United States
Department of
Agriculture

Forest Service

**Northeastern
Research Station**

General Technical
Report NE-340

NEDLite User's Manual

Forest Inventory for Palm OS Handheld Computers

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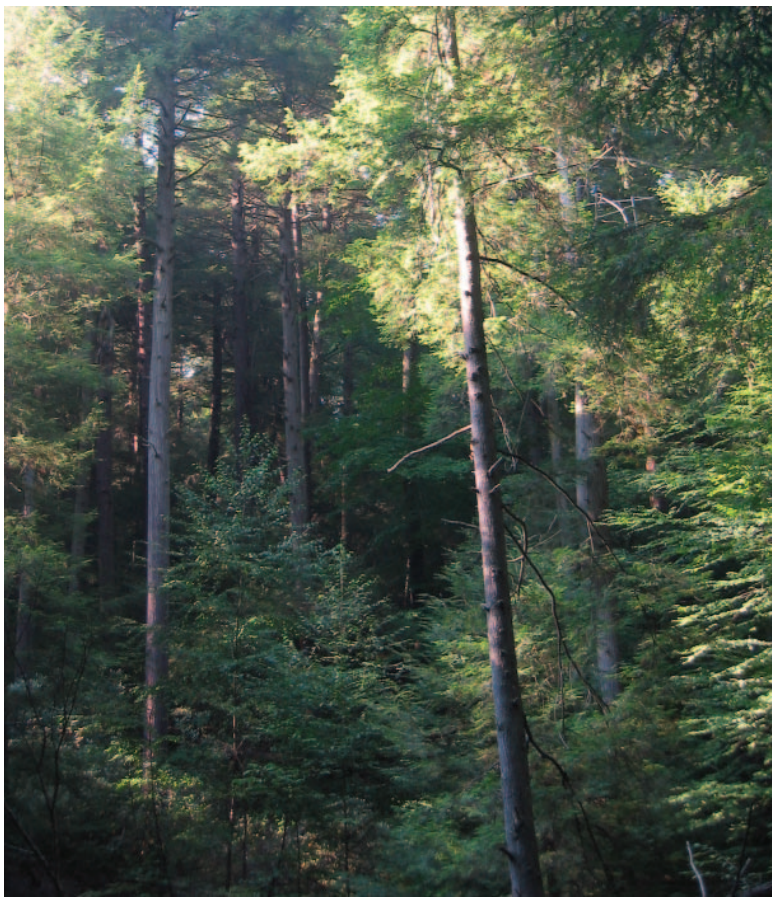
Mark J. Twery



Abstract

A user's manual for NEDLite, software that enables collection of forest inventory data on Palm OS handheld computers, with the option of transferring data into NED software for analysis and subsequent prescription development. NEDLite software is included.

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Published by:
USDA FOREST SERVICE
11 CAMPUS BLVD SUITE 200
NEWTOWN SQUARE PA 19073-3294

March 2006

For additional copies:
USDA Forest Service
Publications Distribution
359 Main Road
Delaware, OH 43015-8640
Fax: (740)368-0152

Visit our homepage at: **http://www.fs.fed.us/ne**

Addendum

Publication: NEDLite user's manual: forest inventory for Palm OS handheld computers. Gen. Tech. Rep. NE-340. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. March 2006.

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The software distributed with Gen. Tech. Rep. NE-340 was tested and runs properly on the Palm OS version 5.2.1 and earlier. It does not run properly on newer Palm OS handhelds equipped with Palm OS Garnet version 5.4 or newer. The solution is to download an updated version of NEDLite from **http://www.fs.fed.us/ne/burlington/ned.** This update will provide a new version of NEDLite suitable for any device running Palm OS 3.5 or newer. Please refer to page 14 of the manual for instructions on re-installing the new version of NEDLite to your device.

To check the Palm OS version on your handheld:

1. Select the Applications Launcher (the "Home" icon on your device) where all applications are viewed.
2. Select the Menus icon to view the pull-down menus at the top of the screen.
3. From the Applications pull-down menu, choose "Info".
4. Select the "Version" box at the bottom of the screen.

List of Palm OS versions on various Palm OS Handhelds (modified from http://www.palm.com)

Device	Palm OS version (out-of-box)	NEDLite update required
Palm TX	Garnet 5.4.9	Yes
Tungsten T5	Garnet 5.4.0	Yes
Tungsten T3	5.2.1	No
Tungsten T2	5.2.1	No
Tungsten T	5	No
Tungsten C	5.2.1	No
Tungsten E2	Garnet 5.4.7	Yes
Tungsten E	5.2.1	No
Tungsten W	4.1.1	No
Palm Z22	Garnet 5.4.9	Yes
Zire 72	5.2.8	No
Zire 71	5.2	No
Zire 31	5.2.8	No
Zire 21	5.2.8	No
Zire	4.1	No
Palm i705	4.1	No
Palm m515	4.1	No
Palm m505	4.0 or 4.1	No
Palm m500	4.0	No
Palm m130	4.1	No
Palm m125	4.0	No
Palm m105	3.5	No
Palm m100	3.5	No
Palm VIIx	3.5	No

Contents

Preface

NEDLite is software that enables field data collection on handheld computers using the Palm OS, with automatic data transfer into NED for analysis and subsequent prescription development. This manual is the printed version of the online Help delivered with NEDLite.

NED is a collection of software products developed by the USDA Forest Service in conjunction with state and educational institutions. NED helps resource managers develop goals, assess current and future conditions, and produce sustainable management plans for forest properties. Originally NED was an acronym for the Northeast Decision Model, but as the geographic scope of the project expanded, the software lost the regional reference and has become simply NED (Twery et al. 2000).

There are numerous features of NED that collectively support a goal-driven forest management approach. When followed, this approach ensures the following:

1. All relevant goals are considered.
2. The current condition and character of forest land are known.
3. Alternatives to manage the land are designed and tested.
4. The future forest under each alternative is simulated.
5. The alternative selected achieves the owner's goals.

NEDLite can be used purely for data collection and does not require NED software. In this manner, NEDLite data can be imported into a spreadsheet program, such as Microsoft Excel®. However, NEDLite was designed specifically for NED-2, a system which expands on previous software, NED-1, by integrating treatment prescriptions, growth simulation, and alternative comparisons of management scenarios across a management unit. NEDLite also can be used with NED-1.

As we began to conceive of forest inventory software for modern handheld computers, we wanted a solution that would run on relatively inexpensive and widely available hardware. Palm OS handheld computers held a substantial majority of the market and we concluded that our initial solution should target the Palm OS. The authors readily acknowledge the rapidly changing handheld computer market and we intend to offer solutions for other platforms, such as devices running Windows Mobile.

Getting Started

This section presents a quick glance at Palm OS handheld technology and how NEDLite manages forest inventory data. See the section, “Installation” (page 10), for instructions on installing NEDLite. Once you have completed the installation, refer to this section to get started with NEDLite.

There are additional steps you must consider before using the program in the field. Specifically, see the sections, “Choose a NED version” and “Overview of plant species codes in NEDLite.”

If you are unfamiliar with Palm OS handhelds, some of the more common features are explained here. There are many terms and ideas presented throughout the User’s Manual. Please refer to the Glossary (page 55) for definitions and additional explanations.

Overview of the Palm OS Handheld

This section provides an overview of the key features of your Palm OS handheld. Refer to the documentation that came with your device more information. There are several manufacturers of Palm OS handhelds, each with unique features and capabilities. The features described here are for an m500 device running Palm OS 4.0. Some devices might not have all of these features, or might have additional features not described here.

The following descriptions are for features shown in Figure 1.

Expansion card slot
With the expansion card slot, you can add more memory or applications through expansion cards. Cards also can be used for backup purposes, allowing you to restore data in an instant.

IR port
The IR port is used for transferring data and applications between other Palm OS devices and/or desktop PCs using infrared technology. IR ports are useful in close range, probably up to 1 meter.

Power button
The power button turns the handheld on and off. If your unit has a backlight feature, press and hold down the power button for 2 seconds and the backlight comes on/off.

Stylus/pen
Tucked away in a slot on the side of the Palm OS handheld, the stylus is used for interacting with screens.

Screen
The screen displays applications such as NEDLite. Most user interaction occurs on the screen and the screen responds to taps from the stylus or your finger.

Clock
Tap the clock icon to display the time and date.

Contrast
Tap the contrast icon to adjust the contrast of the display. This feature is available on most Palm OS devices and may help alleviate problems with screen glare in the field.

Alphabetic keyboard
After you have tapped inside a text field, tap the dot near “abc” to activate the on-screen alphabetic (QWERTY) keyboard.

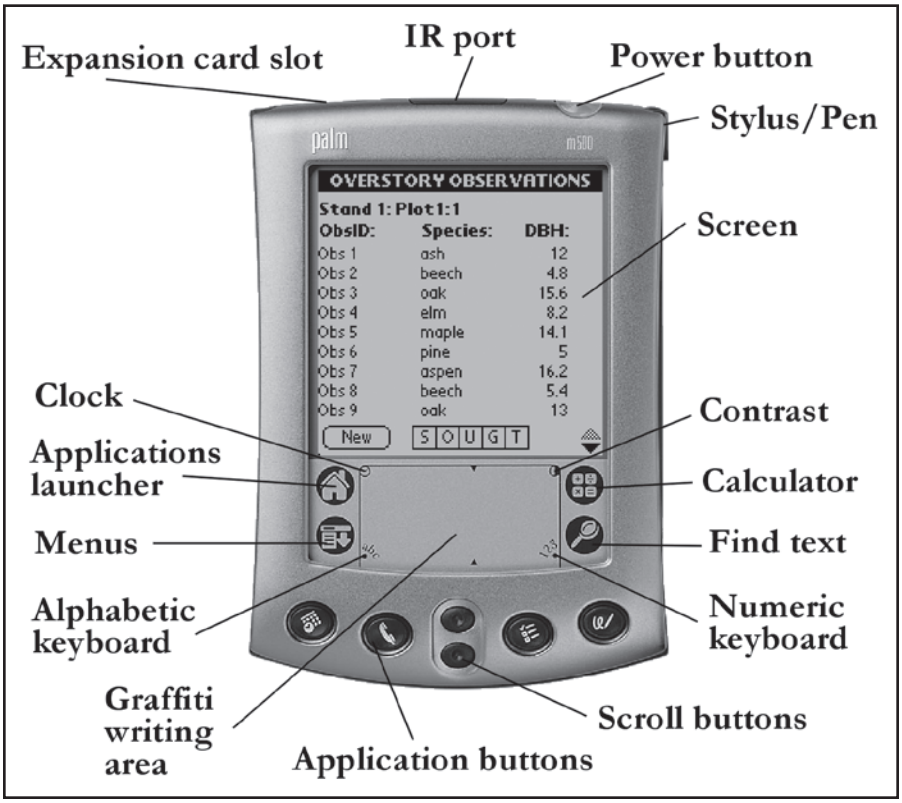


Figure 1.—Features of typical Palm OS handheld

Numeric keyboard

After you have tapped inside a text field, tap the dot near "123" to activate the on-screen numeric keyboard.

Graffiti writing area

This is where you can write letters and numbers using Graffiti. Graffiti is a type of handwriting recognition system built around a unique Graffiti alphabet. It is designed to recognize characters and numbers drawn in a specific manner. Graffiti is NOT a personal handwriting recognition program. The small arrows about 1/3 from the right side of the Graffiti area indicate the boundary between the letters and numbers. Write letters on the left side, and numbers on the right. As an alternative to using Graffiti, you can try the alphabetic and numeric keyboards.

Applications launcher

Tap this icon to display all of the applications on your Palm OS handheld. If you have placed applications among different categories (e.g. "games", "main", "utilities", etc.), repeated taps on the applications launcher will take you through each category.

Menus

Tap this icon to display a top-level menu at the top of the screen. This only works if the screen of the current application supports menus. In many applications, tapping the title bar at the top of the screen will produce the same result.

Calculator

Tap this icon to launch a calculator program. The calculator functions as a standard calculator.

Find text
Tap this icon to search for a text string within any application. This only works for applications that support the "find" feature.

Silkscreen area
The silkscreen area (not labeled in Figure 1) is the lower part of the screen containing the Graffiti writing area and the icons for the applications launcher, menus, calculator, and find text.

Scroll buttons
These buttons display text or rows of data not currently visible within the screen area. Press the upper button to scroll upward and the lower button to scroll downward. The scroll buttons only work for applications that support scrolling with the scroll buttons (versus scroll bars or scroll arrows that appear on the screen).

Application buttons
Pressing these buttons activate four of the built-in applications that come with your Palm OS handheld: Date Book, Address Book, To Do List, and Note Pad. If you press these buttons while the device is turned off, the device will turn on and launch the application.

For help with other items displayed in Figure 1, and additional features specific to NEDLite, please see the following section, "How to interact with NEDLite".

How to Interact with NEDLite

NEDLite uses many of the same features found on desktop applications. Rather than using a mouse, a stylus (pen) is used to touch the screen and activate program features. In most cases, features are selected or activated with a single tap directly on the screen. Figure 2 shows a typical screen in NEDLite.

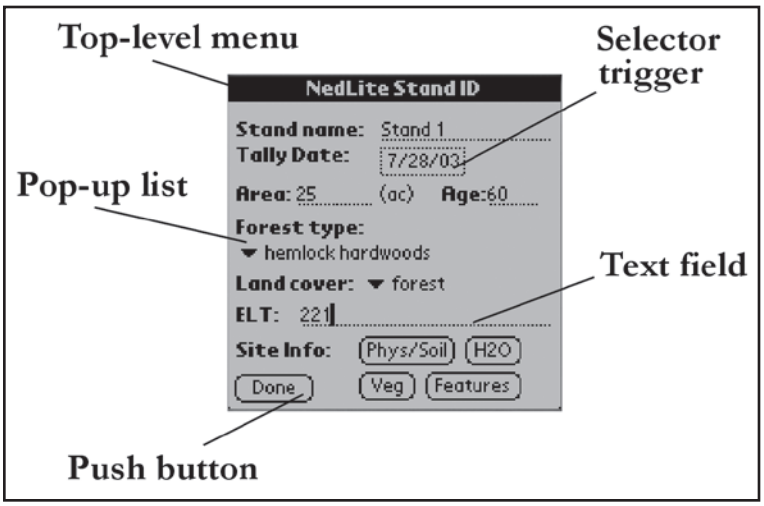


Figure 2.—Typical NEDLite screen.

The following items are used throughout NEDLite:

Top-level menu
Menus provide other commands not visible on the screen. If you tap on the title bar of a screen, a menu will appear only if one has been created for the current screen.

Help on this screen
Occasionally, NEDLite offers additional tips or information for a given screen. If so, the info icon (not shown in Fig. 2) will appear in the right side of the title bar. Tap on the icon to view the information.

Pop-up list
Tap the black arrow, or in the area immediately to the right of arrow, to view and select from a list of choices.

Selector trigger
Tap inside the dotted box to change the data that appears in the box. In this example, a tap will launch a date-selection dialog where the tally date can be modified.

Text field
Text fields are used for entering or modifying text. In certain fields where numeric values are required, only numeric characters are permitted. The insertion point is indicated by a thin, blinking cursor. Tap anywhere in the text to place the insertion point. You may select text by holding down the pen and dragging it to the left or to the right.

Push button
Push buttons have several different appearances in NEDLite. Sometimes push buttons represent alternative choices in a group—much like radio buttons in other applications. Most often, a push button is used to jump to another NEDLite screen.

Navigating Through Your Data

Forest stands, plots, and observations are listed in tables. A NEDLite table is similar to a spreadsheet. Each row represents an item that has already been created. Columns have headings that help distinguish each item. Tables of stands display the tally date, stand name, and numbers of plots created in each stand. Plot tables display each plot in a given stand, along with the number of observations in each plot. Tables of observations display each observation in a given plot, using several columns for species, count, diameter at breast height (d.b.h.), and other attributes. In NEDLite, tables do more than just display collections of similar data—they also provide access to individual items. NEDLite uses tables in three ways:

1. To navigate or move to another table of related data. For example, a table of plots shows the number of observations collected in each plot. Tapping in the observations column will take you to another table that displays all of the observations in the plot.
2. To select items to be viewed/edited in full detail. For example, a table of observations shows all the observations in a given plot. Tapping in any column of a particular observation will bring up a screen that displays the detail for that observation.

3. To provide for direct editing of the items in the table. Such tables contain common interface elements like pop-up lists or text fields. The log-products table is an example of such a table.

For many tables, NEDLite will respond differently depending on which column you select in a row. Figure 3 illustrates the overstory observations table in NEDLite and highlights common tools for viewing and navigating through data.

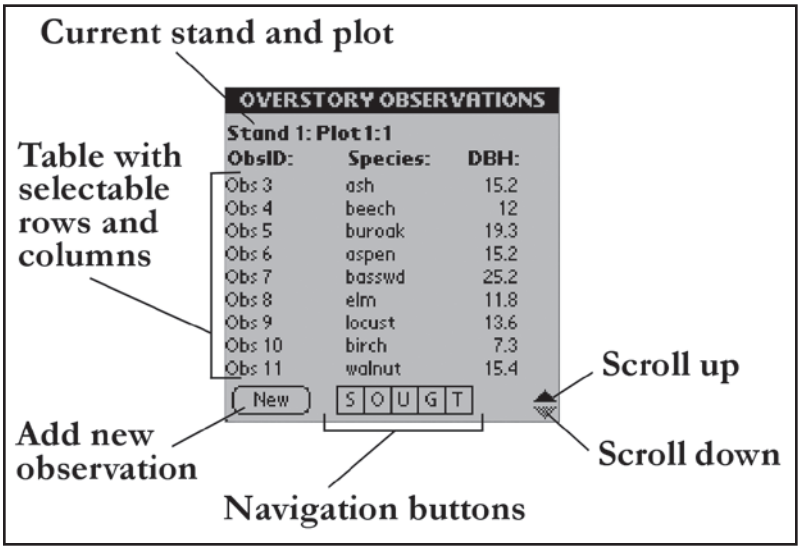


Figure 3.—Example table of overstory observations in NEDLite, with tools for navigating through data.

Current stand and plot

At the top of many screens, NEDLite displays the identity of the stand and plot in which you are working. This helps you remember "where you are".

Table with selectable rows and columns

NEDLite tables display and provide access to data. Tap in any row and/or column to select, modify, or view additional information about the specific row of interest. See above for more information on tables.

Scroll up and Scroll down

When more than nine items are contained in a table, NEDLite automatically displays scrolling arrows. If the top row is not in display, the "up" arrow will be shown in solid black, and tapping on this arrow will cause the table to scroll up. Similarly, if the bottom row is not in display, the "down" arrow will be shown in solid black. In Figure 3, note that the down arrow is shown in a mottled color (not solid). This means the very last row is displayed and there is no need to scroll down any further. Hence, the down arrow is deactivated.

Navigation buttons

These buttons appear at the bottom of all plot and observation tables. They provide instant access to any of the plot tables. Select "S" to return to the "Welcome to NEDLite" screen where all of your stands are displayed. Select "O" to view overstory plots in the current stand. Similarly, select "U" for understory, "G" for groundcover and "T" for Transects (linear transects for dead/down woody debris).

Add new observation
Select this button to create a new observation. On the observation detail screen, select "OK" when you are finished entering information and NEDLite will return to the observations table. NEDLite scrolls the table so that the new observation is in view. The process is essentially the same whether you are adding new stands, plots, or observations.

Choose a NED Version

After installing NEDLite to the Palm OS handheld, it is important to select the version of NED in which you intend to work.

The NED inventory type corresponds to the version of NED software that you intend to use for processing your NEDLite data. NED-1 has different data requirements than newer versions of NED. You must select an inventory type so your data will be properly formatted for your version of NED.

Please make sure you have selected the proper inventory type before you enter data. Know which version of NED you intend to work with before you go to the field. Due to different data formats, once you have entered data you will not be allowed to switch inventory types until you have removed (deleted) all of your data from NEDLite. Before you delete data from NEDLite, please be sure you have performed a Hot Sync to save your data on the desktop and into NED.

During a given session, all forest stands in NEDLite will share the same inventory type. That is, you cannot specify that a certain stand has "NED-1" data, while another stand uses a different format.

To select a NED version:

1. From the "Welcome to NEDLite" screen, open the top menu and select "Inventory".
2. Select "NED Version".
3. Select the inventory type that you wish to work with, either "NED-1 Inventory" or "Typical NED Inventory Settings" (the default setting). Since NEDLite originally was designed for the next generation of NED software, "Typical NED Inventory Settings" applies to NED-2 and later.
4. Select "OK".

Limitations under NED-1 inventory settings:

1. You cannot modify the number of plots per plot-cluster. NED-1 followed a fixed-plot design. This means you cannot modify the cluster design in preferences.
2. You cannot add/delete individual plots and transects. The only way to add/delete plots and transects is to add/delete an entire plot-cluster.
3. You cannot record understory plots and observations. Instead, use ground-cover plots to collect all of your understory data in NED-1.
4. You cannot record buildings. Buildings are used in analyzing fire risk and are not a feature in NED-1.
5. You cannot grade a tree into multiple log products nor specify log lengths for each product. However, you can enter a total sawlog length and/or a total pulpwood length. You also can specify the most valuable product in the tree to prevent NED from deriving products of a higher value than you specify.

6. User codes (user-defined variables) are available only for the overstory.
7. Each ground-cover observation must include the height class, as either “g” for ground or “s” for shrub.

Establishing Your Inventory Design

This section describes how to specify the inventory (cruise) settings that you will be using in the field. If you are using a custom plot design (not available for NED-1), you should establish your plot design in NEDLite before you add stands and enter data. This allows NEDLite to follow your specific plot design as you add plots in the field.

When you add a new stand, it inherits inventory parameters from the default parameters stored in NEDLite preferences. Thus you can enter your cruise design once, and it will be applied to all stands as they are added. Since each stand maintains its own set of inventory parameters, the cruise design of individual stands can be modified if the need arises.

To set global inventory parameters that apply to *new* stands only:

1. From the “Welcome to NEDLite” screen, open the top menu and select “Inventory”.
2. Select “Inventory Settings”.
3. Edit the default items where appropriate.
4. Select “OK”.

To modify the inventory parameters for a single (existing) stand:

1. From the “Welcome to NEDLite” screen, select the on the name of the stand you wish to modify.
2. Tap the title bar at the top of the “STAND ID” form, or tap the menu icon in the silkscreen area of your Palm OS handheld.
3. Select “Options”, and then select “Inventory Settings”.
4. Edit the items where appropriate.
5. Select “OK”.

Overview of Plant Species Codes in NEDLite

NEDLite is flexible when it comes to recording plant species. You can enter up to seven alphanumeric characters; NEDLite does NOT require a known species code. This flexibility allows you to record a species that you did not expect to encounter in the field (one that is not on the list). When you transfer your field data to the desktop, NEDLite preserves your species identification exactly as entered in the field.

Each species has three different codes that are recognized by NED software:

USDA Plants Code: The code is the first two letters of the genus and the first two letters of the species, followed by a number if there are other plants that have similar genus and species abbreviations. This is a code developed by the USDA Natural Resources Conservation Service for every species found in North America (native or exotic). NED will interpret these codes automatically since they are predefined.

FIA Code: This code was formerly used by the U.S. Forest Service for various inventory efforts. Most of these codes were applied to woody species, and therefore you may not find many FIA codes for herbaceous species. NED will interpret these codes automatically since they are predefined.

Not all regions applied identical FIA codes for similar species. Please check that the FIA codes you intend to use are the same as those listed in the NEDLite species codes program (see FIA column in Figure 4-page 17).

User Code: This is a custom code that can be any combination of alphanumeric characters. Unlike the USDA Plants and FIA codes, user codes *must* be defined using the species codes program if they are to be interpreted by NED. See "Working With Plant Species" on page 17, for more detail on defining your own species codes and downloading them to your Palm OS handheld. It is strongly recommended that user codes be established before collecting data in the field. Failure to define your custom species codes will result in NED not recognizing your plant species. If you can remember all of the codes applied in the field, it is still possible to define the codes before transferring your data into NED. However, establishing your custom codes before collecting data will make it easier to apply them consistently in the field, and minimize errors and confusion when you return to the office.

For convenience, NEDLite provides a default plants list, but the default list is large and may have more species than needed or may not contain the species expected at your local site(s). A separate program, installed on your desktop PC during the NEDLite installation, enables you to create your own plant species list. You can import species from existing NED file types and define your own species codes (user codes, described above). See "Working With Plant Species" (page 17) to learn more. When finished with this program, you can download your plants list to NEDLite. Whether you use the default plants list or download your own list, the list is available as a "pick-list" from which to record the species of a given observation.

Be careful about how many species are downloaded to NEDLite. More than 29,000 species are available and selecting all will result in a noticeable slow-down when recording species in NEDLite. For better performance, we recommend working with 4000-6000 species, or less. A fast way to do this is by selecting species in a given state or group of states. For example, selecting every state east of the Mississippi River would result in a list of approximately 10,300 species; if you only select Tennessee, about 3800 species would be included.

Encountering species not on your list

While in the field, if you find a species for which you have no species code, make something up and use it consistently. Keep track of the impromptu codes you define in the field. Then, before transferring your data to the desktop PC, run the species codes (see "Working With plant Species" on page 17 for more detail) program to define the impromptu species code(s). As long as the impromptu species codes are defined before the data transfer (HotSync session), all species will be correctly interpreted by NED.

Installation

The installation process is controlled from your desktop PC. In addition to the NEDLite inventory program that runs on your Palm OS handheld, you will receive desktop software for handling data transfer and other tasks.

Before installing NEDLite, it is recommended that you install the Palm Desktop software that comes with your Palm OS handheld. Without this software, the NEDLite setup will not be complete and you will not be able to transfer data to/from the Palm OS handheld.

System Requirements

NEDLite requires Windows 2000 service pack 3 or newer, or Windows XP. NEDLite cannot be installed on Win 9X operating systems because the NEDLite installation uses the Microsoft Windows Installer engine, version 3.0 or newer, which is not supported on Win9X computers. If your computer has a pre-3.0 version of the Windows Installer, you will be required to upgrade before the NEDLite setup can begin. Refer to the instructions under the section "Running the Installation" for more information.

Depending on how you intend to use NEDLite, the system requirements may vary. If you want to use NEDLite purely for data collection and you do not intend to upload data into NED, the requirements under "NedLite only" should suffice.

NEDLite only

To install NEDLite and subsequently transfer data to/from the Palm OS handheld, you need a computer system with the following specifications:

- A PC with an Intel (or compatible) processor running Windows 2000 service pack 3 or newer, or Windows XP.
- At least 20 MB of hard disk space.
- Any monitor that works with Windows (800x600 pixels or better is recommended).
- An available USB or serial port for transferring data to/from your Palm OS handheld.

Uploading to NED: NED software is NOT required as part of the installation of NEDLite, but it is needed to import data into NED. You can transfer data to/from the Palm OS handheld without NED software, but you must have NED-1 or a newer version of NED software to analyze the data using NED. To download NED from the web, go to http://www.fs.fed.us/ne/burlington/ned.

Running the Installation

On older computers running Windows 2000 or Windows XP service pack 1 (or older versions of XP), the NEDLite installation must first upgrade the Microsoft Windows Installer to version 3.0 before proceeding with the installation. Administrative privileges are required for this upgrade, and the NEDLite installation will not commence until the upgrade is completed. Once the Windows Installer upgrade is finished, you will be prompted to reboot the computer. After the reboot you can resume the rest of the installation as a user without administrative privileges if desired.

The NEDLite installation involves two phases, installation and configuration. During the installation phase, all setup files are extracted to the desktop computer. Then the installation begins and the NEDLite files are copied onto the desktop computer. At the completion of this phase, the setup launches a separate program (installed with NEDLite) to begin the configuration phase. Configuration involves several steps, including registering the NEDLite conduit with the HotSync manager and establishing personal storage space on the desktop. See the section, “Configuration” (page 13) for more information.

If the setup is run with Administrator privileges, only the installation phase is completed. In this scenario, configuration can be run manually, if desired. If the Palm Desktop software is installed under non-Administrative privileges, which is typical, configuration is launched automatically.

Per-machine versus per-user installation

If you run the installation with Administrator privileges, NEDLite will be available for all users on the computer. This is known as a “per-machine” installation. Future updates, including removal of NEDLite, will require Administrator privileges.

A per-user installation is more typical. Under this scenario, NEDLite will be available only to the person that installed the software.

According to the privileges assigned to your PC user name and password, the NEDLite installation automatically determines whether to run a per-machine or per-user installation.

To run a per-machine installation when you are not logged on as an Administrator, follow the steps below.

1. Find the program, “nedliteinstall.exe”. This step is required if you have not already extracted the setup files. When the extraction completes, the NEDLite installation begins automatically. If the extraction process is run as an Administrator, the remainder of the installation will be performed under Administrator privileges.
2. Press and hold the SHIFT key, and right-click the program.
3. From the pop-up dialog, select “Run as…”.
4. Select “Run the program as the following user”.
5. Type the user name, password, and domain of the Administrator account.
6. Follow the installation instructions on the screen.

Installing from CD

To begin the installation, insert the NEDLite CD into the CD-ROM drive. If auto-play is enabled on your computer, the installation program will launch automatically.

If the CD does not start within 5-10 seconds, you can start the setup by opening the “Start” menu. Select the “Run” menu, and from the “Run” dialog box enter “d:\nedliteinstall.exe”, where “d:” is the name of your CD-ROM drive. Select “OK”.

Proceed to the section, “Installing NEDLite” to continue the installation instructions.

Installing from the web

The instructions for installing from the web are similar to the instructions for CD-ROM. You may download the installation from the NED website, http://www.fs.fed.us/ne/burlington/ned. If your computer is running Windows 2000 or Windows XP service pack 1 (or older), you will need to upgrade the Windows Installer engine on your computer. If you prefer, you may try to install the Windows Installer upgrade separately from the NEDLite installation. Please follow the instructions at the NED website for downloading and handling the web-based upgrade of the Windows Installer.

After completing the NEDLite download, run the program nedliteinstall.exe to begin the installation. Proceed to the next section, "Installing NEDLite" to continue the installation instructions.

Installing NEDLite

The installation phase begins by extracting the setup files to the desktop computer. You will be presented with a WinZip self-extractor dialog. This dialog allows you to extract the setup files that run the installation.

Extracting the setup files

On the WinZip self-extractor dialog, it is recommended that you accept the default location displayed in the field under "Unzip to folder". The default is the local temp folder associated with your PC username.

The setup files must remain on your PC as long as you intend to use NEDLite. Therefore, do not remove these files for any reason unless you are sure you have uninstalled NEDLite from the PC. The Windows Installer relies on these files for future updates, repair, and uninstallation.

Select "Unzip" to begin the extraction. At the end of the extraction of setup files, the NEDLite installation will launch automatically. If you select "Run Winzip" instead (this is not recommended) the extraction utility will only display the setup files, and you will need to continue the installation on your own. If this happens, and you wish to start over, close the WinZip window, run the program "nedliteinstall.exe", and start back at the beginning of this section.

Installation of software

Once all files have been extracted to the desktop computer, the installation of NEDLite will launch automatically under most circumstances. If the installation does not begin automatically, try to rerun the program "nedliteinstall.exe" and be sure to accept the default options as described under "Extracting the setup files" described previously.

1. On older computers running Windows 2000, or Windows XP service pack 1 (or older versions of XP), the NEDLite installation will first attempt to run the Windows Installer upgrade provided with the setup files. You must be logged in as an Administrator to perform the upgrade of the Windows Installer.
2. If your computer is upgraded to Windows Installer version 3.0, you will be prompted to reboot the computer.
3. After the reboot, if desired you may log in under a non-Administrator account to resume the NEDLite installation.

4. Once you have logged back onto the computer, the NEDLite installation will resume automatically.
5. Follow the instructions on the screen to complete the installation phase.

Configuration

When NEDLite is first installed, it must be configured to run properly. If configuration is not performed (successfully) at least once, NEDLite may not function at all. It may be necessary to repeat the configuration steps in the future, and configuration can be run at any time. The topics in this section provide instructions on each of the configuration steps and collectively illustrate what happens during configuration.

Running the configuration software

NEDLite includes an additional desktop component, RegNedLiteUser.exe, which controls all configuration steps. When the setup program is launched, RegNedLiteUser.exe starts automatically if the setup program is launched under a non-Administrator account. RegNedLiteUser.exe can be run at any time as follows:

1. Open the Windows Start menu.
2. Look under Programs – NED Programs – NEDLite for the Palm.
3. Double-click “Setup User”.

Some configuration steps are performed automatically by RegNedLiteUser.exe, and other steps can be performed optionally as needed.

NEDLite conduit registration

Conduit is a term that refers to software that performs synchronization between an application on a Palm OS handheld and data on a desktop computer. Most Palm applications, such as NEDLite, include a conduit. The NEDLite conduit (nedliteconduit.dll) cannot be run without first being registered with the Palm HotSync Manager. The configuration software automatically registers the conduit if it is not already registered.

To manually register the NEDLite conduit:

1. If you are currently running the installation, the configuration software is typically launched automatically. Otherwise, run the configuration software.
2. Select “Advanced”.
3. Select “Register NedLite Conduit”.
4. Select “OK”.

Any time after the configuration process, you have option of verifying that the conduit has been registered properly by following these steps:

1. Find the HotSync Manager icon  in the system tray (usually toward the right end of the Windows task bar if it is situated along the bottom of the screen).
2. Right-click the icon and from the pop-up menu select “Custom”. The NEDLite conduit should be visible in the list of other conduits previously registered.
3. If the NEDLite conduit is not listed, you must manually register the conduit as explained in the previous paragraph.

Installing NEDLite onto the Palm OS handheld

Running the configuration software is the recommended method for installing NEDLite to the Palm OS handheld. The "Install Tool" that comes with the Palm Desktop software is another alternative that requires additional steps not mentioned here.

These instructions also apply if you need to reinstall NEDLite to your Palm OS handheld, such as if you replace your Palm OS handheld or if you remove NEDLite from it.

Future versions of NEDLite should be compatible with older data. However, it is recommended that you HotSync your data, if any, into NED before you download a newer version of NEDLite to your Palm. After you have downloaded a newer version of NEDLite, if the data on your Palm looks corrupted then you can safely delete the data. To be cautious, you may even want to remove NEDLite from the Palm OS handheld before reinstalling a newer version.

To install (or reinstall) NEDLite to the Palm OS handheld:

1. If you are currently running the installation, the configuration software is typically launched automatically. Otherwise, run the configuration software.
2. From the list of users, select a name that corresponds with the Palm OS handheld to be updated.
3. Inside the block entitled "Files to install on user's Palm OS handheld", select "NEDLite forest inventory application".
4. Select "OK".
5. Perform a HotSync operation, which will install NEDLite to the Palm OS Handheld.

As an alternative to the HotSync process, if you have a way of beaming data to your Palm OS handheld, such as an infrared port, you can transfer the NEDLite application directly to the Palm OS handheld.

Your personal NEDLite folder

Each Palm OS handheld has a unique user ID associated with it. This permits multiple users on a single desktop computer to keep separate data. Ordinarily, you are prompted to create a user account when you install the Palm desktop software on the desktop computer. You specify a user ID that identifies your Palm OS handheld. (Another way in which the Palm desktop software establishes a user account is whenever an unrecognized [new or different] Palm OS handheld performs a HotSync.) In creating the user account, the Palm desktop software creates a folder on the desktop (named after the user ID) that will store backups, log files, and other files related to HotSync operations. This folder is separate and independent from the personal NEDLite folder.

NEDLite creates folders separate form the Palm Desktop folders to protect against possible loss of data due to changes to the Palm desktop environment. The collection of user names maintained by the Palm desktop software is used by the NEDLite configuration software to establish and identify personal folders for NEDLite data storage. NEDLite can create a separate personal folder for each user. This folder will store raw inventory data from the most recent, successful HotSync (see "Data Storage on the Desktop" on page 37).

You must establish a personal NEDLite folder before using NEDLite to collect data. Loss of data could occur if an attempt is made to transfer data before establishing a NEDLite data folder.

To establish a personal NEDLite data folder:

1. If you are currently running the installation, the configuration software is typically launched automatically. Otherwise, run the configuration software.
2. Select a name from the list of users.
3. If no folder exists, "establish personal NEDLite data folder for selected user" is automatically selected to ensure that the folder is created. Otherwise it is not selected. It is safe to select the option to establish the personal folder if it already exists. If no folder exists for the selected user, the only way to stop the creation of the folder is to select "Cancel" because you are prevented from changing this selection.
4. Select "OK".

The configuration software creates personal NEDLite folders under the "My Documents" area of the current user of the desktop computer. Under most circumstances, your user folder would have the following path: "c:\...\My Documents\My NEDLite Files*YourName*.

Setting up additional users on the desktop

NEDLite is capable of storing forest inventory data collected from multiple users with separate Palm OS handhelds. Before additional users can be recognized by NEDLite, they must first be recognized by the Palm Desktop software. A new user account for the Palm must be created for each additional user before a separate user can be set up for NEDLite. This step usually can be accomplished if the new user does a HotSync with their Palm OS handheld before attempting to be recognized by NEDLite. Normally the HotSync Manager will recognize a new Palm OS handheld and ask you to create a new user account. If it does not, try to run the Palm Desktop software and create a user account manually.

If desired, multiple users can share NEDLite without logging off and switching users on the desktop computer. In fact, unless each desktop computer user has installed the Palm desktop software under his or her own user account, this may be the only way for multiple users to transfer data to/from NEDLite. Remember to use common sense and consider local computer security policies when using NEDLite in this manner.

For each user, follow the steps for establishing a personal folder explained in, "Your personal NEDLite folder" on page 14. Once these steps are completed, each user will be able to transfer data to/from NEDLite and the desktop.

For desktop computers running Windows 2000 or later, if one or more persons are using NEDLite without logging on as a different PC user (i.e. sharing), all personal NEDLite folders will be created under the "My Documents" area of the current user of the desktop computer. In this scenario, two different Palm users hypothetically would have personal folders with the following paths, "c:\...\SomeUser\My Documents\My NEDLite Files\PalmUser1", and "c:\...\SomeUser\My Documents\My NEDLite Files\PalmUser2", respectively.

For information on combining multiple cruises from separate users into a single NED file see "Managing Your Field Data" on page 35.

Items Installed on the Desktop

The installation of NEDLite includes software on the desktop computer for handling data transfer, importing data into NED, and for establishing custom plant species lists for subsequent use on the Palm OS handheld. Some of the more commonly used files are described here.

NEDLite2txt.exe is run automatically by the NEDLite conduit when you perform a HotSync (see the Glossary for an explanation of conduit and HotSync terminology, and also see the topic, "NEDLite Conduit Registration" on page 13). Not much happens inside the NEDLite2txt program. It determines which version(s) of NED are installed on the desktop computer and establishes which kind of NED file you may import data into. From the "Save As" dialog, NEDLite2txt.exe passes a list of NEDLite data files to another program, which then converts your data into NED format.

NEDLite1.ini is a file that contains codes used to convert NEDLite data into NED-1 format. Similarly, **NEDLite2.ini** contains codes used to convert NEDLite data into NED-2 format. The species codes program updates both of these files simultaneously to keep them synchronized with each other.

NEDLite.prc is the forest inventory program that runs on the Palm OS handheld. During the configuration process, this program is placed on the list of items to install during your next HotSync. This file will be transferred to your Palm OS handheld when you run a HotSync.

NEDLiteconduit.dll transfers data between the desktop and the Palm OS handheld. This program is run by the HotSync Manager during a HotSync. See the topic, "NEDLite Conduit Registration" on page 13, for more information.

SpeciesCodes.exe can be run any time from the Start Menu, under Programs, NED Programs, NEDLite for the Palm, "Plant lists". This program allows you to create a custom plant species list to use in NEDLite. You can import species from a variety of different NED file types and define custom plant species codes (user codes) for NEDLite. These codes are stored in an .ini file, NEDLiteX.ini, where 'X' denotes the NED version.

txt2ned.exe converts NEDLite data into NED-1 format. Txt2ned.exe runs automatically if you specify a valid NED-1 file name under the "Save As" dialog at the final step in the HotSync session. This program also can be run manually, which can be useful if you are experiencing problems and wish to import data without running another HotSync. For instance, if you discover that data was successfully downloaded from the Palm OS handheld, but not imported into NED (perhaps because of missing species codes or other errors) then you could import the desktop data into NED without running another HotSync. This might be critical if you have already deleted or replaced the data on the Palm OS handheld. In fact, if this happens, you must *not* run a HotSync or you will lose the data currently residing in your desktop (txt) files.

RegNedLiteUser.exe is run automatically by the setup program (when launched from a non-Administrator account). It performs several important functions, including establishing local storage for personal NEDLite data, finding NEDLite software to transfer to the Palm OS handheld, registering the NEDLite conduit, etc. All of these functions ensure that NEDLite performs properly. This program also can be run at any time, from the Start menu, under Programs, NED Programs, NEDLite for the Palm, "Setup User".

Working With Plant Species

One of the more common details recorded in the field is the identification of plant species. Because plant species identification occurs frequently in forest inventories, this section describes several NEDLite features that simplify the process of searching for and selecting plant species, and describes how to enter plant species information so NED software can interpret it. If you do not follow these instructions, it is likely that NED will not be able to interpret your species.

NEDLite comes with additional desktop software that allows you to define a set of species local to your area. If you prefer to define custom species codes (such as two-letter abbreviations, number codes, etc.), follow the steps outlined in this section.

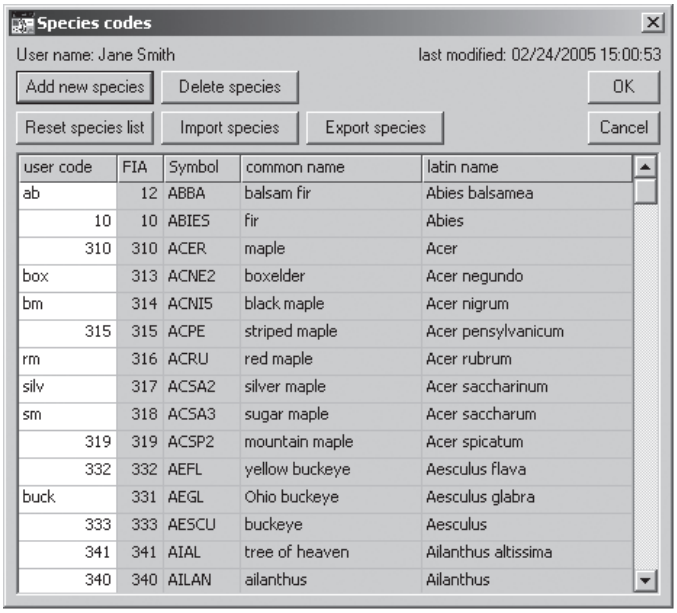
Customizing Your Species

The instructions in this section (pages 17 through 25) require the use of separate *desktop* software included with NEDLite – the species codes program. The first topic describes how to find and run this program. Refer to these steps any time you are instructed to run the species codes program. This section also describes how to modify your plants list, and how to define your own species codes.

Running the species codes program

You must run the species codes program, speciescodes.exe, to view and/or edit a list of plant species. The species codes program is available as a shortcut on the list of programs on the Windows Start Menu. To find the program, open the Start Menu, and then look under Programs – NED Programs – NEDLite for the Palm. Double-click "Plant lists" to run the program.

It may take a few seconds to load the master plants list, after which a screen will appear similar to Figure 4. You can sort the display of species by clicking on the label at the top of any column.



user code	FIA	Symbol	common name	latin name
ab	12	ABBA	balsam fir	Abies balsamea
10	10	ABIES	fir	Abies
310	310	ACER	maple	Acer
box	313	ACNE2	boxelder	Acer negundo
bm	314	ACNI5	black maple	Acer nigrum
315	315	ACPE	striped maple	Acer pensylvanicum
rm	316	ACRU	red maple	Acer rubrum
silv	317	ACSA2	silver maple	Acer saccharinum
sm	318	ACSA3	sugar maple	Acer saccharum
319	319	ACSP2	mountain maple	Acer spicatum
332	332	AEFL	yellow buckeye	Aesculus flava
buck	331	AEGL	Ohio buckeye	Aesculus glabra
333	333	AESCU	buckeye	Aesculus
341	341	AIAL	tree of heaven	Ailanthus altissima
340	340	AILAN	ailanthus	Ailanthus

Figure 4.—The species codes program.

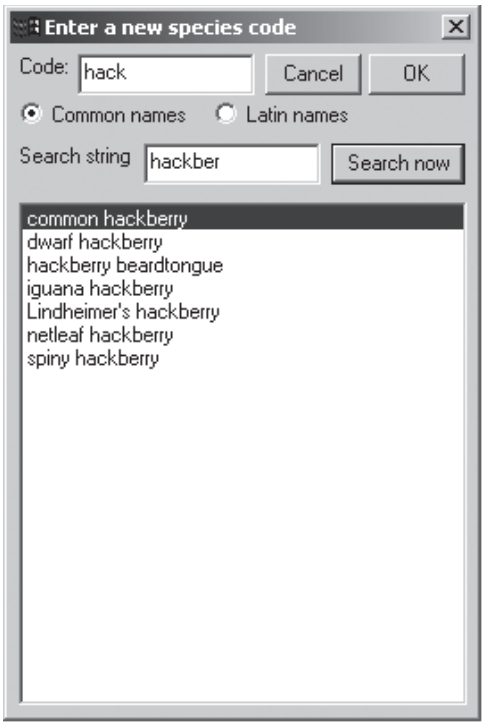


Figure 5. Adding a species using the species codes program.

Modifying your plants list

Add species to your plant list, one at a time

1. Run the species codes program.
2. Select "Add new species". You will see a dialog similar to Figure 5.
3. Choose whether to search by common or Latin name.
4. In the "search string" box, enter some text that will most likely appear in the name of the species sought.
5. Select "Search now".
6. From the list at the bottom, select the species to add.
7. In the "Code" box at the top of Figure 5, enter a custom user code that will be used to identify this species in your inventory.
8. Select "OK".
9. When you are ready to exit the species codes program, select "OK" to save your changes.

- If you enter search text and no matches are found, the list at the bottom will display "none found".
- A species already on your list WON'T appear in the list of species to add. Searching for that species will result in a "none found" response.
- If you try to add a species and your list already contains ALL of the existing species in the NED plants master list, then you will be informed that you already have all species and that you can't add any more. If you need to add a species that isn't in the NED master list of species, please contact us by phone at 802-951-6771 or email: nedsoftware@fs.fed.us to request an update to the master list for your desired species.

Delete species from your list

There are two options for deleting species. If you are starting with a very large list and only want to retain a few species, highlight the species you want to KEEP and choose the alternative that deletes all non-selected species. To delete a just a few species, highlight the species you want to delete and select the option that deletes the selected species. Follow the steps below to delete species:

1. Run the species codes program.
2. Select one or more species in the table that you wish to keep/delete. To highlight multiple rows, press and hold the "Ctrl" (control) key while making your selections.
3. Select "Delete species".
4. From the pop-up dialog, select the desired option for deletion: the choice is either to delete what is highlighted, or delete what is NOT highlighted.
5. Select "OK".
6. When you are ready to exit the species codes program, select "OK" to save your changes.

Reset species by state or region

This option allows you to reset your list by quickly establishing a robust list of species according to the state(s) in which you are working.

1. Run the species codes program.
2. Select "Reset species list" (Fig. 4). You will see a dialog similar to Figure 6.
3. To select a state, uncheck the "All states" box.
4. Select "Select states".
5. From the "select states dialog" (Fig. 7), click the "select states by name" button.
6. From the pick list, select your state by clicking the box next to the desired state.
7. When finished selecting one or more states, select OK.
8. Your selected states will be highlighted on the map as shown in Figure 7.
9. Select "OK" on the map of states to return to the "Reset species" dialog (Fig. 6).
10. Select the default user codes. FIA codes are the default. When adding species from the master plants list, it's unlikely that any of them will have user codes. NEDLite does not permit empty user codes, so you must indicate which codes you want to substitute for user codes until you define them yourself (either PLANTS or FIA codes can substitute for missing user codes).

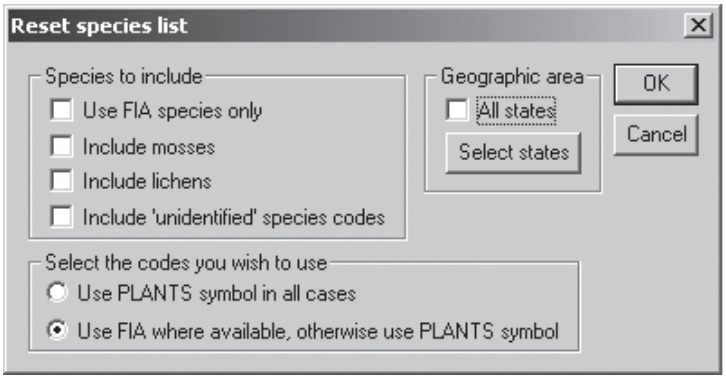


Figure 6.—Resetting the species list with the species codes program.

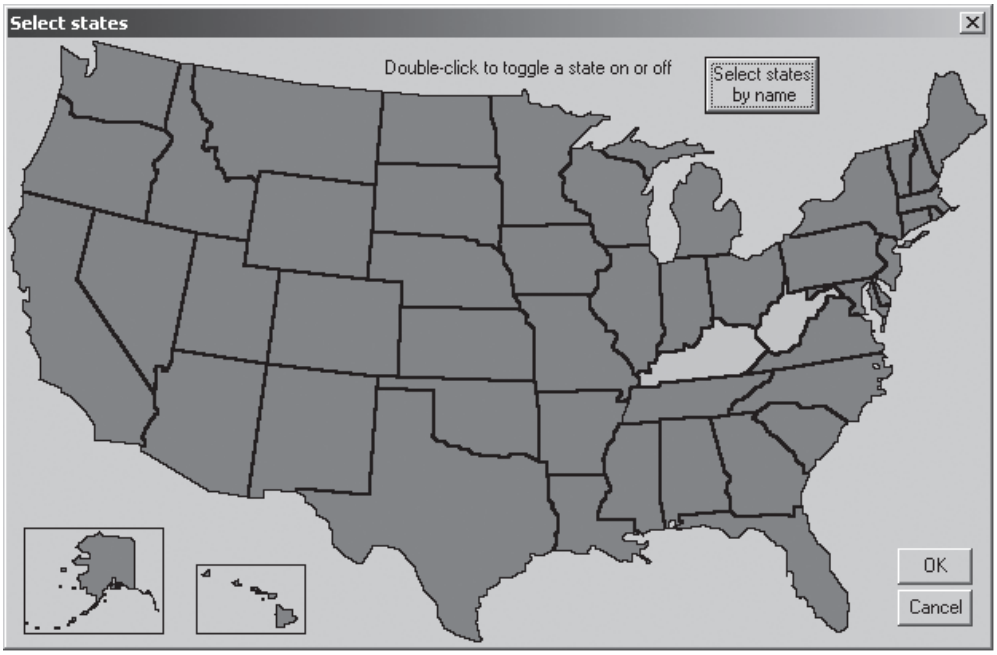


Figure 7.—Using the species codes program to select species by state.

11. Mosses and lichens currently are NOT associated with any geographic area. Therefore you will get all North American species if you select these.
12. Select “OK”.
13. The import options dialog will appear (Fig. 8). Select the option for processing the incoming state species against your existing species list. You can completely replace the existing list with the state species, or you can replace existing species if certain conditions are met (Fig. 8).
14. Select “OK” after you have chosen an import option.
15. When you are ready to exit the species codes program, select “OK” to save your changes.

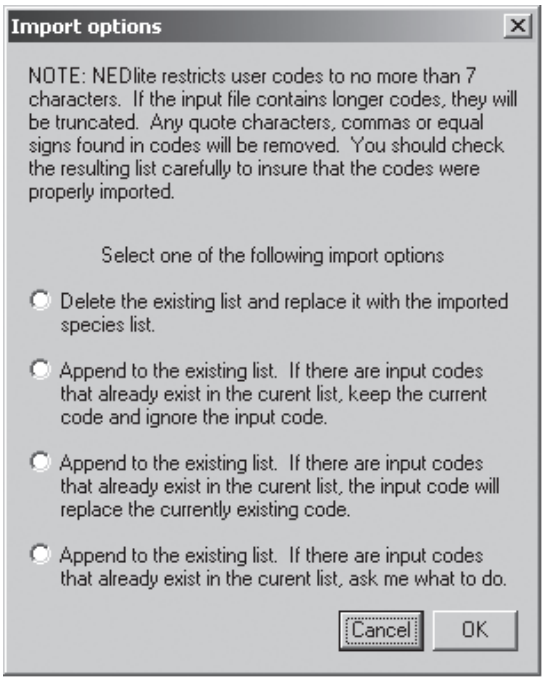


Figure 8.—Available options when importing species using the species codes program.

Import species from NED files

To import species from NED data and plant species files (version NED-1 and newer), follow the steps below:

1. Run the species codes program.
2. Select "Import species" (Fig. 4).
3. An "Open" dialog will appear. In "Files of type", select the kind of file you want to use (e.g. NED-1 data set, NED-2 data set, NED plant species .spp files, etc.).
4. From the list of files displayed, choose the desired file. If the file you wish to use is not listed, choose another folder in the "Look in" pick list at the top.
5. Once you have selected the file, select "Open".

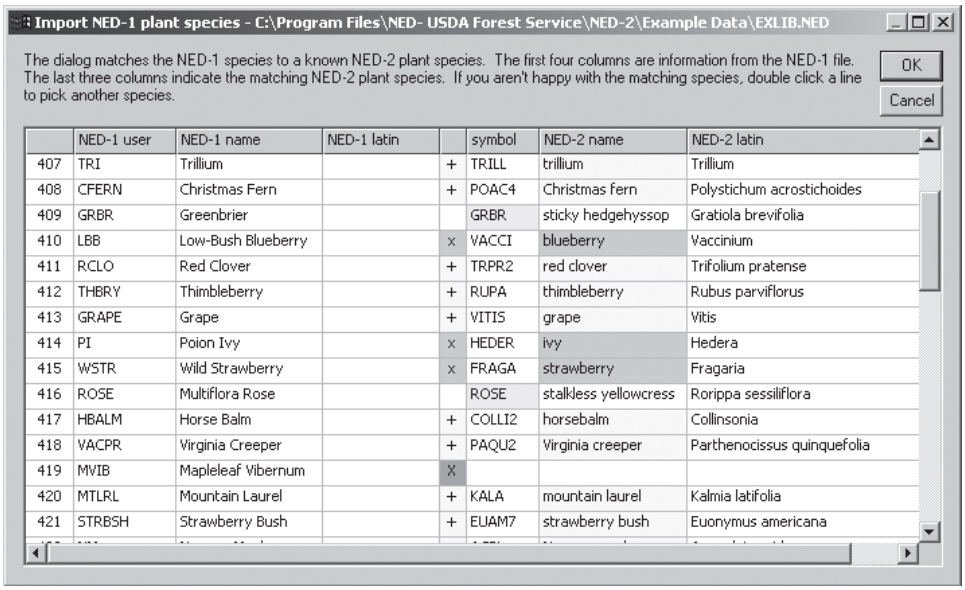
   The species program will read all of the species from the chosen file. For NED-1 file types, if the program has trouble matching or identifying any of the species, it will display the list of incoming species and give you a chance to resolve problems with unknown species. See the topic "Interpreting NED-1 species" for further instructions on resolving problems with NED1- species that you are importing.
6. After selecting a file and correcting species mismatches (if any), then indicate how to process the incoming species against your existing species list. As shown in Figure 8, you can completely replace the existing list with the imported species, or you can replace existing species if certain conditions are met.
7. Select "OK" after you have chosen an import option.
8. Continue to import and add/delete species as necessary. Only those species displayed in the table are available to be downloaded to NEDLite.
9. When you are ready to exit the species codes program, select "OK" to save your changes.

Interpreting NED-1 species:

NED-1 species follow a different format and may require user intervention to import properly. Duplicate species entries are permitted in NED-1 files, which add to the difficulty of correctly identifying species. If problems occur when importing NED-1 species, you will be presented with a dialog similar to Figure 9.

You can change the order of the species by clicking once in any of the column headers in the table. For instance, to group all species together by strength of match, click the unlabelled center column.

The dialog in Figure 9 lists the plant species found in the selected NED-1 file on the left, and the counterparts from the current NED master list of species on the right. If a good match was found, one of the last three columns on the right will be shaded green to indicate how the match was made. For instance, if the Latin name is highlighted, the program successfully found a matching Latin name. The program checks Latin names first and if no match exists, the common name is checked.



	NED-1 user	NED-1 name	NED-1 latin		symbol	NED-2 name	NED-2 latin
407	TRI	Trillium		+	TRILL	trillium	Trillium
408	CFERN	Christmas Fern		+	POAC4	Christmas fern	Polystichum acrostichoides
409	GRBR	Greenbrier			GRBR	sticky hedgehyssop	Gratiola brevifolia
410	LBB	Low-Bush Blueberry		x	VACCI	blueberry	Vaccinium
411	RCLO	Red Clover		+	TRPR2	red clover	Trifolium pratense
412	THBRY	Thimbleberry		+	RUPA	thimbleberry	Rubus parviflorus
413	GRAPE	Grape		+	VITIS	grape	Vitis
414	PI	Poion Ivy		x	HEDER	ivy	Hedera
415	WSTR	Wild Strawberry		x	FRAGA	strawberry	Fragaria
416	ROSE	Multiflora Rose			ROSE	stalkless yellowcress	Rorippa sessiliflora
417	HBALM	Horse Balm		+	COLLI2	horsebalm	Collinsonia
418	VACPR	Virginia Creeper		+	PAQU2	Virginia creeper	Parthenocissus quinquefolia
419	MVIB	Mapleleaf Vibernum		X			
420	MTLRL	Mountain Laurel		+	KALA	mountain laurel	Kalmia latifolia
421	STRBSH	Strawberry Bush		+	EUAM7	strawberry bush	Euonymus americana

Figure 9.—Interpreting older (NED-1) species identities using the species codes program.

The center column with no heading indicates the strength or degree of confidence in each match, as described below.

X	No match could be found
x	A match was found, but not a very good one
+	A match was found that was pretty close.
•	A synonym of the Latin name was found. This can usually be left alone.
	(empty) A very good match was found.

Exact spelling is required for a match. Any line that has a red center cell (with either a lower or upper case 'X') should be corrected if possible. See the section "Correcting or changing a NED-1 species match" on page 23. Anything with yellow or green (with a '+' or '.') is probably okay and you can leave it alone. A blank cell indicates a good match was found. Nevertheless, be sure to check the validity of each match, regardless of color or strength of match. As shown in Figure 9, despite the indication of a "very good" match for multiflora rose, it is incorrect. In this example it would be necessary to correct the match even though it appears to be valid.

Matches with a dark red center column, indicated with an upper case 'X', will NOT be imported. All other matches, including pink cells indicated with a lower case 'x', will be imported. For all matches, only the NED-1 user code (shown as "NED-1 user" in the first column) will be retained—the program will apply the current Latin and common name shown in the columns to the right.

The column on the far left displays the NED-1 species index. This code is NOT an FIA code or any other kind of species code – it's a plain, numerical index used by NED-1 to isolate individual entries in the file.

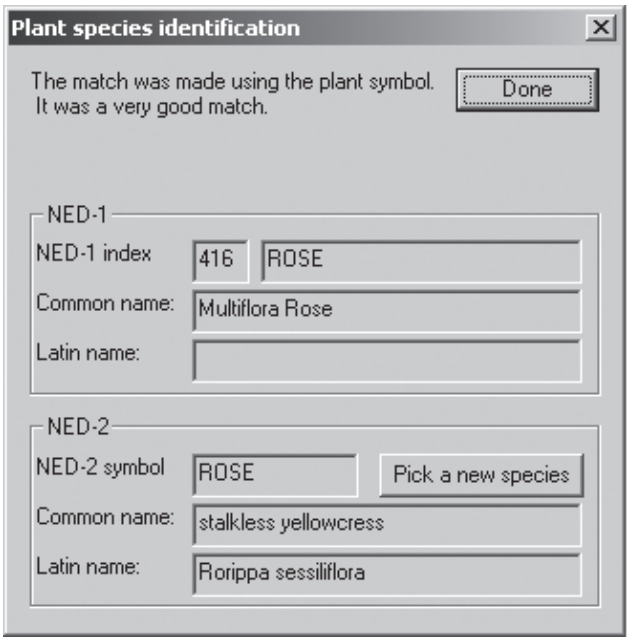


Figure 10.—Correcting the identity of a NED-1 species using the species codes program.

Correcting or changing a NED-1 species match

Following the steps below, you can change any of the matches if they aren't what you desire:

1. Double click a row, and a dialog similar to Figure 10 is displayed:

   The species information from the NED-1 file is displayed at the top, and the suggested or current matching information is displayed at the bottom. An explanation in the top left corner of the dialog in Figure 10 describes how the match was made.

2. To look up and assign a different species, select "Pick a new species". A dialog similar to Figure 11 is displayed. The information from the NED-1 file is displayed at the top of the dialog. The list box contains all of the current species in the NED master list. Search by common or Latin names.
3. Select the desired species.
4. Select "OK".

When finished correcting matches, ideally the dialog (Figure 9) will have mostly green or white matches, and possibly some yellow matches.

Export the species list

This option allows you to save your list of plant species to an external file. Thus, you can maintain separate species lists when working in areas that require different species. The species codes program maintains one list of species at a time. Assuming you have already exported one or more species lists, switching to another set of species is a matter of running the import option (see "Import species from NED files", page 21) and loading in the desired set of species.

To share a species list with other users, export your species list and distribute the resulting species codes file. Exported species lists can be given any name and they will have a ".spp2" extension.

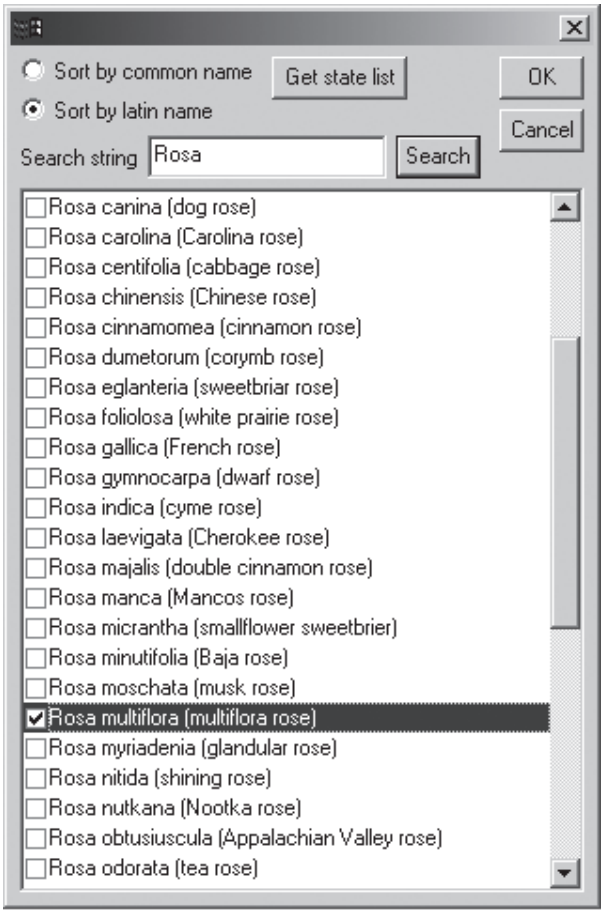


Figure 11.—Selecting a better match for older NED-1 species using the species codes program.

To export the current list of species to an external file:

1. Run the species codes program.
2. Select “Export species”.
3. Enter the file name you wish to create (Fig. 12) in the “File name” box, or, to replace an existing file, choose the desired file from the list of files displayed. If you don’t see the file you wish to use, you may choose another folder in the “Save in” pick list at the top.
4. Once a file has been specified select “Save”.

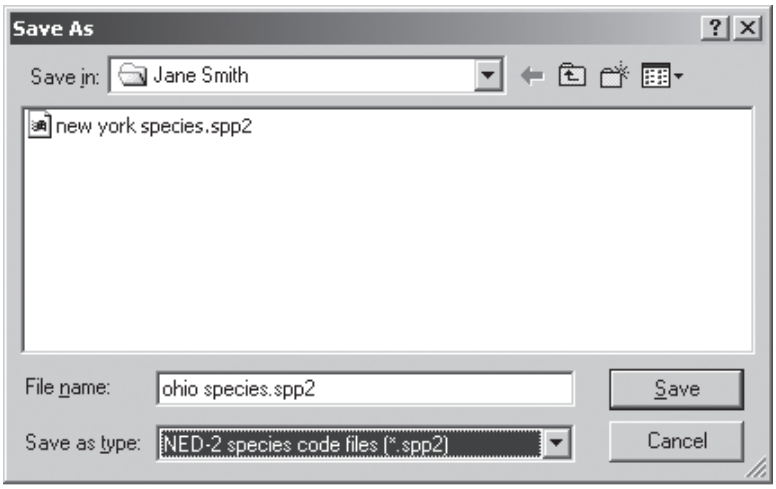


Figure 12.—Exporting a species list using the species codes program.

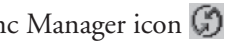
Define your own species codes

Define your species codes before venturing into the field. This will ensure that species codes are consistently applied. Because NEDLite does not validate your species entries, it is still possible to define species codes after completing the inventory. It is important to define user codes before importing data into NED, otherwise NED will not be able to interpret species. As stated previously, if you encounter a new species or simply one that you didn't anticipate, make something up and use it consistently. Keep track of the impromptu codes you define in the field. Then, before transferring your data to the desktop PC, follow the instructions below to define the impromptu species code(s). As long as the impromptu species codes are defined before the HotSync process, all species will be correctly interpreted by NED.

1. Run the species code program (Fig. 4).
2. In the column to the far left (the user code column), enter the desired user code in the row of the species. Only one user code per species – codes cannot be repeated among species. User codes are NOT case sensitive.
3. Select "OK" when finished.

Download your species list to NEDLite

From the NEDLite configuration software, you can choose to install a default plant species list to the Palm OS handheld during the next HotSync session. Occasionally you may need to download a species list, such as when upgrading or replacing NEDLite, or when making modifications to the species list. This step is not required to use NEDLite in the field, but without a list of species on the Palm OS handheld you will be unable to look up codes for species and you will be required to enter species codes by hand.

The following steps require you to perform a HotSync, which will not work unless the HotSync Manager is running. Typically, you will see the HotSync Manager icon  in the lower right corner of your screen.

To install (or reinstall) your species list to the Palm OS handheld:

1. If NEDLite is running on your Palm OS handheld, exit the program.
2. Place the Palm OS handheld in the HotSync cradle.
3. If you aren't sure, check that NEDLite is configured for data transfer from the desktop to the Palm OS handheld. See the section, "Data Transfer – Setting the HotSync Action" on page 38 for instructions.
4. Press the HotSync button on the cradle to start a HotSync process.
5. The HotSync Manager may perform some administration before transferring data. It will backup your plant species list (if applicable) to the desktop, along with the NEDLite program that runs on the Palm OS handheld. Then the HotSync Manager will transfer applications and databases that you may have posted for installation using the Palm Install Tool. Next, the HotSync Manager will run through all applications that are configured for data transfer during the current HotSync session. Typically, these include the built-in applications, such as Address Book, Expense, etc., as well as other applications, such as NEDLite.

6. Depending on the size of the species list, it may take a few seconds or minutes to download the list. Occasionally, after the plants list is transferred to your Palm OS handheld, you may be asked to perform a soft reset on your Palm OS handheld. A pop-up screen will appear on your Palm OS handheld in this situation. Follow the instructions for the reset.


Note

Whenever a new species list is downloaded from the desktop, NEDLite automatically empties your history of recent species selections.

Using Plant Species in NEDLite

This section describes how to find species in the plants list (also referred to as species list), how to record plant species in NEDLite, and how to download a custom plant species list to your Palm OS handheld.

Find a species on NEDLite

The list of plant species on your Palm OS handheld, as shown in Figure 13, can be viewed from any screen where a species entry is required in NedLite.

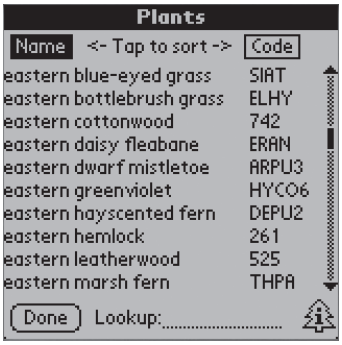


Figure 13.—Finding a species in NEDLite.

Follow these instructions to view your species list:

1. Navigate to the appropriate species-entry screen. Most often, you will be working with observations in a given plot, and recording information on observation detail screens. Such screens are titled “overstory observation detail”, “und observation detail”, etc. Species also can be viewed from the stand “vegetation” screen where site index is entered.
2. Tap the stylus on the small black down-arrow to the right of the species field and you will jump to another screen that displays your list of plant species. If you don’t see any species, it is because you do not have a list of species on your Palm OS handheld.

If your species list is relatively short, the scroll bar or the scroll buttons can be used to locate a species. NEDLite also provides a look-up feature to help you locate a species.

Searching for a species

The look-up feature will only search for a match in the current sorted column. If you have sorted your species by common name, it is impossible to search by Latin name or any of the species codes. This restriction enables a much faster search. To search by other names or codes, try sorting by a different column. Review the current species display preferences if you want to view and sort by other attributes.

1. Navigate to the species screen, entitled “Plants”, as described in the two steps above.
2. In the “Lookup” field, enter one or more characters that match the name or code for which you are searching.
3. As you enter each letter or number, NEDLite will jump to the first species it finds that matches the characters you have entered.
4. To select (and record) a species, tap once on the row that contains the correct species. If you only wanted to look up the species, but not record it, tap the “Done” button.
5. The code that is displayed in the second column will become the species entry.

Recording species by hand

The method for entering species is the same wherever species information is used in NEDLite. This topic describes how to enter the species by hand, using graffiti and the alphanumeric keyboard.

1. Navigate to the appropriate screen where a species entry is required.
2. Tap the stylus in the species field.
3. In the silkscreen area, enter the appropriate graffiti letters and/or numbers for a species code. Any of the three codes defined for a species can be entered, up to a maximum of seven characters. Alternatively, tap the stylus on either the alphabetic or numeric keyboard symbols to punch letters and numbers as you might on a normal keyboard. See the section, “Overview of the Palm OS handheld” on page 2, for an overview of the features common to most Palm devices.

Regardless of what is entered by hand, NEDLite preserves that entry. That is, NEDLite will not convert entries into a standard code. This allows you to recall your inventory data exactly as you entered it if the need arises; it also allows entry of species not expected in the field (and/or with an unknown species code).

If you enter a code that isn’t recognized by NEDLite, NEDLite will NOT inform you. However, when viewing your history of recent species selections, you will see “unrecognized code” next to each unknown species entry.

Pick a species from your plants list

The plants list can be used as a “pick-list” from which to record the species of given observation in NEDLite. This assumes a plant species list has been downloaded to your Palm OS handheld.

1. Navigate to the appropriate screen where a species entry is required.
2. Tap the stylus on the small black down-arrow to the right of the species field to jump to another screen that displays your list of plant species.
3. From the plants list, find a desired species.
4. To select (and record) a species, tap once on the row that contains the correct species. If you only wanted to look up the species, but not record it, tap the “Done” button.
5. The code that is displayed in the second column will become the species entry.

Pick from recently selected species

For each plot type, NEDLite maintains a list of the 10 most recent species selections. After collecting data for a few plots, you may find several species that are common to some or all of your plots. You can recall your recent selections and pick from these lists, which may be faster than scrolling through the full species list to make a selection.

Instead of keeping a single history of selections, separate lists are maintained for all plot types—overstory, understory, groundcover, and coarse woody debris (CWD) transects. This way, a ground cover selection, such as large-flowered trillium (*Trillium grandiflorum*), won't show up in the list of recent overstory selections.

Every time a new species is recorded, whether by hand or by selecting from the full plants list, the history of recent species selections in the current plot type is updated.

1. Navigate to the appropriate observation detail screen. Recent selections are not available for the site index species on the stand ID screen.
2. Tap the title bar at the top of the observation detail screen or tap on the menu icon in the silkscreen area of the Palm OS handheld.
3. From the pop-up menu, select "Plants".
4. Select "Recent Selections" to see the recent selections for whichever plot type you are working in.
5. From the list of recent selections, find the desired species.
6. To select (and record) a species, tap once on the row that contains the correct species. If you only wanted to look up the species, but not record it, tap the "Done" button.
7. The code that is displayed in the second column will become the species entry.

Recent plant selections are stored and maintained even when the Palm OS handheld is turned off.

Empty recent selections

You can empty your history of recent species selections any time. Navigate to Plant Display Preferences from either of the following screens:

From the "Welcome to NEDLite" screen, the main screen that appears when NEDLite is launched:

1. Tap the title bar or tap on the menu icon in the silkscreen area of your Palm OS handheld.
2. Select the Options menu.
3. Select "Plant Spp Prefs", and a screen like Figure 14 will appear.
4. Select "Clear history of recent selections". This will erase the recent history of species selections for ALL plot types (all lists).
5. Select "OK".

From a list of plant species (full list or recent selections):

1. If not already in view, access the species list from any screen where a species entry is required (tap on the pick list arrow next to the species field, or view the recent species selections).

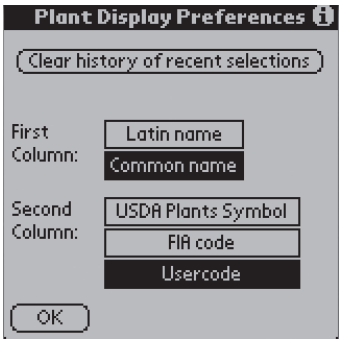


Figure 14.—Emptying recent plant selections in NEDLite.

2. Tap the title bar or tap on the menu icon in the silkscreen area of your Palm OS handheld.
3. From the Options menu, select "Preferences", and a screen like Figure 14 will appear.
4. Select "Clear history of recent selections". This will erase the recent history of species selections for ALL plot types (all lists).
5. Select "OK".

View species detail

NEDLite maintains information about each species, as shown in Figure 15.

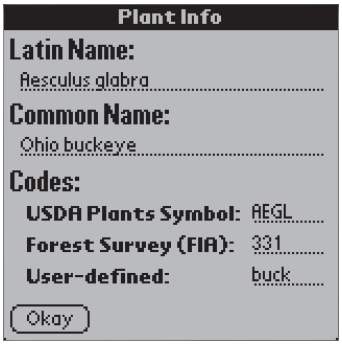


Figure 15.—Species detail in NEDLite.

If you are displaying all species by common name, you can check the Latin name for a given species (or vice versa) or you can review the codes using the following steps:

1. If not already in view, access the species list from any screen where a species entry is required (tap on the pick list arrow next to the species field, or view the recent species selections).
2. Select the tree icon in the lower right corner of the species list screen. When the tree is highlighted (dark background with white letter "i"), this changes what happens when you tap on a species in the list. Normally, tapping on a species in the list makes a species selection and accepts the displayed code as your species entry. When you activate the tree icon, you will see the species detail as shown in Figure 15.
3. From the species list, select the row of your desired species to review the detail for that species.
4. Select "Okay" to return to the list of species.
5. When you no longer wish to view species detail, tap the tree icon to deactivate this feature and re-enable species selection.

NEDLite will retain the status of the tree icon (enabled/disabled) even if you turn the unit off or jump to other applications on the Palm OS handheld.

Customizing NEDLite

You can alter the appearance and operation of NEDLite by modifying user preferences. Your settings are stored on the Palm OS handheld and are remembered even when the unit is off. User preferences are accessed from the "Welcome to NEDLite" screen that appears when NEDLite is launched. Preferences appear on the pop-up menu, which is accessed by tapping on the title bar or tapping on the menu icon in the silkscreen area of your Palm OS handheld.

Table Displays

NEDLite offers some customization in the display of your observations. For example, as you are viewing the collection of observations you may want to minimize the number of columns displayed in order to simplify the display and unclutter the screen.

Hiding observation IDs

By default, NEDLite displays identifications (IDs) for each observation in the plot tables. If you don't use observation IDs or if you don't want to display IDs, you can turn them off. NEDLite will display a sequential number instead. The Display Preferences Screen appears as shown in Figure 16.

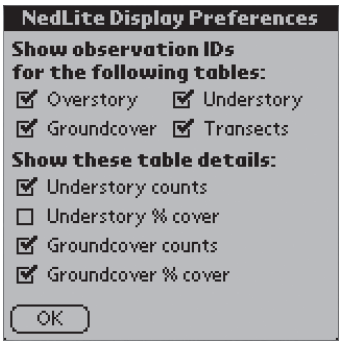


Figure 16.—Display preferences for observation tables in NEDLite.

1. From the "Welcome to NEDLite" screen, open the top menu and select "Options".
2. Select "Table Displays".
3. Tap the checkbox next to each plot table name to toggle the display of observation IDs. For example, if you do not want to display overstory observation IDs, uncheck "Overstory".
4. Select "OK".

Counts and percent coverage

You have some control over the items displayed in the understory and ground-cover tables. For instance, you can turn on/off the display of stem count and percent coverage.

From the "Welcome to NEDLite" screen, open the top menu and select "Options".

1. Select "Table Displays".
2. Ensure that the checkboxes contain checks next to stem counts and/or percent cover items you want to display.
3. Select "OK".

For understory tables only, you can choose to display any two items from the Display Preferences Screen: observation IDs, understory counts, or understory percent cover. There isn't enough room to display all three items in the table; consequently NEDLite will display a warning if you select more than two.

Sorting Data

By default, NEDLite sorts and displays data according the values shown in Figure 17. You may modify these values at any time. The items in the drop-down lists are defined as follows:

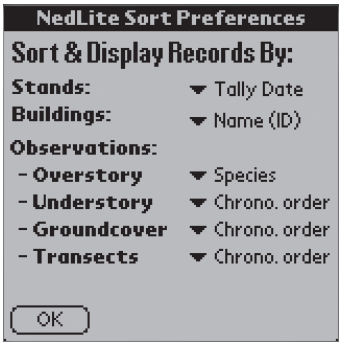


Figure 17.—Options for sorting and displaying data in NEDLite.

- Tally Date - Sorts by the tally date.
- Name (ID) - Sorts by the name of the stand, building, or observation, where appropriate. In a list of numbers, this means that "10" follows "1", so that items would be displayed in the following order "1, 10, 11,12, 13, ... 19, 2, 20, 21, ..." and so on.
- Chrono. order - Sorts items in the original (chronological) order they were added. A list of numbers would appear as "1,2,3,…9,10,11,…" and so on.
- Species - Sorts items alphanumerically according to the species code entered.

1. From the "Welcome to NEDLite" screen, open the top menu and select "Options".
2. Select "Sort data".
3. Next to the appropriate item, select the drop-down list and choose a value to sort by.
4. Select "OK".

For very large data sets, sorting may take a few seconds.

Specifying Units

NEDLite can display English or metric units. You can modify this selection any time by following the steps below.

1. From the "Welcome to NEDLite" screen, open the top menu and select "Options".
2. Select "Units".
3. Select the units desired (English is the default).
4. Select "OK".

NEDLite stores your values in English units and if Metric mode is turned on, the values are converted into Metric units for display only. When you enter a value in Metric units, NEDLite will convert it and store the value in English units.

Stem Heights

By default, NEDLite uses height classes to approximate actual stem height. If you wish to record actual stem heights instead, you must indicate this under user preferences. You can independently choose whether to record actual stem heights for overstory, understory, and groundcover.

1. From the "Welcome to NEDLite" screen, open the top menu and select "Inventory".
2. Select "Stem heights".
3. Check the box next to the plot type where you want to record ACTUAL stem heights.
4. Select "OK".

Plant Species Display Preferences

This section describes how to configure the display of plant species in NEDLite. These preferences are retained each time you run NEDLite. However, if you download a new species list, the default plant species display preferences are reapplied.

Sort the list of species

In NEDLite, each species has a common name, Latin name, and a USDA Plants symbol. Many tree species also will have an FIA code. Depending on how your species list was built, you also may have user-defined codes for each species. You can sort by any one of these attributes. Figure 18 shows a species list sorted by common name.

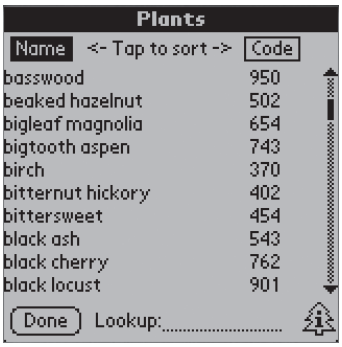


Figure 18.—NEDLite species list sorted by common name.

The species list is displayed as two columns. The left column lists the species name and the right column displays the species code. If the Name button is highlighted, the list is sorted alphabetically, according to the type of name (Latin or common name) displayed in that column. Similarly, if Code is highlighted, the species list is sorted alphanumerically by whichever type of code is displayed.

Sorting from within the plants list:

1. If you are already viewing the Plants screen, skip to step 3. Otherwise, navigate to the appropriate screen where a species entry is required.
2. Select the small black down-arrow to the right of the species field to jump to the screen that displays your species list.
3. Select "Name" or "Code" to sort in alphanumeric order by plant name or species code, respectively.
4. Once the list is sorted, repeated taps on the same button will have no effect.
5. A large list may take a few seconds to sort.

From plants preferences:

NEDLite will resort the database automatically if you change a display preference that affects the column that the species list is sorted by.

For example, if your list is already sorted by "Name", and you change the display from common to Latin name, NEDLite will resort the species list by Latin name. On the other hand, changing what is displayed for the species code will NOT result in a new sort because the species list is sorted by name and not by code. In this case, when you return to the plants list, if you wanted to sort the species by code you will have to resort the list yourself, as described above.

When viewing your history of recent species selections, the sort order is fixed in reverse chronological order showing the most recent selection at the top.

Species list options

You can customize the display of your species list. What is displayed affects the options for sorting and finding species. Species display preferences apply when viewing your entire list of plants or when viewing your history of recent plant selections. These settings are retained even if your unit is off, or you jump to other applications on the Palm OS handheld.

Navigate to Plant Display Preferences from either of the following screens:
From the "Welcome to NEDLite" screen:

1. Tap the title bar or select the menu icon in the silkscreen area of your Palm OS handheld.
2. Select the Options menu.
3. Select "Plant Spp Prefs".

From a list of plant species (full list or recent selections):

1. If not already in view, access the species list from any of the observation detail screens (select the pick list arrow next to the species field, or view the recent species selections).
2. Tap the title bar or select the menu icon in the silkscreen area of your Palm OS handheld.
3. From the Options menu, select "Preferences".

You will see a screen that looks like Figure 19.

4. Next to “First Column”, select either Latin or common name to display for each species.
5. Next to “Second Column”, select the code you wish to have displayed in the species list. The selected code is what is displayed when viewing the species list – it does not prevent you from entering one of the alternative codes for a given species. As mentioned previously, whatever you enter for the species of given observation will be retained and displayed by NEDLite.
6. Select “OK”.

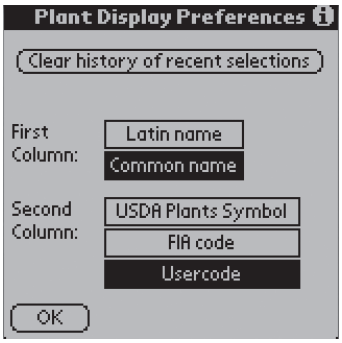


Figure 19.—Plant species display options in NEDLite.

Managing Your Field Data

This section describes how data is stored on the Palm OS handheld, and what happens as data is transferred onto the desktop computer. This information may prove invaluable during troubleshooting.

Also described are instructions for combining data from multiple NED files, how to record data when more than one person is cruising the same property, and how to combine the data into a single NED file. Conversely, you can learn how to split data into separate NED files. A definition of plot clusters also is included, along with the rationale for their use.

Transferring Field Data Onto the Desktop

This section describes how to transfer field data onto the desktop. Also called uploading or "HotSyncing", this process is vital because it is the only way to save your field data to the desktop.

Make sure the HotSync Manager is running on your desktop. The following steps will not work unless the HotSync Manager is running. Typically, you will see the HotSync Manager icon  in the lower right corner of the desktop PC.

1. Place the Palm OS handheld in the HotSync cradle.
2. If you aren't sure, check that NEDLite is configured for data transfer from the Palm OS handheld to the desktop. See "Data Transfer – Setting the HotSync Action" on page 38 for instructions.
3. Press the HotSync button on the cradle to start a HotSync process.
4. The HotSync Manager may perform some administration before transferring data. It will backup your plant species list to the desktop, along with the NEDLite program that runs on your Palm OS handheld, in case you need to restore NEDLite in the future (i.e. after losing batteries or performing a hard reset, etc.). The HotSync Manager then will transfer applications and databases that you may have posted for installation using the Palm Install Tool. Next, the HotSync Manager will run through all applications that are configured for data transfer during the current HotSync session. Typically, these include built-in applications like Address Book, Expense, and so on, as well as other applications such as NEDLite.
5. At the very end of the NEDLite data transfer, the NEDLite conduit launches a program that prompts you with a "Save-As" dialog. This program runs independently of the HotSync Manager and will remain even after the HotSync process has completed.
6. Choose the appropriate file type. The file types available will depend on the version of NED you have installed on the desktop.
7. If you wish to save your NEDLite data into a NED file, either select an existing file or enter a new file name.

If you select an existing file, you will overwrite all data in the existing file. You cannot use this process to append to data in an existing file.

8. Select "Save".
9. During the next few minutes, NED will import the NEDLite data.

10. You will be notified if any unknown species codes are found. If you prefer, you can save all error entries into a file for subsequent viewing and data validation. For NED-1 users, only those species which occur in your data will be imported into the NED file.

HotSyncing Multiple Inventories Into One NED File

When starting an inventory, you begin the process by creating at least one stand in NEDLite. NEDLite adds stands in sequential order, applying a hidden, non-editable stand index, and always beginning with 1, then 2, 3, and so on. The stand ID (i.e. the editable stand name such as "Stand 1") reflects this numbering, but you can edit the stand ID at any time. The editable stand ID is not used by NED software to distinguish stands. Instead, the hidden, non-editable stand index number is used.

Do not attempt to rename stands as a means of preventing NED from overwriting stands from multiple cruises; and do not expect NED to interpret stand IDs in any way. The stand ID is retained in NED so you can keep track of stands as you identified them in the field.

When you HotSync data into NED, all data remains on the Palm OS handheld. If you decide to delete all of the stands, NEDLite will start over again with stand 1. Therefore, please exercise caution if you plan to return to the same property to continue your forest inventory. Since NEDLite restarts with stand 1, importing data into the same NED file could result in overwriting the original data from the previous inventory. NED won't know that you have actually cruised different stands, even if you have tried to rename the stand IDs. Similarly, extra care is required if several crew members are cruising separate stands in the same property. Crew members should coordinate their efforts when HotSyncing into NED to ensure that they do not overwrite previous cruises that shared identical stand numbers. In this case it is strongly recommended that each user HotSync to a separate NED file. See the next section on combining data from separate files.

Merging and splitting data

NED-1 users:

Use the NED exchange program to combine multiple cruises (separate NED-1 files) into a single file. Conversely, to split off stands/plots from an existing NED-1 file into one or more separate NED-1 files, use the ShufflePlots program to move stands and plots from one file to another. These programs are distributed with NED-1 and are available for download at the NED website: http://www.fs.fed.us/ne/burlington/ned.

NED-2 and newer:

Newer versions of NED have built-in utilities for importing stands and plots from other files. To combine separate files, open one file and import stands from other files. To split off one or more stands into *separate* files, create an empty file and import the desired stands from other files.

Data Storage on the Palm OS Handheld

There are a number of levels where data can be entered in NEDLite. These levels are organized around the typical field inventory. Levels correspond to forest stands, plot-clusters (see the section, "Plot Clustering" on page 38 for more details), plots (sometimes called subplots), observations, and log products for tree observations. Each stand maintains its own collection of plot-clusters. Each plot-cluster maintains a list of its plots—overstory, understory, groundcover, and CWD transects. Each

plot maintains a collection of observations. Each overstory observation maintains a collection of log products.

You also can record information on buildings in each stand. Therefore, in addition to plot-clusters, each stand also maintains its own collection of buildings.

On the Palm OS handheld, each level in NEDLite is comprised of a list of records. All stands are grouped together in one list, plot-clusters are in a separate list, plots are grouped in another, and likewise for observations and log products. These individual lists cannot be seen and are somewhat like files on a desktop computer. But unlike a desktop program that opens files from nonvolatile storage such as a hard disk or CD-ROM, Palm OS handheld data resides in memory all the time—even when the unit is off. You never need to find files or open them in NEDLite.

NEDLite organizes the lists and displays only portions of them depending on the stand, plot, and so on. The information is displayed in tables. For instance, even though you may have hundreds of plots, NEDLite separates overstory plots from all other kinds of plots. And within the overstory plots, NEDLite only displays the plots that belong to a given stand.

You don't really need to be concerned about records, lists of records, or how NEDLite manages them on the Palm OS handheld. All of this is handled for you automatically. However, collecting data on the Palm OS handheld is only the beginning of the inventory process. Since NEDLite does not analyze your data, it must be transferred to the desktop and converted into NED or other formats for efficient analysis. Knowledge of how your data is organized and stored may be helpful if problems occur when you return from the field.

Data Storage on the Desktop

This section describes what happens with your raw inventory data before it is imported into NED. NEDLite was designed for NED, but that doesn't preclude the use of other software in viewing and analyzing your data. After a HotSync session, the inventory data is stored on the desktop regardless of whether it is imported into NED.

Recall how data is stored on the Palm OS Handheld, where data is organized into hierarchical levels corresponding to forest stands, plot-clusters, plots, observations, and log products (for tree observations). When you perform a HotSync, data files matching each level are created on your desktop. Currently there are 12 files—one for each level in NEDLite. These files are created and stored under the personal storage folder of the current PC user (C:\...\My Documents), inside the My NEDLite Files folder and under your specific Palm OS handheld user name.

Knowledge of these desktop files may become important later if something goes wrong during conversion into NED or other formats. Also, you may want to preserve raw data from forest properties over time. With an understanding of how the data is stored, you will find it easier to develop a strategy for storing and backing up your cruise data.

With each HotSync, NEDLite will overwrite your desktop files. If you do not want this to happen you should make copies of your desktop data files or rename them to preserve their contents before you HotSync.

Raw data files

Desktop data from your Palm OS handheld is stored in tab-delimited ASCII text files that end with a ".txt" extension. On each line in a file, each piece of data is separated by a tab. These files can be opened with any word processor, and/or imported into a spreadsheet program, such as Microsoft Excel. The NEDLite installation includes software that can import these files into NED. At the end of a HotSync operation ("handheld overwrites desktop"), NEDLite prompts you for the name of a NED file in which to import the data from these raw files.

The following is list of files which contain raw text data from NEDLite:

- Stands.txt - List of all stands and data about each individual stand.
- Clusters.txt - List of all clusters with data about each individual cluster.
- OVPlots.txt - List of all overstory plots with data about each individual plot.
- OVObs.txt - List of all overstory observations with data about each tree.
- Logs.txt - List of all logs with data about log length and product.
- UndPlots.txt - List of all understory plots with data about each individual plot.
- UndObs.txt - List of all understory observations with data about each stem.
- GrnPlots.txt - List of all ground-cover plots with data about each individual plot.
- GrnObs.txt - List of all ground-cover observations with data about each species found.
- Transects.txt - List of all CWD transects with data about length of each transect.
- TranObs.txt - List of all transect observations with data about coarse woody debris observations.
- Buildings.txt - List of all buildings with data about each individual building.

Plot Clustering

If you are collecting data on more than one layer in the forest (e.g., overstory and understory), then most likely you are collecting data in plot-clusters. A plot-cluster is a collection of plots taken repetitively at numerous points in a forest inventory. Usually the plots follow a predefined spatial arrangement.

NEDLite maintains plot-clusters and plots because for some analyses, it is important to know which plots belong together.

Plot-clusters are referred to as plots in the inventory, and the plots that belong to each plot-cluster are also referred to as plots. At first it may seem difficult trying to distinguish between plot-clusters and plots if you are not used to thinking of cruising in this manner. NEDLite most often refers to plots that belong to a plot-cluster as "nested plots", but occasionally the term "subplots" is used.

NED-1 followed a fixed plot-clustering scheme. For each plot-cluster, there was one overstory plot, two understory plots and two coarse woody debris (CWD) transects. For newer versions of NED, NEDLite provides a more flexible plot-cluster layout, with still only one overstory plot but an unlimited number of the other plot types per plot-cluster.

Data Transfer - Setting the HotSync Action

NEDLite permits data transfer in two directions—from the Palm OS handheld to the desktop and vice versa. NEDLite can be used for collecting data and saving the data to the desktop for analysis.

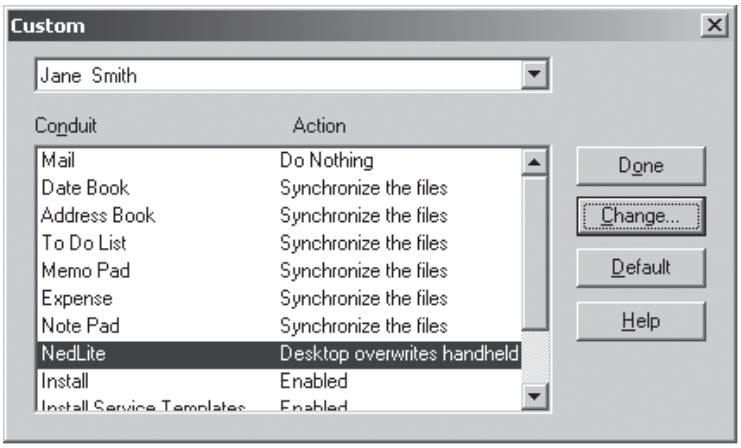


Figure 20.—Finding the NEDLite conduit in the desktop HotSync Manager.

You can also download a list of plant species from the desktop to the Palm OS handheld for reference. NEDLite does not transfer data in two directions at the same time. Since NEDLite is used primarily for data collection, two-way "mirror image" synchronization, as used on some Palm OS handheld programs, will probably not appear in NEDLite. This is to allow users to edit desktop data freely without worrying about unwanted rippling through the original field data on the Palm OS handheld.

NEDLite data will remain on the Palm OS handheld regardless of whether a HotSync is performed. When you are ready to clean up or remove inventory data from your Palm OS handheld, you must manually delete it yourself.

The direction of data transfer is controlled through the HotSync Manager, and is referred to as the current "HotSync action".

To change which direction you wish to transfer data:

1. Position the mouse pointer over the HotSync Manager icon in the lower right corner of your desktop PC screen, and click once with the right mouse button.
2. From the pop-up menu, select "Custom". Or, as an alternative method for accessing the current HotSync settings for the current user, launch the Palm Desktop software. Then, from the top-level menu, select the HotSync menu. From the HotSync menu, select "Custom".
3. When you select "Custom", you will see a dialog similar to Figure 20.
4. Select the appropriate user at the top.
5. Find NEDLite among the list of applications.
6. To change the HotSync action for NEDLite, click the "Change" button. You will see a dialog similar to Figure 21.
7. Select the desired HotSync action for NEDLite.
8. Select "OK".

In Figure 21, the HotSync Manager displays the current HotSync settings for a given NEDLite user. The default action occurs during each HotSync without any intervention from the user. If you have recently changed the default HotSync action, this will be displayed as "Next HotSync Action".

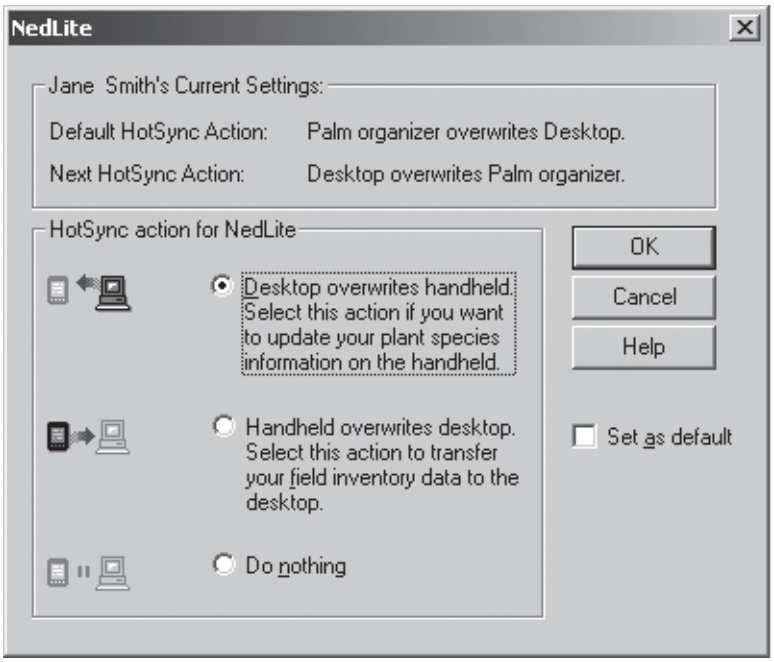


Figure 21.—Setting the HotSync action for NEDLite in the HotSync Manager.

Description of Inventory Items

This section provides an overview of the specific items you can record in NEDLite. Each item corresponds to a matching inventory item in NED. There are no additional inventory items beyond what exists in NED. See the glossary for a description of a particular item.

Stands

The following items help to identify a stand:

1. Stand ID
2. Tally date
3. Area
4. Age
5. Forest type
6. Land cover type
7. Ecological land type

The following items describe the physiography of a stand:

1. Elevation
2. Slope aspect
3. Slope percent
4. Slope shape
5. Slope position
6. Loose soils
7. Rock piles
8. Rock crevices
9. Caves

The following items describe the hydrology of a stand:

1. Percent riparian
2. Percent wetland
3. Seeps
4. Springs
5. Temporary ponds
6. Permanent ponds
7. Adjacent to water
8. CWD in water

The following items describe general vegetation properties of a stand:

1. Site index
2. Site index species
3. Height to canopy base

4. Live cavity present
5. Dead cavity present
6. High perch
7. Low perch

The following items describe access, operability, and other stand features:

1. Average haul distance
2. Roaded
3. Operability
4. Vehicle access
5. Unique features
6. Show features
7. Hide features

Buildings

NEDLite collects data on buildings and other manmade structures, which are available only under "Typical NED Inventory Settings". These items are not available in NED-1.

1. Building ID
2. Building on steep slope
3. Open soffits
4. Open foundation
5. Wood shingles
6. Vinyl siding
7. Wood siding
8. Single pane windows
9. Nearest building
10. Space for firefighters
11. Stacked firewood
12. Wood fence
13. Wood deck
14. Comments
15. Map x coordinate
16. Map y coordinate

Plot-clusters

NEDLite maintains the identity and location of plot clusters.

1. Plot-cluster ID
2. Map x coordinate
3. Map y coordinate

Overstory Data

The following items describe an overstory plot:

1. Plot ID
2. Canopy closure
3. Midstory closure
4. Midstory type
5. Size class
6. Riparian plot
7. Hard mast
8. Soft mast
9. Comments
10. Map x coordinate
11. Map y coordinate

The following items describe an overstory (tree) observation:

1. Observation ID
2. Species
3. D.B.H.
4. Stem count
5. Live or dead
6. Timber quality
7. Most valuable product
8. Sawlog defect
9. Pulpwood defect
10. Product/grade
11. Crown class
12. Crown condition
13. Total stem height
14. Height class
15. Cavity present
16. Visually interesting
17. User codes

Understory Data

The following items describe an understory plot:

1. Plot ID
2. Percent regeneration from sprouts
3. Timber residuals
4. High value species
5. Commercial species

6. Wetland species
7. Average shrub height
8. Percent shrub cover
9. Deciduous species in shrub layer
10. Coniferous species in shrub layer
11. Ericaceous species in shrub layer
12. Showy flowers in shrub layer
13. Riparian plot
14. Hard mast
15. Soft mast
16. Comments
17. Map x coordinate
18. Map y coordinate

The following items describe an understory observation:

1. Observation ID
2. Species
3. D.B.H.
4. Stem count
5. Live or dead
6. Percent cover
7. Total stem height
8. Height class
9. Plant origin
10. User codes

Groundcover Data

The following items describe a groundcover plot:

1. Plot ID
2. Percent ground cover
3. Rock barrier to regeneration
4. Wetness barrier to regeneration
5. Percent rock cover
6. Percent moss cover
7. Percent grass/sedge cover
8. Percent litter cover
9. Litter depth
10. Percent inhibiting fern cover
11. Percent other fern cover
12. Percent regen from sprouts
13. High value species

14. Commercial species
15. Wetland species
16. Average shrub height
17. Percent shrub cover
18. Deciduous species in shrub layer
19. Coniferous species in shrub layer
20. Ericaceous species in shrub layer
21. Showy flowers in shrub layer
22. Riparian plot
23. Hard mast
24. Soft mast
25. Comments
26. Map x coordinate
27. Map y coordinate

The following items describe a groundcover observation:

1. Observation ID
2. Species
3. Stem count
4. Percent cover
5. Total stem height
6. Height class
7. Plant origin
8. User codes

Coarse Woody Debris (CWD) Transect Data

The following items describe a coarse woody debris (dead and down) transect:

1. Plot ID
2. Transect length
3. Interesting tree
4. High slash
5. Low slash
6. Comments

The following items describe a CWD transect observation:

1. Observation ID
2. Species
3. Count
4. Diameter
5. Condition
6. Bark present

How to Add Data

In NEDLite, field data is organized into a hierarchy of stands, plot-clusters, plots, and observations. You must establish stands and plots before you can record observations. Hence, in order to place an observation into the correct stand and plot, a suitable stand and plot must already exist. Overstory, understory, and ground-cover observations are collected in plots, whereas coarse woody debris (dead and down) data is gathered on linear transects. Despite these differences, the procedure for adding plots, transects, and their respective observations is virtually identical for each kind of data.

Error-checking and validation

NEDLite does very little contextual error-checking or validation of your input. Some fields allow only positive integers—to prevent negative numbers or other invalid values. Other fields allow input of any character on the keyboard. For example, the species code for a given observation can be anything you want. Be careful that you enter a species code that NED will interpret successfully.

If you wish to enter text from the onscreen keyboard, you will notice that NEDLite has eliminated some of the standard punctuation characters. To conform with NED, NEDLite does not allow certain characters.

Whether you are entering text from the graffiti area or through the on-screen keyboard, the following characters are not intended for use and are routinely disallowed in NEDLite:

- Carriage return/line feed
- Tab
- All punctuation except periods or decimals
- Special characters, including percentage sign, dollar sign, asterisk, ampersand, etc.

Adding Stands

Creating a new stand requires one step: from the "Welcome to NEDLite" screen, select "NEW" at the bottom of the screen. When you are just beginning to collect field data, this is the very first step.

Be sure you have already specified which NED version you are using before you add stands. Once you start entering data you cannot switch to a different NED version without deleting data.

When you create a stand, the following actions immediately occur:

1. The stand is created with a default ID based on the sequential stand number.
2. The tally date defaults to the current date.
3. The global inventory settings are copied into the inventory settings for your new stand.

Select "Done" when you are finished entering/editing information on the stand to return to the "Welcome to NEDLite" screen.

Adding Plot-clusters

NEDLite is designed to create plot-clusters automatically when new plots are added.

In most cases, forest cruising follows a predefined plot-cluster layout without deviation. Therefore, it is possible to enter data in NEDLite without too much emphasis on plot-clusters. With an understanding of what happens behind the scenes, it is possible for you to avoid dealing with plot-clusters almost completely, but the capability of tinkering with the plot-cluster design is always available.

Consider each "point" on a cruise as a potential location for several plots (one plot-cluster). At each point on the cruise, data is recorded in one or more plots. Instead of manually creating each plot in NEDLite, you set up NEDLite to create a new plot as part of a new plot-cluster, and NEDLite will create the plot-cluster for you. NEDLite also will create all remaining types of plots in the plot-cluster for you as well, using the number of plots specified in the inventory settings for your stand.

Plot-clusters are added when you attempt to add a plot of given plot type (e.g. groundcover), and you select "New plot-cluster with nested plots" as shown in Figure 22. Figure 22 shows that a total of seven different plots will be created as part of the 26th plot-cluster in the stand. That means 25 points (plot-clusters) on the cruise have already been visited or collected, or at least created in NEDLite.

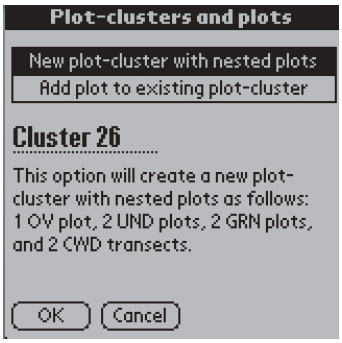


Figure 22.—Adding plots as part of a new plot-cluster in NEDLite.

Adding Plots

Each plot in NEDLite is associated with a plot-cluster. Therefore you must consider whether you want to add a plot to an existing plot-cluster or establish a new plot-cluster with its predefined set of plots.

The first time you add a new plot, your only option is to establish a new plot-cluster.

To add a plot by establishing (adding) a new plot-cluster:

1. Navigate to the plots table that contains the type of plot you wish to add, using one of these methods: From the "Welcome to NEDLite" screen -- in the row of the stand where the plot belongs, select under the desired plot column (O=overstory, U=understory, G=groundcover, T=transects). Alternatively, from any of the plot tables or observation tables -- select the letter that corresponds to the type of plot you wish to add.
2. Select "NEW" at the bottom of the plot table screen.
3. Select "New plot-cluster with nested plots". This action will cause NEDLite to create a new plot-cluster, while also creating all of the plots in each plot type as specified under Inventory Settings for the stand.
4. Select "OK" to return back to the plot table screen.

To add a plot to an existing plot-cluster:

1. Navigate to the plots table that contains the type of plot you wish to add, using one of these methods: From the "Welcome to NEDLite" screen -- in the row of the stand where the plot belongs, select under the desired plot column (O=overstory, U=understory, G=groundcover, T=transects). Alternatively, from any of the plot tables or observation tables -- select the letter that corresponds to the type of plot you wish to add.
2. Select "NEW" at the bottom of the plot table screen.
3. Select "Add plot to existing plot-cluster".
4. From the list of existing plot-clusters, select the name of the plot-cluster where you wish to add a plot.
5. Select "OK" to return back to the plot table screen.

Some restrictions apply when you are adding a plot to an existing cluster:

1. If you have chosen "NED-1" as the version of the NED software under NEDLite preferences, you will not be allowed to add a new plot to an existing cluster. This is because NED-1 requires a fixed number of plots per plot-cluster.
2. Currently you cannot add a new overstory plot to an existing plot-cluster if it already has an overstory plot. All versions of NED allow only one overstory plot per plot-cluster.

Adding Observations

To add an observation to a plot:

1. Navigate to the table where the new observation belongs. First, navigate to the plots table that holds the desired type of observation, using one of these methods: From the "Welcome to NEDLite" screen, select the number in the row of the stand where the plot belongs under the desired plot column (O=overstory, U=understory, G=groundcover, T=transects). Alternatively, from any of the plot tables or observation tables within the same stand where the new plot belongs, select the letter that corresponds to the type of plot for the observation.
2. In the row that contains the plot where the observation belongs, select the "Observations" column to go to the observation table for that plot.
3. Tap "NEW" at the bottom of the observation table screen.
4. Enter the desired information and select "OK" to return to the observation table screen.

Adding Log Products to an Overstory Tree

To add a log to an overstory observation:

1. Navigate to the overstory plots table using one of these methods: From the "Welcome to NEDLite" screen, select the number in the row of the stand where the plot belongs under the overstory column (O=overstory). Alternatively, from any of the plot tables or observation tables—select the letter "O" at the bottom of the screen.
2. In the row that contains the plot where the observation belongs, select the "Observations" column to go to the observation table for that plot.
3. From the list of overstory observations, select anywhere on the row of the tree of interest.
4. From the observation detail screen, select "Products".

5. Select “New Log” at the bottom right of the screen.
6. Select the product (e.g. grade 1 sawlog, pulpwood, etc.) and enter a length of the log.
7. Select “OK”.

When using NED-1 Inventory settings, you are allowed a maximum of only two “logs” in your tree. The first log should be the total sawlog height in the tree and should be given the grade of the highest product. The second log should be the length of pulpwood above the sawlog height. If the tree has only pulp quality in it, record one log for the tree with the total merchantable height recorded as pulpwood.

Adding Buildings

In NEDLite you can enter information about buildings and other man-made structures. (If NED-1 inventory settings are being used, you cannot use this section of NEDLite.) This data (along with other site information) can be used to evaluate risk from fire in NED-2 and newer versions of NED. To access buildings, first create stands in NEDLite. Each stand maintains a list of buildings independent from other stands.

To add a building to an existing stand:

1. From the list of stands on the “Welcome to NEDLite” screen, select the name of the stand for which you wish to add a building.
2. Select the title bar at the top of the “STAND ID” screen, or select the menu icon in the silkscreen area of your Palm OS handheld.
3. Select “Options” and select “View/Mod Buildings”.
4. Select “NEW” at the bottom center of the buildings table screen.
5. Enter the desired information and select “OK” to return to the buildings table screen.
6. Select “OK”.
7. Select “Done” to return to the “STAND ID” screen.

How To Delete Data

Deleting data from NEDLite is straightforward. You have to delete data manually and there is no option to "clean the slate" by deleting everything from NEDLite. The fastest way to delete data is to delete stands from the "Welcome to NEDLite" screen. When you delete an item, all related items hierarchically below it also are deleted.

Be sure to save your data (via HotSync) first. Once deletion starts, it cannot be stopped, and there is no option to undo the deletion.

Delete a Stand

When you delete a stand, all buildings, plot-clusters, plots, and observations in the stand are deleted.

1. From the "Welcome to NEDLite" screen, select the stand you wish to delete. (Make sure to save data (via HotSync) before you delete the stand!)
2. Select the title bar at the top of the "NEDLite Stand ID" form, or select the menu icon in the silkscreen area of your Palm OS handheld.
3. Under the Edit menu, select "Delete Stand".
4. Select "OK".

Delete a Single Plot-cluster

When you delete a plot-cluster, all plots and observations in the plot-cluster are deleted.

1. From the "Welcome to NEDLite" screen, select the stand that contains the plot-cluster you wish to delete.
2. Select the title bar at the top of the "NEDLite Stand ID" form, or select the menu icon in the silkscreen area of the Palm OS handheld.
3. Under the Options menu, select "View/Mod Plot-clusters".
4. Under the Plot-clusters column, select the plot-cluster to delete.
5. Select the title bar at the top of the "Plot-cluster ID" form, or select the menu icon in the silkscreen area of your Palm OS handheld.
6. Under the Edit menu, select "Delete Cluster".
7. Select "OK".

Delete a Plot in Any Given Stand

On the "Welcome to NEDLite" screen where all stands are listed, NEDLite maintains a list of plots that exist in each stand. Regardless of your plot-clustering layout, NEDLite maintains a total plot count (over all plot-clusters) so you can have an idea of how many plots have been created. When plots are deleted or added, NEDLite will update the plot count.

When you delete a plot, all observations in the plot are deleted.

1. Navigate to the plots table that contains the plot you wish to delete, using one of these methods: From the "Welcome to NEDLite" screen—in the row of the stand where the plot belongs, select the number under the desired plot column (O=overstory, U=understory,

G=groundcover, T=transects). Alternatively, from any of the plot tables or observation tables—select the letter that corresponds to the type of plot you wish to delete.

2. Under the Plots column, select the plot you wish to delete.
3. Select the title bar at the top of the "PLOT ID" form, or select the menu icon in the silkscreen area of your Palm OS handheld.
4. Under the Edit menu, select "Delete Plot".
5. Select "OK".

Delete an Observation in Any Given Plot

For overstory observations, all logs (if any) belonging to the observation are deleted.

1. Navigate to the plots table that contains the observation you wish to delete, using one of these methods: From the "Welcome to NEDLite" screen—in the row of the stand where the plot belongs, select the number under the desired plot column (O=overstory, U=understory, G=groundcover, T=transects). Alternatively, from any of the plot tables or observation tables—select the letter that corresponds to the type of plot (observation) you wish to delete.
2. Under the Observations column, select the row of the plot that contains the observation you wish to delete.
3. Select anywhere in the row of the observation you wish to delete.
4. Select the title bar at the top of the "OBSERVATION DETAIL" form, or select the menu icon in the silkscreen area of your Palm OS handheld.
5. Under the Edit menu, select "Delete Obs".
6. Select "OK".

Delete a Log From an Overstory Observation

1. Navigate to the overstory plots table, using one of these methods: From the "Welcome to NEDLite" screen -- in the row of the stand where the plot belongs, select the number under the overstory plot column (O=overstory). Alternatively, from any of the plot tables or observation tables -- select the letter "O" at the bottom of the screen.
2. Under the Observations column, select the row of the plot that contains the observation you wish to modify.
3. From the list of overstory observations, select anywhere on the row of the tree (observation) of interest.
4. Select "Products".
5. Select the name of the log you wish to delete.
6. Select the title bar at the top of the "PRODUCTS" form, or select the menu icon in the silkscreen area of your Palm OS handheld.
7. Under the Edit menu, select "Delete Log".
8. Select "OK".

Delete a Building from Any Given Stand

1. From the list of stands on the "Welcome to NEDLite" screen, select the name of the stand with the building to be deleted.

2. Select the title bar at the top of the “STAND ID” screen, or select the menu icon in the silkscreen area of your Palm OS handheld.
3. Select “Options” and select “View/Mod Buildings”.
4. In the list of buildings, select the building to delete.
5. Under the Edit menu, select “Delete Building”.
6. Select “OK”.
7. Select “Done” to return to the STAND ID screen.

Software Maintenance

There are several maintenance options for an existing NEDLite installation. Repair and removal can be accomplished through Add/Remove Programs on the Control Panel. Updates (i.e. enhancements and/or bug fixes) to the software are delivered separately and cannot be handled by the original installation program. Consequently, the instructions for updates are different from those for repair or removal.

Use Add/Remove Programs to perform software maintenance (other than updates) on NEDLite:

1. Select “Settings” from the Windows Start Menu.
2. Select “Control Panel”.
3. Select “Add/Remove Programs”.
4. Select “NEDLite for the Palm” from the list of programs.
5. Select “Change” or “Remove”.
6. You will be presented with the following maintenance options:
   - Modify
   - Repair
   - Remove

If you are installing NEDLite for the first time, see the installation chapter.

Modify an existing installation

Typically, the “modify” option would be used to change which program features are currently installed. Individual features can be installed or uninstalled. The modify option can only install/remove features packaged with the original installation program. It will not work with periodic file updates that you may receive over the internet or by other means.

NEDLite is currently delivered as a single-feature application, which essentially means that the “modify” option only could be used to remove NEDLite from the computer. Therefore this option is not recommended.

If you need to completely reinstall everything that was originally installed, see the section, “Repair an Existing Installation”.

Repair an existing installation

If NEDLite stops working, or if you suspect one or more files are missing, you can try to repair (recover) an installation to get it back to the way it was originally. Use the “repair” option to completely reinstall NEDLite.

Configuration problems (i.e. post-installation settings that create user folders and register the NEDLite conduit) typically are not resolved through software repair. If you suspect there are problems with some of the NEDLite configuration settings, such as if the NEDLite conduit isn’t registered with the HotSync Manager, see the section, “Configuration,” on page 13.

To reinstall all the software that you originally installed:

1. Run Add/Remove Programs as described on page 53.
2. Select “Repair” from the “Program Maintenance” dialog.
3. Follow the on-screen instructions.

Uninstall NEDLite

This option will not remove all files associated with NEDLite. Personal NEDLite folders (under “../My Documents/My NEDLite Files”) are not removed. Components shared by other NED software will remain on the computer if other NED software exists on the computer.

When NEDLite is removed from your computer:

- All NEDLite shortcuts are removed under Start - Programs - NED Programs.
- The NEDLite conduit is removed and unregistered with the HotSync Manager.
- Some non-shared programs are removed from the NEDLite installation folder.
- All user data folders and files are left intact.

To remove NEDLite:

1. Run Add/Remove Programs as described on page 53.
2. Select “Remove”.
3. Follow the on-screen instructions.

Updating NEDLite

Updates to NEDLite will be packaged as full installations and patches. A full installation will contain all of the files necessary to install NEDLite for the first time, as well as provide updates to an existing installation. A patch will only update an existing installation of NEDLite.

If you receive a newer version of the setup program and run it against an existing installation of NEDLite, the behavior will be different than if you were to run the original setup program as described in “Installation” on page 10. Instead of launching the “Program Maintenance” dialog, you only will be asked if you want to update NEDLite. A minimal user response is required when running updates. The outward behavior of patches is very similar to running an upgrade packaged as a full installation.

As much as possible, future versions of NEDLite will be compatible with older data. However, to be safe it is recommended that you HotSync data into NED *before* you download a newer version of NEDLite to your Palm OS handheld. After downloading a newer version, if the data on your Palm OS handheld looks corrupted, then you can safely delete the data.

Glossary and Field Procedures

Adjacent to water - For a given stand, indicates if the stand is adjacent to or contains a perennial stream, permanent pond, or lake.

Age - Stand age. Indicates the number of years since the current stand was established.

AGS - Acceptable growing stock. A tree capable of producing sawtimber when it reaches appropriate size and expected to live at least 15 more years.

Area - Stand area. Indicates the approximate area of land covered by a given stand.

Aspect - Slope aspect. Indicates the direction an area of land is facing, and the relative amount of incoming solar radiation an area receives. In NEDLite, recorded as azimuth for an entire stand. To record azimuth, make a selection from the list of choices or enter an azimuth of up to three digits.

Average haul distance - The average distance from the stand to the nearest mill.

Average shrub height - The average height of shrub-layer plants between 3-10 feet tall.

BAF - Basal area factor. The amount of basal area (ft^2/acre or m^2/ha) represented by each tallied tree, based on the angle of the prism or angle gauge used in sampling overstory vegetation.

Bark present - Recorded for each observation of coarse woody debris tallied on a transect in NEDLite. If a single piece of coarse woody debris still has most of the bark on it, place a checkmark in the box for the observation.

Building ID - For display and user reference only. Also called building name. The default value is based on the sequential building index (e.g. “Building 1”, “Building 2”, etc.). This value may be edited. See Plot ID for related information.

Building on steep slope - The average slope of the defensible space around the building is more than 30 percent.

Canopy closure - The degree of light blockage by branches and leaves of tree crowns in a given overstory plot. Expressed as a percentage of the maximum amount of sky obstructed or simply the percentage cover of the overstory trees.

Caves - In a given stand, check the box for this field if there are any caves or larger rock openings that lead below the frost line.

Cavity - A condition in which a tree (living or dead) has one or more holes in the trunk or stem from broken branches and decay, or a hollow trunk. In NEDLite, the presence of a cavity can be indicated on any given overstory observation.

Cluster - see Plot-Cluster.

Codominant crown class - A tree with a crown forming the general level of the main canopy, receiving full light from above but little from the sides.

Comments - Additional notes on an item. Generally used for special annotations and not typically analyzed.

Commercial species - For a given understory or ground-cover plot, check the box if the plot is stocked with commercial tree seedlings (any commercial species, but not necessarily high value species). If detailed plot information is tallied (i.e. individual observations of species are recorded), this variable will be calculated automatically.

Condition - Condition of coarse woody debris (CWD). When recording CWD data in NEDLite, refers to the condition of a downed log. Select either hard/sound or soft/decayed.

Coniferous species in shrub layer - For a given understory or ground-cover plot, check the box if the shrub layer contains coniferous species. If detailed plot information is tallied (i.e. individual observations of species are recorded), this variable will be calculated automatically by NED.

Conduit - A program that performs synchronization between applications on a Palm OS handheld and data on a desktop computer. Most Palm applications come with a conduit. When you perform a HotSync operation, the Palm Desktop HotSync Manager calls each application's conduit to give it a chance to perform data synchronization. Without a conduit, an application cannot respond to a HotSync operation. NEDLite has a conduit that it uses for uploading forest inventory data into NED.

Count - The number of individuals of same species, diameter, and quality (if applicable). If you observe several stems that have virtually identical qualities, you can enter them as one observation in NEDLite, and use the count field to record how many individuals there were.

Crop tree - A crop tree can be any tree that the landowner especially wants to retain. For sawlog production, timber crop trees should be high value species, dominant or codominant, straight, and vigorous. Crop trees for wildlife might be den trees and mast producers such as oaks, hickories, or beech. (Lamson et al. 1988)

Crown class - The position of a tree in the canopy, indicated by one of five categories: dominant, codominant, intermediate, suppressed, and open-grown.

Crown condition - An estimate of the tree crown's condition based on the percentage of the normal crown that is alive and healthy. In NEDLite this variable is entered as a percentage, under "percent of full crown living".

CWD - Coarse woody debris. Includes fallen dead trees and larger woody branches (greater than 3 in or 7 cm diameter) that have fallen either naturally or as a result of logging. In NEDLite, stems lying on the ground are recorded along transects. Standing dead trees (snags) are recorded in overstory plots and noted as dead.

CWD in water - At the stand level, indicates if any downed logs are partially or wholly in a permanent water source.

D.B.H. - Diameter at breast height. The standard location on a stem where diameter is measured, at approximately 4.5 feet above ground.

Dead cavity present - Check the box if the stand contains at least one standing dead tree with a cavity.

Deciduous species in shrub layer - For a given understory or ground-cover plot, check the box if the shrub layer contains deciduous species. If detailed plot information is tallied (i.e. individual observations of species are recorded), this variable will be calculated automatically by NED.

Diameter of CWD - The diameter of each downed log you cross along a transect for measuring CWD. Usually the transect follows your compass bearing between plot centers. Measure only downed logs with a diameter of at least 3 inches and a length of at least 3 feet.

Dominant crown class - A tree with the crown extending above the general level of the main crown canopy and receiving full light from above and partly from the sides.

Ecological land type - Enter Bailey's ecological land type(s) in the stand (Bailey 1995). This variable is not currently analyzed, so it is a note to yourself and can be used to record any other habitat type or natural community classification system as desired.

Elevation - Recorded as mean height above sea level for an entire stand.

Ericaceous - A characterization of plants that belong to the family Ericaceae. Sometimes evergreen, ericaceous plants are typified by thick, glossy leaves. Examples include blueberry, huckleberry, wintergreen, rhododendron, mountain laurel, and cranberry.

Ericaceous species in shrub layer - For a given understory or ground-cover plot, check the box if the shrub layer contains ericaceous species. If detailed plot information is tallied (i.e., individual observations of species are recorded), this variable will be calculated automatically by NED.

Forest type - A forest ecosystem often is described according to the species growing in the overstory. One can assign a forest type, which is a group of dominant tree species that are often found growing together, usually because they have similar requirements and tolerances. Examples include northern hardwoods, spruce-fir, oak-hickory, and aspen-birch. In NEDLite, a pick-list is available to record the forest type for each stand. If not recorded in NEDLite, NED will calculate a forest type from the observations after the data is transferred.

Groundcover - The zone or layer of a forest ecosystem that includes herbaceous (nonwoody) flora, as well as smaller woody tree stems and shrubs. In NED a ground-cover plot describes this layer. The ground-cover plot can be used analogously to the NED-1 ground layer, for all stems under 3 ft tall (see Ground layer, below). Or, alternatively, the user can establish other thresholds for determining what stem sizes are included in the ground-cover. Under "Typical NED Inventory Settings", the use of the ground-cover plot is left to the discretion of the user. For example, one could use d.b.h. rather than height to determine what stems to include in the groundcover. A ground-cover plot also is used to describe the amount and coverage of leaf litter, rocks, etc.

Ground layer - Similar to groundcover, but more narrowly defined for specific NED goals. A plant is in the ground layer if it is less than 3 ft tall. If one collects ground-cover data based on d.b.h. or other measures, it's likely that some plants in the groundcover will be taller than 3 ft, and thus not fitting the definition of "ground layer". Under "NED-1 Inventory Settings", you must indicate the height class for each ground-cover observation. Hence, if you wish to describe a plant in the ground layer, you must enter the letter "g" (lower or upper case is acceptable) for the height class. Under "Typical NED Inventory Settings", the user can apply his or her own height classes, as long as they include thresholds at 3 and 10 feet. The user does not need to use height classes under "Typical NED Inventory Settings". However, beware that a failure to collect either actual height, or to assign a height class, will effectively eliminate any interpretation for wildlife and visual goals. Many of these goals depend on knowledge of plant heights in the understory and groundcover.

Hard mast - Indicates whether any species that produces hard fruit (acorns, beech nuts, walnuts, hickory nuts, etc.) is present in the plot.

Height class - A forest is comprised of several layers with each layer having differences in vegetation, light levels, and microclimate. While it is useful to know the height of plants and in which layer they are presently growing, height is costly to obtain and prone to measurement error. Height class is offered as an approximation of actual stem height. Therefore, the user can define his or her own height classes in NED and use them in the field (in NEDLite). Instead of recording actual stem height, the user can assign a height class code. For example, code 1 might be applied to stems 0-3 ft, code 2 for stems 3-10 ft, code 3 for stems 10-30 ft, and so on.

Height to canopy base - Height to bottom of canopy. Enter the height to the lowest leaves that form part of the overstory canopy.

Hide features - List any features that you would like to screen or hide, such as a residence, a cut along a main road, a junk yard, etc.

High perch - At the stand level, check the box to indicate if any high exposed perches occur in the stand. A high perch is any live or dead tree that clearly towers above the canopy, such as a supracanopy white pine, or a single tree or group of trees standing above ground vegetation, such as a lone elm in a pasture or a snag in a clearcut.

High slash - Along a CWD ("between-plot") transect, check the box if you saw any high slash piles along the traverse. Slash piles are considered high if any part of the pile is above 3 ft.

High value species - For a given understory or ground-cover plot, check the box if the plot is stocked with desirable seedlings of high value species. If detailed plot information is tallied (i.e.

individual observations of species are recorded), this variable will automatically be calculated by NED.

HotSync - An operation that initiates transfer of data to/from a Palm OS handheld and a desktop data source. Currently, a HotSync can only be initiated from a Palm OS handheld. To perform a HotSync, press the HotSync button on the cradle or select the HotSync button in the HotSync application on the Palm OS handheld.

HotSync Manager - A desktop program that controls the entire HotSync process. The HotSync Manager runs in the background on the desktop computer, watching for signals via the communication ports for a HotSync request from a Palm OS handheld. Handles multiple users synchronizing with the same desktop computer, and provides an interface for customizing the behavior of conduits.

Interesting tree - Along a CWD transect, check the box if you saw an interesting (standing) tree along the way.

Intermediate crown class - A tree with a crown extending into the lower portions of the main crown canopy but shorter than the codominants and receiving little direct light from above and none from the sides.

Land cover type - For a given stand, select from the list of cover types that best describe the current use of the land.

Large sawlog - A size class describing a tree that is larger than 23.5 inches d.b.h. In cases where the medium sawlog size class is not used, large sawlogs include trees larger than 17.5 inches d.b.h.

Litter depth - For a given ground-cover plot, enter the average depth of forest litter. This is essentially all undecomposed as well as partially decomposed organic material that occurs above the first mineral horizon in the soil.

Live cavity present - Check the box if the stand contains at least one live tree with a cavity.

Live or dead - Check the box if the stem is alive (the default value).

Log length - Under "Typical NED Settings", you can grade each log of a tree separately and must enter the length of each log that you identify. Under "NED-1 Inventory Settings", you may enter a "log length" for the total sawlog portion and the total pulpwood portion of a tree.

Log product - Under "Typical NED Settings", you can grade each log of a tree separately. Each log receives its own product grade. See Product for a list of choices. Under "NED-1 Inventory Settings", you may indicate only whether a tree has a sawlog and/or pulpwood portion, and then enter the most valuable product likely to be obtained from the tree.

Loose soils - For a given stand, check the box if there is soil that can be easily burrowed into.

Low perch - At the stand level, check the box to indicate if any low exposed perches occur in the stand. Low perches are any exposed perches less than 10 ft tall. Examples include fences, isolated shrubs, clumps of woody sprouts, tree tops remaining after harvesting, and short tree stubs.

Low slash - Along a "between-plot" transect, check the box if any low slash piles are observed along the traverse. Slash piles are considered low if the pile is below 3 ft tall.

Map x-coordinate - GPS location or other coordinate. Not used by NED, but available for your reference.

Map y-coordinate - GPS location or other coordinate. Not used by NED, but available for your reference.

Medium sawlog - A size class describing a tree that is 17.5 to 23.5 inches d.b.h. In some cases this size class is not used, and the next largest size class, large sawlog, is applied to all trees larger than 17.5 inches d.b.h.

Midstory closure - In an overstory plot, the percent cover of the midstory trees (trees between 10 and 30 ft tall).

Midstory type - In an overstory plot, if there is at least 25 percent midstory cover, select whether it is deciduous, coniferous, or a mix of coniferous and deciduous species.

Most valuable product - If you indicate the most valuable product likely to be obtained from a given tree, but do not provide a product grade for each log in the tree, then NED will estimate the amount of product(s) to come out of the tree, with no product being of greater or higher value than the most valuable product entered. See definition of Product for a list of choices.

Nearest building - For a given building or other manmade structure, enter the distance to the nearest adjacent building.

NED - NED is a collection of software products developed by the USDA Forest Service in conjunction with state and educational institutions. NED is intended to help resource managers develop goals, assess current and future conditions, and produce sustainable management plans for forest properties. NED originally was an acronym for the Northeast Decision Model but as the geographic scope of the project expanded, the software lost the regional reference and has become simply NED.

Observation ID - For display and user reference only. Also called observation name. The default value is based on the sequential observation index (e.g. "Obs 1", "Obs 2", etc.). You may edit this value. See Plot ID for related information.

Open-grown crown class - A tree that is free of competition and receives light on top and on all sides of the crown as a result of a very heavy thinning or being in a supracanopy or an isolated, open-grown position.

Open foundation - For a given building or other manmade structure, check the box if the foundation is open, such as post-and-pier, etc.

Open soffits - For a given building or other manmade structure, check the box if the soffits are open rather than boxed or closed in.

Operability - For a given stand, select "Limited" from the list to provide an estimate of the stand's environmental or economic limitations, such as unmarketable timber or wet soils, steep slopes, or rockiness which limit the use of mechanical equipment. If there are no limitations such as these, select "No Limitations".

Palm - Palm Computing, Inc. The company that develops the Palm OS and the original manufacturer of the first Palm OS handheld devices.

Palm Desktop - A program from Palm, Inc. that includes the HotSync Manager, and desktop versions of programs such Address Book, Date Book, Expense, and Mail. Palm Desktop is the software that controls your Palm environment on your desktop computer. Without Palm Desktop or equivalent software, you will not be able to properly setup NEDLite on your computer.

PDA - Personal Digital Assistant. A small handheld computer, such as a Palm device or a Pocket PC.

Percent cover - For understory and ground-cover plots, enter the percentage of the fixed area plot that is covered by a species. Typically when recording percent cover, each species is tallied just once, even if it occurs in several places throughout the plot. That is, instead of recording the percent cover of each individual of a species, estimate the total percent coverage for all stems or plants of species in the plot, and then record this estimate for the species.

Percent grass/sedge - For a given ground-cover plot, enter the percentage of the plot that is covered by grass and sedge that will inhibit seedling establishment and growth. Even if only a tiny trace is present—one or two blades—record a minimum of 1 percent.

Percent ground cover - For a given ground-cover plot, enter an ocular estimate of the percent cover of all plants in the ground layer (0-3 ft tall); using 10 percent increments is adequate.

Percent inhibiting fern - For a given ground-cover plot, enter the percentage of the plot covered by any ferns that will inhibit seedling establishment and growth, such as bracken, hay-scented, or New York fern. If identity is uncertain, count any fern that grows as individual fronds from the ground level and ignore any ferns that grow in clumps. Ferns that grow in clumps can be recorded under "percent other fern".

Percent litter - For a given ground-cover plot, enter the percentage of the plot covered by forest litter (leaves, small twigs, etc.).

Percent moss - For a given ground-cover plot, enter the percentage of the plot covered with moss.

Percent other fern - For a given ground-cover plot, enter the percentage of the plot covered by any fern that will not inhibit seedling establishment and growth. Typically, such ferns grow in clumps such as Christmas and interrupted fern.

Percent regen from sprouts - Enter the percentage of seedlings and saplings of sprout origin (root sprouts, sucker sprouts, etc.).

Percent riparian - The percentage of a given stand that is in a riparian area, including buffer strips along water sources.

Percent rock - Percentage of a given ground-cover plot that is covered by exposed, bare rock or stones.

Percent shrub cover - An ocular estimate of the percent cover of all plants in the shrub layer (3 - 10 ft tall); using 10 percent increments is adequate.

Percent wetland - The percentage of a given stand that is a wetland.

Permanent ponds - Permanent ponds are any size or depth, but larger is generally better; water must be present year round, although the top layer can freeze. Check the box to indicate if any permanent ponds or lakes are within or adjacent to the stand.

Plant origin - For an observation in a given understory or ground-cover plot, specify the origin of plant from the following choices: "seedling", "stump sprout", "root sprout", "seedling sprout", or "other".

Plot-cluster - A collection of plots taken repetitively at numerous points in a forest inventory. May imply a spatial arrangement among subplots but this is not necessary. In NEDLite, a plot-cluster contains one overstory plot, but it may contain any number of understory plots, ground-cover plots, and coarse woody debris transects. The default (under "Typical NED Inventory Settings") is one overstory plot, two understory plots, two ground-cover plots, and two coarse woody debris transects.

Plot-cluster ID - For display and user reference only. Also called cluster name. The default value is based on the sequential plot-cluster index (e.g. "Cluster 1", "Cluster 2", etc.). You may edit this value. See Plot ID for related information.

Plot ID - For display and user reference only. Also called plot name. The default value is the plot-cluster number concatenated with a colon and the plot index (e.g. "Plot 1:1"). You may edit the plot ID, but changing the plot ID will not prevent NEDLite from overwriting pre-existing data when you upload data into an existing NED file. NED and NEDLite use a hidden plot index to keep track of plots. Therefore, be careful when using plot IDs to distinguish separate plots if you plan on combining separate cruises into the same NED file. Whenever you delete data from NEDLite, NEDLite will reset the plot index so your first plot is always "plot 1" internally. If you plan to continue cruising the same area after all previous plots were deleted, or if a given area is divided among several crew members, data should be uploaded into separate NED files to ensure

that data from one cruise isn't overwritten by another. Data from separate NED files can be combined later, and modified plot IDs will be preserved.

Pole - A size class describing a tree that is between 5.5 and 8.5 (for softwood or 11.5 for hardwood) inches d.b.h.

Product - An estimation of the product obtained from a tree or an individual log. Valid choices are: veneer, sawlog, pulpwood, boltwood, firewood, local use, cull, grade 1 sawlog, grade 2 sawlog, grade 3 sawlog, subfactory sawlog, chipped pulpwood, whole pulpwood.

Pulpwood defect - The amount of defect in the pulpwood portion of the tree, recorded as a percentage.

Riparian - Describes an area that includes one or more of the following: stream channels, lakes, wetlands, and floodplains.

Riparian plot - A plot that is adjacent to, or includes stream channels, lakes, wetlands, and floodplains.

Roaded - A truck road is in or adjacent to a given stand.

Rock barrier to regen - Rocks or stones will inhibit seedling regeneration in a given ground-cover plot.

Rock crevices - Indicates a stand has one or more rocks with cracks that extend below the frost line.

Rock piles - Indicates a stand has one or more natural or manmade piles (stone walls) that provide hiding places for small mammals, amphibians, or reptiles.

Sapling - A tree larger than a seedling but smaller than a pole-sized tree. Size definitions vary by region, but a sapling is usually between 1 and 5 inches d.b.h.

Sawtimber defect - The amount of defect in the sawtimber portion of the tree, recorded as a percentage.

Seedling - A small tree grown from a seed. Usually the term is restricted to trees smaller than 6 ft tall or smaller than 1 inch d.b.h.

Seeps - A seep is a source of surface groundwater without a well defined point of origin. A spring has a well defined point of origin. Seeps and springs may or may not have vegetation around them. In NEDLite you can indicate the presence of seeps at the stand level.

Show features - List any features in the stand that you would like to promote, such as a potential vista, a waterfall, an unusual looking tree, etc.

Showy flowers in shrub layer - For a given understory or ground-cover plot, check the box if the shrub layer contains species that produce showy flowers. If detailed plot information is tallied (i.e. individual observations of species are recorded), this variable will be calculated automatically by NED.

Shrub layer - Somewhat similar to understory but more narrowly defined for specific NED goals. A plant is in the shrub layer if it is between 3 ft and 10 ft tall. If plants are characterized as understory according to d.b.h. or other measures, it is likely that some will be taller than 10 feet, and thus not fit the definition of "shrub layer". Under "NED-1 Inventory Settings", you must indicate the height class for each understory/ground-cover observation. Hence, if you wish to describe a plant in the shrub layer, you must enter the letter "s" (lower or upper case is acceptable) for the height class. NED-1 originally combined ground and shrub observations into a single "understory plot". Thus, one plot was used for both kinds of observations. If you are collecting data for NED-1, then you can follow this procedure by recording all of your ground and shrub observations in ground-cover plots. In fact, under "NED-1 Inventory Settings" you will not be

permitted to establish understory plots. Under "Typical NED Inventory Settings", you can apply your own height classes as long as you include thresholds at 3 and 10 feet. You do not need to use height classes under "Typical NED Inventory Settings". However, beware that failing to collect either actual height, or to assign a height class, will effectively eliminate any interpretation for wildlife and visual goals. Many of these goals depend on knowledge of plant heights in the understory and groundcover.

Single pane windows - For a given building or other manmade structure, check the box if the building has single pane or non-tempered glass windows.

Site index - The expected height of a codominant tree at an index age. NED uses 50-year site index to influence growth of trees in its simulators. Enter the site index as determined from appropriate charts or plot measurements. Site index should be calculated from age and height measurements of five or more dominant or codominant trees of the site species. Do not bore veneer quality trees.

Site index species - Enter the code of the species used for the site index.

Size class - For a given overstory plot, select the size class that best represents the plot (regeneration, saplings, poles, small sawtimber, or large sawtimber). If not recorded, NED will calculate size class from the data automatically after import.

Slope percent - Entered as a percentage. Indicates steepness of slope, which affects the rate of movement of soil water and nutrients. In NEDLite, you can enter the mean percent slope for an entire stand.

Slope position - Indicates position on a slope. Slope position effects the amount of moisture and solar radiation received, and the rate of soil profile development. In NEDLite, you can select from a list of positions ranging from ridge top to lower slope and bottom. Slope position applies to an entire stand.

Slope shape - Indicates the shape of the slope. The shape of a slope impacts movement and accumulation of moisture and organic matter. In NEDLite, you can select from a list of slope shapes: concave, convex, and linear/flat. Slope shape applies to an entire stand.

Small sawlog - A size class describing a tree that is larger than a pole-sized tree, from around 11.5 to 17.5 inches d.b.h.

Soft mast - Fleshy fruits (i.e. berries, drupes) produced by any species on a plot.

Space for firefighters - For a given building or other manmade structure, enter the linear distance of allowable space for firefighters -- how much space is available for firefighters to protect the building.

Species - For tallied observations, enter the species using either the three-digit Forest Survey code (such as 318 for sugar maple), the USDA Plants symbol (such as ACSA3 for sugar maple) or a user defined code (such as SM for sugar maple). The species may be entered by hand or selected from a plants list.

Springs - A spring is a source of surface groundwater with a well defined point of origin. Springs may or may not have vegetation around them. In NEDLite, indicate the presence of springs at the stand level.

Stand ID - For display and user reference only. Also called stand name. The default value is based on the sequential stand index (e.g. "Stand 1", "Stand 2", etc.). You may edit this value. See Plot ID for related information.

Stacked firewood - For a given building or other manmade structure, check the box if firewood is stacked near the building.

Stem height - A measure of total stem height, from the ground to the very top of the plant. In NEDLite Preferences, you can indicate whether you want to record actual stem height as described here, or height class (the default setting).

Streams - Perennial streams are in a stand or bordering the stand.

Suppressed crown class - A tree whose crown is entirely below the general level of the canopy and receives no direct light from either above or the sides. Also known as "overtopped".

Tally date - Date a stand was inventoried. Select the date inside the box to change the tally date.

Temporary ponds - Temporary or vernal ponds or pools are in or adjacent to a stand. Temporary ponds must be greater than 6 inches deep and greater than 1 square yard; water must be present for at least 2 months during the growing season. The month(s) when a temporary pond is used depends on the species. Areas covered by a fine layer of silt and depressions filled with blackened leaves may serve as dry season indicators of temporary ponds.

Timber quality - An indication of the potential of a tree to produce a sawtimber product. In NEDLite, one can indicate Acceptable Growing Stock (AGS), Unacceptable Growing Stock (UGS), and CROP (a tree of exceptional commercial value).

Timber residuals - A given understory plot contains at least one acceptable tree between 5 to 10 inches d.b.h. that will meet your management goal and survive to occupy the site after a final harvest. Acceptable commercial trees have at least moderately good crowns and clear straight boles free of branches, epicormic branches, or other defects for at least the first 17 ft. Commercial species with more than one or two epicormic branches on the butt log should not be considered acceptable residual trees.

Transect length - Enter the distance of the CWD transect on which dead and down log data was collected; for example, 200 ft or 75 m. The distance should be greater than 50 ft. In a line-plot cruise, transect length is recommended to be the distance between successive understory plots, but it need not be the entire distance between plots.

Typical NED Inventory Settings - NEDLite was designed for the next generation of NED software. Thus, "Typical NED Inventory Settings" refers to the set of inventory defaults and variables for newer versions of NED software (NED-2 or later).

UGS - Unacceptable growing stock. A tree not capable of producing sawtimber at any time in the future and/or not expected (or desired) to survive for 15 years.

Understory - The zone or layer of a forest ecosystem above the groundcover but beneath a canopy. Typically does not include herbaceous flora. May include saplings of tree species, and medium to large woody shrubs. In NED, an understory plot is available to describe this layer. Also in NED, there is an overstory-understory d.b.h. threshold which can be used to separate stems between the understory and overstory. As a default, this threshold is set to 1 inch d.b.h. In this way, the understory plot can be used analogously to NED-1, for all stems less than 1 inch d.b.h., and between 3 and 10 ft tall (see Shrub layer, above). Under "Typical NED Inventory Settings" in NEDLite, use of the understory plot is left to your discretion. For instance, if you wish to collect larger stems as understory, you could establish a threshold of 3.5 inches d.b.h. in NED, and then follow this threshold in NEDLite. Under "NED-1 Inventory Settings", the understory plot is not available.

Unique features - Enter a description of any unique features in the stand.

User codes - User codes are simply user-defined fields that can be used for any purpose. There are six different user codes that can be recorded for each observation in the overstory, understory, and groundcover. As an example, one might want to develop a system of codes for rating or evaluating ice storm damage, insect and disease progression, presence of bear sign, etc.

Vehicle access - Select from the list of choices to indicate the type of vehicle access to the stand (2WD = two-wheel drive; 4WD = four-wheel drive; within a mile of a road; none (no road access).

Vinyl siding - For a given building or other manmade structure, check the box if the building has vinyl siding.

Visually interesting tree - If a tree has characteristics that make it pleasing or interesting to view, indicate this for any overstory observation, or along a "between-plot" (CWD) transect in NEDLite.

Welcome screen - This is the initial screen that displays when you launch NEDLite. The top of the screen displays a title bar with the inscription "Welcome to NEDLite". Also on this screen is your current list of stands.

Wetland - Wetlands include areas with shallow standing water or seasonal to year-long saturated soils (including bogs, marshes, and wet meadows).

Wetland species - A given understory or ground-cover plot is stocked with wetland species. If detailed plot information is tallied (i.e. individual observations of species are recorded), this variable will be calculated automatically by NED.

Wetness barrier to regen - A given ground-cover plot is characterized by wetness or poorly drained soils that will inhibit seedling regeneration. Look for areas covered by a fine layer of silt and depressions filled with blackened leaves during the dry season.

Wood deck - A wooden deck is attached to the building or other manmade structure.

Wood fence - A wooden fence is attached to the building or other manmade structure.

Wood shingles - A given building or other manmade structure has Class C or unrated wooden shingles or shakes.

Wood siding - A given building or other manmade structure has wood siding.

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Acknowledgments

Several people have helped refine NEDLite into a useful product. We would like to thank Bill Moulton, State of Vermont, Department of Forests, Parks and Recreation, and Roger Monthey, USDA Forest Service, for their cooperation in testing the software and in encouraging others to use NEDLite. Thanks also to Scott Thomasma, USDA Forest Service, for providing consultation and for developing the species codes software and NEDLite-to-NED conversion tools.

Knopp, Peter D.; Twery, Mark J. 2006. **NEDLite user's manual: forest inventory for Palm OS handhelds**. Gen. Tech. Rep. NE-340. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 64 p.

A user's manual for NEDLite, software that enables collection of forest inventory data on Palm OS handheld computers, with the option of transferring data into NED software for analysis and subsequent prescription development. NEDLite software is included.

Keywords: forest inventory, forest management, NEDLite, NED, handheld software, decision support software

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http://www.fs.fed.us/ne/burlington/ned

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