# Fundamental Training and Applications of the Landscape Management System

For NRCS and Conservation District Forestry Personnel

February 10th, 2009 – Pack Forest, Eatonville, WA
February 12th, 2009 – Spokane, WA

# Assessing Stands

- Typical Forestry Statistics (Stand Attributes, Inventory, Summary Table, etc.)
- Habitat (Johnson & Oneil, Owl Habitat, etc.)
- Carbon Assessment

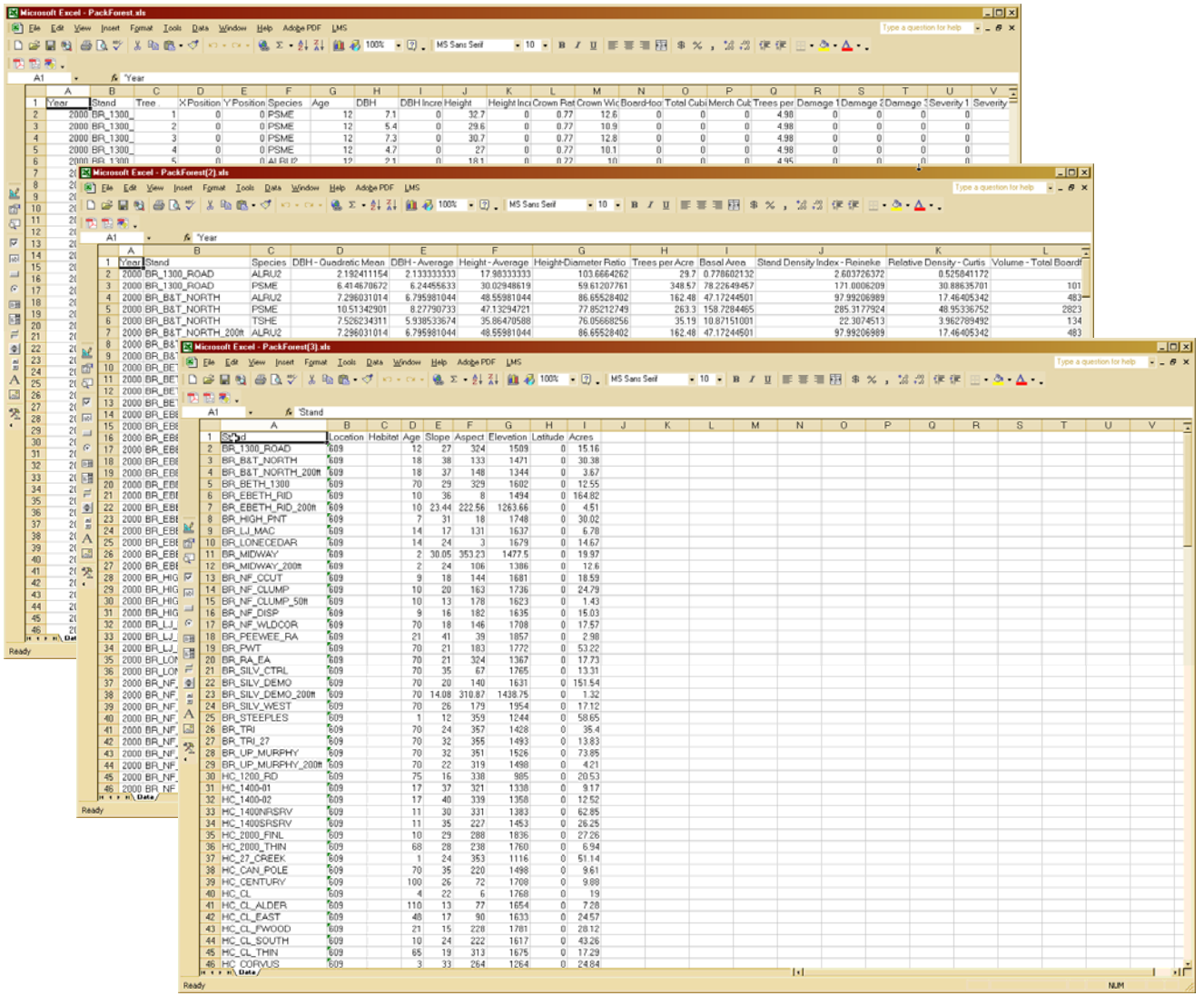
# Getting to know stands

LMS will be used to examine and compare stand inventories using output tables and Stand Visualization System (SVS) images and graphs.

- Tables
  - Stand Attributes
  - Inventory
  - Stand Summary
  - etc.
- SVS images
  - 3-view
  - Graphs with legends
  - Images and graphs

# Tables

LMS contains many tables designed to answer questions about the stands in the portfolio. All tables are created from the base LMS data: tree-list inventory and site and topographic data for each stand. This section will examine Raw Inventory, Stand Summary By Species, and Stand Summary Total. To the left are examples of Inventory, Summary, and Attributes tables.



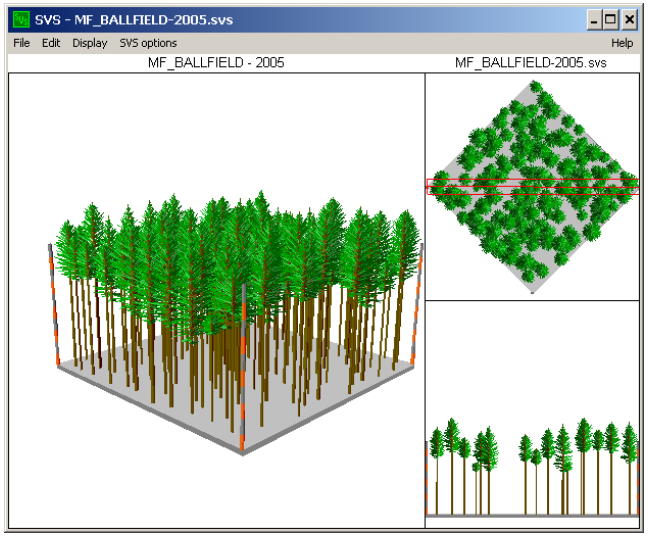
# Stand Visualization System (SVS)

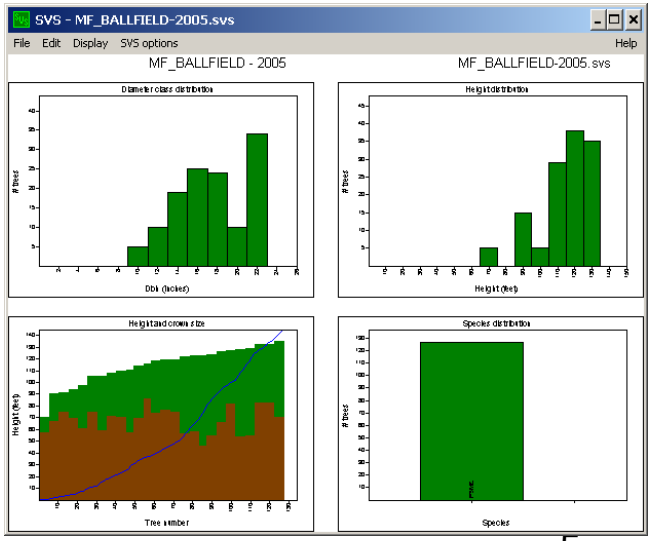
**SVS** is a freely available stand-level visualization tool developed by the USFS and distributed with LMS.

**SVS** provides the following specific capabilities:

- Display stand information represented by a list of individual plant and log components in a realistic, although abstract, fashion
- Display stand information in a manner that communicates the overall structural diversity present within the stand
- Differentiate between stand components using different plant forms, colors, or other types of marking
- Provide overhead, profile and perspective views of a stand
- Allow users to define plant forms and colors based on species, plant type, and plant position within the canopy
- Provide tabular and graphical summaries of stand information before and after a silvicultural treatment
- Display information describing individual stand components as they are selected by the user
- Allow the user to design of silvicultural treatments by "marking" stand components and specifying a treatment

**SVS** can be downloaded to be used as a stand-alone at:
http://forsys.cfr.washington.edu/svs.html



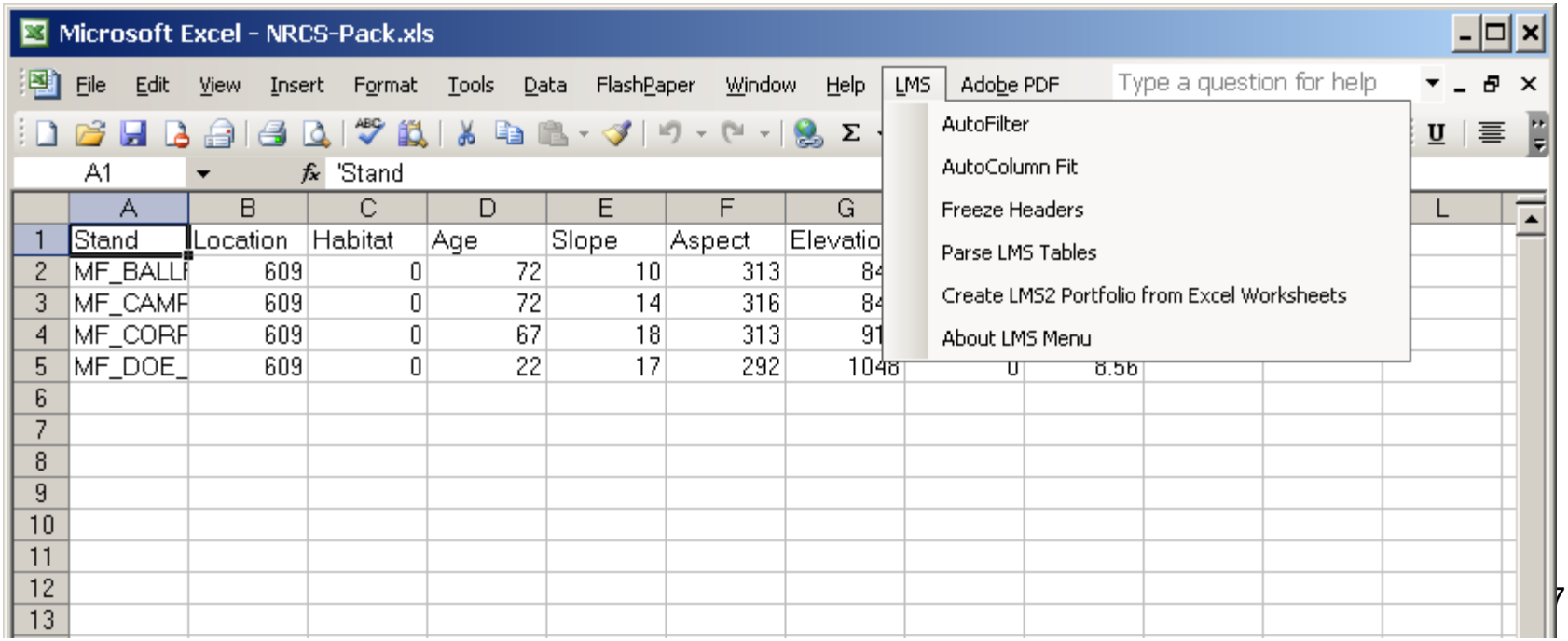



# Roadmap

- LMS Menu in Excel
- Basic Analysis Tables
  - Stand Attributes
  - Inventory - Standing
  - Stand Summary
- Advanced Analysis Tables
  - 3-view
  - Stand Summary
  - All graphs with legends

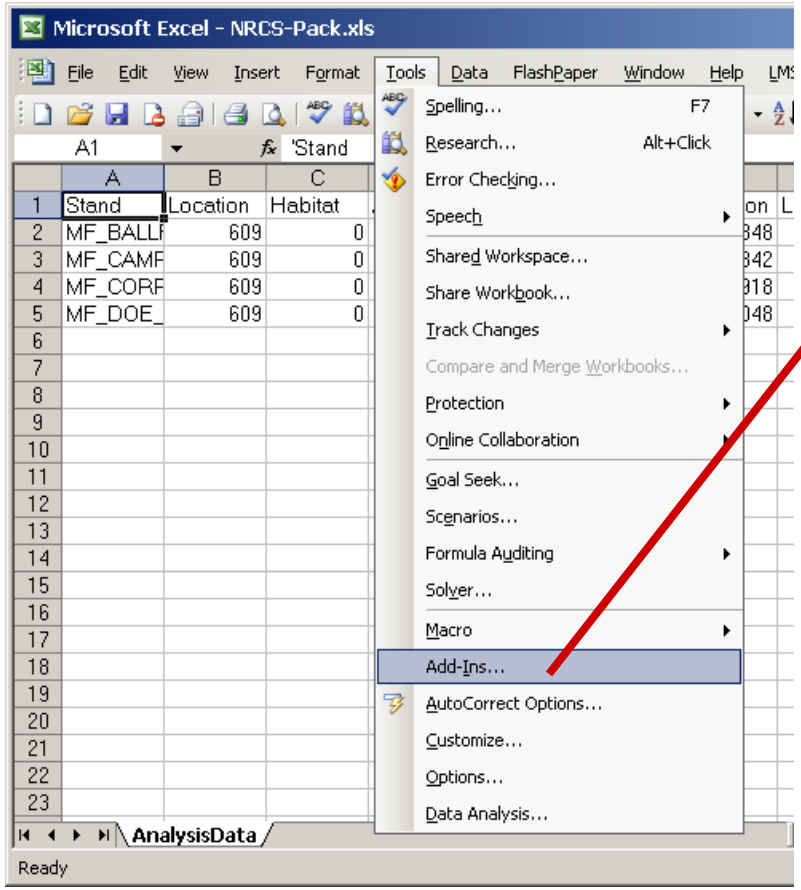
# LMS Menu in Excel 2003

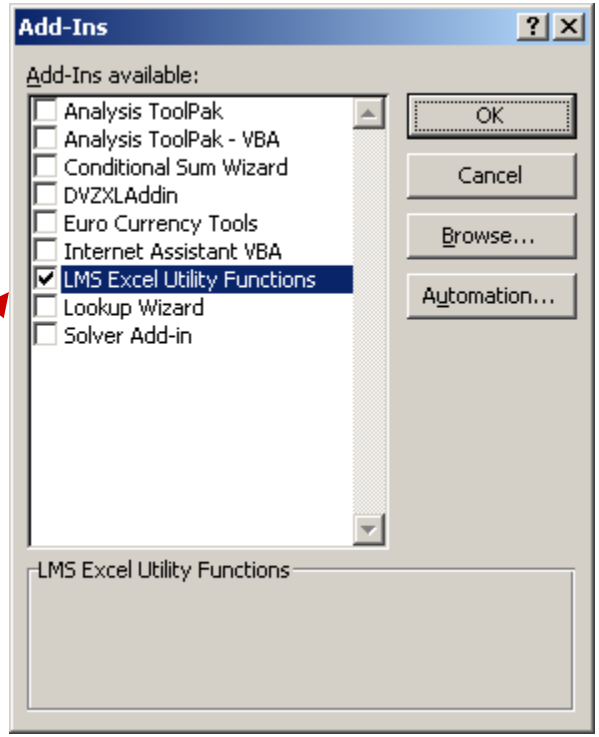
LMS 3.1 comes with an Excel Addin, which provides a few useful functions when using Excel with LMS. Use AutoFilter to help select subsets of your data. Use AutoColumnFit to adjust the widths of columns so you can see the data in the columns. Use Freeze Headers to make the top header line available when you scroll down in the spreadsheet.



# LMS Menu in Excel 2003

If the LMS menu is not available in Excel use the Tools/Add-Ins menu to open the Add-Ins Manager (see at right). The LMS Excel Utility Functions should be available in the list, but may not be checked. Check the box to make the menu available. If it's not available click the Browse button and browse to locate the lmsmacro3.xla file in the C:\Program Files\Lms3 directory.

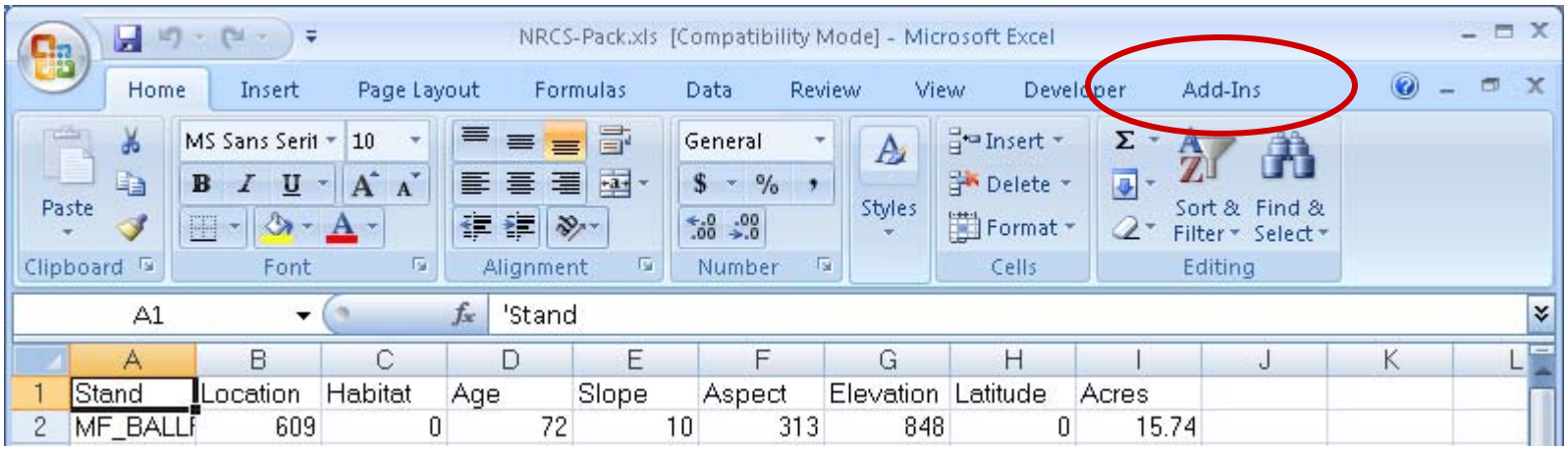


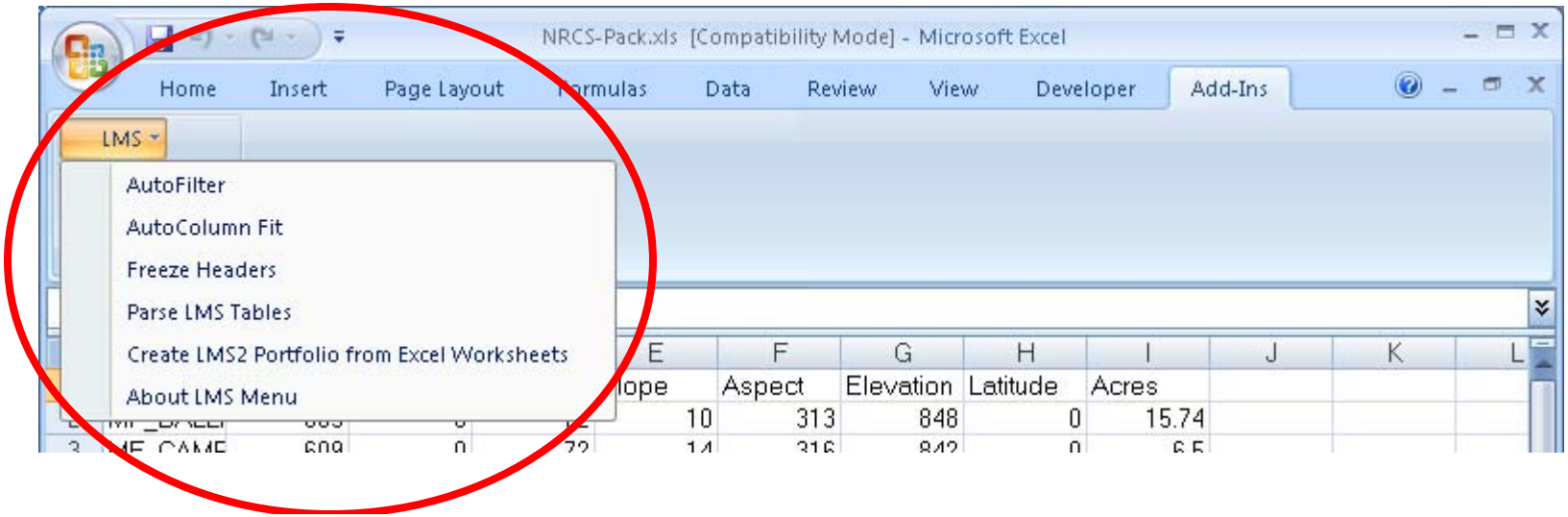




To remove the LMS menu open the Add-Ins manager and un-check the LMS Excel Utility Functions. The LMS menu will disappear.

# LMS Menu in Excel 2007

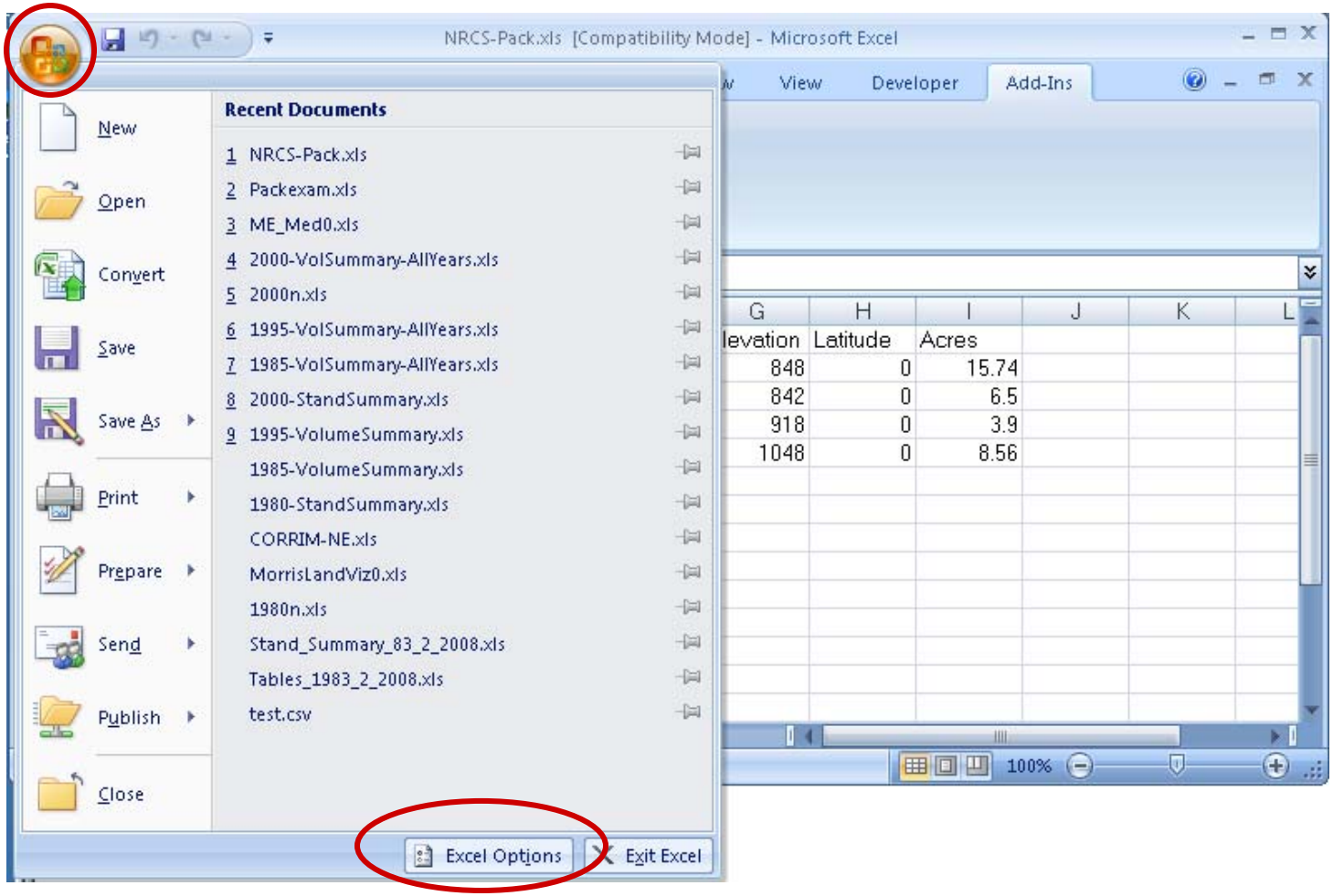
The LMS menu should be available in Excel 2007 under the Add-Ins ribbon.



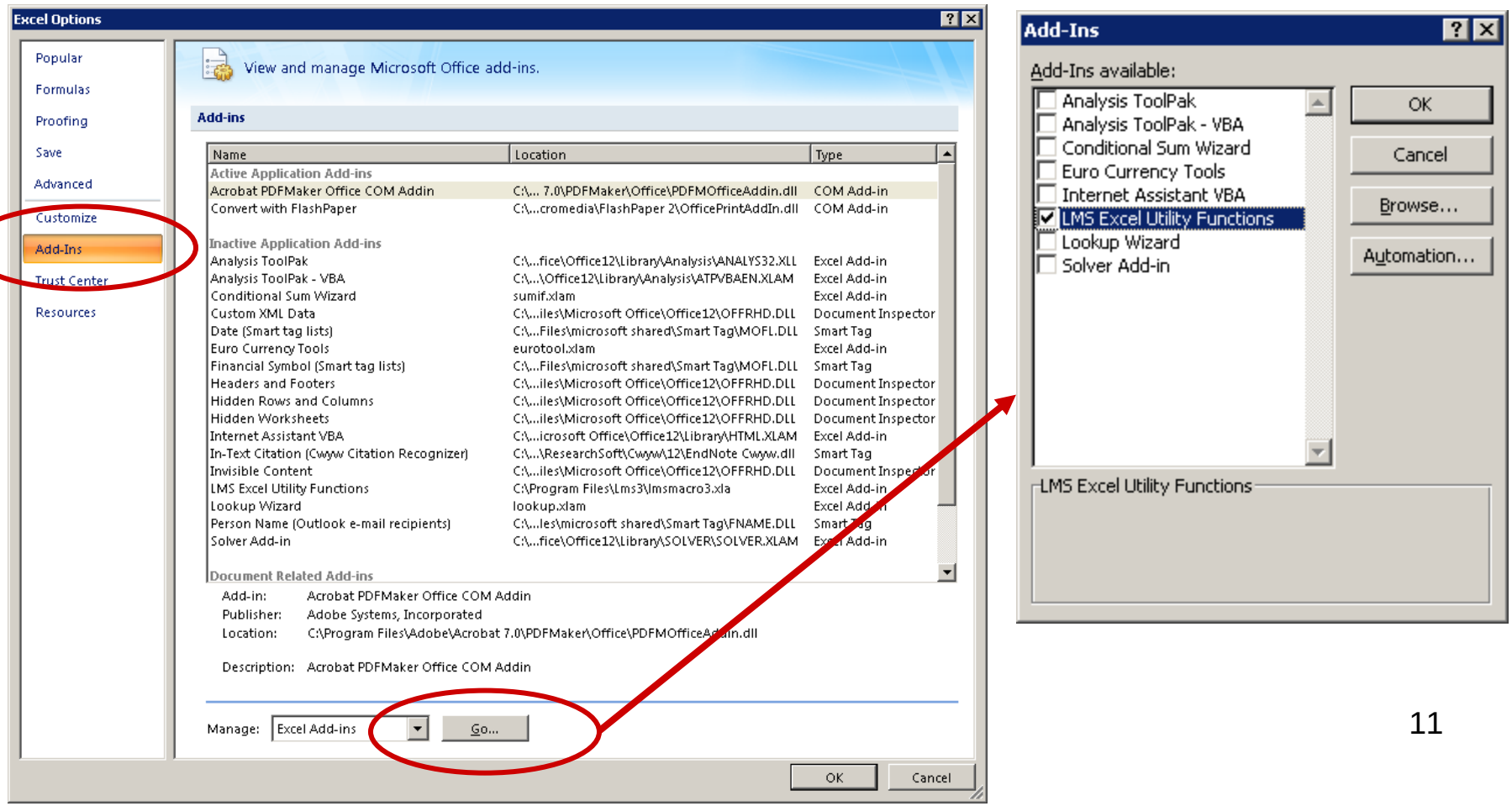
# LMS Menu in Excel 2007

If the LMS menu is not available under the Add-Ins ribbon click the Home button, then select Excel Options.



# LMS Menu in Excel 2007

Select the Go… button to open the Add-Ins dialog.  Check the box next to LMS Excel Utility Functions or Brose to locate the lmsmacro3.xla file in the C:\Program Files\Lms3 directory.



# LMS Tables

- Basic Table Interface
  - Pre-define tables implemented in the Python scripting language
    - Requires programming capability to add tables. Tables can be added by users.
- Advanced Table Interface
  - User's can create their own tables from LMS variables using GUI.
    - No programming required. Limited to variables known by LMS (additional variables can be added by developing an LMS component).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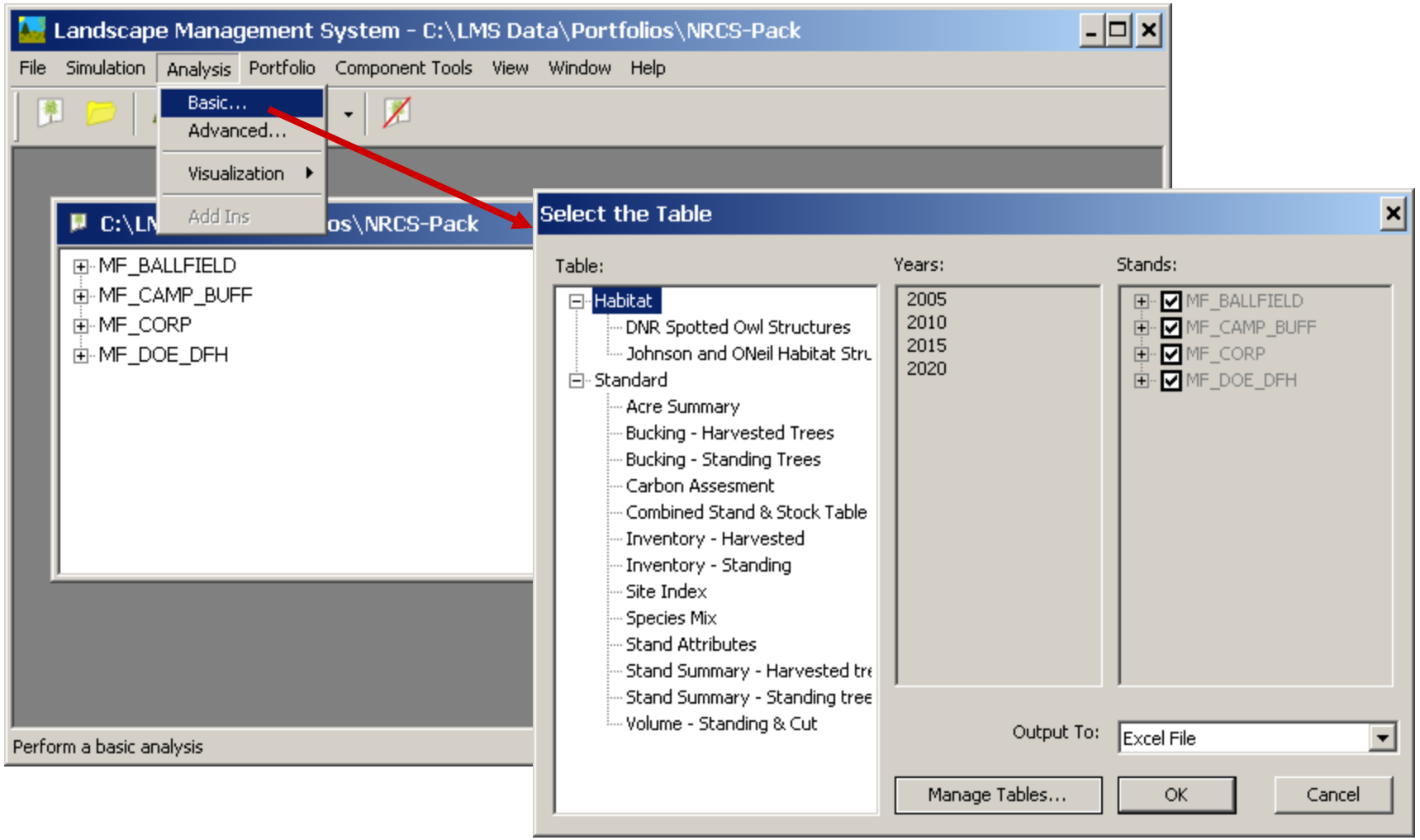
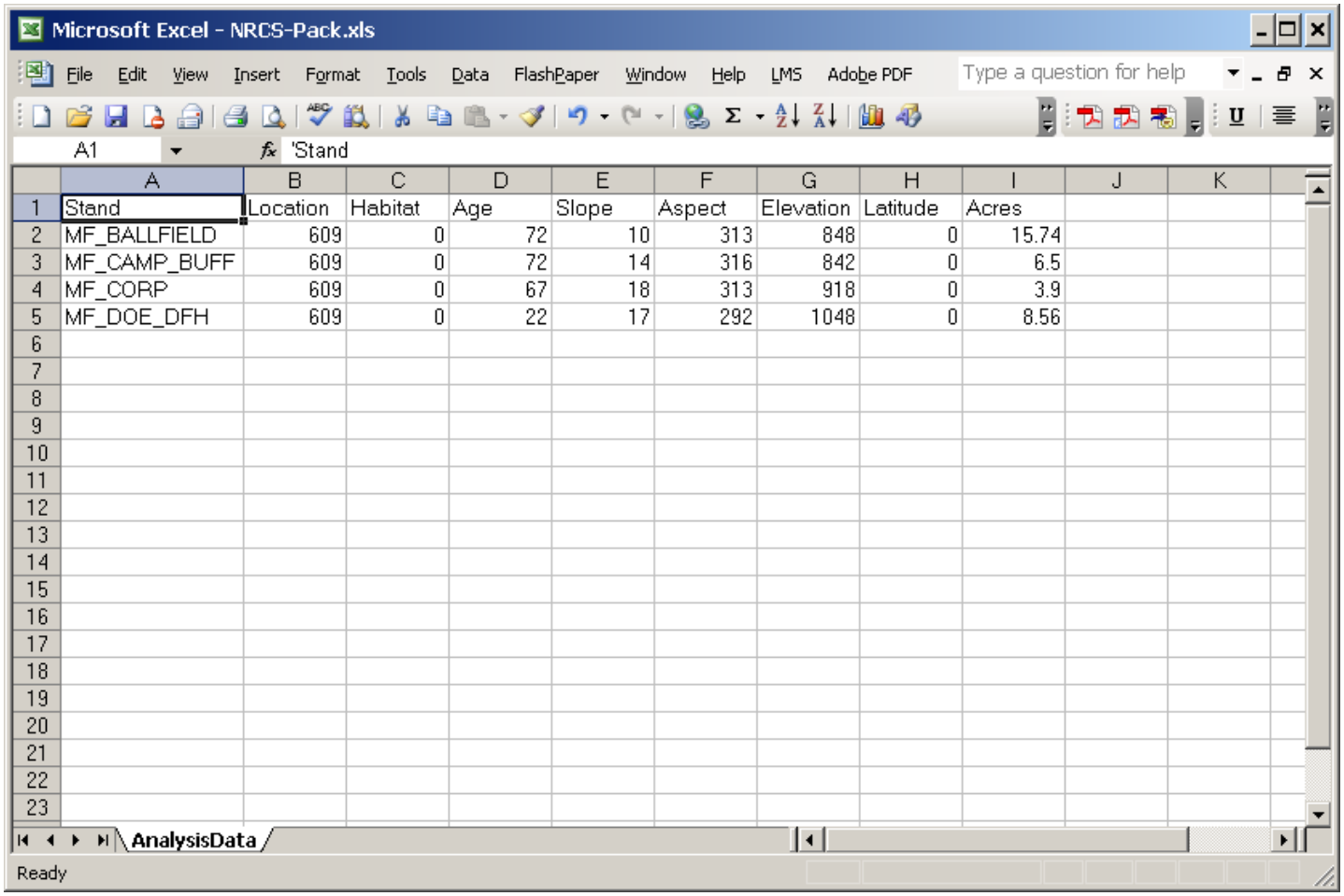
# Basic Analysis Tables



# Stand Attributes Table

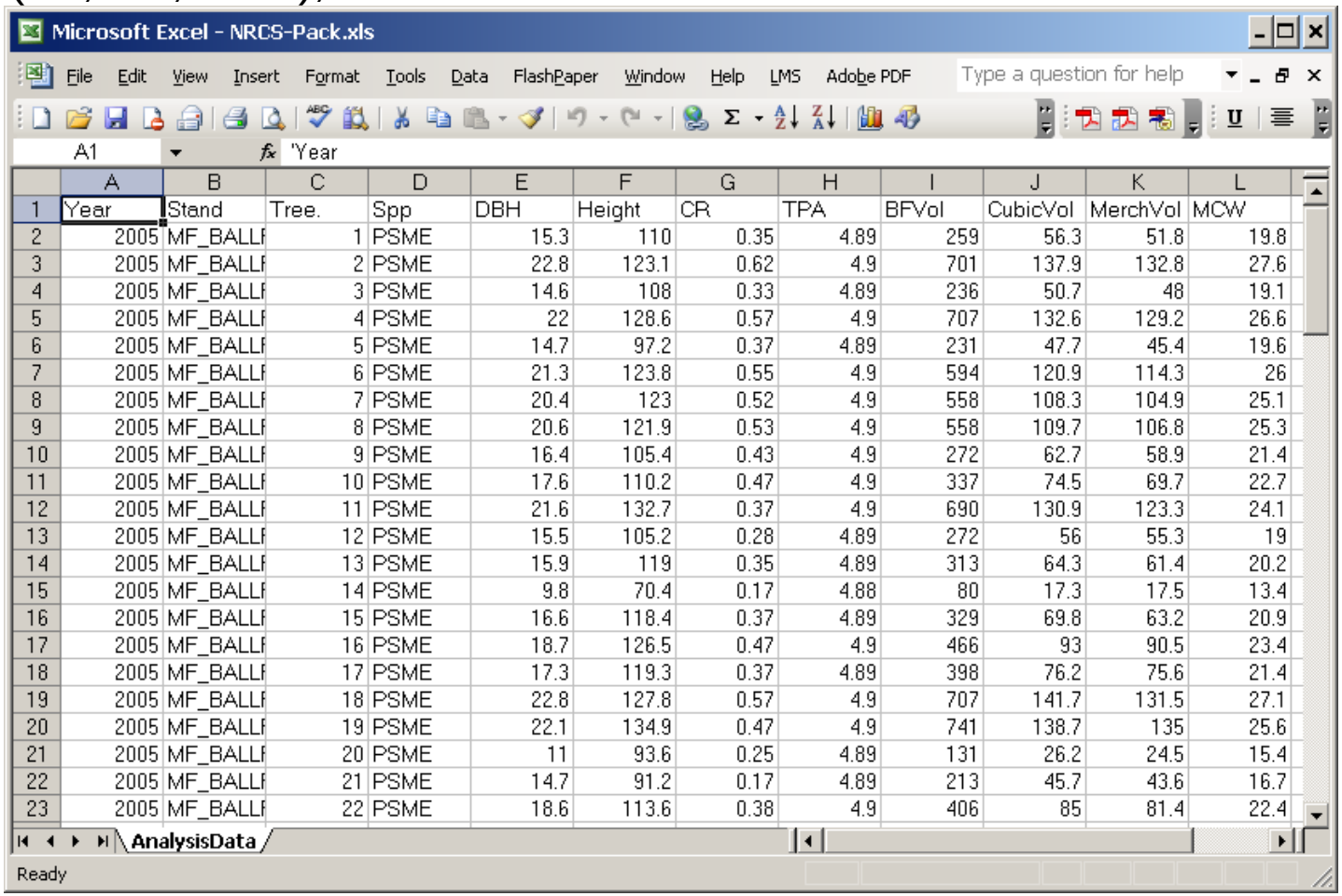
The Stand Attributes Table contains stand level information for each stand in the portfolio: Location Code, Age, Slope, Aspect, Elevation, Latitude, and Acres




| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Stand | Location | Habitat | Age | Slope | Aspect | Elevation | Latitude | Acres | | |
| 2 | MF_BALLFIELD | 609 | 0 | 72 | 10 | 313 | 848 | 0 | 15.74 | | |
| 3 | MF_CAMP_BUFF | 609 | 0 | 72 | 14 | 316 | 842 | 0 | 6.5 | | |
| 4 | MF_CORP | 609 | 0 | 67 | 18 | 313 | 918 | 0 | 3.9 | | |
| 5 | MF_DOE_DFH | 609 | 0 | 22 | 17 | 292 | 1048 | 0 | 8.56 | | |

# Inventory – Standing Table

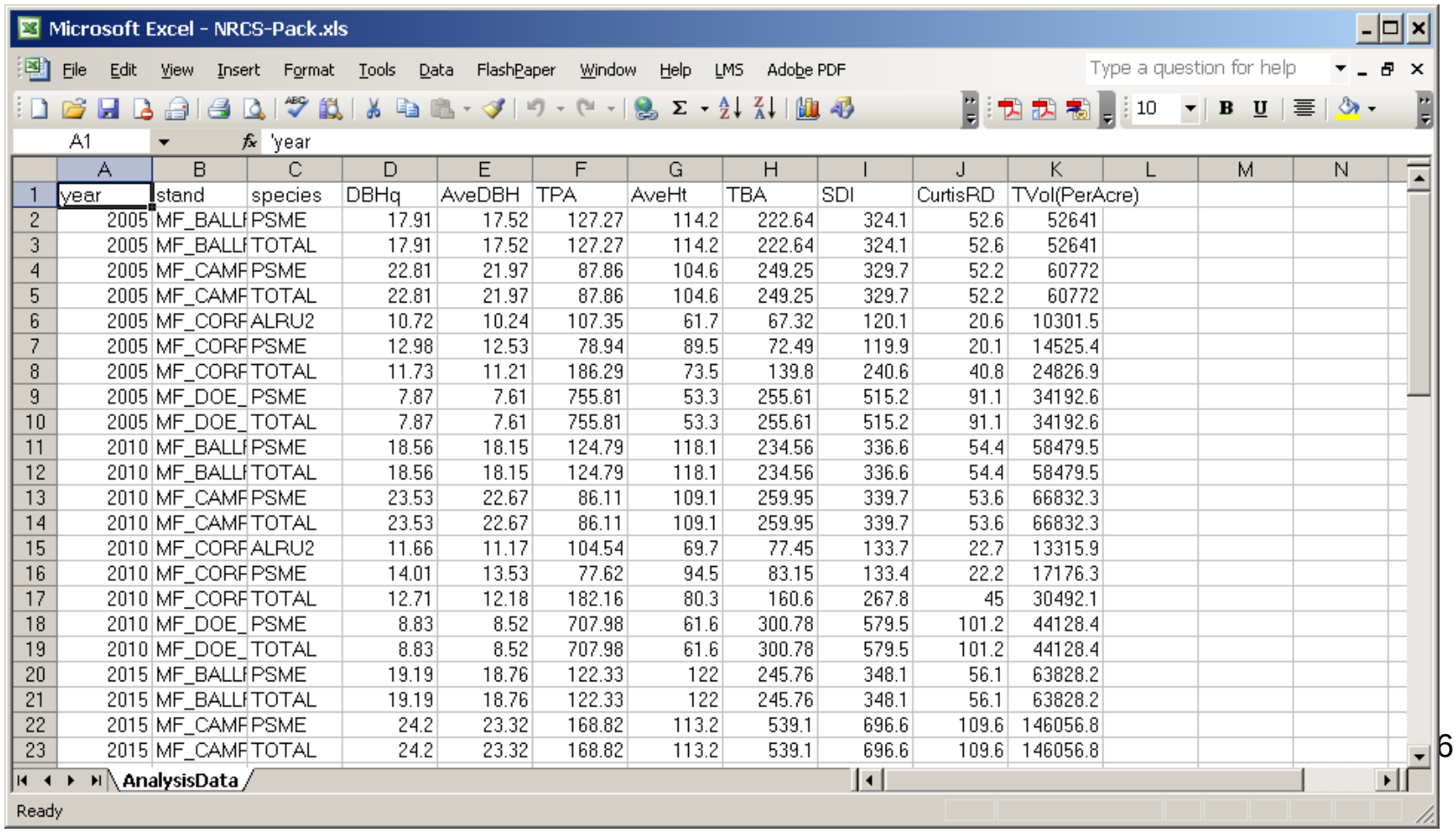
The Inventory – Standing Table displays the “raw” inventory information that LMS 3.1 knows about the selected stands: Species, Diamter, Height, Crown Ratio, TPA, Volumes (BF, CU, MCU), and Maximum Crown Width.




| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Year | Stand | Tree. | Spp | DBH | Height | CR | TPA | BFVol | CubicVol | MerchVol | MCW |
| 2 | 2005 | MF_BALLF | 1 | PSME | 15.3 | 110 | 0.35 | 4.89 | 259 | 56.3 | 51.8 | 19.8 |
| 3 | 2005 | MF_BALLF | 2 | PSME | 22.8 | 123.1 | 0.62 | 4.9 | 701 | 137.9 | 132.8 | 27.6 |
| 4 | 2005 | MF_BALLF | 3 | PSME | 14.6 | 108 | 0.33 | 4.89 | 236 | 50.7 | 48 | 19.1 |
| 5 | 2005 | MF_BALLF | 4 | PSME | 22 | 128.6 | 0.57 | 4.9 | 707 | 132.6 | 129.2 | 26.6 |
| 6 | 2005 | MF_BALLF | 5 | PSME | 14.7 | 97.2 | 0.37 | 4.89 | 231 | 47.7 | 45.4 | 19.6 |
| 7 | 2005 | MF_BALLF | 6 | PSME | 21.3 | 123.8 | 0.55 | 4.9 | 594 | 120.9 | 114.3 | 26 |
| 8 | 2005 | MF_BALLF | 7 | PSME | 20.4 | 123 | 0.52 | 4.9 | 558 | 108.3 | 104.9 | 25.1 |
| 9 | 2005 | MF_BALLF | 8 | PSME | 20.6 | 121.9 | 0.53 | 4.9 | 558 | 109.7 | 106.8 | 25.3 |
| 10 | 2005 | MF_BALLF | 9 | PSME | 16.4 | 105.4 | 0.43 | 4.9 | 272 | 62.7 | 58.9 | 21.4 |
| 11 | 2005 | MF_BALLF | 10 | PSME | 17.6 | 110.2 | 0.47 | 4.9 | 337 | 74.5 | 69.7 | 22.7 |
| 12 | 2005 | MF_BALLF | 11 | PSME | 21.6 | 132.7 | 0.37 | 4.9 | 690 | 130.9 | 123.3 | 24.1 |
| 13 | 2005 | MF_BALLF | 12 | PSME | 15.5 | 105.2 | 0.28 | 4.89 | 272 | 56 | 55.3 | 19 |
| 14 | 2005 | MF_BALLF | 13 | PSME | 15.9 | 119 | 0.35 | 4.89 | 313 | 64.3 | 61.4 | 20.2 |
| 15 | 2005 | MF_BALLF | 14 | PSME | 9.8 | 70.4 | 0.17 | 4.88 | 80 | 17.3 | 17.5 | 13.4 |
| 16 | 2005 | MF_BALLF | 15 | PSME | 16.6 | 118.4 | 0.37 | 4.89 | 329 | 69.8 | 63.2 | 20.9 |
| 17 | 2005 | MF_BALLF | 16 | PSME | 18.7 | 126.5 | 0.47 | 4.9 | 466 | 93 | 90.5 | 23.4 |
| 18 | 2005 | MF_BALLF | 17 | PSME | 17.3 | 119.3 | 0.37 | 4.89 | 398 | 76.2 | 75.6 | 21.4 |
| 19 | 2005 | MF_BALLF | 18 | PSME | 22.8 | 127.8 | 0.57 | 4.9 | 707 | 141.7 | 131.5 | 27.1 |
| 20 | 2005 | MF_BALLF | 19 | PSME | 22.1 | 134.9 | 0.47 | 4.9 | 741 | 138.7 | 135 | 25.6 |
| 21 | 2005 | MF_BALLF | 20 | PSME | 11 | 93.6 | 0.25 | 4.89 | 131 | 26.2 | 24.5 | 15.4 |
| 22 | 2005 | MF_BALLF | 21 | PSME | 14.7 | 91.2 | 0.17 | 4.89 | 213 | 45.7 | 43.6 | 16.7 |
| 23 | 2005 | MF_BALLF | 22 | PSME | 18.6 | 113.6 | 0.38 | 4.9 | 406 | 85 | 81.4 | 22.4 |

# Stand Summary Table

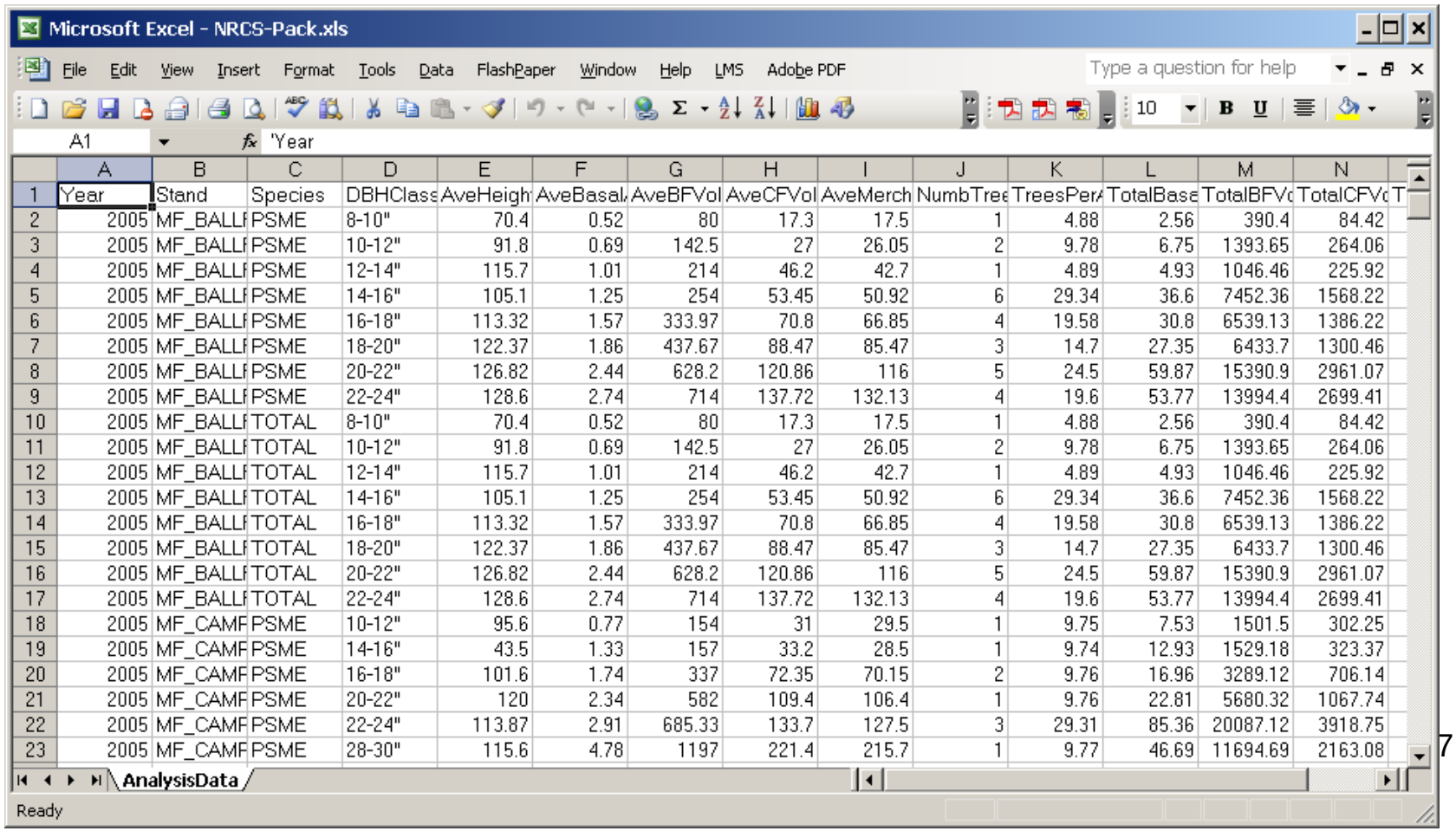
The Stand Summary Table contains “typical” statistics used to evaluate forest stands, summarized by species: Quadratic Mean Diameter (DBHq), Average Diameter, TPA, Average Height, Reineke’s Stand Density Index (SDI), Curtis Relative Density (RD), and Board Foot Volume.




| | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | year | stand | species | DBHq | AveDBH | TPA | AveHt | TBA | SDI | CurtisRD | TVol(PerAcre) |
| 2 | 2005 | MF_BALLI | PSME | 17.91 | 17.52 | 127.27 | 114.2 | 222.64 | 324.1 | 52.6 | 52641 |
| 3 | 2005 | MF_BALLI | TOTAL | 17.91 | 17.52 | 127.27 | 114.2 | 222.64 | 324.1 | 52.6 | 52641 |
| 4 | 2005 | MF_CAMP | PSME | 22.81 | 21.97 | 87.86 | 104.6 | 249.25 | 329.7 | 52.2 | 60772 |
| 5 | 2005 | MF_CAMP | TOTAL | 22.81 | 21.97 | 87.86 | 104.6 | 249.25 | 329.7 | 52.2 | 60772 |
| 6 | 2005 | MF_CORP | ALRU2 | 10.72 | 10.24 | 107.35 | 61.7 | 67.32 | 120.1 | 20.6 | 10301.5 |
| 7 | 2005 | MF_CORP | PSME | 12.98 | 12.53 | 78.94 | 89.5 | 72.49 | 119.9 | 20.1 | 14525.4 |
| 8 | 2005 | MF_CORP | TOTAL | 11.73 | 11.21 | 186.29 | 73.5 | 139.8 | 240.6 | 40.8 | 24826.9 |
| 9 | 2005 | MF_DOE_ | PSME | 7.87 | 7.61 | 755.81 | 53.3 | 255.61 | 515.2 | 91.1 | 34192.6 |
| 10 | 2005 | MF_DOE_ | TOTAL | 7.87 | 7.61 | 755.81 | 53.3 | 255.61 | 515.2 | 91.1 | 34192.6 |
| 11 | 2010 | MF_BALLI | PSME | 18.56 | 18.15 | 124.79 | 118.1 | 234.56 | 336.6 | 54.4 | 58479.5 |
| 12 | 2010 | MF_BALLI | TOTAL | 18.56 | 18.15 | 124.79 | 118.1 | 234.56 | 336.6 | 54.4 | 58479.5 |
| 13 | 2010 | MF_CAMP | PSME | 23.53 | 22.67 | 86.11 | 109.1 | 259.95 | 339.7 | 53.6 | 66832.3 |
| 14 | 2010 | MF_CAMP | TOTAL | 23.53 | 22.67 | 86.11 | 109.1 | 259.95 | 339.7 | 53.6 | 66832.3 |
| 15 | 2010 | MF_CORP | ALRU2 | 11.66 | 11.17 | 104.54 | 69.7 | 77.45 | 133.7 | 22.7 | 13315.9 |
| 16 | 2010 | MF_CORP | PSME | 14.01 | 13.53 | 77.62 | 94.5 | 83.15 | 133.4 | 22.2 | 17176.3 |
| 17 | 2010 | MF_CORP | TOTAL | 12.71 | 12.18 | 182.16 | 80.3 | 160.6 | 267.8 | 45 | 30492.1 |
| 18 | 2010 | MF_DOE_ | PSME | 8.83 | 8.52 | 707.98 | 61.6 | 300.78 | 579.5 | 101.2 | 44128.4 |
| 19 | 2010 | MF_DOE_ | TOTAL | 8.83 | 8.52 | 707.98 | 61.6 | 300.78 | 579.5 | 101.2 | 44128.4 |
| 20 | 2015 | MF_BALLI | PSME | 19.19 | 18.76 | 122.33 | 122 | 245.76 | 348.1 | 56.1 | 63828.2 |
| 21 | 2015 | MF_BALLI | TOTAL | 19.19 | 18.76 | 122.33 | 122 | 245.76 | 348.1 | 56.1 | 63828.2 |
| 22 | 2015 | MF_CAMP | PSME | 24.2 | 23.32 | 168.82 | 113.2 | 539.1 | 696.6 | 109.6 | 146056.8 |
| 23 | 2015 | MF_CAMP | TOTAL | 24.2 | 23.32 | 168.82 | 113.2 | 539.1 | 696.6 | 109.6 | 146056.8 |

# Combined Stand & Stock Table

The Combined Stand & Stock Table presents inventory information summarized by stand, species, and diameter class: Average Height, Ave Basal Area, Ave Vol (BF, CF, MCF), number of records, TotalBasal Area, Total Vol (BF, CF, MCF)…



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A1 'Year

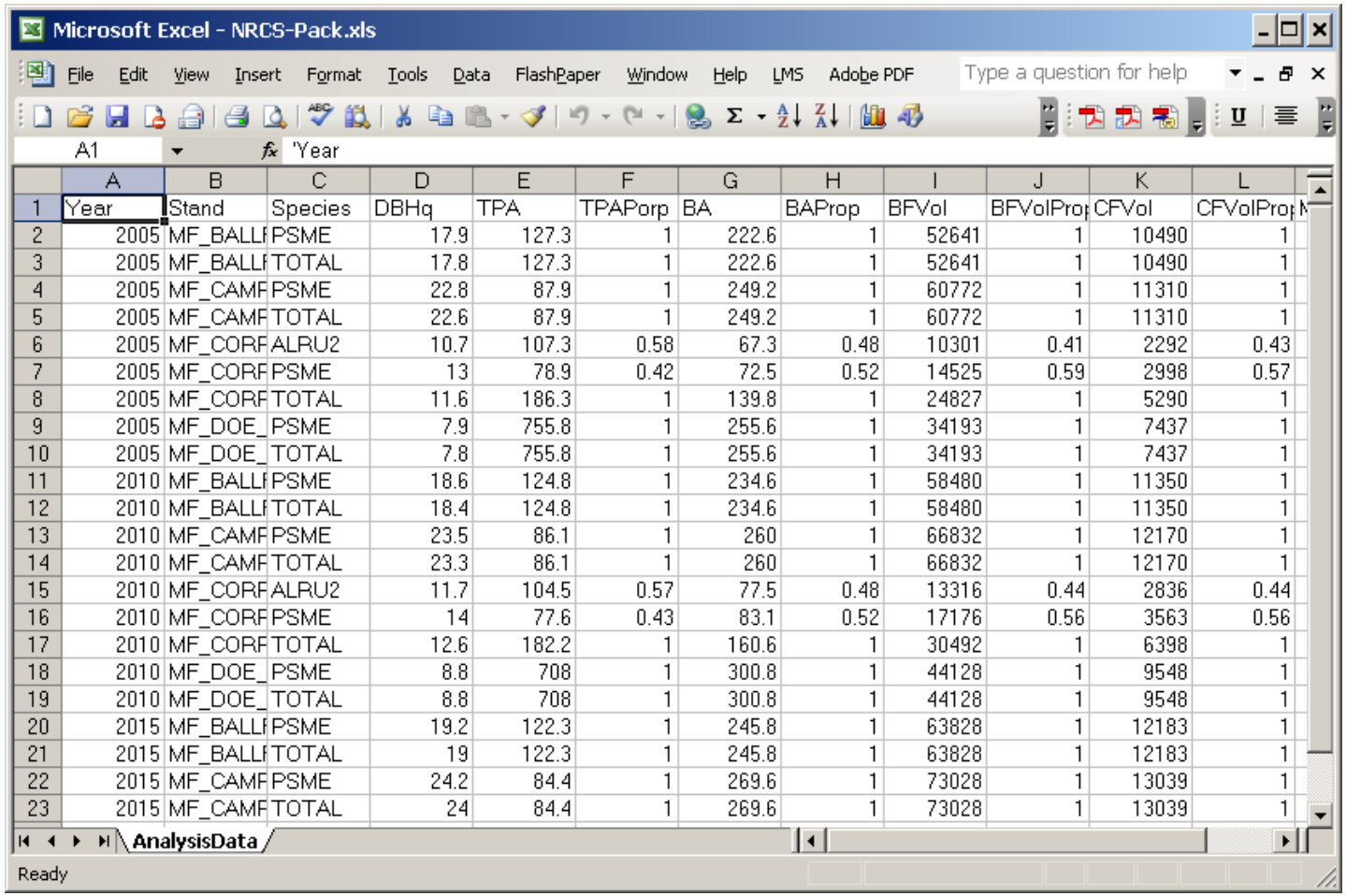
| | A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Year | Stand | Species | DBHClass | AveHeigh | AveBasal | AveBFVol | AveCFVol | AveMerch | NumbTree | TreesPer | TotalBase | TotalBFVo | TotalCFVo |
| 2 | 2005 | MF_BALL | PSME | 8-10" | 70.4 | 0.52 | 80 | 17.3 | 17.5 | 1 | 4.88 | 2.56 | 390.4 | 84.42 |
| 3 | 2005 | MF_BALL | PSME | 10-12" | 91.8 | 0.69 | 142.5 | 27 | 26.05 | 2 | 9.78 | 6.75 | 1393.65 | 264.06 |
| 4 | 2005 | MF_BALL | PSME | 12-14" | 115.7 | 1.01 | 214 | 46.2 | 42.7 | 1 | 4.89 | 4.93 | 1046.46 | 225.92 |
| 5 | 2005 | MF_BALL | PSME | 14-16" | 105.1 | 1.25 | 254 | 53.45 | 50.92 | 6 | 29.34 | 36.6 | 7452.36 | 1568.22 |
| 6 | 2005 | MF_BALL | PSME | 16-18" | 113.32 | 1.57 | 333.97 | 70.8 | 66.85 | 4 | 19.58 | 30.8 | 6539.13 | 1386.22 |
| 7 | 2005 | MF_BALL | PSME | 18-20" | 122.37 | 1.86 | 437.67 | 88.47 | 85.47 | 3 | 14.7 | 27.35 | 6433.7 | 1300.46 |
| 8 | 2005 | MF_BALL | PSME | 20-22" | 126.82 | 2.44 | 628.2 | 120.86 | 116 | 5 | 24.5 | 59.87 | 15390.9 | 2961.07 |
| 9 | 2005 | MF_BALL | PSME | 22-24" | 128.6 | 2.74 | 714 | 137.72 | 132.13 | 4 | 19.6 | 53.77 | 13994.4 | 2699.41 |
| 10 | 2005 | MF_BALL | TOTAL | 8-10" | 70.4 | 0.52 | 80 | 17.3 | 17.5 | 1 | 4.88 | 2.56 | 390.4 | 84.42 |
| 11 | 2005 | MF_BALL | TOTAL | 10-12" | 91.8 | 0.69 | 142.5 | 27 | 26.05 | 2 | 9.78 | 6.75 | 1393.65 | 264.06 |
| 12 | 2005 | MF_BALL | TOTAL | 12-14" | 115.7 | 1.01 | 214 | 46.2 | 42.7 | 1 | 4.89 | 4.93 | 1046.46 | 225.92 |
| 13 | 2005 | MF_BALL | TOTAL | 14-16" | 105.1 | 1.25 | 254 | 53.45 | 50.92 | 6 | 29.34 | 36.6 | 7452.36 | 1568.22 |
| 14 | 2005 | MF_BALL | TOTAL | 16-18" | 113.32 | 1.57 | 333.97 | 70.8 | 66.85 | 4 | 19.58 | 30.8 | 6539.13 | 1386.22 |
| 15 | 2005 | MF_BALL | TOTAL | 18-20" | 122.37 | 1.86 | 437.67 | 88.47 | 85.47 | 3 | 14.7 | 27.35 | 6433.7 | 1300.46 |
| 16 | 2005 | MF_BALL | TOTAL | 20-22" | 126.82 | 2.44 | 628.2 | 120.86 | 116 | 5 | 24.5 | 59.87 | 15390.9 | 2961.07 |
| 17 | 2005 | MF_BALL | TOTAL | 22-24" | 128.6 | 2.74 | 714 | 137.72 | 132.13 | 4 | 19.6 | 53.77 | 13994.4 | 2699.41 |
| 18 | 2005 | MF_CAMF | PSME | 10-12" | 95.6 | 0.77 | 154 | 31 | 29.5 | 1 | 9.75 | 7.53 | 1501.5 | 302.25 |
| 19 | 2005 | MF_CAMF | PSME | 14-16" | 43.5 | 1.33 | 157 | 33.2 | 28.5 | 1 | 9.74 | 12.93 | 1529.18 | 323.37 |
| 20 | 2005 | MF_CAMF | PSME | 16-18" | 101.6 | 1.74 | 337 | 72.35 | 70.15 | 2 | 9.76 | 16.96 | 3289.12 | 706.14 |
| 21 | 2005 | MF_CAMF | PSME | 20-22" | 120 | 2.34 | 582 | 109.4 | 106.4 | 1 | 9.76 | 22.81 | 5680.32 | 1067.74 |
| 22 | 2005 | MF_CAMF | PSME | 22-24" | 113.87 | 2.91 | 685.33 | 133.7 | 127.5 | 3 | 29.31 | 85.36 | 20087.12 | 3918.75 |
| 23 | 2005 | MF_CAMF | PSME | 28-30" | 115.6 | 4.78 | 1197 | 221.4 | 215.7 | 1 | 9.77 | 46.69 | 11694.69 | 2163.08 |

AnalysisData

Ready

# Species Mix Table

The Species Mix Table presents the porportion of the stand by species for TPA, BA, BFVol, and CFVol.



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A1 'Year

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Year | Stand | Species | DBHq | TPA | TPAPorp | BA | BAProp | BFVol | BFVolProp | CFVol | CFVolProp |
| 2 | 2005 | MF_BALLI | PSME | 17.9 | 127.3 | 1 | 222.6 | 1 | 52641 | 1 | 10490 | 1 |
| 3 | 2005 | MF_BALLI | TOTAL | 17.8 | 127.3 | 1 | 222.6 | 1 | 52641 | 1 | 10490 | 1 |
| 4 | 2005 | MF_CAMP | PSME | 22.8 | 87.9 | 1 | 249.2 | 1 | 60772 | 1 | 11310 | 1 |
| 5 | 2005 | MF_CAMP | TOTAL | 22.6 | 87.9 | 1 | 249.2 | 1 | 60772 | 1 | 11310 | 1 |
| 6 | 2005 | MF_CORP | ALRU2 | 10.7 | 107.3 | 0.58 | 67.3 | 0.48 | 10301 | 0.41 | 2292 | 0.43 |
| 7 | 2005 | MF_CORP | PSME | 13 | 78.9 | 0.42 | 72.5 | 0.52 | 14525 | 0.59 | 2998 | 0.57 |
| 8 | 2005 | MF_CORP | TOTAL | 11.6 | 186.3 | 1 | 139.8 | 1 | 24827 | 1 | 5290 | 1 |
| 9 | 2005 | MF_DOE_ | PSME | 7.9 | 755.8 | 1 | 255.6 | 1 | 34193 | 1 | 7437 | 1 |
| 10 | 2005 | MF_DOE_ | TOTAL | 7.8 | 755.8 | 1 | 255.6 | 1 | 34193 | 1 | 7437 | 1 |
| 11 | 2010 | MF_BALLI | PSME | 18.6 | 124.8 | 1 | 234.6 | 1 | 58480 | 1 | 11350 | 1 |
| 12 | 2010 | MF_BALLI | TOTAL | 18.4 | 124.8 | 1 | 234.6 | 1 | 58480 | 1 | 11350 | 1 |
| 13 | 2010 | MF_CAMP | PSME | 23.5 | 86.1 | 1 | 260 | 1 | 66832 | 1 | 12170 | 1 |
| 14 | 2010 | MF_CAMP | TOTAL | 23.3 | 86.1 | 1 | 260 | 1 | 66832 | 1 | 12170 | 1 |
| 15 | 2010 | MF_CORP | ALRU2 | 11.7 | 104.5 | 0.57 | 77.5 | 0.48 | 13316 | 0.44 | 2836 | 0.44 |
| 16 | 2010 | MF_CORP | PSME | 14 | 77.6 | 0.43 | 83.1 | 0.52 | 17176 | 0.56 | 3563 | 0.56 |
| 17 | 2010 | MF_CORP | TOTAL | 12.6 | 182.2 | 1 | 160.6 | 1 | 30492 | 1 | 6398 | 1 |
| 18 | 2010 | MF_DOE_ | PSME | 8.8 | 708 | 1 | 300.8 | 1 | 44128 | 1 | 9548 | 1 |
| 19 | 2010 | MF_DOE_ | TOTAL | 8.8 | 708 | 1 | 300.8 | 1 | 44128 | 1 | 9548 | 1 |
| 20 | 2015 | MF_BALLI | PSME | 19.2 | 122.3 | 1 | 245.8 | 1 | 63828 | 1 | 12183 | 1 |
| 21 | 2015 | MF_BALLI | TOTAL | 19 | 122.3 | 1 | 245.8 | 1 | 63828 | 1 | 12183 | 1 |
| 22 | 2015 | MF_CAMP | PSME | 24.2 | 84.4 | 1 | 269.6 | 1 | 73028 | 1 | 13039 | 1 |
| 23 | 2015 | MF_CAMP | TOTAL | 24 | 84.4 | 1 | 269.6 | 1 | 73028 | 1 | 13039 | 1 |

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# DNR Owl Habitat

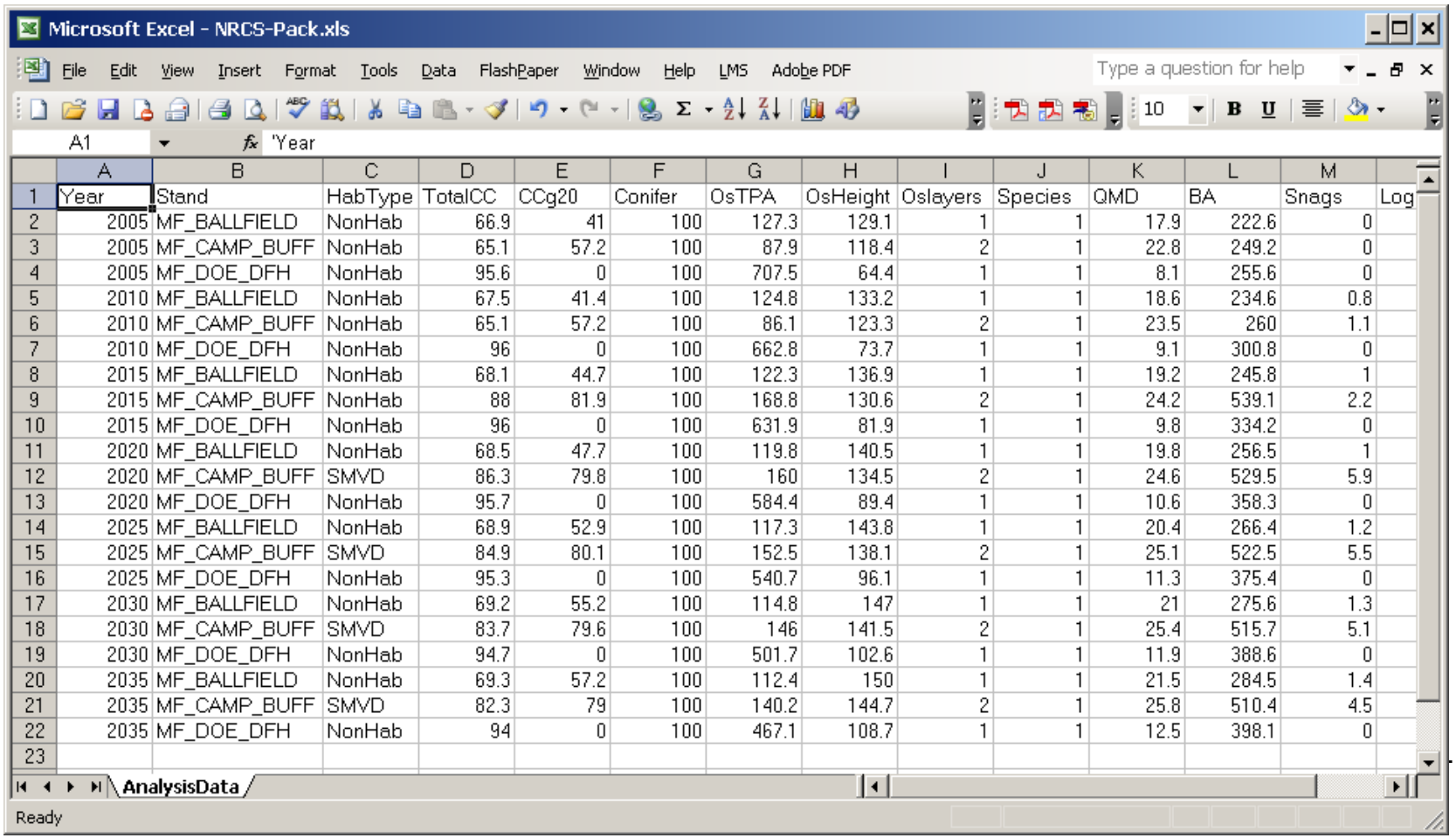
- NonHab (non habitat)
- OF (old-forest habitat)
- SM (sub-mature)
- SMVB (sub-mature vertically diverse)
- YFM (young forest marginal)
- YFMVD (young forest marginal vertically diverse)
- From: WC 222-16-085

# DNR Owl Habitat

- OF (old-forest habitat)
  - CC>=60, Layers>=2, CCg20 >=5, Snags>=3, Logs>=2
- SM (sub-mature)
  - (CC>=70 and 115<OsTPA>=285 and OsTPA and Snags>=3) or (QMD>=13 and BA>=100) and OsHeight>=85 and Snags>=3
- SMVB (sub-mature vertically diverse)
  - Same as SM except OsLayers>=2
- YFM (young forest marginal)
  - Same as SM except Logs >= 2 or LogCover>=10
- YFMVD (young forest marginal vertically diverse)
  - Same as YFM except OsLayers>=2

# DNR Owl Habitat Table

The DNR Owl Habitat Table presents a stand classification for Spotted Owl habitat using definitions of habitat defined by WC 222-16-085. The table presents the habitat classification along with the variables used for that determination.



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A1 'Year

| | A | B | C | D | E | F | G | H | I | J | K | L | M | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Year | Stand | HabType | TotalCC | CCg20 | Conifer | OsTPA | OsHeight | Oslayers | Species | QMD | BA | Snags | Log |
| 2 | 2005 | MF_BALLFIELD | NonHab | 66.9 | 41 | 100 | 127.3 | 129.1 | 1 | 1 | 17.9 | 222.6 | 0 | |
| 3 | 2005 | MF_CAMP_BUFF | NonHab | 65.1 | 57.2 | 100 | 87.9 | 118.4 | 2 | 1 | 22.8 | 249.2 | 0 | |
| 4 | 2005 | MF_DOE_DFH | NonHab | 95.6 | 0 | 100 | 707.5 | 64.4 | 1 | 1 | 8.1 | 255.6 | 0 | |
| 5 | 2010 | MF_BALLFIELD | NonHab | 67.5 | 41.4 | 100 | 124.8 | 133.2 | 1 | 1 | 18.6 | 234.6 | 0.8 | |
| 6 | 2010 | MF_CAMP_BUFF | NonHab | 65.1 | 57.2 | 100 | 86.1 | 123.3 | 2 | 1 | 23.5 | 260 | 1.1 | |
| 7 | 2010 | MF_DOE_DFH | NonHab | 96 | 0 | 100 | 662.8 | 73.7 | 1 | 1 | 9.1 | 300.8 | 0 | |
| 8 | 2015 | MF_BALLFIELD | NonHab | 68.1 | 44.7 | 100 | 122.3 | 136.9 | 1 | 1 | 19.2 | 245.8 | 1 | |
| 9 | 2015 | MF_CAMP_BUFF | NonHab | 88 | 81.9 | 100 | 168.8 | 130.6 | 2 | 1 | 24.2 | 539.1 | 2.2 | |
| 10 | 2015 | MF_DOE_DFH | NonHab | 96 | 0 | 100 | 631.9 | 81.9 | 1 | 1 | 9.8 | 334.2 | 0 | |
| 11 | 2020 | MF_BALLFIELD | NonHab | 68.5 | 47.7 | 100 | 119.8 | 140.5 | 1 | 1 | 19.8 | 256.5 | 1 | |
| 12 | 2020 | MF_CAMP_BUFF | SMVD | 86.3 | 79.8 | 100 | 160 | 134.5 | 2 | 1 | 24.6 | 529.5 | 5.9 | |
| 13 | 2020 | MF_DOE_DFH | NonHab | 95.7 | 0 | 100 | 584.4 | 89.4 | 1 | 1 | 10.6 | 358.3 | 0 | |
| 14 | 2025 | MF_BALLFIELD | NonHab | 68.9 | 52.9 | 100 | 117.3 | 143.8 | 1 | 1 | 20.4 | 266.4 | 1.2 | |
| 15 | 2025 | MF_CAMP_BUFF | SMVD | 84.9 | 80.1 | 100 | 152.5 | 138.1 | 2 | 1 | 25.1 | 522.5 | 5.5 | |
| 16 | 2025 | MF_DOE_DFH | NonHab | 95.3 | 0 | 100 | 540.7 | 96.1 | 1 | 1 | 11.3 | 375.4 | 0 | |
| 17 | 2030 | MF_BALLFIELD | NonHab | 69.2 | 55.2 | 100 | 114.8 | 147 | 1 | 1 | 21 | 275.6 | 1.3 | |
| 18 | 2030 | MF_CAMP_BUFF | SMVD | 83.7 | 79.6 | 100 | 146 | 141.5 | 2 | 1 | 25.4 | 515.7 | 5.1 | |
| 19 | 2030 | MF_DOE_DFH | NonHab | 94.7 | 0 | 100 | 501.7 | 102.6 | 1 | 1 | 11.9 | 388.6 | 0 | |
| 20 | 2035 | MF_BALLFIELD | NonHab | 69.3 | 57.2 | 100 | 112.4 | 150 | 1 | 1 | 21.5 | 284.5 | 1.4 | |
| 21 | 2035 | MF_CAMP_BUFF | SMVD | 82.3 | 79 | 100 | 140.2 | 144.7 | 2 | 1 | 25.8 | 510.4 | 4.5 | |
| 22 | 2035 | MF_DOE_DFH | NonHab | 94 | 0 | 100 | 467.1 | 108.7 | 1 | 1 | 12.5 | 398.1 | 0 | |
| 23 | | | | | | | | | | | | | | |

AnalysisData

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# Johnson & Oneil Habitat Structures

- Habitat structures are described by a three component classification:
  - Size
    - Giant, Large, Medium, Small, Sapling, Seedling
  - Canopy Density
    - Closed, Moderate, Open, Grass-forb
  - Canopy Layers
    - Multi, Single

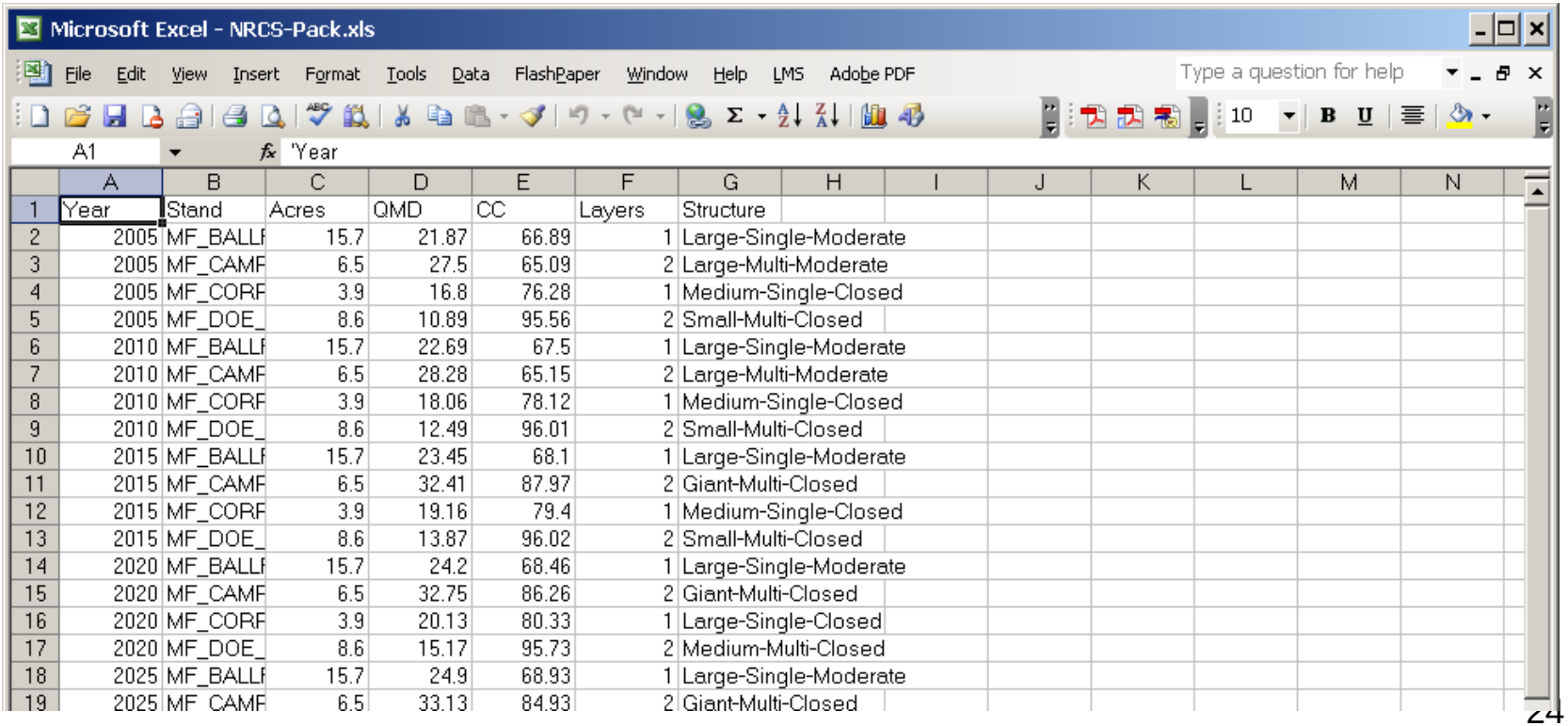
Jonhson, David H. and Thomas A. O'Neil. 2001. Wildlife Habitat Relationships in Oregon and Washington

# Johnson & Oneil Habitat Structures

- Size
  - Giant(QMD>=30), Large(20>=QMD<30), Medium(15>=QMD<20), Small (10>=QMD<15), Sapling(1>=QMD<10), Seedling(QMD<=1)
- Canopy Density
  - Closed(CC>=70), Moderate(40>=CC<=70), Open(10>=CC<40), Grass-forb(CC<10)
- Canopy Layers
  - Multi(Layers>=2), Single(Layers<2)

# Johnson & Oneil Structures Table

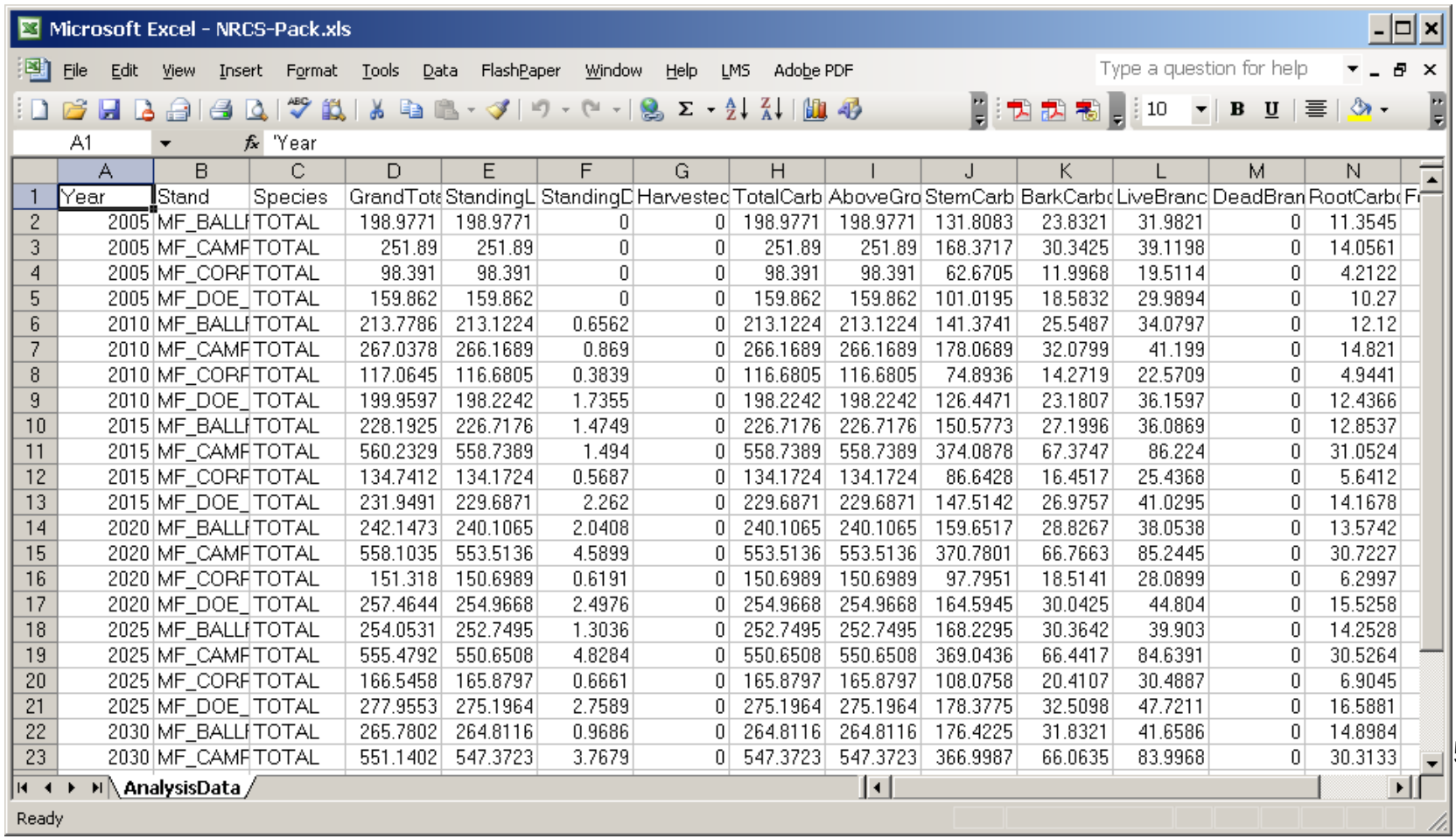
The Johnson & Oneil Structures Table presents a habitat structure classification that can be used to relate stand structure to potential habitat in Oregon & Washington. The table presents the Structure and intermediate variables used to determine the classification.




| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | Year | Stand | Acres | QMD | CC | Layers | Structure |
| 2 | 2005 | MF_BALLI | 15.7 | 21.87 | 66.89 | 1 | Large-Single-Moderate |
| 3 | 2005 | MF_CAMF | 6.5 | 27.5 | 65.09 | 2 | Large-Multi-Moderate |
| 4 | 2005 | MF_CORF | 3.9 | 16.8 | 76.28 | 1 | Medium-Single-Closed |
| 5 | 2005 | MF_DOE_ | 8.6 | 10.89 | 95.56 | 2 | Small-Multi-Closed |
| 6 | 2010 | MF_BALLI | 15.7 | 22.69 | 67.5 | 1 | Large-Single-Moderate |
| 7 | 2010 | MF_CAMF | 6.5 | 28.28 | 65.15 | 2 | Large-Multi-Moderate |
| 8 | 2010 | MF_CORF | 3.9 | 18.06 | 78.12 | 1 | Medium-Single-Closed |
| 9 | 2010 | MF_DOE_ | 8.6 | 12.49 | 96.01 | 2 | Small-Multi-Closed |
| 10 | 2015 | MF_BALLI | 15.7 | 23.45 | 68.1 | 1 | Large-Single-Moderate |
| 11 | 2015 | MF_CAMF | 6.5 | 32.41 | 87.97 | 2 | Giant-Multi-Closed |
| 12 | 2015 | MF_CORF | 3.9 | 19.16 | 79.4 | 1 | Medium-Single-Closed |
| 13 | 2015 | MF_DOE_ | 8.6 | 13.87 | 96.02 | 2 | Small-Multi-Closed |
| 14 | 2020 | MF_BALLI | 15.7 | 24.2 | 68.46 | 1 | Large-Single-Moderate |
| 15 | 2020 | MF_CAMF | 6.5 | 32.75 | 86.26 | 2 | Giant-Multi-Closed |
| 16 | 2020 | MF_CORF | 3.9 | 20.13 | 80.33 | 1 | Large-Single-Closed |
| 17 | 2020 | MF_DOE_ | 8.6 | 15.17 | 95.73 | 2 | Medium-Multi-Closed |
| 18 | 2025 | MF_BALLI | 15.7 | 24.9 | 68.93 | 1 | Large-Single-Moderate |
| 19 | 2025 | MF_CAMF | 6.5 | 33.13 | 84.93 | 2 | Giant-Multi-Closed |

# Carbon Assessment Table

The Carbon Assessment Table applies alomertic equations to make per species biomas estimates by stand component (stem, roots, crown, branches, etc) which are subsequently converted to estimates of carbon in the forest.



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A1 'Year

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Year | Stand | Species | GrandTote | StandingL | StandingD | Harvestec | TotalCarb | AboveGro | StemCarb | BarkCarbo | LiveBranc | DeadBran | RootCarbo |
| 2 | 2005 | MF_BALLF | TOTAL | 198.9771 | 198.9771 | 0 | 0 | 198.9771 | 198.9771 | 131.8083 | 23.8321 | 31.9821 | 0 | 11.3545 |
| 3 | 2005 | MF_CAMF | TOTAL | 251.89 | 251.89 | 0 | 0 | 251.89 | 251.89 | 168.3717 | 30.3425 | 39.1198 | 0 | 14.0561 |
| 4 | 2005 | MF_CORF | TOTAL | 98.391 | 98.391 | 0 | 0 | 98.391 | 98.391 | 62.6705 | 11.9968 | 19.5114 | 0 | 4.2122 |
| 5 | 2005 | MF_DOE_ | TOTAL | 159.862 | 159.862 | 0 | 0 | 159.862 | 159.862 | 101.0195 | 18.5832 | 29.9894 | 0 | 10.27 |
| 6 | 2010 | MF_BALLF | TOTAL | 213.7786 | 213.1224 | 0.6562 | 0 | 213.1224 | 213.1224 | 141.3741 | 25.5487 | 34.0797 | 0 | 12.12 |
| 7 | 2010 | MF_CAMF | TOTAL | 267.0378 | 266.1689 | 0.869 | 0 | 266.1689 | 266.1689 | 178.0689 | 32.0799 | 41.199 | 0 | 14.821 |
| 8 | 2010 | MF_CORF | TOTAL | 117.0645 | 116.6805 | 0.3839 | 0 | 116.6805 | 116.6805 | 74.8936 | 14.2719 | 22.5709 | 0 | 4.9441 |
| 9 | 2010 | MF_DOE_ | TOTAL | 199.9597 | 198.2242 | 1.7355 | 0 | 198.2242 | 198.2242 | 126.4471 | 23.1807 | 36.1597 | 0 | 12.4366 |
| 10 | 2015 | MF_BALLF | TOTAL | 228.1925 | 226.7176 | 1.4749 | 0 | 226.7176 | 226.7176 | 150.5773 | 27.1996 | 36.0869 | 0 | 12.8537 |
| 11 | 2015 | MF_CAMF | TOTAL | 560.2329 | 558.7389 | 1.494 | 0 | 558.7389 | 558.7389 | 374.0878 | 67.3747 | 86.224 | 0 | 31.0524 |
| 12 | 2015 | MF_CORF | TOTAL | 134.7412 | 134.1724 | 0.5687 | 0 | 134.1724 | 134.1724 | 86.6428 | 16.4517 | 25.4368 | 0 | 5.6412 |
| 13 | 2015 | MF_DOE_ | TOTAL | 231.9491 | 229.6871 | 2.262 | 0 | 229.6871 | 229.6871 | 147.5142 | 26.9757 | 41.0295 | 0 | 14.1678 |
| 14 | 2020 | MF_BALLF | TOTAL | 242.1473 | 240.1065 | 2.0408 | 0 | 240.1065 | 240.1065 | 159.6517 | 28.8267 | 38.0538 | 0 | 13.5742 |
| 15 | 2020 | MF_CAMF | TOTAL | 558.1035 | 553.5136 | 4.5899 | 0 | 553.5136 | 553.5136 | 370.7801 | 66.7663 | 85.2445 | 0 | 30.7227 |
| 16 | 2020 | MF_CORF | TOTAL | 151.318 | 150.6989 | 0.6191 | 0 | 150.6989 | 150.6989 | 97.7951 | 18.5141 | 28.0899 | 0 | 6.2997 |
| 17 | 2020 | MF_DOE_ | TOTAL | 257.4644 | 254.9668 | 2.4976 | 0 | 254.9668 | 254.9668 | 164.5945 | 30.0425 | 44.804 | 0 | 15.5258 |
| 18 | 2025 | MF_BALLF | TOTAL | 254.0531 | 252.7495 | 1.3036 | 0 | 252.7495 | 252.7495 | 168.2295 | 30.3642 | 39.903 | 0 | 14.2528 |
| 19 | 2025 | MF_CAMF | TOTAL | 555.4792 | 550.6508 | 4.8284 | 0 | 550.6508 | 550.6508 | 369.0436 | 66.4417 | 84.6391 | 0 | 30.5264 |
| 20 | 2025 | MF_CORF | TOTAL | 166.5458 | 165.8797 | 0.6661 | 0 | 165.8797 | 165.8797 | 108.0758 | 20.4107 | 30.4887 | 0 | 6.9045 |
| 21 | 2025 | MF_DOE_ | TOTAL | 277.9553 | 275.1964 | 2.7589 | 0 | 275.1964 | 275.1964 | 178.3775 | 32.5098 | 47.7211 | 0 | 16.5881 |
| 22 | 2030 | MF_BALLF | TOTAL | 265.7802 | 264.8116 | 0.9686 | 0 | 264.8116 | 264.8116 | 176.4225 | 31.8321 | 41.6586 | 0 | 14.8984 |
| 23 | 2030 | MF_CAMF | TOTAL | 551.1402 | 547.3723 | 3.7679 | 0 | 547.3723 | 547.3723 | 366.9987 | 66.0635 | 83.9968 | 0 | 30.3133 |

AnalysisData

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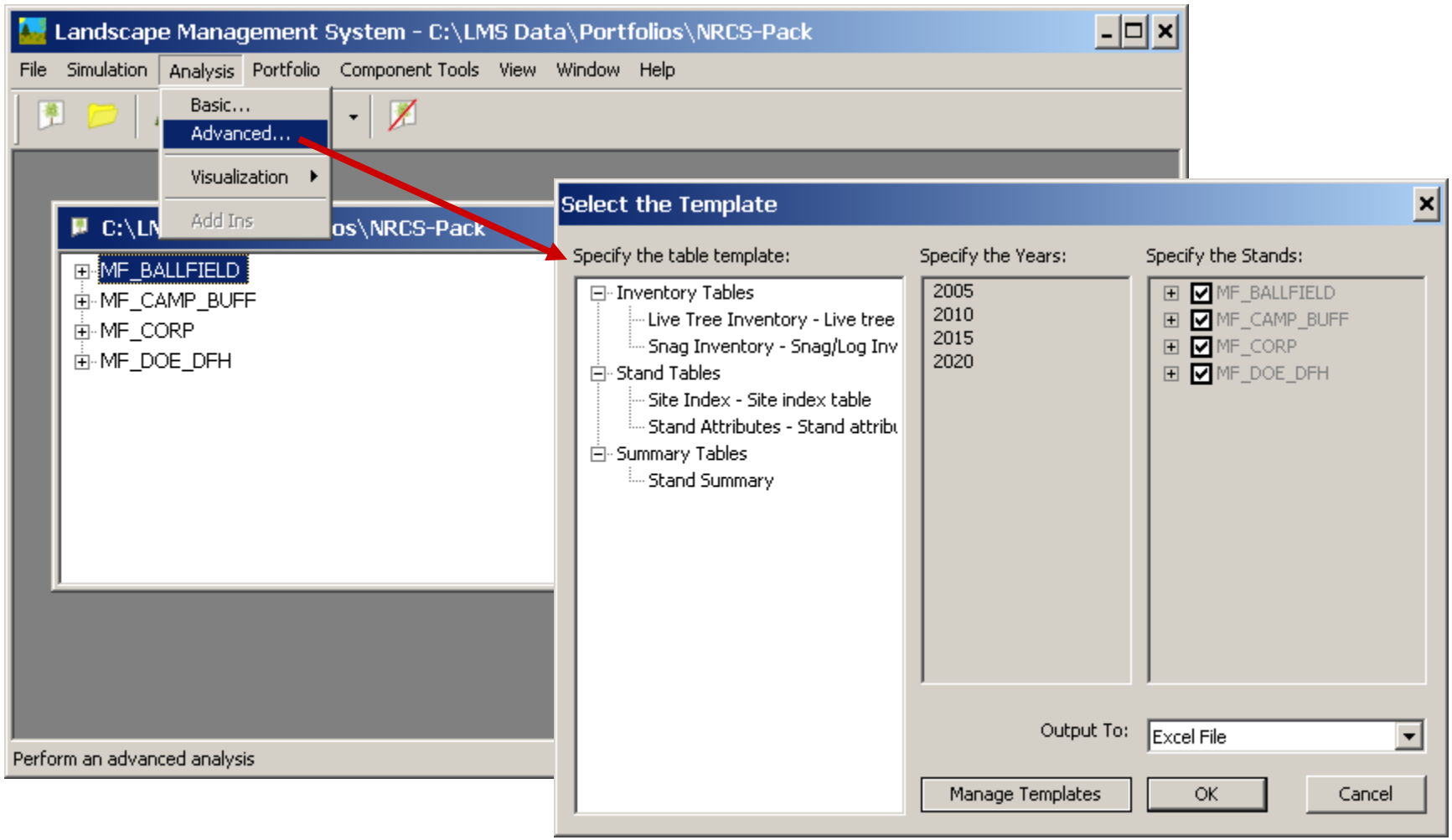
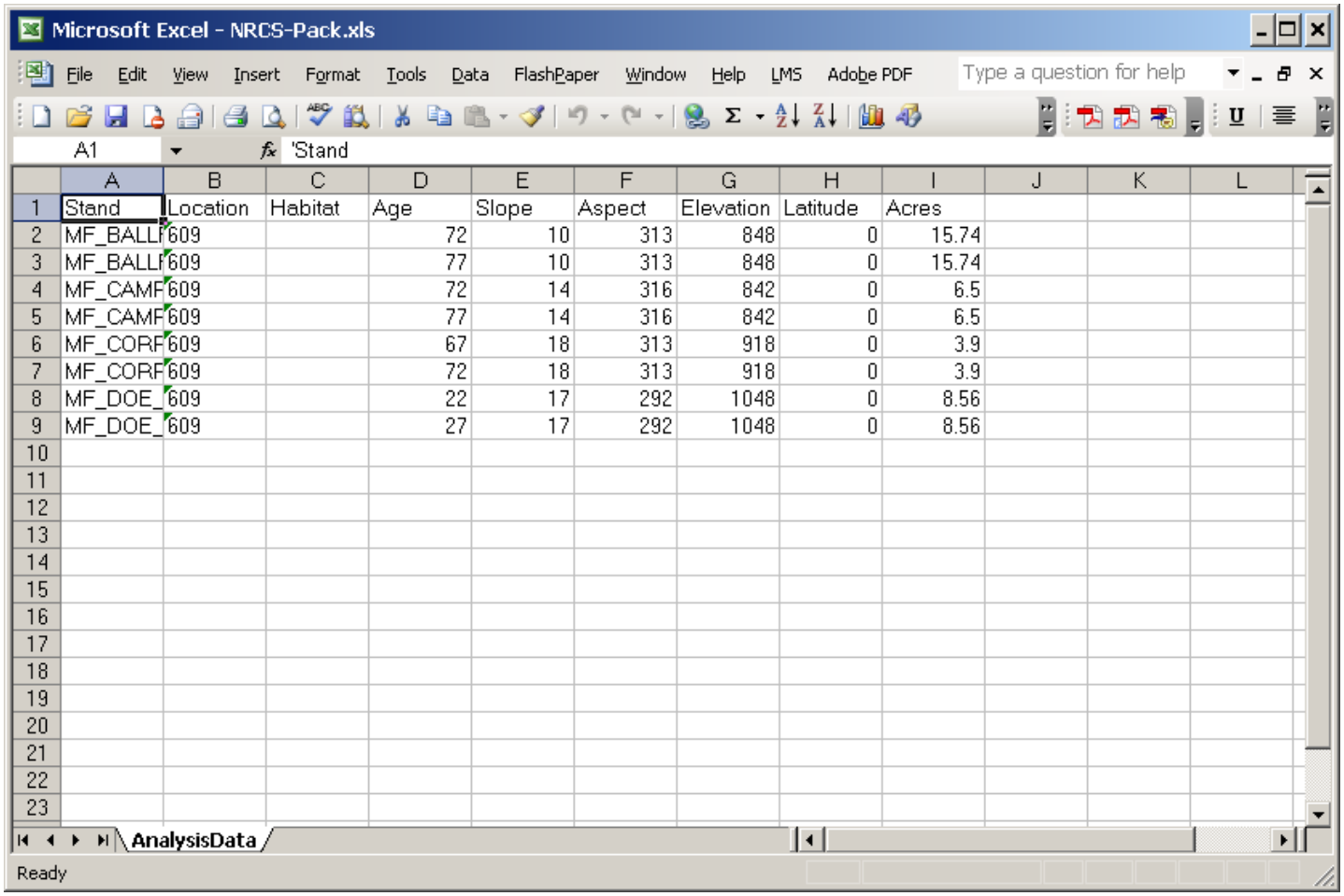
# Advance Analysis Tables



# Stand Attributes Template

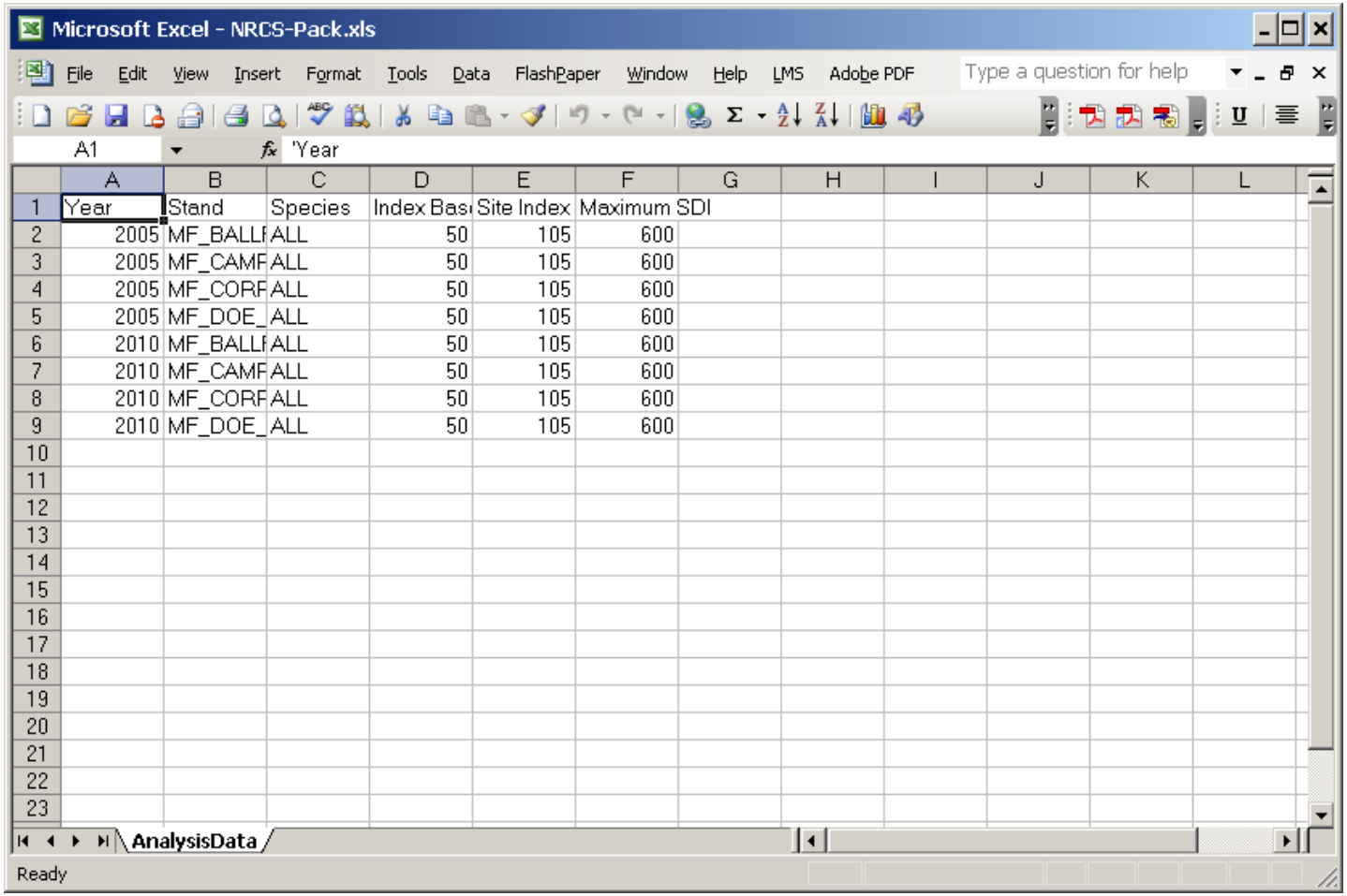
The Stand Attributes Template displays stand level information: Location code, Habitat, Stand Age, Slope, Aspect, Elevation, Latitude, and Acres.




| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Stand | Location | Habitat | Age | Slope | Aspect | Elevation | Latitude | Acres |
| 2 | MF_BALLI | 609 | | 72 | 10 | 313 | 848 | 0 | 15.74 |
| 3 | MF_BALLI | 609 | | 77 | 10 | 313 | 848 | 0 | 15.74 |
| 4 | MF_CAMF | 609 | | 72 | 14 | 316 | 842 | 0 | 6.5 |
| 5 | MF_CAMF | 609 | | 77 | 14 | 316 | 842 | 0 | 6.5 |
| 6 | MF_CORF | 609 | | 67 | 18 | 313 | 918 | 0 | 3.9 |
| 7 | MF_CORF | 609 | | 72 | 18 | 313 | 918 | 0 | 3.9 |
| 8 | MF_DOE_ | 609 | | 22 | 17 | 292 | 1048 | 0 | 8.56 |
| 9 | MF_DOE_ | 609 | | 27 | 17 | 292 | 1048 | 0 | 8.56 |

# Site Index Template

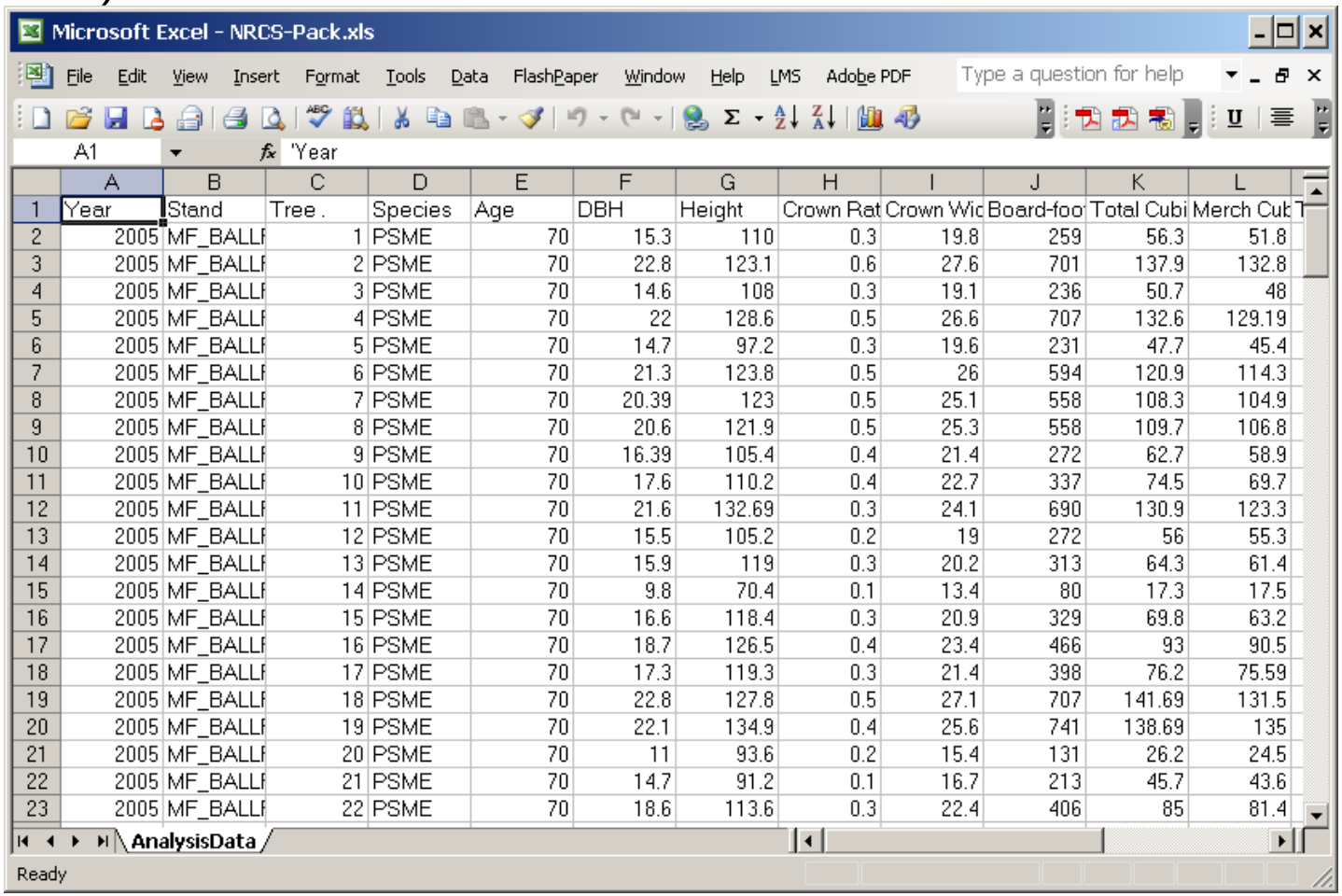
The Site Index Template displays stand and species specific Site Index information for the portfolio: Stand, Species, Index Base, Site Index, and Maximum SDI.




| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | Year | Stand | Species | Index Bas | Site Index | Maximum SDI |
| 2 | 2005 | MF_BALL | ALL | 50 | 105 | 600 |
| 3 | 2005 | MF_CAMP | ALL | 50 | 105 | 600 |
| 4 | 2005 | MF_CORP | ALL | 50 | 105 | 600 |
| 5 | 2005 | MF_DOE_ | ALL | 50 | 105 | 600 |
| 6 | 2010 | MF_BALL | ALL | 50 | 105 | 600 |
| 7 | 2010 | MF_CAMP | ALL | 50 | 105 | 600 |
| 8 | 2010 | MF_CORP | ALL | 50 | 105 | 600 |
| 9 | 2010 | MF_DOE_ | ALL | 50 | 105 | 600 |

# Live Tree Inventory Template

The Live Tree Inventory Template displays “raw” inventory information about selected stands: Stand, Tree, Species, Age, DBH, Height, CrownRatio, CrownWidth, Volume (BF, CF, MCF)…



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A1 'Year

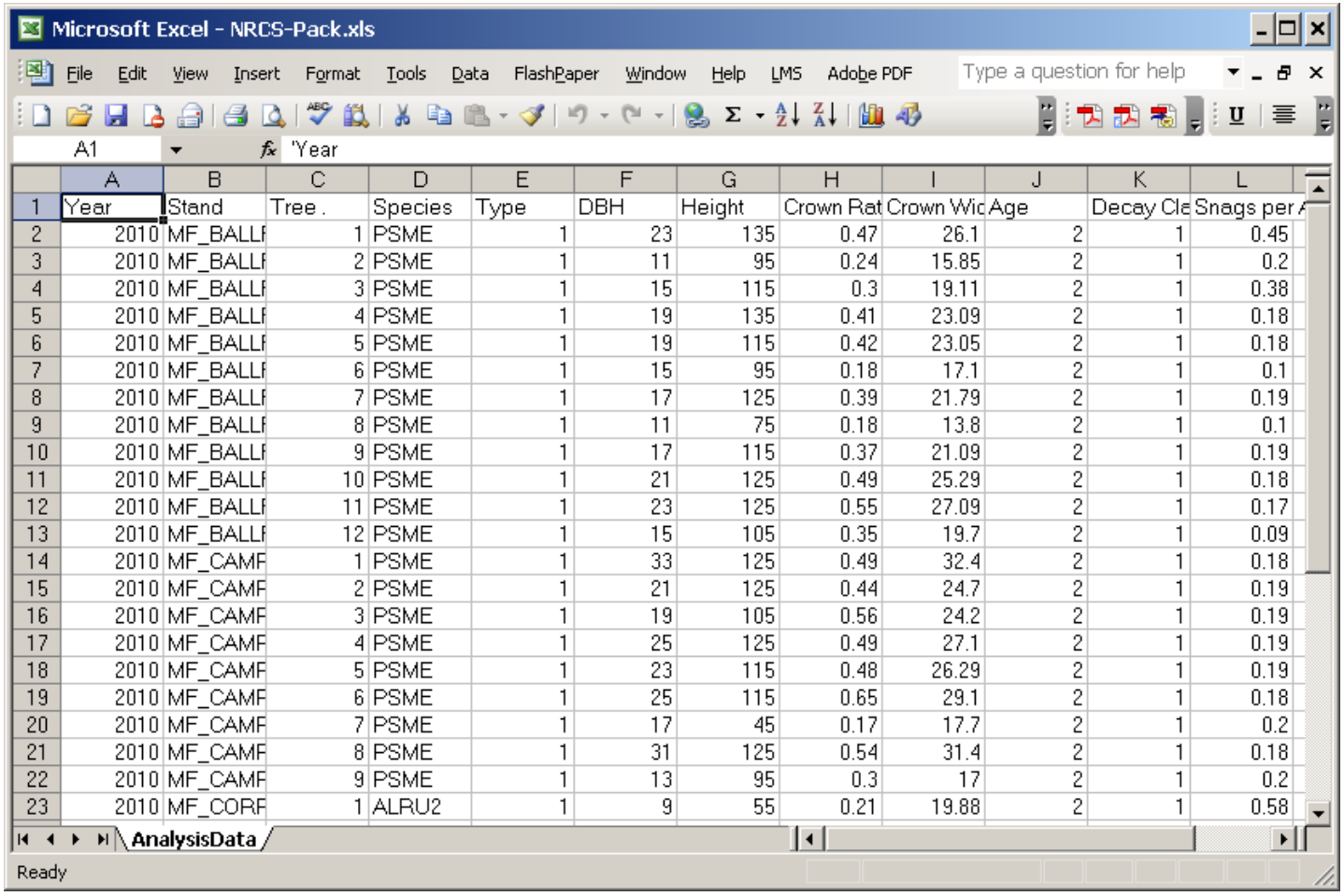
| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Year | Stand | Tree . | Species | Age | DBH | Height | Crown Rat | Crown Wic | Board-foo | Total Cubi | Merch Cub |
| 2 | 2005 | MF_BALLF | 1 | PSME | 70 | 15.3 | 110 | 0.3 | 19.8 | 259 | 56.3 | 51.8 |
| 3 | 2005 | MF_BALLF | 2 | PSME | 70 | 22.8 | 123.1 | 0.6 | 27.6 | 701 | 137.9 | 132.8 |
| 4 | 2005 | MF_BALLF | 3 | PSME | 70 | 14.6 | 108 | 0.3 | 19.1 | 236 | 50.7 | 48 |
| 5 | 2005 | MF_BALLF | 4 | PSME | 70 | 22 | 128.6 | 0.5 | 26.6 | 707 | 132.6 | 129.19 |
| 6 | 2005 | MF_BALLF | 5 | PSME | 70 | 14.7 | 97.2 | 0.3 | 19.6 | 231 | 47.7 | 45.4 |
| 7 | 2005 | MF_BALLF | 6 | PSME | 70 | 21.3 | 123.8 | 0.5 | 26 | 594 | 120.9 | 114.3 |
| 8 | 2005 | MF_BALLF | 7 | PSME | 70 | 20.39 | 123 | 0.5 | 25.1 | 558 | 108.3 | 104.9 |
| 9 | 2005 | MF_BALLF | 8 | PSME | 70 | 20.6 | 121.9 | 0.5 | 25.3 | 558 | 109.7 | 106.8 |
| 10 | 2005 | MF_BALLF | 9 | PSME | 70 | 16.39 | 105.4 | 0.4 | 21.4 | 272 | 62.7 | 58.9 |
| 11 | 2005 | MF_BALLF | 10 | PSME | 70 | 17.6 | 110.2 | 0.4 | 22.7 | 337 | 74.5 | 69.7 |
| 12 | 2005 | MF_BALLF | 11 | PSME | 70 | 21.6 | 132.69 | 0.3 | 24.1 | 690 | 130.9 | 123.3 |
| 13 | 2005 | MF_BALLF | 12 | PSME | 70 | 15.5 | 105.2 | 0.2 | 19 | 272 | 56 | 55.3 |
| 14 | 2005 | MF_BALLF | 13 | PSME | 70 | 15.9 | 119 | 0.3 | 20.2 | 313 | 64.3 | 61.4 |
| 15 | 2005 | MF_BALLF | 14 | PSME | 70 | 9.8 | 70.4 | 0.1 | 13.4 | 80 | 17.3 | 17.5 |
| 16 | 2005 | MF_BALLF | 15 | PSME | 70 | 16.6 | 118.4 | 0.3 | 20.9 | 329 | 69.8 | 63.2 |
| 17 | 2005 | MF_BALLF | 16 | PSME | 70 | 18.7 | 126.5 | 0.4 | 23.4 | 466 | 93 | 90.5 |
| 18 | 2005 | MF_BALLF | 17 | PSME | 70 | 17.3 | 119.3 | 0.3 | 21.4 | 398 | 76.2 | 75.59 |
| 19 | 2005 | MF_BALLF | 18 | PSME | 70 | 22.8 | 127.8 | 0.5 | 27.1 | 707 | 141.69 | 131.5 |
| 20 | 2005 | MF_BALLF | 19 | PSME | 70 | 22.1 | 134.9 | 0.4 | 25.6 | 741 | 138.69 | 135 |
| 21 | 2005 | MF_BALLF | 20 | PSME | 70 | 11 | 93.6 | 0.2 | 15.4 | 131 | 26.2 | 24.5 |
| 22 | 2005 | MF_BALLF | 21 | PSME | 70 | 14.7 | 91.2 | 0.1 | 16.7 | 213 | 45.7 | 43.6 |
| 23 | 2005 | MF_BALLF | 22 | PSME | 70 | 18.6 | 113.6 | 0.3 | 22.4 | 406 | 85 | 81.4 |

AnalysisData

Ready

# Snag Inventory Template

The Snag Inventory Template displays “raw” snag inventory information about selected stands: Stand, Tree, Species, Type (1=snag, 0=log), DBH, Height, CrownRatio, CrownWidth, Age, Decay Class, Snags per acre.



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A1 'Year

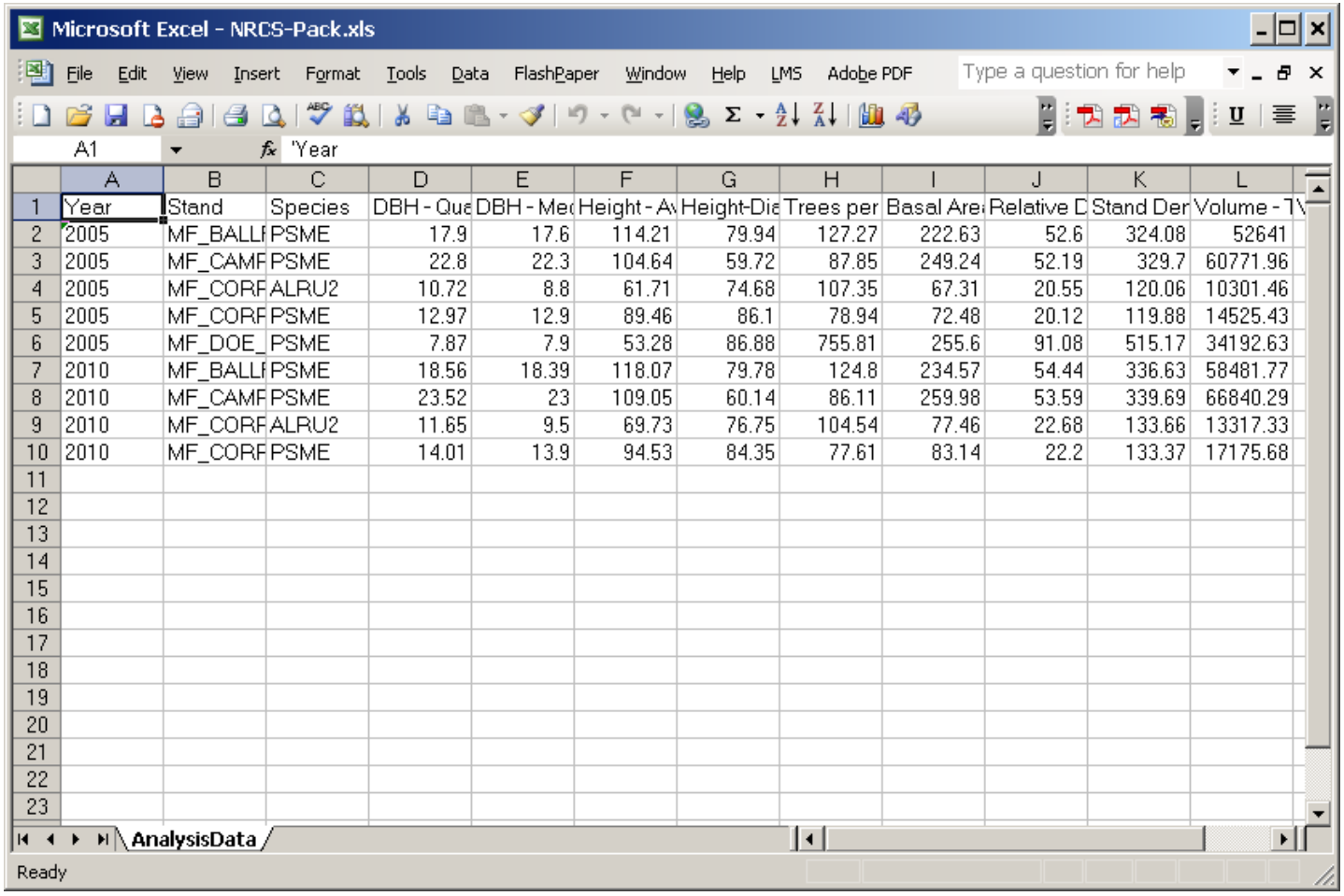
| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Year | Stand | Tree . | Species | Type | DBH | Height | Crown Rat | Crown Wic | Age | Decay Cla | Snags per A |
| 2 | 2010 | MF_BALLF | 1 | PSME | 1 | 23 | 135 | 0.47 | 26.1 | 2 | 1 | 0.45 |
| 3 | 2010 | MF_BALLF | 2 | PSME | 1 | 11 | 95 | 0.24 | 15.85 | 2 | 1 | 0.2 |
| 4 | 2010 | MF_BALLF | 3 | PSME | 1 | 15 | 115 | 0.3 | 19.11 | 2 | 1 | 0.38 |
| 5 | 2010 | MF_BALLF | 4 | PSME | 1 | 19 | 135 | 0.41 | 23.09 | 2 | 1 | 0.18 |
| 6 | 2010 | MF_BALLF | 5 | PSME | 1 | 19 | 115 | 0.42 | 23.05 | 2 | 1 | 0.18 |
| 7 | 2010 | MF_BALLF | 6 | PSME | 1 | 15 | 95 | 0.18 | 17.1 | 2 | 1 | 0.1 |
| 8 | 2010 | MF_BALLF | 7 | PSME | 1 | 17 | 125 | 0.39 | 21.79 | 2 | 1 | 0.19 |
| 9 | 2010 | MF_BALLF | 8 | PSME | 1 | 11 | 75 | 0.18 | 13.8 | 2 | 1 | 0.1 |
| 10 | 2010 | MF_BALLF | 9 | PSME | 1 | 17 | 115 | 0.37 | 21.09 | 2 | 1 | 0.19 |
| 11 | 2010 | MF_BALLF | 10 | PSME | 1 | 21 | 125 | 0.49 | 25.29 | 2 | 1 | 0.18 |
| 12 | 2010 | MF_BALLF | 11 | PSME | 1 | 23 | 125 | 0.55 | 27.09 | 2 | 1 | 0.17 |
| 13 | 2010 | MF_BALLF | 12 | PSME | 1 | 15 | 105 | 0.35 | 19.7 | 2 | 1 | 0.09 |
| 14 | 2010 | MF_CAMF | 1 | PSME | 1 | 33 | 125 | 0.49 | 32.4 | 2 | 1 | 0.18 |
| 15 | 2010 | MF_CAMF | 2 | PSME | 1 | 21 | 125 | 0.44 | 24.7 | 2 | 1 | 0.19 |
| 16 | 2010 | MF_CAMF | 3 | PSME | 1 | 19 | 105 | 0.56 | 24.2 | 2 | 1 | 0.19 |
| 17 | 2010 | MF_CAMF | 4 | PSME | 1 | 25 | 125 | 0.49 | 27.1 | 2 | 1 | 0.19 |
| 18 | 2010 | MF_CAMF | 5 | PSME | 1 | 23 | 115 | 0.48 | 26.29 | 2 | 1 | 0.19 |
| 19 | 2010 | MF_CAMF | 6 | PSME | 1 | 25 | 115 | 0.65 | 29.1 | 2 | 1 | 0.18 |
| 20 | 2010 | MF_CAMF | 7 | PSME | 1 | 17 | 45 | 0.17 | 17.7 | 2 | 1 | 0.2 |
| 21 | 2010 | MF_CAMF | 8 | PSME | 1 | 31 | 125 | 0.54 | 31.4 | 2 | 1 | 0.18 |
| 22 | 2010 | MF_CAMF | 9 | PSME | 1 | 13 | 95 | 0.3 | 17 | 2 | 1 | 0.2 |
| 23 | 2010 | MF_CORF | 1 | ALRU2 | 1 | 9 | 55 | 0.21 | 19.88 | 2 | 1 | 0.58 |

AnalysisData

Ready

# Stand Summary Template

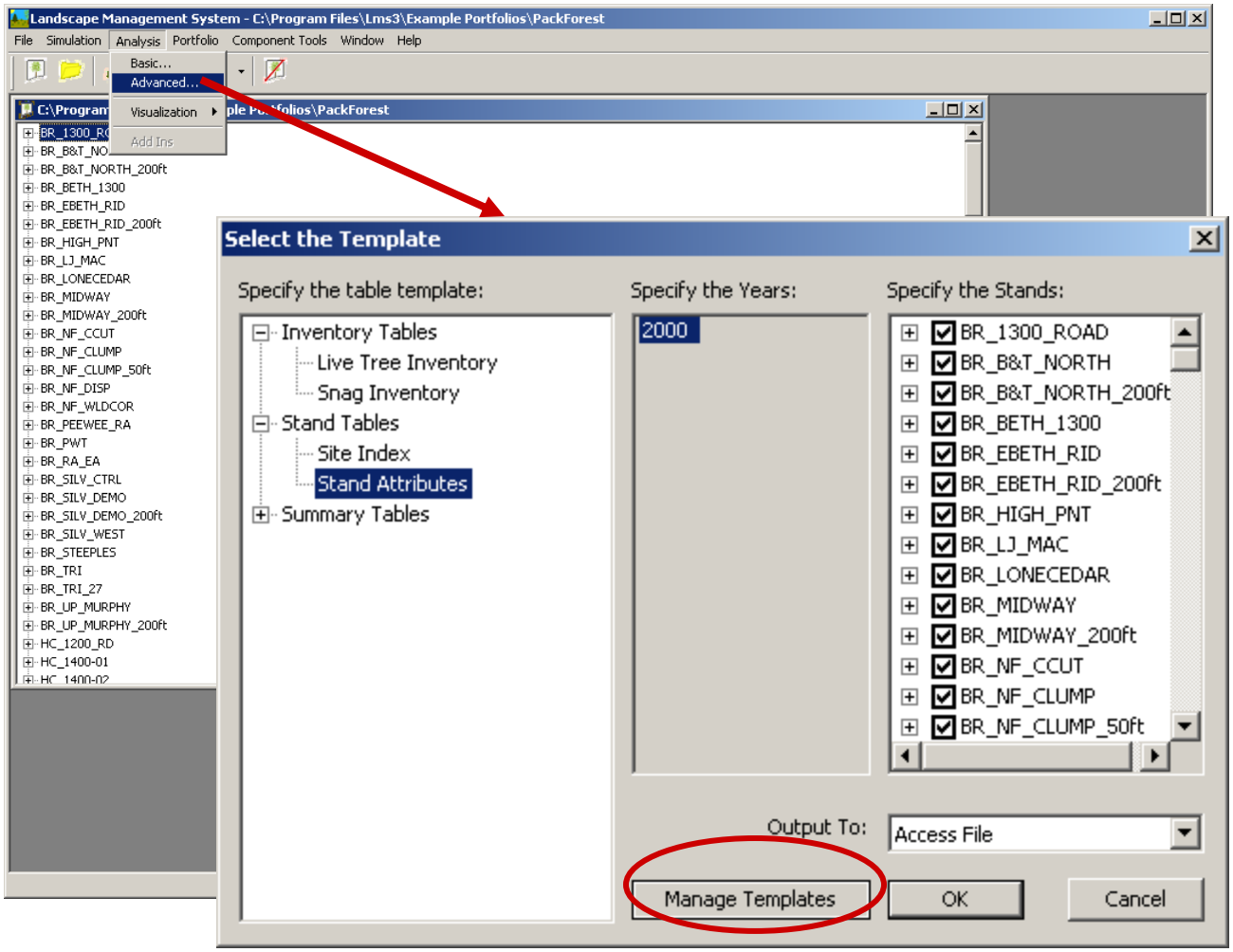
The Stand Summary Template provides typical forestry statistics about stand by species: Quadratic Mean Diameter, Average Diameter, Average height, Height-Diameter ratio, TPA, Basal Area, SDI, Volume, etc.




| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Year | Stand | Species | DBH - Qua | DBH - Me | Height - Av | Height-Dia | Trees per | Basal Are | Relative D | Stand Den | Volume - T |
| 2 | 2005 | MF_BALLI | PSME | 17.9 | 17.6 | 114.21 | 79.94 | 127.27 | 222.63 | 52.6 | 324.08 | 52641 |
| 3 | 2005 | MF_CAMF | PSME | 22.8 | 22.3 | 104.64 | 59.72 | 87.85 | 249.24 | 52.19 | 329.7 | 60771.96 |
| 4 | 2005 | MF_CORF | ALRU2 | 10.72 | 8.8 | 61.71 | 74.68 | 107.35 | 67.31 | 20.55 | 120.06 | 10301.46 |
| 5 | 2005 | MF_CORF | PSME | 12.97 | 12.9 | 89.46 | 86.1 | 78.94 | 72.48 | 20.12 | 119.88 | 14525.43 |
| 6 | 2005 | MF_DOE_ | PSME | 7.87 | 7.9 | 53.28 | 86.88 | 755.81 | 255.6 | 91.08 | 515.17 | 34192.63 |
| 7 | 2010 | MF_BALLI | PSME | 18.56 | 18.39 | 118.07 | 79.78 | 124.8 | 234.57 | 54.44 | 336.63 | 58481.77 |
| 8 | 2010 | MF_CAMF | PSME | 23.52 | 23 | 109.05 | 60.14 | 86.11 | 259.98 | 53.59 | 339.69 | 66840.29 |
| 9 | 2010 | MF_CORF | ALRU2 | 11.65 | 9.5 | 69.73 | 76.75 | 104.54 | 77.46 | 22.68 | 133.66 | 13317.33 |
| 10 | 2010 | MF_CORF | PSME | 14.01 | 13.9 | 94.53 | 84.35 | 77.61 | 83.14 | 22.2 | 133.37 | 17175.68 |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |

# Create/Modify Table Templates

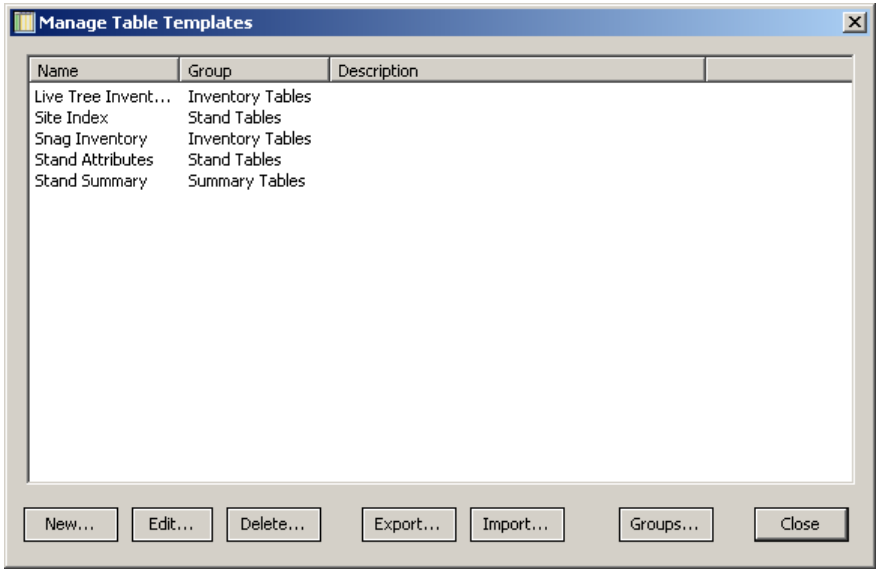
All LMS Advanced tables are available from the Select the Template dialogue, which is accessed from Analysis/Advanced... in the LMS application. Any of the table templates can be modified, or new tables can be created.

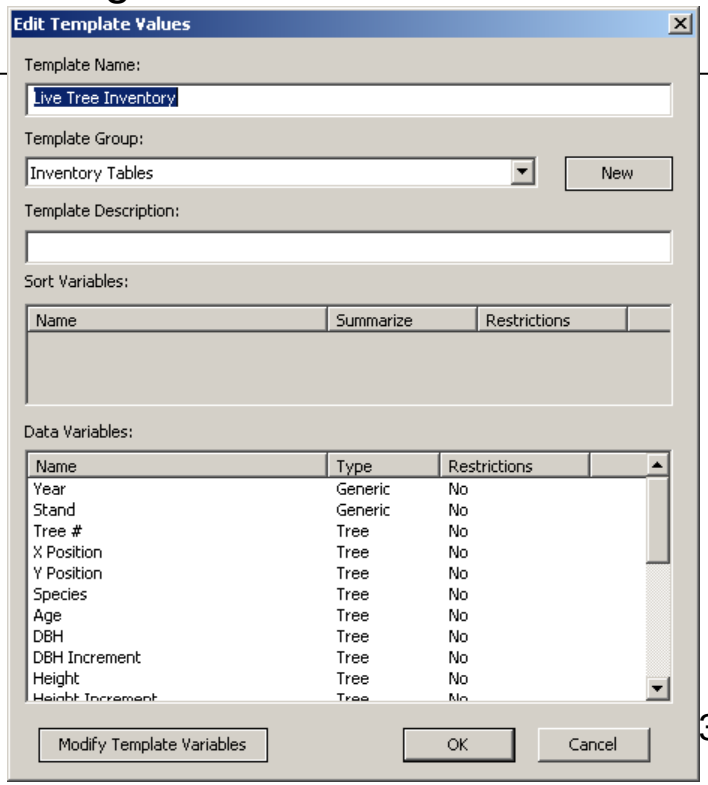


# Table Templates

Table Templates can be managed using the Manage Table Templates. Users can "Create" new tables and "Edit" existing tables. "Load" will allow users to add existing tables to the dialog and "Delete" will allow the user to remove tables they don't want, customizing their interface. The "Load" and "Delete" functions will be added soon.

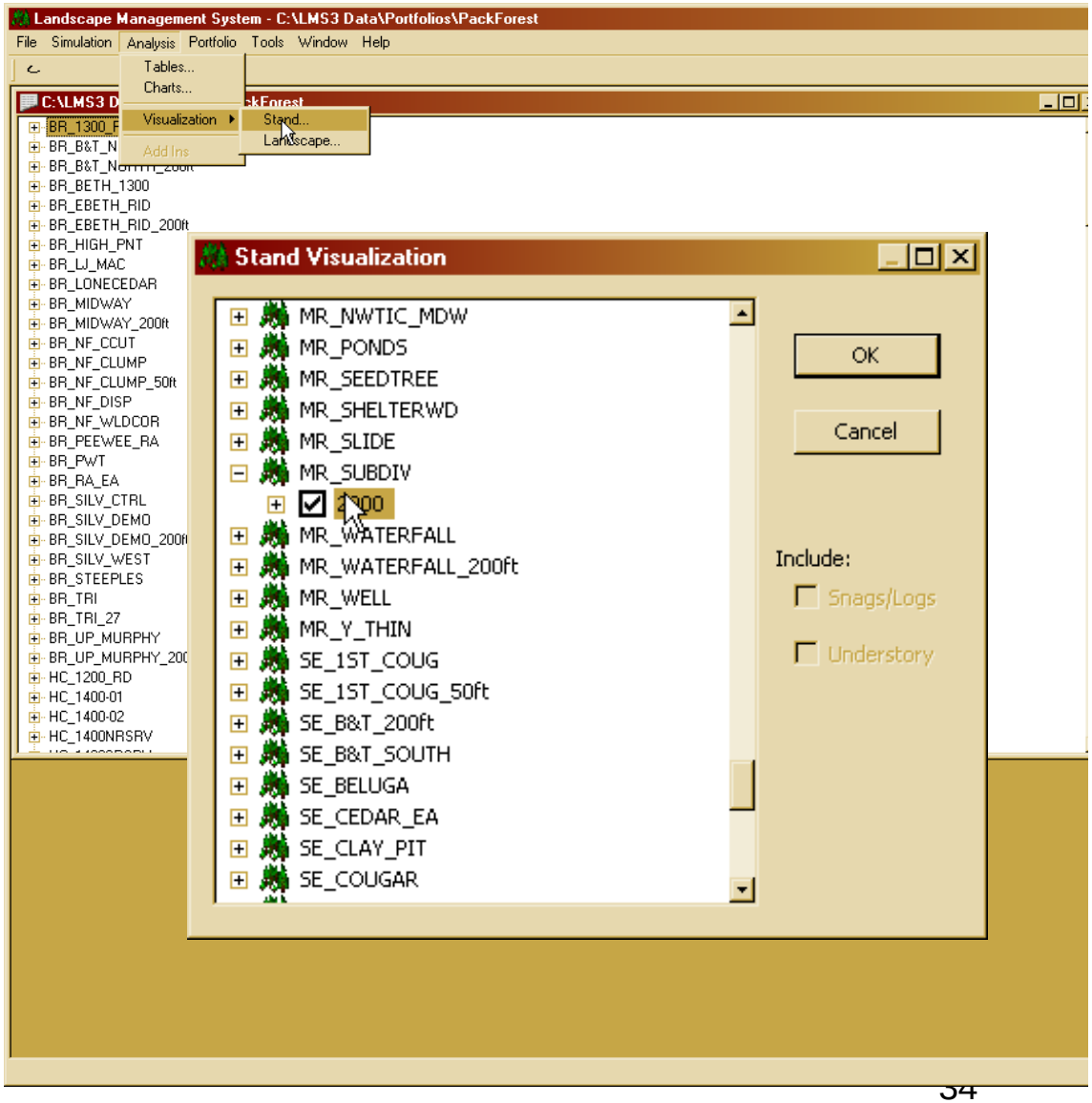
The Edit Template Values dialog lets the user change the variables and order of variables in the table.



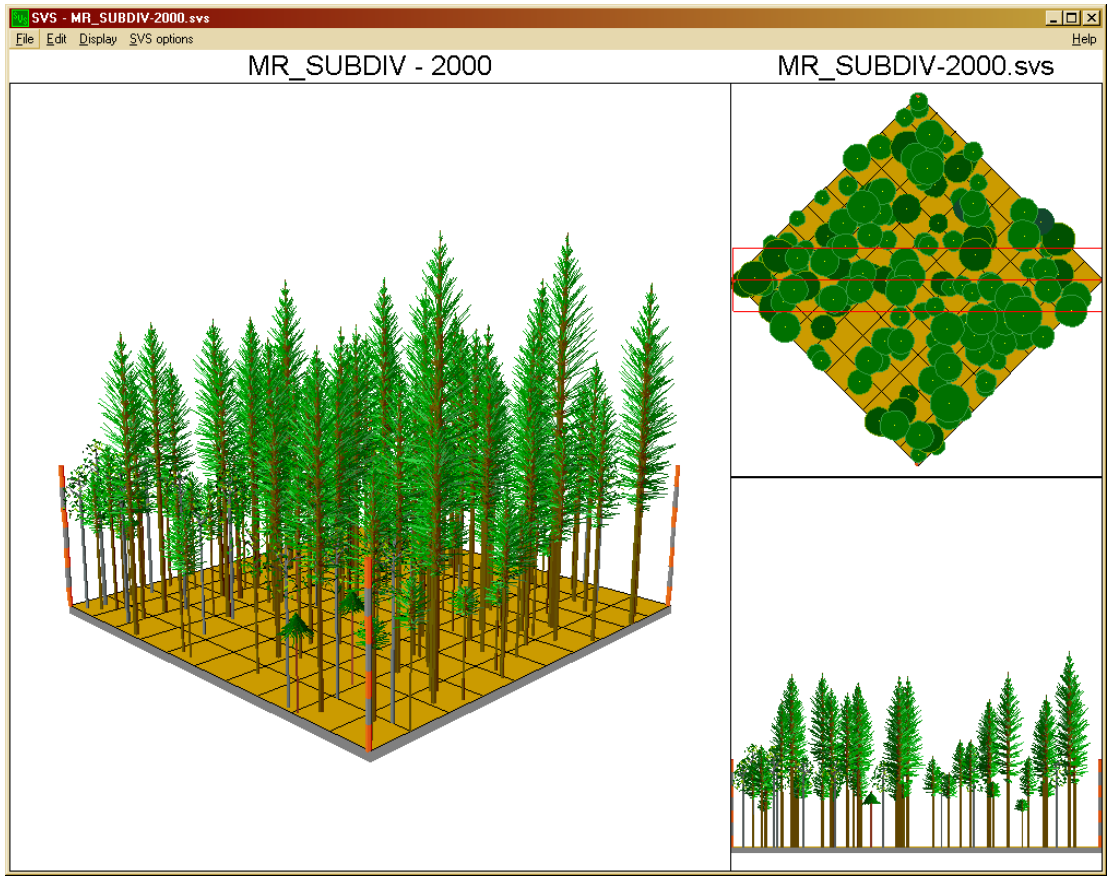
# Make SVS Image of MR_SUBDIV

SVS images are created for a stand in a given year from the Stand Visualization dialogue. To open the Stand Visualization dialog, select the Visualization menu from the Analysis drop-down. From the Visualization menu select Stand… To create a visualization of MR_SUBDIV in the year 2000, scroll down the list of stands to MR_SUBDIV and click the plus sin to expand the tree to see available years. If the portfolio has not been grown out, 2000 will be the only year and will be checked by default. Click OK to create visualization.



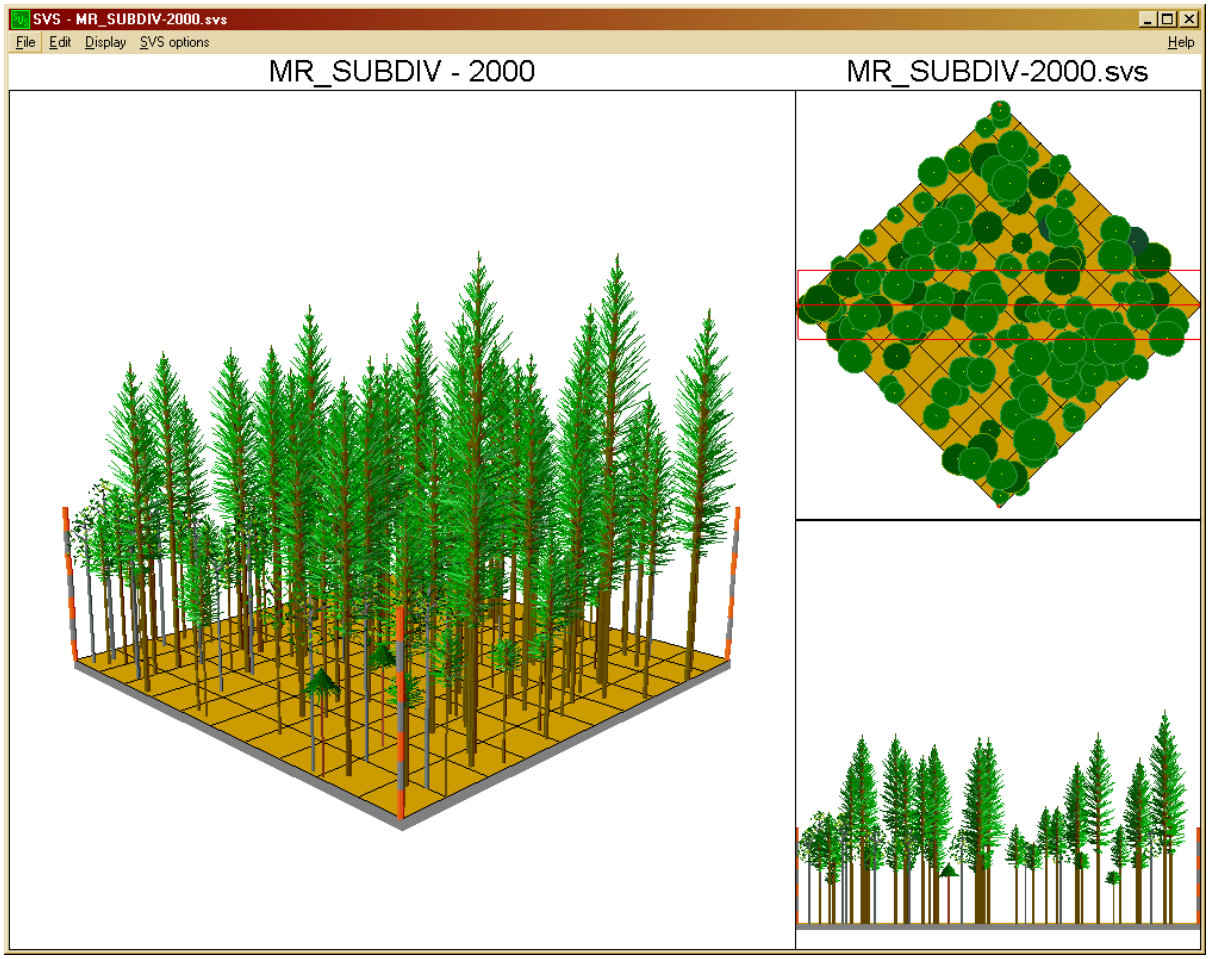
# SVS 3-View Layout of MR_SUBDIV

SVS draws a graphical representation of the inventory table for MR_SUBDIV. The 3-view layout with perspective, overhead, and profile view shows and “average” acre of the stand. The ground surface is 208.7 feet per side representing a full acre. At the corners of the acre are 75 foot tall range poles to give tree heights a context. If SVS does not come up in 3-view select “Screen layouts” from the SVS Options drop-down then “3-view layout” from the pop-out menu as in the lower image to the right.



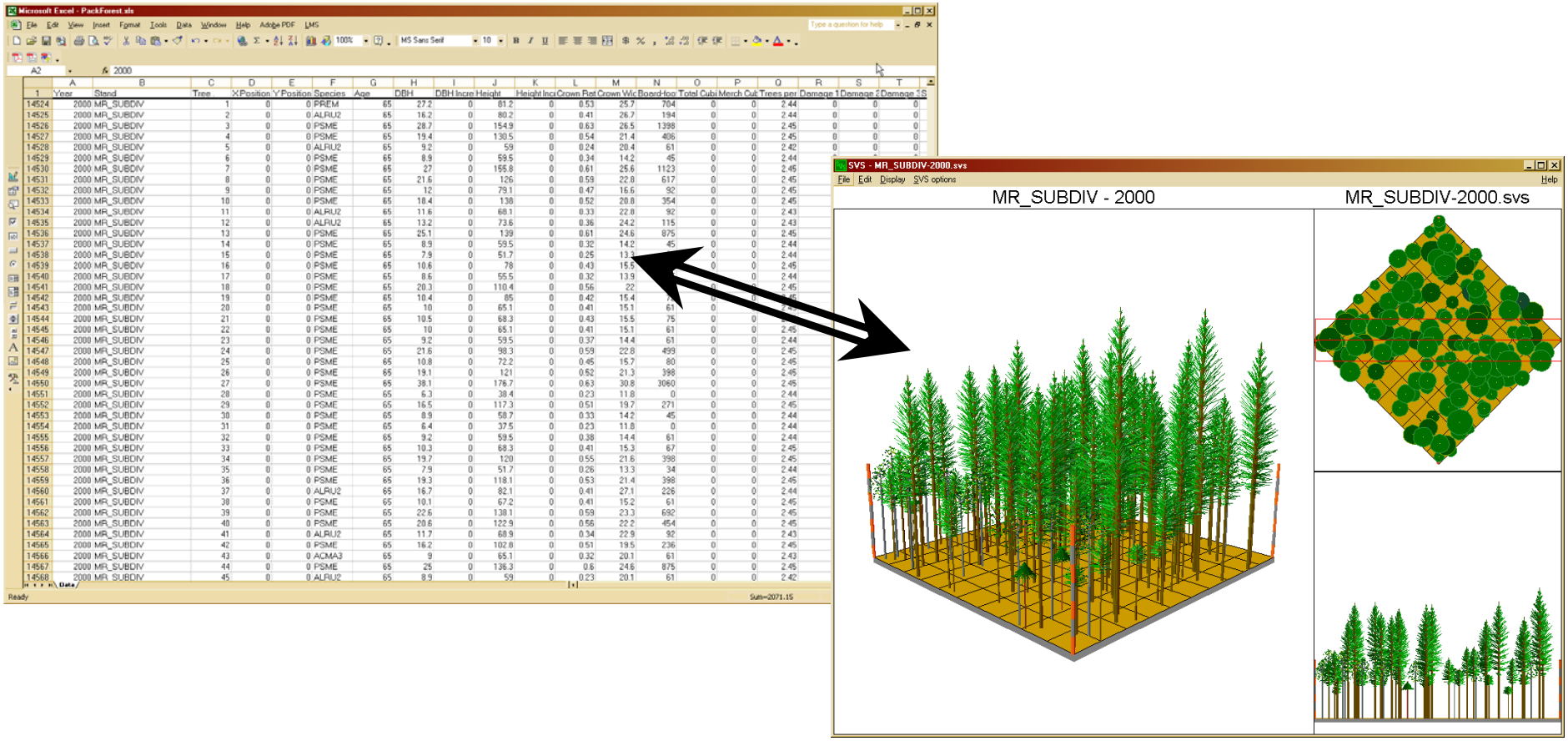
# SVS 3-View Layout of MR_SUBDIV

SVS images provide a great deal of information about a stand. The perspective view in the left pane of the SVS window gives a representation of the structure and composition of the stand. The overhead view with solid crowns in the upper right pane gives a representation of canopy cover. The profile view in the lower right pane shows the trees within the red lines shown on the overhead view. This represents the vertical distribution of trees and crowns.



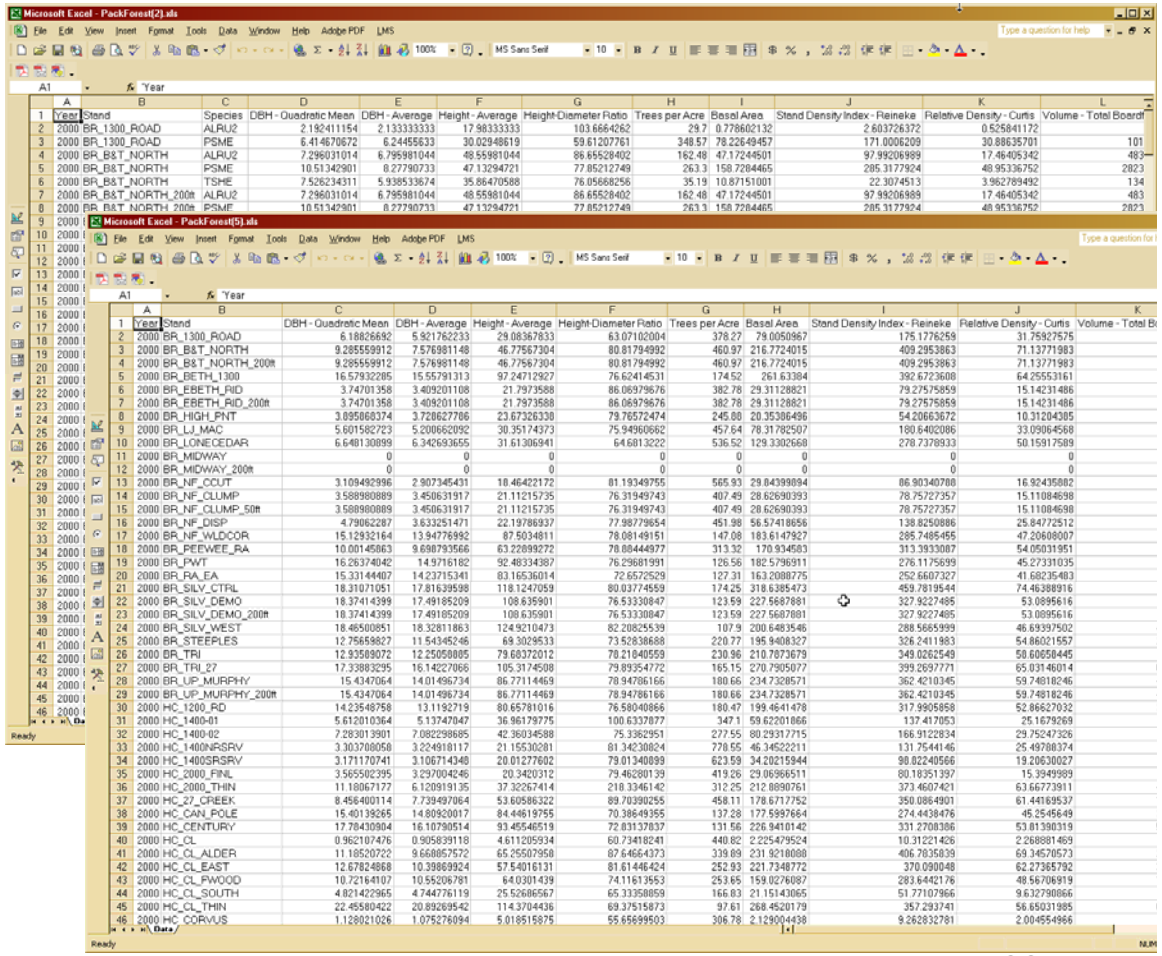
# Compare SVS Image and Inventory

SVS depicts actual stand inventory representing trees based on species and size. Trees are randomly placed on the acre each time the image is created. When a tree record has a fractional part, a random number is drawn to determine if the tree is drawn.



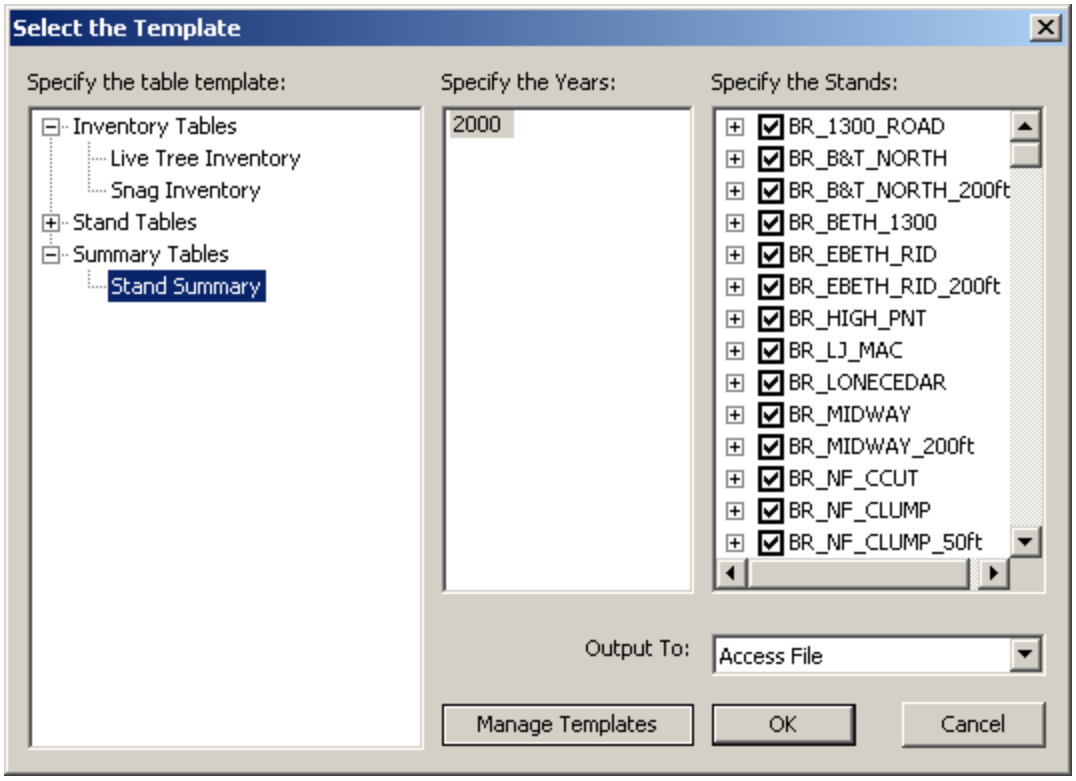
# Stand Summary Tables

The Stand Summary tables contain tree data summarized into totals, means, and density measures for each species or total for the stand. The measures include quadratic mean diameter (QMD), arithmetic average diameter, aveage height, height to diameter ratio, trees per acre, basal area, Rieneke's stand density index, Curtis's relative density, board-foot volume, cubic-foot volume, and merchantable cubic-foot volume. This table is useful to assess stand size, structure, and composition.



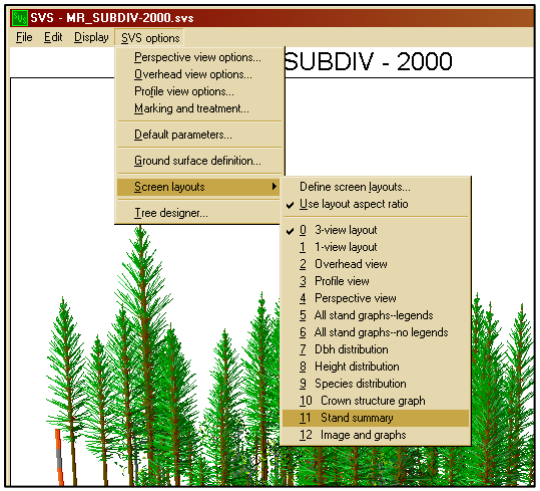
# Stand Summary Table

Stand Summary tables are created for all stands in a portfolio with summaries for each species. A Stand Summary table is created by opening the Select the Template dialogue, selecting “Stand Summary” from the list in the left under Summary group then selecting “2000” under Specify the Years and Output To Excel File. Click “OK”, and a Stand Summary table will be created in Excel.



# SVS Stand Summary

SVS will create a stand summary as well, though it does not contain as much information as the LMS summary table. This is created by selecting “Screen layouts” from the “SVS Options” menu then “Stand summary” from the pop-out menu.




SVS - MR_SUBDIV-2000.svs

File Edit Display SVS options Help

MR_SUBDIV - 2000

File: C:\lmsfolio2\packexam\CACHE\MR_SUBDIV-2000.svs

Summary is for all species

Tree list summary:

Origin: (0.0,0.0)
Size: 208.7 by 208.7 (1.00 acres)
Units: ENGLISH

Total objects: 151 (151 per acre)

Standing live trees (using FVS plant class codes):

| | Mean | SD | Min | Max |
|---|---|---|---|---|
| dbh | 14.6 | 6.5 | 6.3 | 38.1 |
| ht | 88.4 | 24.1 | 38.0 | 177.0 |

Basal area: 205.3 (205.3 per acre)
Number of trees: 147 (147 per acre)

Standing dead trees (using FVS plant class codes):

No FVS standing dead trees to summarize

Downed trees and logs (status code 0, 10, 3, or 13):

No downed logs to summarize

Microsoft Excel - PackForest[2].xls

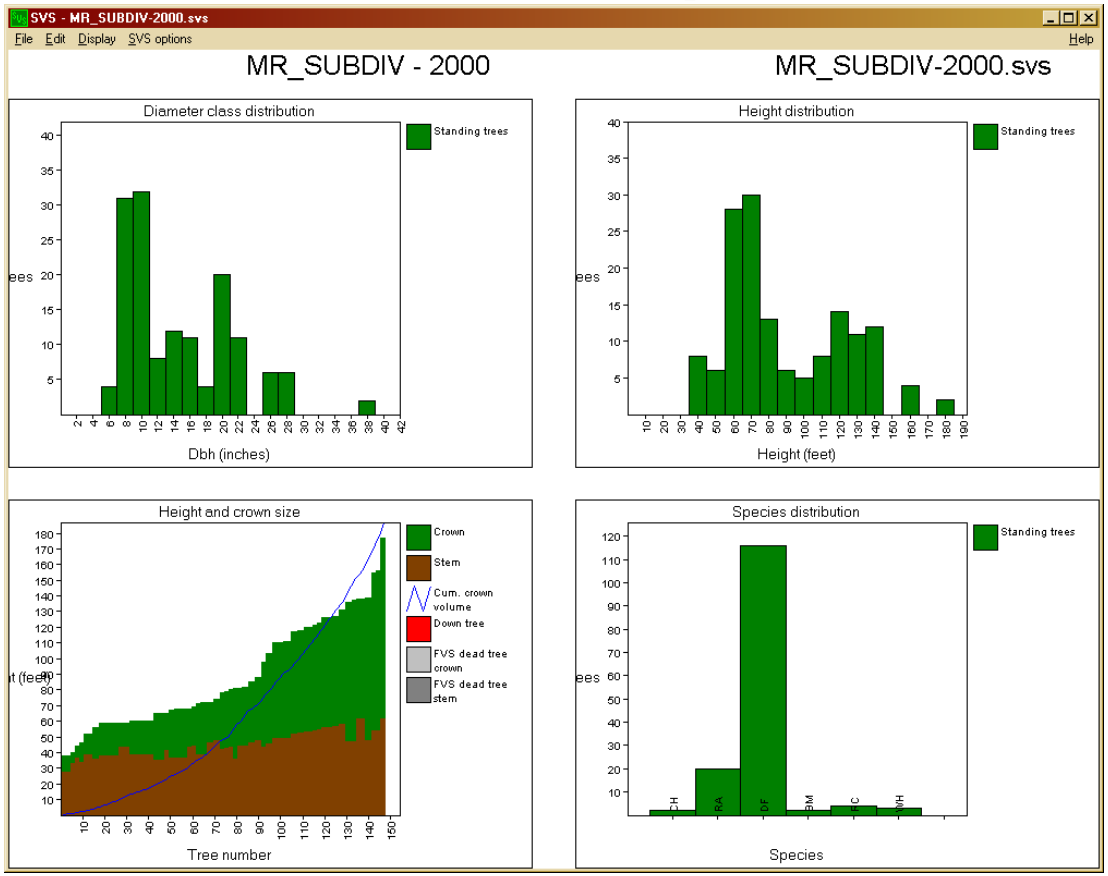
File Edit View Insert Format Tools Data Window Help Adobe PDF LMS

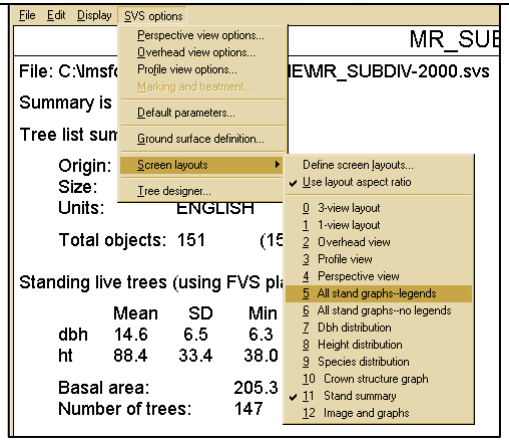
G11 0

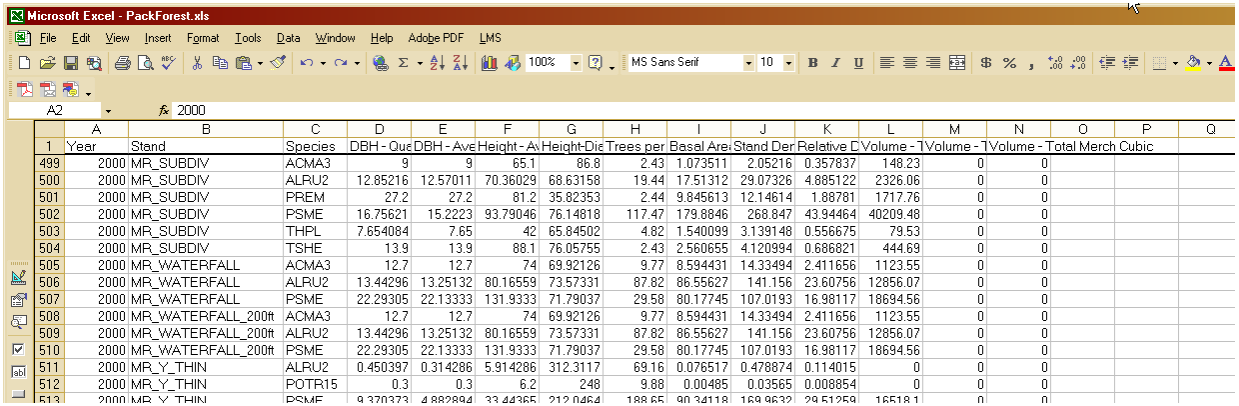
| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | Year | Stand | DBH - Quadratic Mean | DBH - Average | Height - Average | Height-Diameter Ratio | Trees per Acre | Basal Area |
| 172 | 2000 | MR_SUBDIV | 16.16593364 | 14.70452258 | 88.29237737 | 74.34644545 | 149.03 | 212.4175614 |
| 173 | 2000 | MR_WATERFALL | 15.8992236 | 15.27493906 | 91.73319179 | 72.8780224 | 127.17 | 175.3281454 |
| 174 | 2000 | MR_WATERFALL_200ft | 15.8992236 | 15.27493906 | 91.73319179 | 72.8780224 | 127.17 | 175.3281454 |
| 175 | 2000 | MR_WELL | 0 | 0 | 0 | 0 | 0 | 0 |
| 176 | 2000 | MR_Y_THIN | 7.869818493 | 3.533408047 | 25.32568643 | 239.277789 | 267.69 | 90.4225423 |
| 177 | 2000 | SE_1ST_COUG | 16.90130183 | 15.46072534 | 92.1233525 | 73.84598945 | 113.05 | 176.1270315 |

# SVS Graphs

Distributions of DBH, height, height and crown, and species are also available from SVS by selecting the “All stand graphs – legends” selection from the “Screen layouts” menu from the “SVS Options” drop-down. The spread between QMD and average DBH seen in the Summary table suggests a wide DBH distribution, as seen in the upper left graph. Species distribution by TPA in the Summary table is seen graphically in the lower right graph.



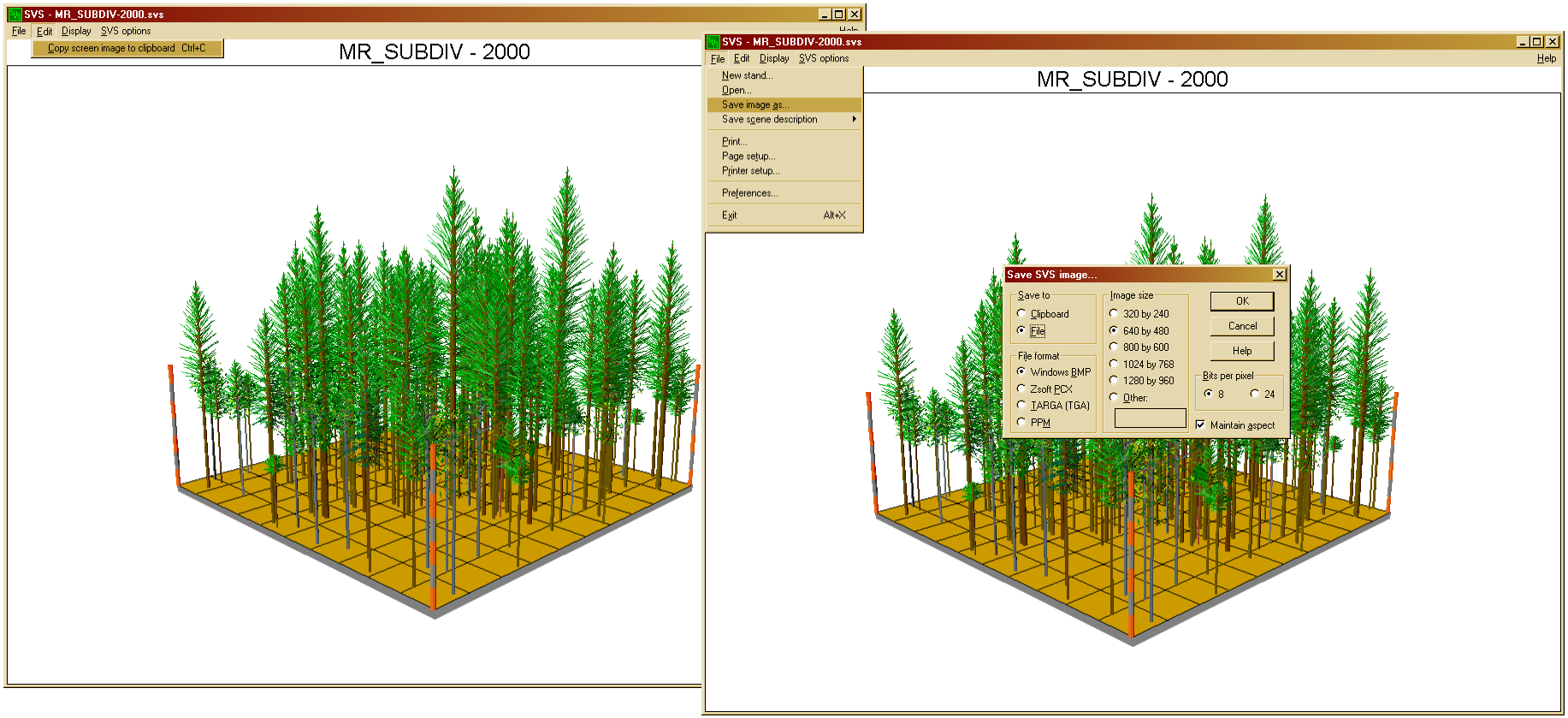




| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Year | Stand | Species | DBH - Qua | DBH - Ave | Height - A | Height-Die | Trees per | Basal Area | Stand Den | Relative D | Volume - T | Volume - T | Volume - Total Merch Cubic | | | |
| 499 | 2000 | MR_SUBDIV | ACMA3 | 9 | 9 | 65.1 | 86.8 | 2.43 | 1.073511 | 2.05216 | 0.357837 | 148.23 | 0 | 0 | | | |
| 500 | 2000 | MR_SUBDIV | ALRU2 | 12.85216 | 12.57011 | 70.36029 | 68.63158 | 19.44 | 17.51312 | 29.07326 | 4.885122 | 2326.06 | 0 | 0 | | | |
| 501 | 2000 | MR_SUBDIV | PREM | 27.2 | 27.2 | 81.2 | 35.82353 | 2.44 | 9.845613 | 12.14614 | 1.88781 | 1717.76 | 0 | 0 | | | |
| 502 | 2000 | MR_SUBDIV | PSME | 16.75621 | 15.2223 | 93.79046 | 76.14818 | 117.47 | 179.8846 | 268.847 | 43.94464 | 40209.48 | 0 | 0 | | | |
| 503 | 2000 | MR_SUBDIV | THPL | 7.654084 | 7.65 | 42 | 65.84502 | 4.82 | 1.540099 | 3.139148 | 0.556675 | 79.53 | 0 | 0 | | | |
| 504 | 2000 | MR_SUBDIV | TSHE | 13.9 | 13.9 | 88.1 | 76.05755 | 2.43 | 2.560655 | 4.120994 | 0.686821 | 444.69 | 0 | 0 | | | |
| 505 | 2000 | MR_WATERFALL | ACMA3 | 12.7 | 12.7 | 74 | 69.92126 | 9.77 | 8.594431 | 14.33494 | 2.411656 | 1123.55 | 0 | 0 | | | |
| 506 | 2000 | MR_WATERFALL | ALRU2 | 13.44296 | 13.25132 | 80.16559 | 73.57331 | 87.82 | 86.55627 | 141.156 | 23.60756 | 12856.07 | 0 | 0 | | | |
| 507 | 2000 | MR_WATERFALL | PSME | 22.29305 | 22.13333 | 131.9333 | 71.79037 | 29.58 | 80.17745 | 107.0193 | 16.98117 | 18694.56 | 0 | 0 | | | |
| 508 | 2000 | MR_WATERFALL_200ft | ACMA3 | 12.7 | 12.7 | 74 | 69.92126 | 9.77 | 8.594431 | 14.33494 | 2.411656 | 1123.55 | 0 | 0 | | | |
| 509 | 2000 | MR_WATERFALL_200ft | ALRU2 | 13.44296 | 13.25132 | 80.16559 | 73.57331 | 87.82 | 86.55627 | 141.156 | 23.60756 | 12856.07 | 0 | 0 | | | |
| 510 | 2000 | MR_WATERFALL_200ft | PSME | 22.29305 | 22.13333 | 131.9333 | 71.79037 | 29.58 | 80.17745 | 107.0193 | 16.98117 | 18694.56 | 0 | 0 | | | |
| 511 | 2000 | MR_Y_THIN | ALRU2 | 0.450397 | 0.314286 | 5.914286 | 312.3117 | 69.16 | 0.076517 | 0.478874 | 0.114015 | 0 | 0 | 0 | | | |
| 512 | 2000 | MR_Y_THIN | POTR15 | 0.3 | 0.3 | 6.2 | 248 | 9.88 | 0.00485 | 0.03565 | 0.008854 | 0 | 0 | 0 | | | |
| 513 | 2000 | MR_Y_THIN | PSME | 9.370373 | 4.882894 | 33.44365 | 212.0464 | 188.65 | 90.34118 | 169.9632 | 29.51259 | 16518.1 | 0 | 0 | | | |

# Capturing SVS Images

SVS images can be captured for use in other documents. The image can be copied to the clipboard by selecting the “Copy screen image to clipboard” from the Edit menu. The image can also be saved as an image file by selecting “Save image as” from the File menu then selecting “File” and file format from the Save SVS Image… dialogue. After clicking OK, a file browser will open and a file name and location can be entered.



# Section Summary