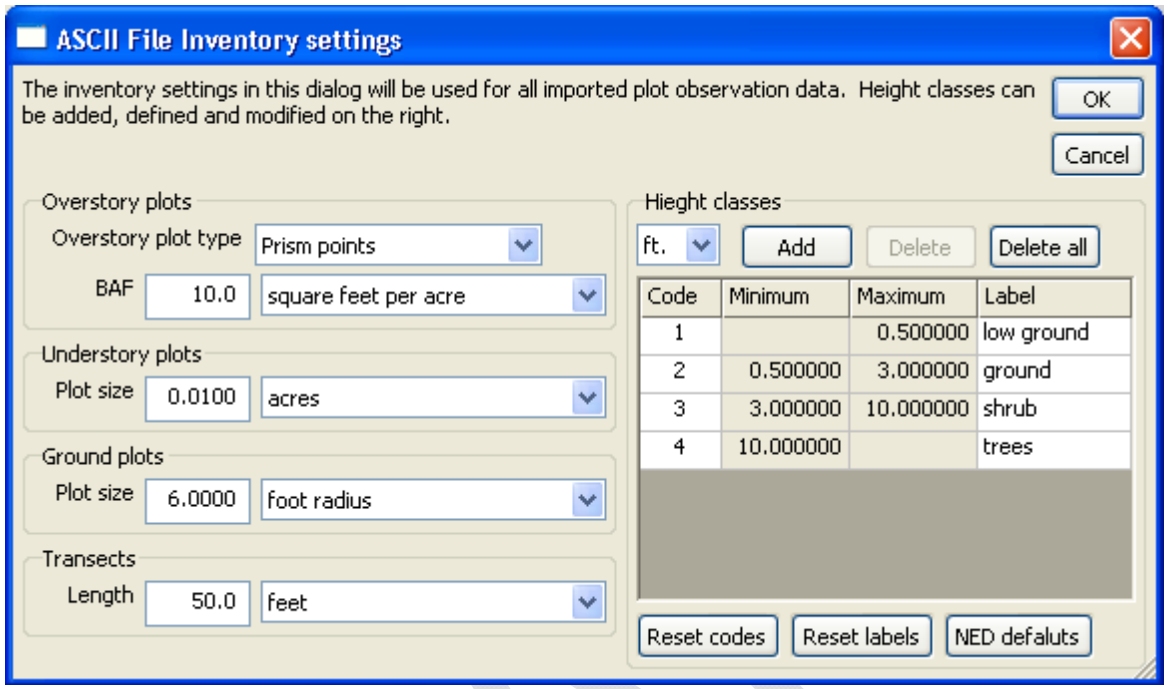
The idea is to select species from the left-hand list and add them to the right-hand list. You do that by clicking on a species and use the arrow buttons to move them back and forth. The search string is handy for limiting the number of species listed in the left-hand list. And if you want to make this dialog work more smoothly, use the “State List” button and select the state or states you’re working in. That greatly reduces the number of species in the left-hand list. For this example, I’m going to keep the list pretty short.

Back on the species list dialog, the only field that is editable is the first column for the species code. You can use any string for your species codes, but you can’t use the same code for more than one species. The codes are case insensitive, so the code “SPP” is the same as “spp”. Every species must have a code and species without codes will have a red background. There is a button to automatically generate codes. This won’t change any existing codes, but will come up with a unique code for all species that don’t already have codes.

The species list does not necessarily have to include all species in your TXT files. The program can recognize FIA numeric codes and PLANTS species symbols. It can also read Latin and common species names, although they must be spelled exactly how they appear in NED. So the string “white pine” cannot be imported, but the string “eastern white pine” will be just fine.

Inventory

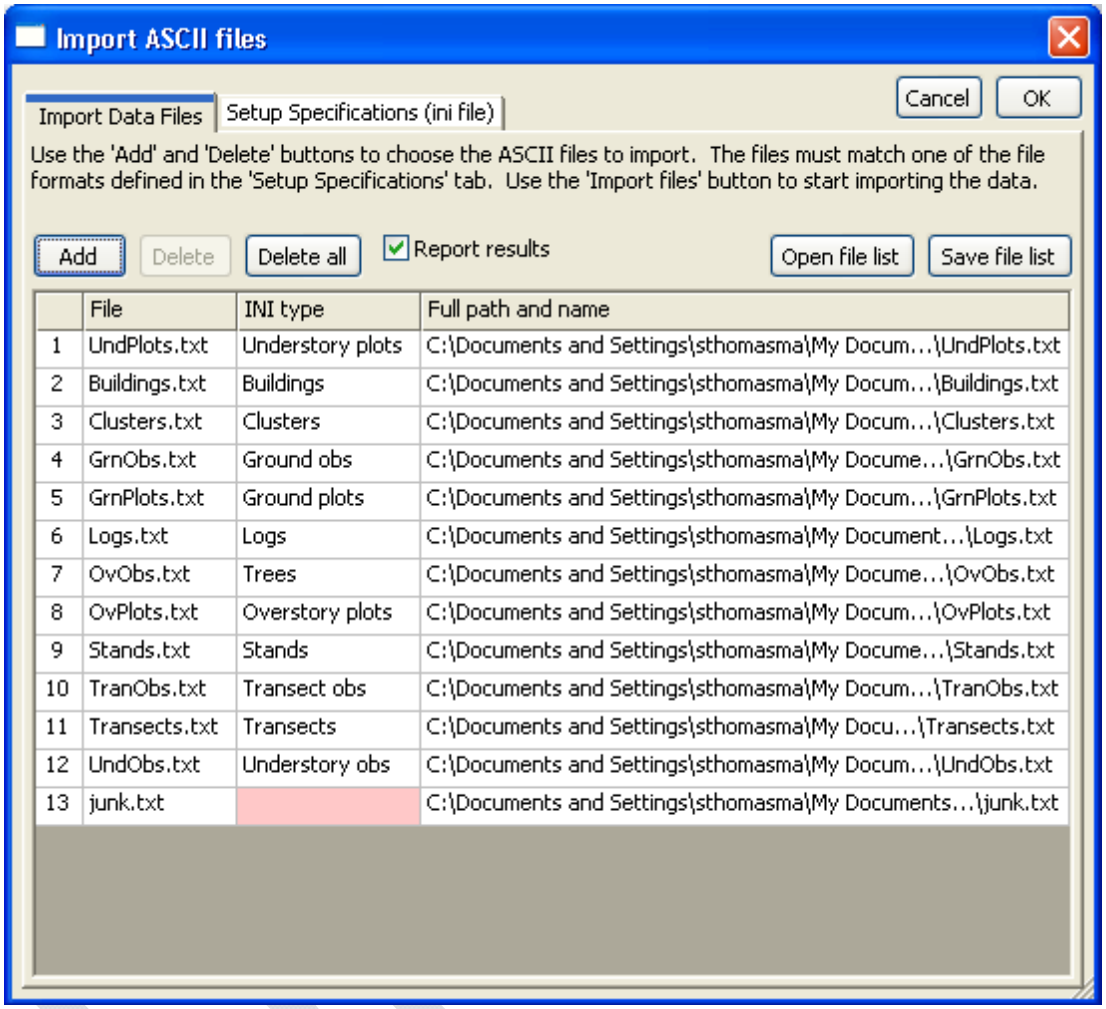
Because we are only importing stand data in this example, we really don't have to worry about inventory settings. But if you are importing plot observation data, such as trees, you should set the type of inventory you used when collecting the data. This "Inventory" button on the main import dialog will display the following:



DRAFT

Importing files

Once you are finished linking all your columns to a NED variable you're ready to actually read a file and import data. We now have to deal with the other tab at the top of the main import dialog. Here's what it looks like:

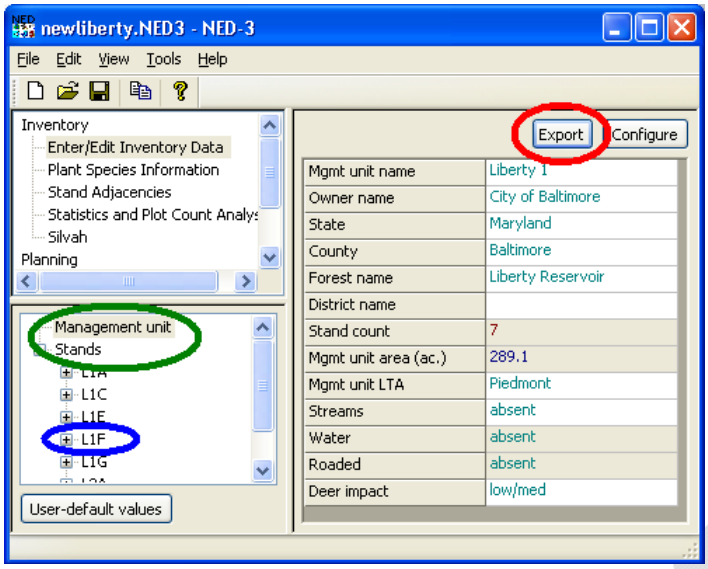


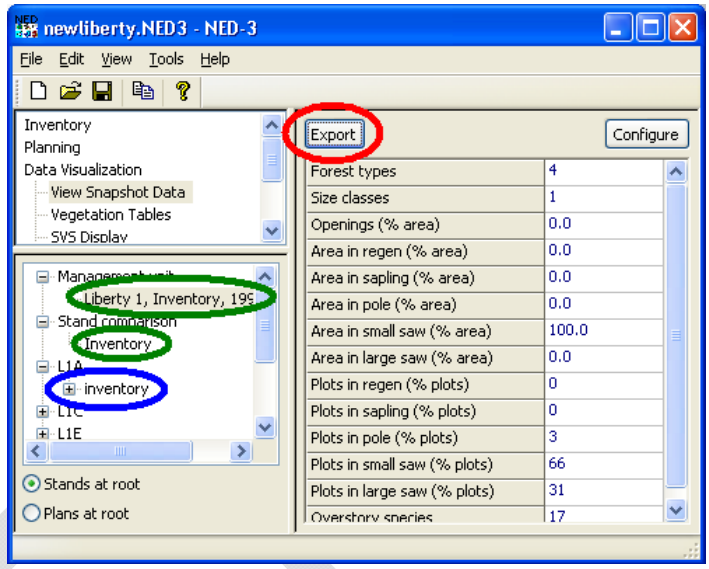
	File	INI type	Full path and name
1	UndPlots.txt	Understory plots	C:\Documents and Settings\sthomasma\My Docum...\UndPlots.txt
2	Buildings.txt	Buildings	C:\Documents and Settings\sthomasma\My Docum...\Buildings.txt
3	Clusters.txt	Clusters	C:\Documents and Settings\sthomasma\My Docum...\Clusters.txt
4	GrnObs.txt	Ground obs	C:\Documents and Settings\sthomasma\My Docume...\GrnObs.txt
5	GrnPlots.txt	Ground plots	C:\Documents and Settings\sthomasma\My Docum...\GrnPlots.txt
6	Logs.txt	Logs	C:\Documents and Settings\sthomasma\My Document...\Logs.txt
7	OvObs.txt	Trees	C:\Documents and Settings\sthomasma\My Docume...\OvObs.txt
8	OvPlots.txt	Overstory plots	C:\Documents and Settings\sthomasma\My Docum...\OvPlots.txt
9	Stands.txt	Stands	C:\Documents and Settings\sthomasma\My Docume...\Stands.txt
10	TranObs.txt	Transect obs	C:\Documents and Settings\sthomasma\My Docum...\TranObs.txt
11	Transects.txt	Transects	C:\Documents and Settings\sthomasma\My Docu...\Transects.txt
12	UndObs.txt	Understory obs	C:\Documents and Settings\sthomasma\My Docum...\UndObs.txt
13	junk.txt		C:\Documents and Settings\sthomasma\My Documents...\junk.txt

Now, for our little example there was only one file, so the screen looked pretty boring. So I thought I'd show the list of file from NEDlite. You can use the "Add" and "Delete" buttons to modify the file list. I added a file called "junk.txt". The program could not find a matching file type in the INI file, so the third column is empty. This file will be ignored.
The "Report results" checkbox is a handy option that will produce a report on how the import process worked. You usually want that turned on. When the import process is complete the report will list any errors that occurred while reading the files.

The two buttons over the list, on the right, are to retrieve or save the files in a separate file. This can be handy if you need to keep a list of the files you are importing.

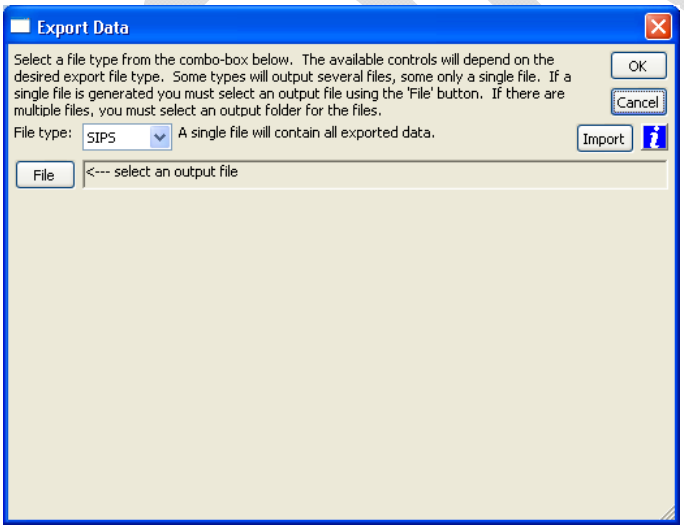
How to export data from NED-3

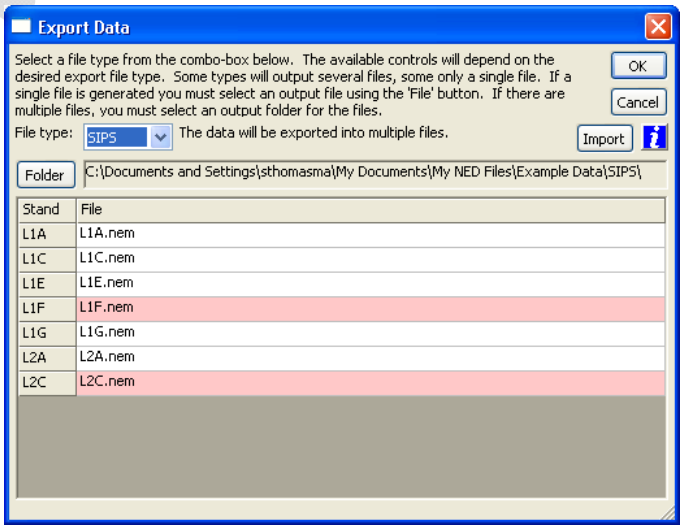




There are two places to export data from in NED-3, one in the "Enter/Edit Inventory Data" module, and the other in the "View Snapshot Data" module. In both places there is an 'Export' button (circled in red above). Selecting the management unit or the stand table in the "Enter/Edit Inventory Data" module will export all the stands (see the green circled items above). Selecting an individual stand in the "Enter/Edit Inventory Data" module will export a single stand (see the blue circled items above). Similarly, in the "View Snapshot Data" module, selection of a management unit or stand comparison table will allow you to export all the stands. And picking an individual stand snapshot will export only that stand.

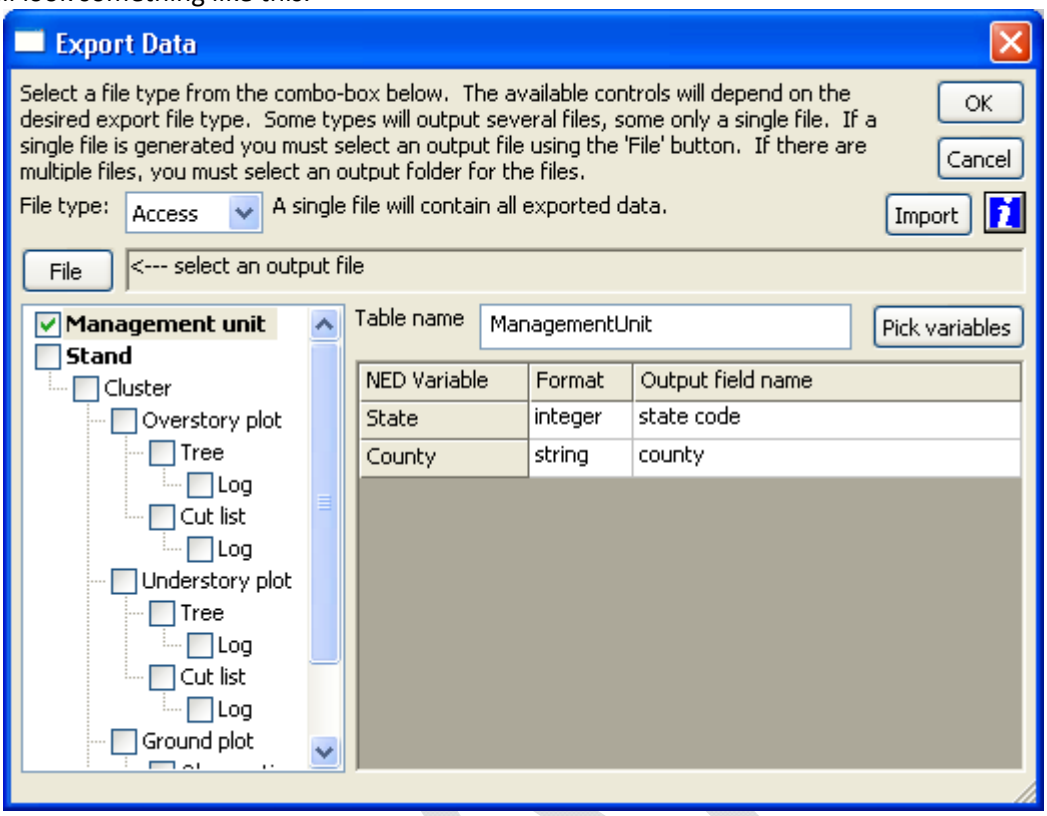
If you are exporting a single file, the Export Data dialog will look like the left image below. For multiple files, the dialog will appear as the image on the right. The choice of output file type is made from a combo-box located near the top left corner of the dialog. In these examples the file type is selected as "SIPS". The simplest layout of the screen is displayed here and other options are available depending on what file type you are exporting to. The different file types and their options will be discussed below.





For single stands the output file is specified using the 'File' button. For multiple stands, choose an output directory using the 'Folder' button. The file names for each stand will be listed in the table. A red background indicates that a file with that name already exists and will be overwritten if you continue.

Exporting to Access, Excel or ASCII files is a little different because the user has a choice of the data to export. The dialog in these cases will look something like this:



For Access and Excel files all data will be output to a single file. The output file is specified using the "File" button. For ASCII files there will be several output files and the "File" button is replaced with the "Folder" button, used to select the output folder for the files.

To select the data to output, check off the boxes in the list on the left side of the dialog. Before you can choose a data level, you must have its parents selected. For example, before selecting the Overstory plots, you must first select the Cluster level, and before you can choose the Cluster data you must select the Stand level. As a data level is selected on the left, several options for the level become enabled on the right. The name given to the output table within the Access file can be changed by entering a name in the "Table name" edit-box. For Excel files, the name is for the output worksheet. For ASCII files the name will be the output file name.

The variables for the level can be selected using the "Pick variables" button on the right. The selected variables are listed in the table, along with their format and output field name. Some variables have different format options. Right-click the "Format" cell for a variable to display a menu of different format options. In the example above the State variable will be output as an integer code instead of the normal state name. The last column in the table is the output field name. You can edit the names in that column. If you try to leave it blank, the default name will be displayed. Normally you would want the field names to be unique, but it isn't necessary requirement.

Once you have everything set in this dialog, and you press "OK" to export the data, you will be prompted as to whether or not you want the dialog settings to be saved. The file will have an *.NED3export extension and all dialog settings will be saved. The "Import" button can be used to retrieve the export options from a previously saved file.

Exporting SIPS data

The SIPS data file does not require any additional information to be exported. Simply select the output file if you are exporting a single stand or the output folder if you are exporting several stands.

Exporting NED-2 data

The NED-2 data file does not require any additional information to be exported. Simply select the output file. The values calculated in NED-3 are exported to NED-2. It is possible there may be differences of how NED-2 calculates data. It is probably a good idea to use the "Calculate all" option under the "Tools" menu in NED-2 after exporting data from NED-3.

The storage of simulated data does not make it possible to export the plans from NED-3 to NED-2. If you are exporting simulated data, the data will appear as inventory data in NED-2. The overstory plot type will be set to "Fixed area" and all plot sizes will be 1-acre.

Exporting SILVAH data

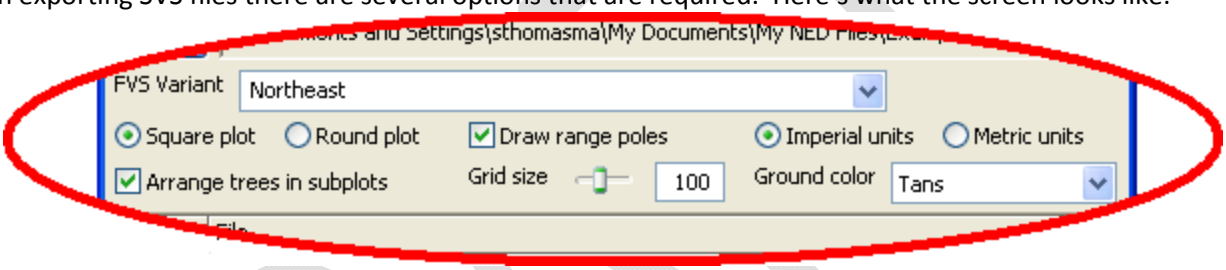
You must select an output DEF file, which will contain the plant species information for SILVAH.

Exporting FVS data

Before you can export data to FVS you must choose an FVS variant. Each variant has its own set of species codes, so NED needs to know what variant to use.

Exporting SVS files

When exporting SVS files there are several options that are required. Here's what the screen looks like:



As with FVS files, you need to specify a FVS variant. You can choose to display square or round plots, arrange the data into subplots, draw range poles in the corners of the display and the units. The Ground color and Grid size controls the appearance of the ground in the SVS images. A higher Grid size will look less grainy

Exporting Access files

When exporting Access files all data will go into a single output file. The data levels (checked off on the left side of the dialog) will each have their own table. The table name can be edited using the "Table name" edit-box. The variables chosen will be columns in the output table. Except for the Management Unit table, there will be index columns that can be used to link the tables together. The follow is a list of indexes for each table:

Table	Indexes
Stand	STAND
Cluster	STAND, CLUSTER
Overstory plot	STAND, CLUSTER, OVER_PLOT
Overstory trees	STAND, CLUSTER, OVER_PLOT, OVER_OBS
Overstory logs	STAND, CLUSTER, OVER_PLOT, OVER_OBS, OVER_LOG
Overstory cut list	STAND, CLUSTER, OVER_PLOT, OVER_CUT
Overstory cut logs	STAND, CLUSTER, OVER_PLOT, OVER_CUT, OVER_CUTLOG
Understory plot	STAND, CLUSTER, UNDER_PLOT
Understory observations	STAND, CLUSTER, UNDER_PLOT, UNDER_OBS
Understory logs	STAND, CLUSTER, UNDER_PLOT, UNDER_OBS, UNDER_LOG
Understory cut list	STAND, CLUSTER, UNDER_PLOT, UNDER_CUT
Understory cut logs	STAND, CLUSTER, UNDER_PLOT, UNDER_CUT, UNDER_CUTLOG
Ground plot	STAND, CLUSTER, GROUND_PLOT
Ground observations	STAND, CLUSTER, GROUND_PLOT, GROUND_OBS
Transect	STAND, CLUSTER, TRANSECT
Transect observations	STAND, CLUSTER, TRANSECT, TRANSECT_OBS

These indexes will make up the first columns of a table. The combination of indexes within a table will be unique for each record.

In addition to the data tables, there will be a table called “Exported Variables”. This table contains information about the columns in all tables. The field type, units and format can be found in this table.

Exporting Excel files

Exporting Excel files is similar to exporting Access files. A single file is created for all output data. The data levels (checked off on the left side of the dialog) will each have their own worksheet (or tab) in the output file. The worksheet name can be edited using the “Worksheet” edit-box. The variables chosen will be columns in the worksheet. The first row in each worksheet contains field names. Except for the Management Unit table, there will be index columns that can be used to link the worksheets together. The list of indexes is the same as those listed in the “Exporting Access files” section above.

In addition to worksheets for the data, there will be a worksheet called “Exported Variables”. This worksheet contains information about the columns in all tables. The field type, units and format can be found in this table.

Exporting ASCII files

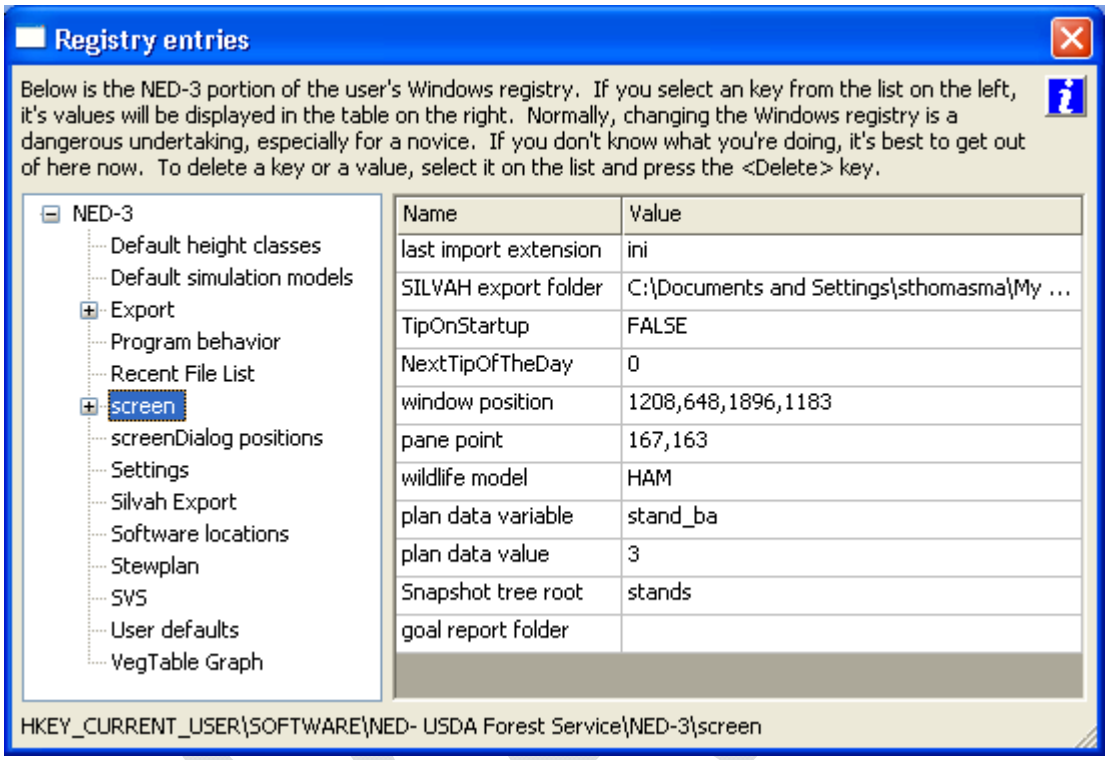
When exporting ASCII files there will be on output file for each data level chosen on the left-hand side of the dialog. The file name can be changed by using the “File name” edit-box. The variables chosen will be columns in the output file. The first line in the file contains field names. The fields within a line are separated by a character specified by choosing one of the “Field delimiter” radio-buttons. You can specify that the strings be enclosed with quotes. This is a good idea unless you can be sure that none of the output strings contain the specified field delimiter. Except for the Management Unit table, there will be index columns that can be used to link the files together. The list of indexes is the same as those listed in the “Exporting Access files” section above.

In addition to the files for the data, there will be a file called “ExportedNED3.ini”. This file contains information about the columns in all files. This file can be used to import similar TXT files into NED-3.

DRAFT

Registry entries

Normally fooling around with the Windows registry is a dangerous thing to do. This dialog isolates the NED-3 part of the registry and only allows limited changes to be made. Although most users should probably not take any action on this dialog, anything you do will probably be safe.

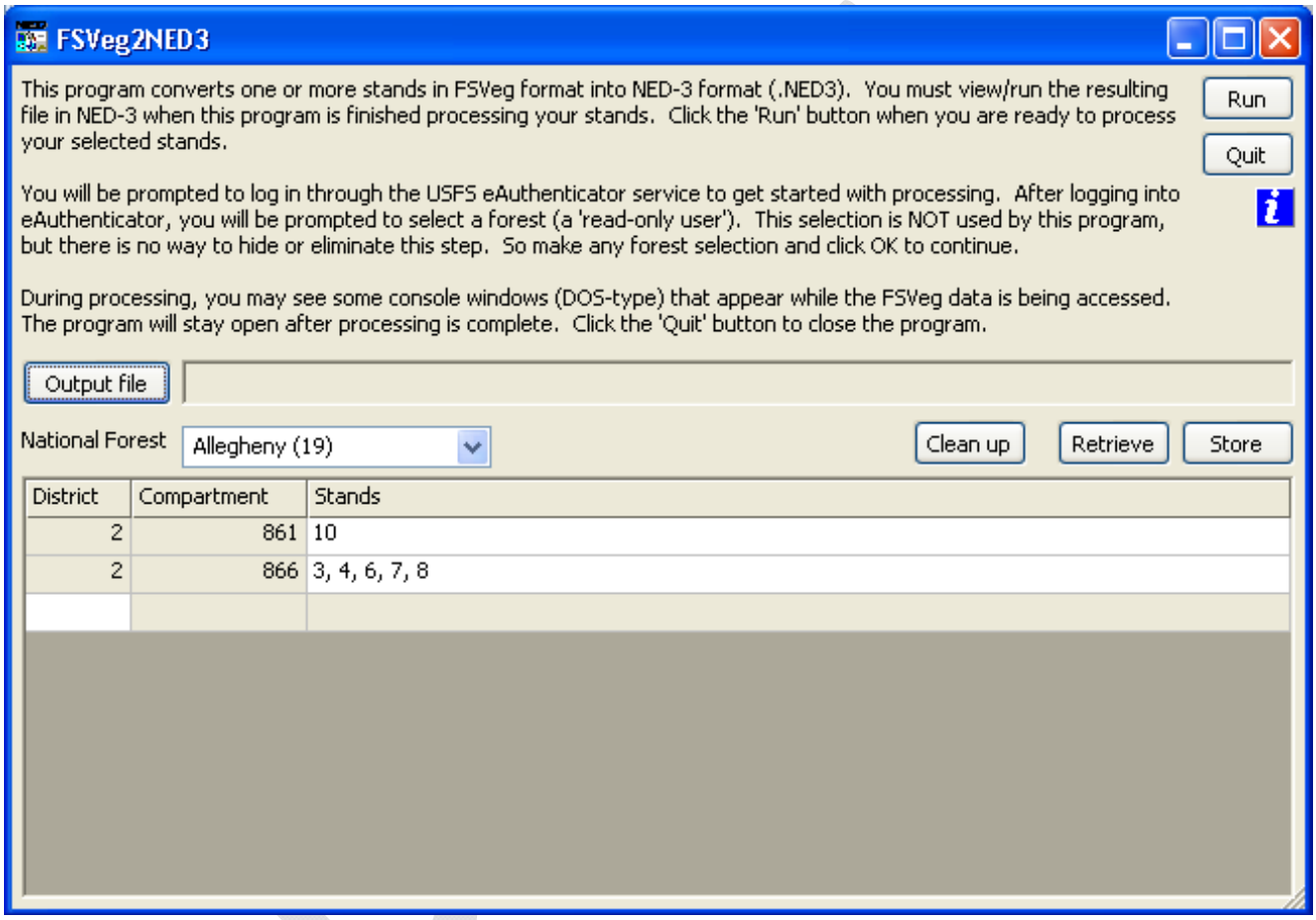


This screen displays the portion of the Windows registry that is used by NED-3 to store user settings and preferences. The list on the left shows the hierarchical layout of the registry keys. The list on the right shows the individual values stored in the registry under the selected key. You can use the <Delete> key to remove either entire key on the left or individual values on the right.

FSVeg2NED3

Field Sampled Vegetation (FSVeg) stores data about trees, fuels, down woody material, surface cover, and understory vegetation. FSVeg supports the business of common stand exam, fuels data collection, permanent grid inventories, and other vegetation inventory collection processes. Additional information about FSVeg can be obtained from http://www.fs.fed.us/nrm/fsveg/index.shtml.

The FSVeg2NED3 program is used to extract data from the FSVeg database into a NED-3 file. The main interface looks like the screen-dump below. If you have any questions about the use of any buttons or controls on the dialog, use the <F1> key to display a help page for the currently selected control.



All of the imported stands will be output to a single NED-3 file. You can select the output file using the “Output file” button. Select the National Forest from the combo-box. You may only get data from a single National Forest per program run. The main table is used to enter the District, Compartment and a stand list.

To begin a new list of stands, enter the district in the first column at the bottom of the table (the only cell in the first column that is empty). You cannot go back and edit the District once you leave the cell, but if you leave the “Compartment column” or “Stands” column empty, the row will be deleted when you use the “Clean up” button. Once the district is entered, enter the Compartment in the second column. Once again, once a Compartment is entered, you cannot go back and edit it. But if the “Stands” column is left empty, the entire row will be deleted when you press the “Clean up” button. Once a District and Compartment are entered, you can enter a list of stands to retrieve. Separate stands with a space or comma or any non-digit character. When you leave the cell, the stands will be sorted and duplicates will be eliminated.

The “Clean up” button is used to fix entries on the table. Any row with an empty “Compartment” or “Stands” cell will be eliminated. Rows that have the same “District” and “Compartment” will have their stand lists combined into a single row in the table. Here are some typical things that the “Clean up” button will fix:

District	Compartment	Stands	
2	861	10	⟵ this line is OK, it has a single stand
2	866	3, 8, 6, 7, 4, 3	⟵ this line is unsorted and stand 3 is entered twice
2			⟵ this line is missing the Compartment
2	999	1, 2, 3, 4, 5	⟵ this line is fine, but the stand list overlaps with the sixth line
2	999		⟵ this line is missing the Stand list
2	999	4, 5, 6, 7	⟵ this line is fine, but the stand list overlaps with the fourth line
			⟵ this line is where you'd enter a new District

After using the “Clean up” button, the table looks like this:

District	Compartment	Stands
2	861	10
2	866	3, 4, 6, 7, 8
2	999	1, 2, 3, 4, 5, 6, 7

The first row stayed the same. The second line is now sorted and the duplicate entry of stand 3 is eliminated. The third line was removed because it didn’t have a Compartment. The fourth and sixth lines where combined into a single stand list for District 2, Compartment 999. The duplicate stand numbers were removed. The fifth line was removed because it didn’t have any stands specified. The bottom line is always the same- it is where you enter the District to begin a new row.

The “Retrieve” and “Store” buttons are used to save and load the contents of the table to an external file. The file is in ASCII format with a fairly simple layout. The “Retrieve” button will remove the current entries and replace them with those found in the file.

Click the Run button when you are ready to process your selected stands. The first step is to check to make sure you have internet connection and that FSVeg is accessible. You will be prompted to log in through the USFS eAuthenticator service to get started with processing. You must have a login name and password plus have permissions to access the FSVeg databases.

After logging into eAuthenticator, you will be prompted to select a forest (a 'Read-Only user'). This selection is NOT used by this program, but there is no way to hide or eliminate this step. Make any forest selection and click OK to continue.

During processing, you may see some console windows (DOS-type) that appear while the FSVeg data is being accessed. Just sit back and watch it work until all your data has been downloaded from the FSVeg database. The program will stay open after processing is complete. The status bar below goes half-way as the queries to FS-Veg are being built then continues as the NED-3 file is being created. There will be a pause in the status bar when data is being fetched from FS- Veg.