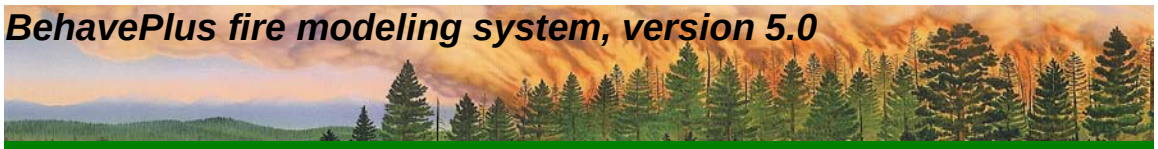


File Management Lesson **Operation Unit**

Introduction

Understanding BehavePlus file management helps with more effective use of the program. BehavePlus Workspaces store all files related to user-defined options in a single, portable format. This feature allows users to build a custom configuration for any program application and store all the relevant information to recreate analyses performed for a specific purpose such as a prescribed fire burn plan or a wildland fire behavior assessment. Workspaces are self-contained and can be shared among fire behavior analysts on a given incident and given to incoming teams during transition, making them ideal for ICS-based fire behavior prediction documentation. Daily fire behavior predictions can be run and stored for reference or modification at a later date.

Objectives

1. Describe the BehavePlus file structure.
2. Define the components of a workspace.
3. Create a new workspace.
4. Open an existing workspace.
5. Create and save files in a new workspace: worksheet, run, fuel model, and moisture scenario.
6. Use Microsoft Explorer® to move files within the BehavePlus fire structure.

Where This Lesson Fits In

File management and documentation is a key component of any fire behavior prediction operation. You can use BehavePlus with only the default Workspace and create subfolders to organize your files. Use of Workspaces, however, will help you keep track of your work and aid in documentation and sharing results.

This lesson includes the use of operational features covered in other lessons. The required Introduction lessons provide information on using Worksheets and calculating Runs. Optional modeling lessons cover the use of custom Fuel Models and Moisture Scenarios.

Lesson Changes: V4.0 to V5.0

Changes to the BehavePlus program required some minor changes to this lesson. We updated the headers and footers, but did not redo many of the screen captures labeled BehavePlus 4.0.0.

Installation

The default location for program installation on U.S. Forest Service computers is **C:/fsapps/fsprod/fam**. Otherwise the default location is **C:/Behave**.

You can install BehavePlus as you choose, however, it is suggested that you not install BehavePlus in the **Program Files** directory because of problems that may arise from permissions. When BehavePlus Version 4 is installed, the program creates a folder named BehavePlus4. All of the files needed to run the program are in that folder. Files that you create using the program are also saved there.

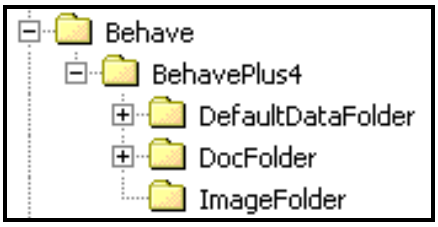
File Structure

BehavePlus has a prescribed file structure, and all files must be located in specific subdirectories. The parent directory of this file structure and all its subdirectories and files are known collectively as a Workspace.

We start by looking at the BehavePlus file structure.

- Use Microsoft Explorer® to open the BehavePlus4 folder by navigating to **C:/fsapps/fsprod/fam** or **C:/Behave**.

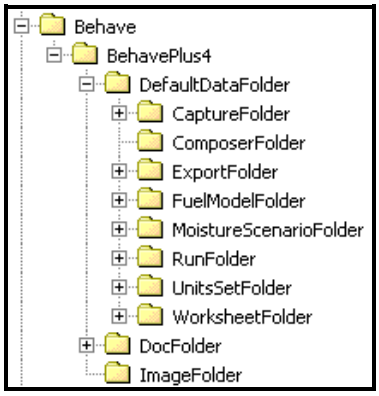
There are three subfolders in BehavePlus4.



Folders in BehavePlus

The folders **DocFolder** and **ImageFolder** contain material that the program requires for operation. The user need not be concerned with them. The folder called **DefaultDataFolder** easily could have been named “DefaultWorkspace” because that is exactly what it is.

- Expand the **DefaultDataFolder** to see the following.



File storage has been designed to be largely self-explanatory. Details about the various folders are included in the table below.

Folder Name	Command	Function
CaptureFolder	**File > Save as an image**	Images of table, graph, and diagram screens can all be saved as image files, which are stored here. They can be in one of three formats: .bmp, .jpg, .png.
ComposerFolder		This folder contains temporary files.
ExportFolder	**File > Export results**	Exporting results creates an HTML file in the ExportFolder that be viewed with a web browser, used in a web page, or modified in a spreadsheet application such as Microsoft Excel®.
FuelModelFolder	**File > Save as a fuel model > BehavePlus format**	Custom Fuel Models are saved to this folder or subfolders that you can create. (When Fuel Models are saved in FARSITE format they can not be used by BehavePlus and, therefore, should not be saved in the BehavePlus4 folder.)
MoistureScenarioFolder	**File > Save as a moisture scenario**	Custom Moisture Scenarios are saved in this folder, or in subfolders that you create. Values must be assigned to each size class, even those that are shaded.
RunFolder	**File > Save as a run**	Runs can be saved in this folder or in subfolders you create. A Run contains both the Worksheet and the defined input values. All variables must have valid values.
UnitsSetFolder	**Configure > Custom units preferences**	After creating a custom Units Set, you can save it to the UnitsSetFolder for future use.
WorksheetFolder	**File > Save as a worksheet**	Worksheet files can be saved in this folder or in subfolders you create. The Worksheet preferences are saved, but the values entered onto the Worksheet are not saved.

BehavePlus Extensions

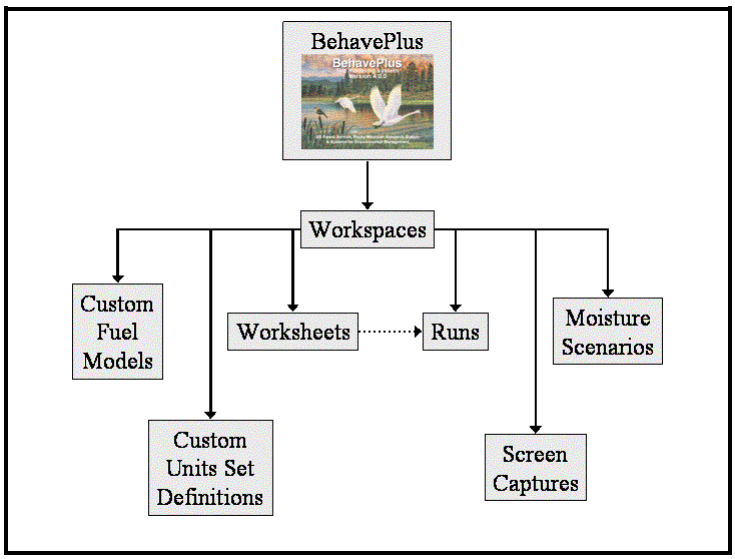
A list of three letter file extensions used by BehavePlus is shown in the following table.

Extension	Description
.bpf	BehavePlus custom Fuel Model
.bpm	BehavePlus Moisture Scenario
.bpw	BehavePlus Worksheet
.bpr	BehavePlus Run
.bpu	Behave Plus Units Set
.png	Portable network graphic image format
.bmp	Bitmap graphic image format
.jpg	JPEG graphic image format

These extensions are automatically appended to the files you create in BehavePlus, but understanding them can help you with your file naming and management.

The Anatomy of a Workspace

BehavePlus Workspaces store all user-defined files in a single, portable set of files that can be moved from location to location. Workspaces can be used to define a set of commonly used input Worksheets or document a model Run for a specific application such as a wildland fire behavior assessment or training session, in which each student can start from the same point, which may or may not be the default setup. In addition, Workspaces store Custom Units Sets, screen captures of graphs and tables, custom Fuel Model parameters and Moisture Scenarios.



A Workspace stores all the user-defined files in a single directory that can be shared between users. The dashed arrow between Worksheets and Runs indicates that Runs store both the Worksheet information and the data used for a particular set of conditions.

Cloning an Existing Workspace

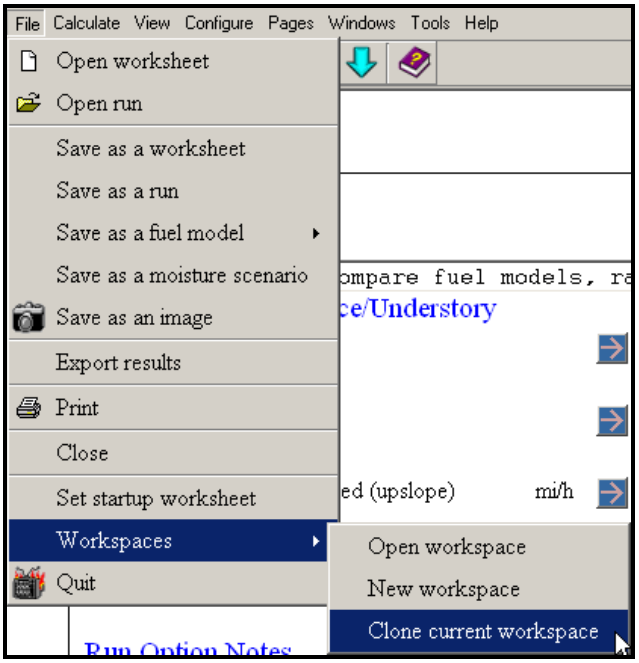
BehavePlus allows you to create a new Workspace from an existing one. This process is referred to as "cloning". Cloning will create an *identical* version of the existing Workspace under a new name. This Workspace will include a complete copy of the subdirectory tree containing all required BehavePlus files plus any additional Worksheet, Run, Fuel Model, Moisture Scenario, Units Set, or screen capture files you saved in the originating Workspace.

- Open BehavePlus.

Even if you didn't realize it, you have now opened a Workspace. The location of the Workspace in which you are working is found at the bottom of the BehavePlus screen. For the current screen, it should look similar to the following.

Now, clone this Workspace.

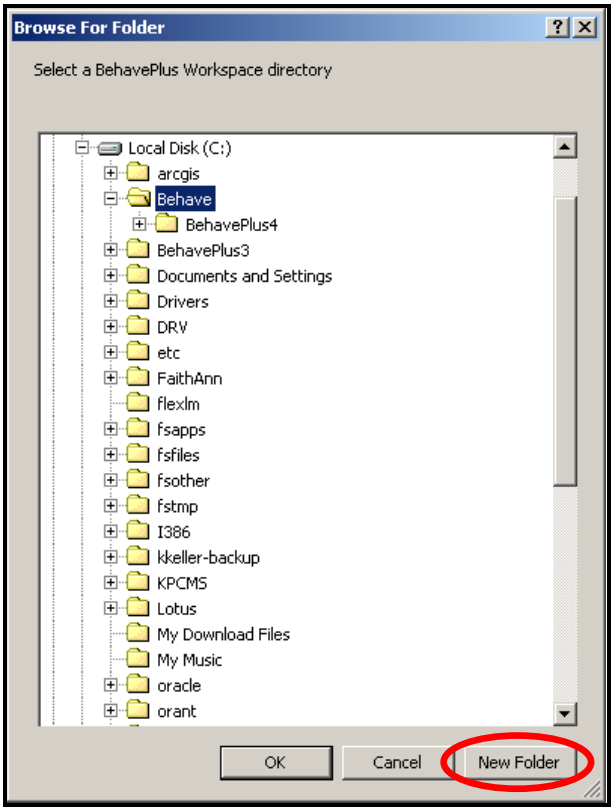
- Click **File > Workspaces > Clone current workspace**



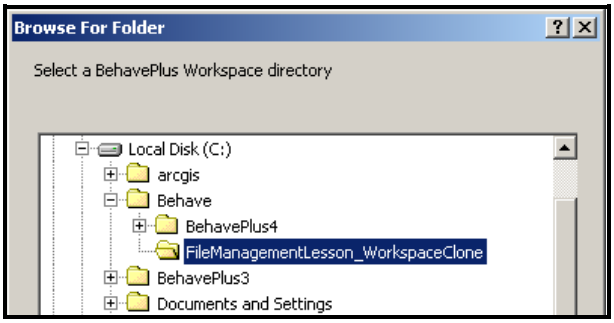
- Select a BehavePlus Workspace directory. We will save this Workspace to **C:/Behave**, although you may want to set up a different area on your computer to save your Workspaces.

***** Note: To avoid problems in the future, *always* save your new Workspaces in a separate folder. *****

- Click on **New Folder**.

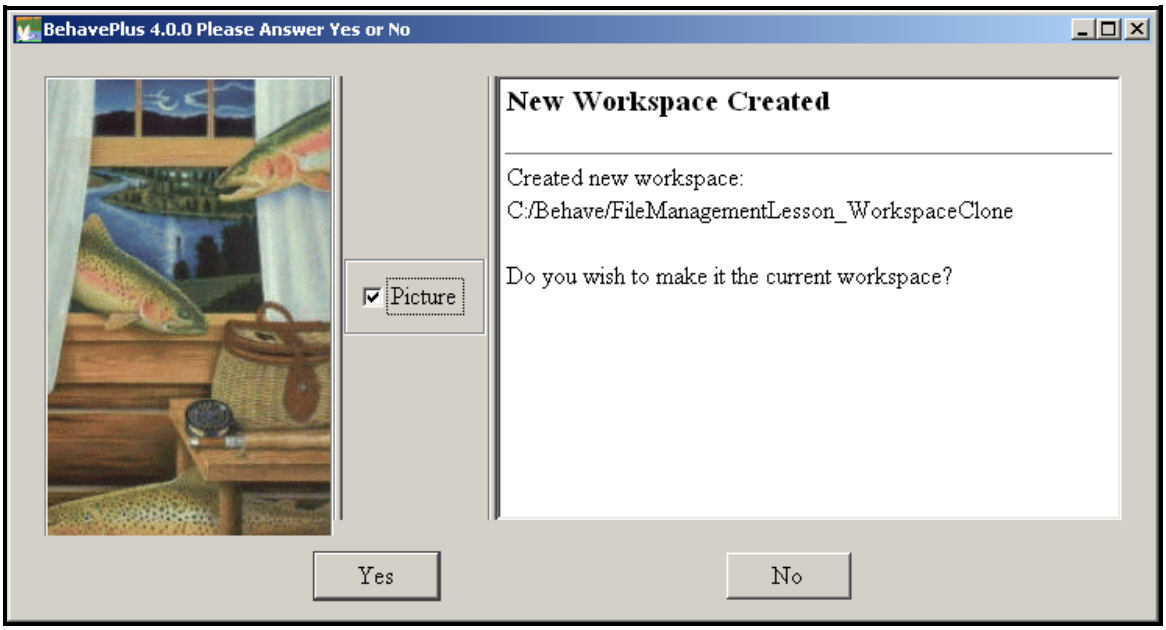


- When the New Folder appears in the **Browse for Folder** box, the cursor will blink at the end of the words **New Folder**. Type in the folder name 'FileManagementLesson_WorkspaceClone'.
- Click outside the text box to stop editing the name.
- Highlight the **FileManagementLesson_WorkspaceClone** folder, and click **Ok**.



BehavePlus will create the required Workspace directories and files. A Window will open called **Please Answer Yes or No** to make the newly created Workspace the *current* Workspace.

- Click **Yes**.



You are now working in the **new** Workspace. Notice that the Workspace location at the bottom of the screen has changed.

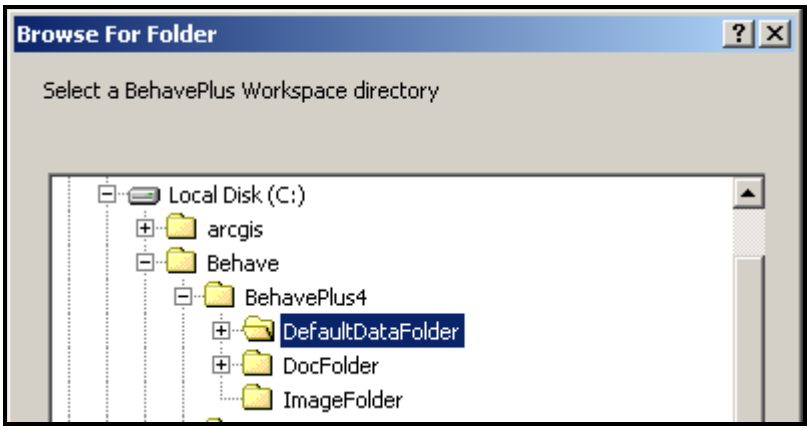
Opening an Existing Workspace

Now that we have cloned a Workspace, we want to return to the original one. There are two ways to do this. If you close BehavePlus and reopen it, you will return to the default Workspace. Conversely, you can use a more elegant approach.

To open a Workspace:

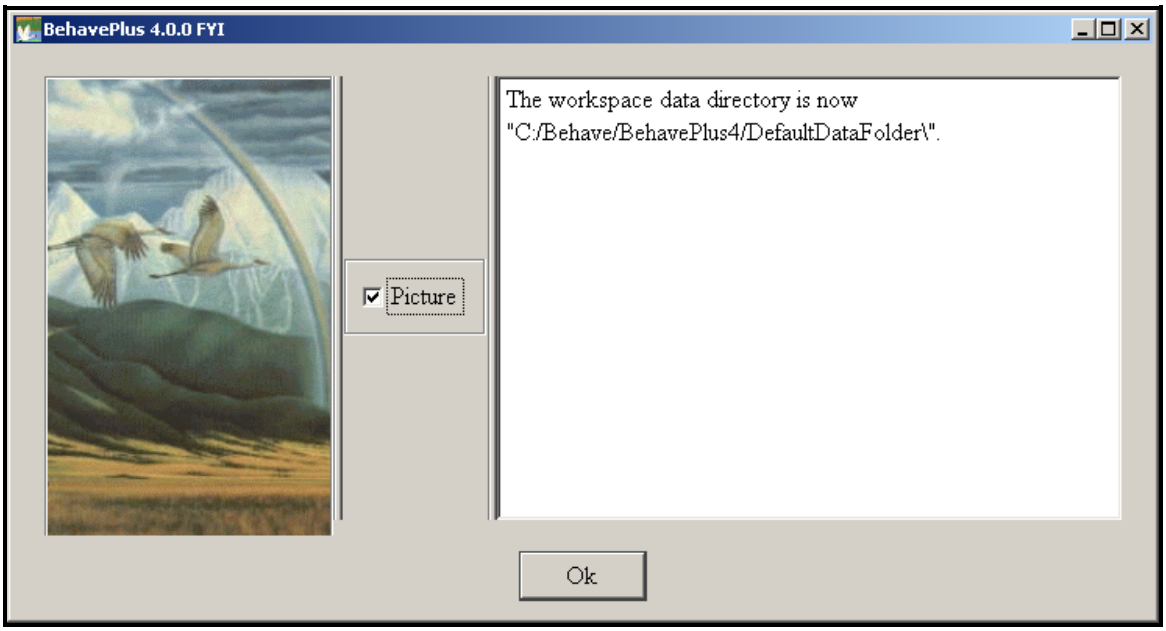
- Click on **File > Workspaces > Open workspace**.

- Navigate to and highlight the ***folder*** that contains the default Workspace. For U.S. Forest Service users, this will probably be **C:/fsapps/fsprod/fam/BehavePlus4**. For others, it will be C**:/Behave/BehavePlus4**. Highlight the folder called **DefaultDataFolder**.



- Click **Ok**.

BehavePlus will inform you that your Workspace has been changed.



- Click **Ok**.
- Notice that the Workspace location at the bottom of the screen has changed again to reflect the switch.

- Close BehavePlus.

Note: When you open BehavePlus, the default Workspace will ***always*** be the DefaultDataFolder Workspace.

Creating a New Workspace

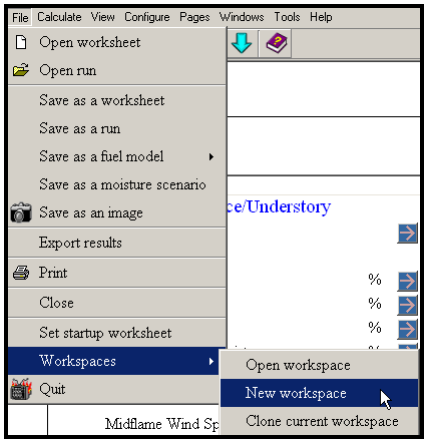
While you may want to clone a given Workspace that has specific characteristics (e.g., custom Fuel Models, custom Units Sets, etc.), you may also want to create a new one. A **cloned** Workspace contains *all* of the files of the original Workspace, including any additional files you have saved along the way. A **new** Workspace generates a "pristine" copy of the default files found in the **DefaultDataFolder** Workspace. Any custom files you have created in the **DefaultDataFolder** will *not* be transferred to the new Workspace. You may find it useful to create a new Workspace for every BehavePlus project you are working on as a way of tracking your projects.

- Start the BehavePlus program.
- Click **File > Open worksheet** or click on the **Open worksheet** button in the upper left-hand corner of the program window ( ).
- Open the **BasicStart.bpw** Worksheet.

The bottom of the window shows the Workspace.

To create a new Workspace:

- Click on **File > Workspaces > New workspace**.



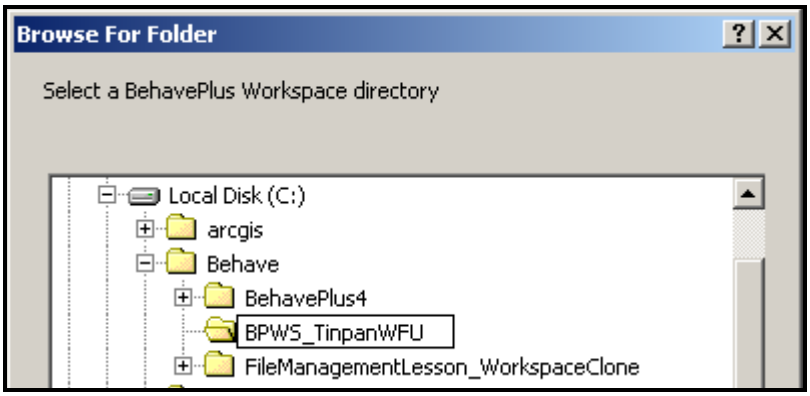
A file navigation dialog box (**Browse For Folder**) will appear.

- Navigate to the location that you would like to store the Workspace (**C:/Behave**).
- Push the **New Folder** button.

We recommend using a file name that indicates that a particular directory is a BehavePlus Workspace. For example, use the name BPWS_<FireName> or some equivalent naming scheme, where BPWS denotes that it is a **B**ehave**P**lus **W**ork**S**pace.

Be careful!! Be sure to give the new Workspace a different folder name. Do not create a new Workspace in an existing folder that is already in use (has other files in it).

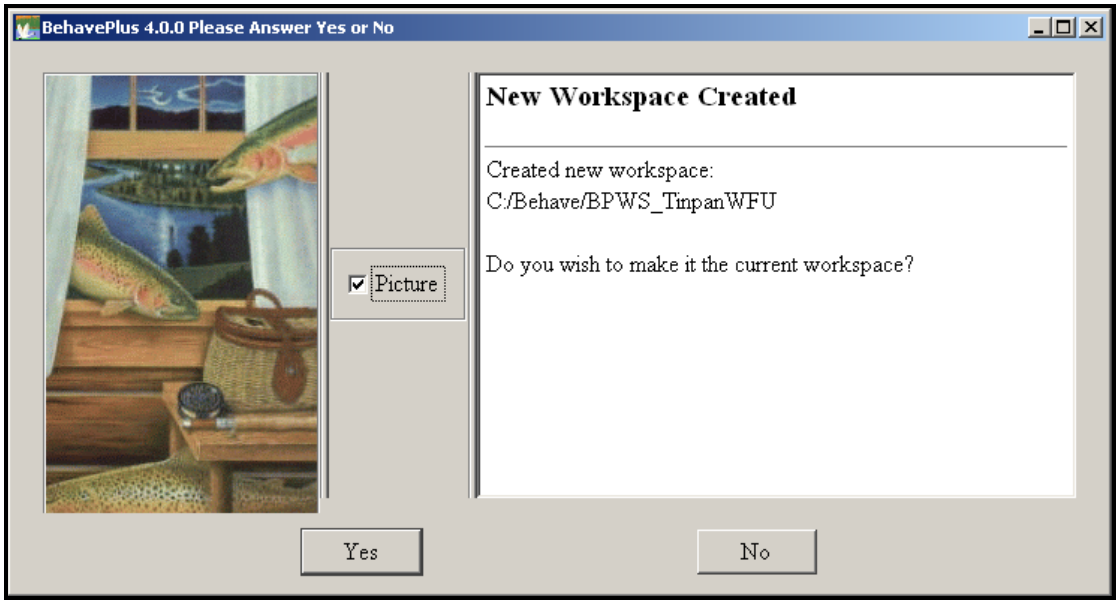
- Type "BPWS_TinpanWFU" as the name of the new folder.



- Click **Ok** to create the new Workspace.

As before, BehavePlus prompts you to make the newly created Workspace the current Workspace.

- Click **Yes**.



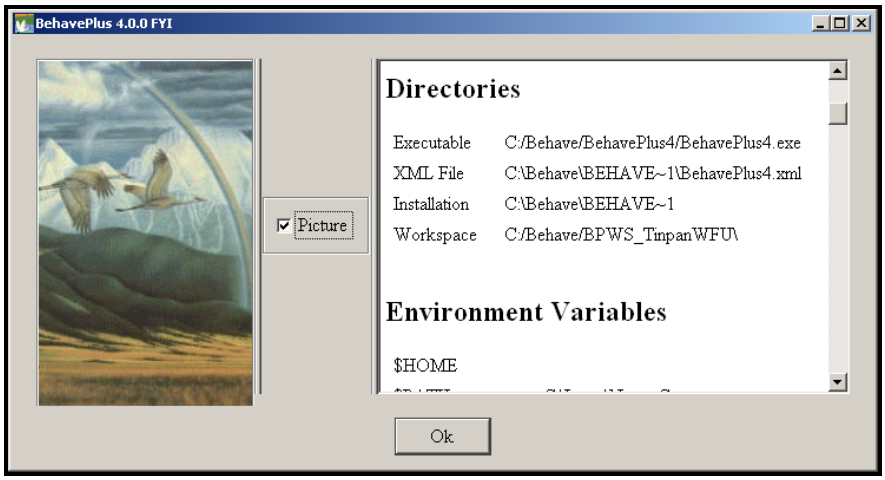
- Click **Yes** to use the new Workspace

Look at the bottom of the window to see the current Workspace.

Workspace C:\Behave\BEHAVE~1\DefaultDataFolder\ (Page 1 of 1)

There is a second way to verify the name of the current Workspace.

- Click on **Help > Installation Info**.
- Scroll down to **Directories**.



You are now in the New Workspace!

Creating Files in the New Workspace

We have just created a new Workspace called **BPWS_TinpanWFU**. We will now look at different folders in and create new files for this Workspace.

As a reminder of the folders and their purpose, we are recopying portions of the table from the beginning of the lesson with the Folder Names sorted according to the order in which we will address them. We will develop files in the new Workspace for a Worksheet, a Run, a Fuel Model, and a Moisture Scenario.

Folder Name	Command	Function
WorksheetFolder	**File > Save as a worksheet**	Worksheet files can be saved in this folder or in subfolders you create. The Worksheet preferences are saved, but values entered onto the Worksheet are not saved.
RunFolder	**File > Save as a run**	Runs can be saved in this folder or in subfolders you create. A Run contains both the Worksheet and the defined input values. All variables must have valid values.
FuelModelFolder	**File > Save as a fuel model > BehavePlus format**	Custom Fuel Models are saved to this folder or subfolders that you can create. (When Fuel Models are saved in FARSITE format they can not be used by BehavePlus and should therefore not be saved in the BehavePlus4 folder.)
MoistureScenarioFolder	**File > Save as a moisture scenario**	Custom Moisture Scenarios are saved in this folder, or in subfolders that you create. To save a Moisture Scenario, you must make sure the SURFACE module is selected and the individual size class check box is selected. Values must be assigned to each size class, even those that are shaded.

***** Note: If you need to close BehavePlus at any point during the remainder of this lesson, to continue you must *open* the Workspace called** BPWS_TinpanWFU**, which contains the correct files. *****

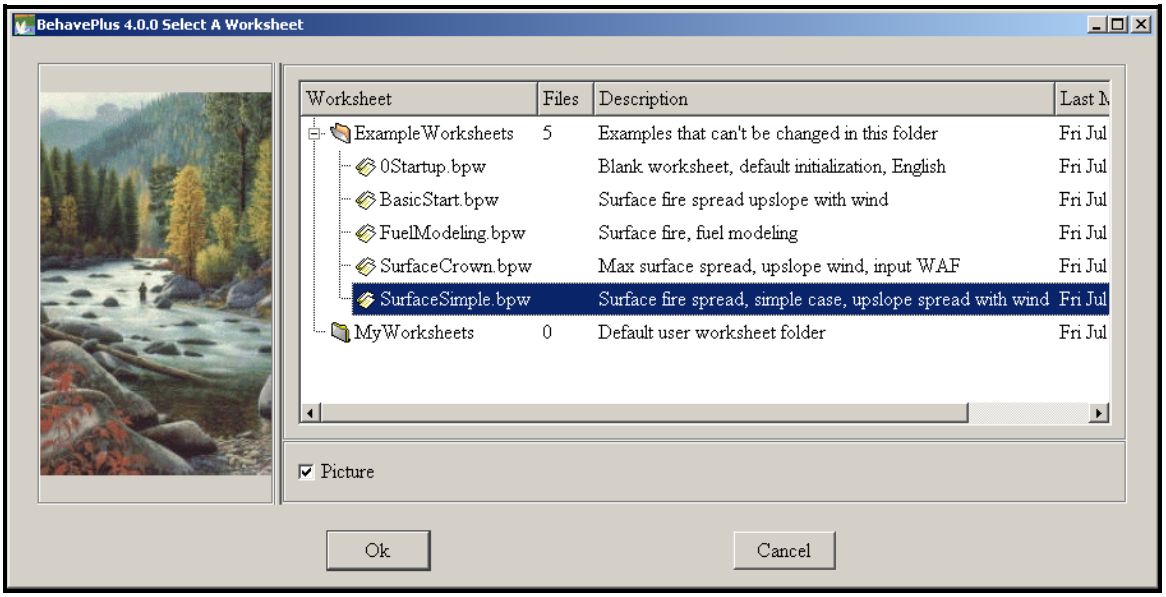
Worksheet Folder

A Worksheet is based on selected input options and output variables. It does not store the input values. Worksheets are stored in the folder called **WorksheetFolder** in the current Workspace.

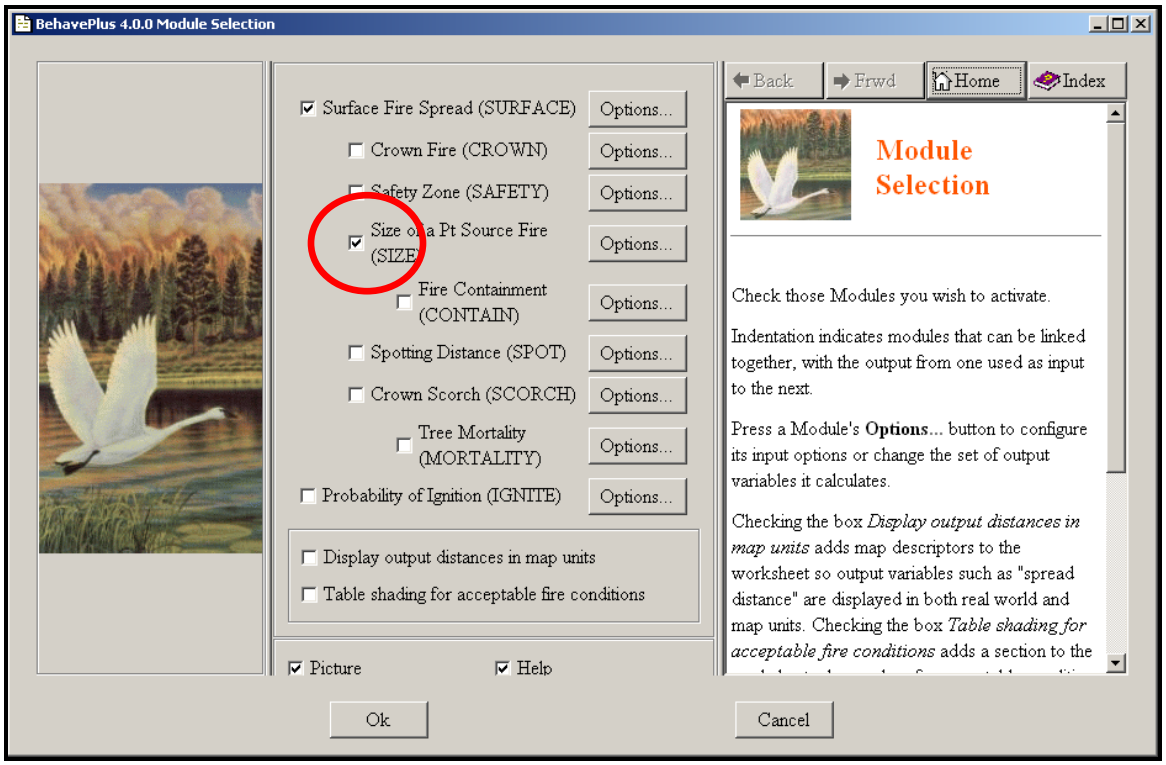
We will open one of the example Worksheets that come with program, alter it, and save it in the new Workspace. The Example Worksheets are available in all Workspaces.

- Click **File > Open worksheet** or click on the **Open worksheet** button in the upper left-hand corner of the program window ( ).

- Click on the ⊞ next to **ExampleWorksheets**.
- Click on the Select the **SurfaceSimple.bpw** Worksheet.

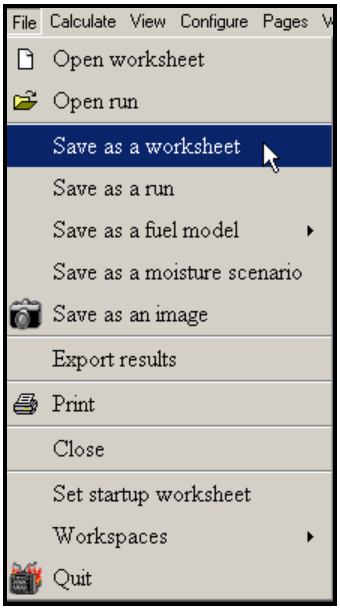


- Click **Ok**.
- Click on **Configure > Module selection** or the Module Selection button ( ).
- Check the box by the **SIZE module**.

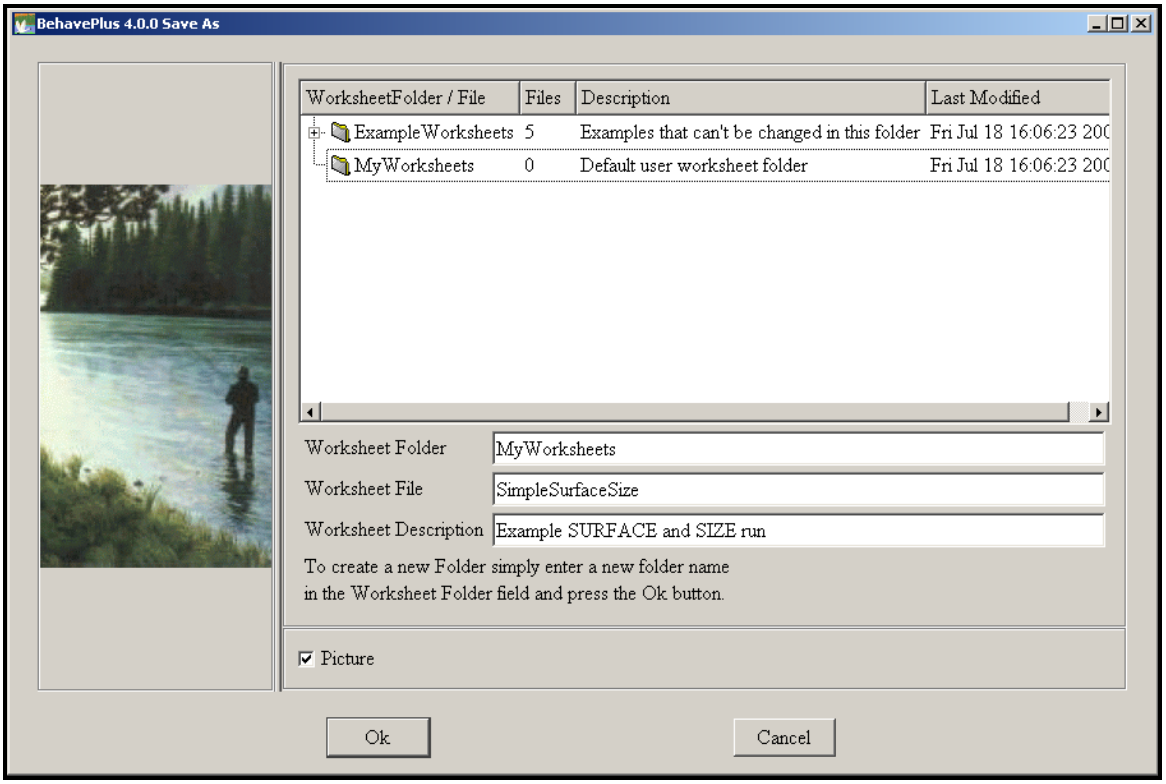


- Click **Ok**.

- Click **File> Save as a worksheet**.

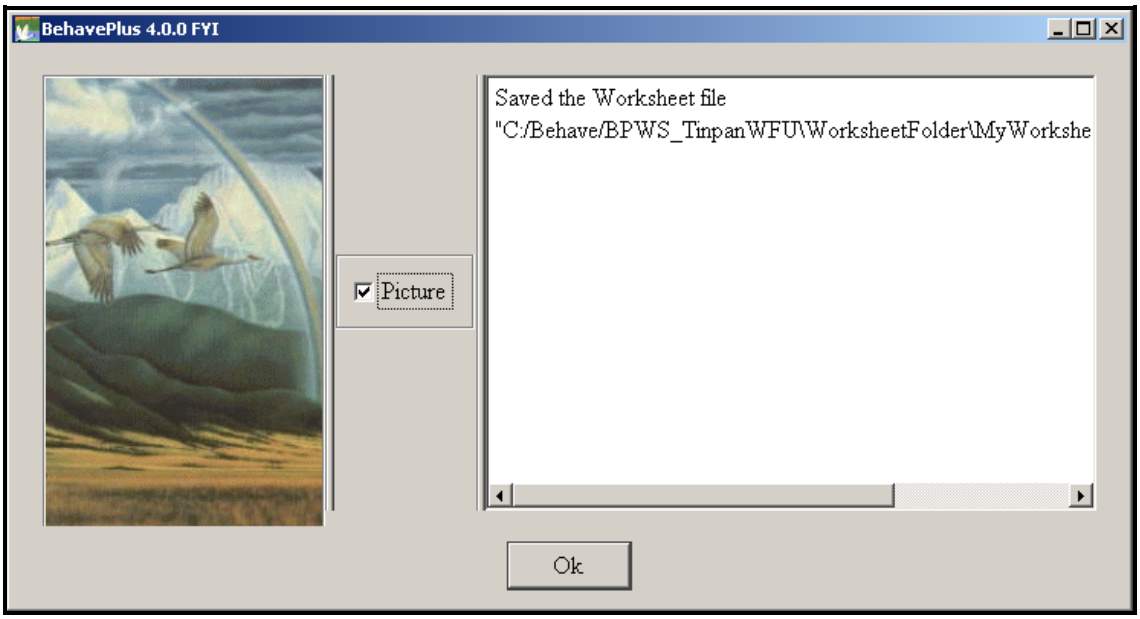


- We will store the Worksheet in the folder marked **MyWorksheets**.
- Type 'SimpleSurfaceSize' in the **Worksheet File** box.
- Enter the description as shown below.



- Click **Ok** to save the Worksheet.

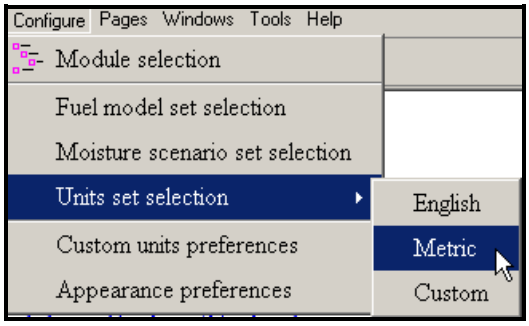
Question: In which Workspace is the Worksheet found?
Hint: Look in the **FYI** confirmation box.



- Click **Ok** to confirm creation of the new Worksheet.

Since you will need a second Worksheet later in this lesson, let's save a version of this Worksheet with metric units.

- Click to **Configure > Units set selection > Metric**.



Look at the units in the Worksheet; they are now metric.

- Save this Worksheet as 'SimpleSurfaceSize_metric'.
- Type 'Example SURFACE and SIZE run - metric' in the **Worksheet Description**.

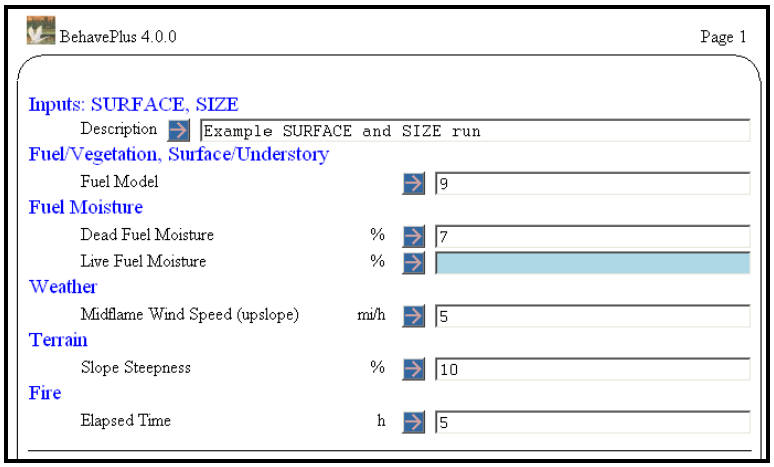
- Close the Worksheet.

Run Folder

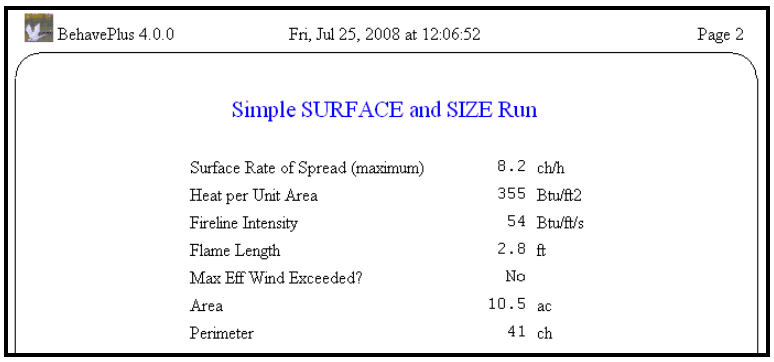
In contrast to the Worksheet, the Run stores *both* the configuration of the Worksheet and the input data used for a particular calculation. Runs are useful when you need to be able to quickly reproduce the results of a particular analysis. If you store a completed Worksheet as a Run, you simply need to open the Run and click the **Calculate** button to reproduce the results.

- Open the Worksheet entitled **SimpleSurfaceSize.bpw**.

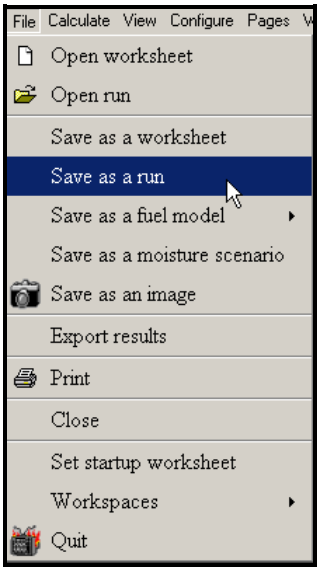
- Fill in the Worksheet as follows:



- **Calculate** the Run to make sure you have what you want. Recall that the answers are not stored when you save a Run.

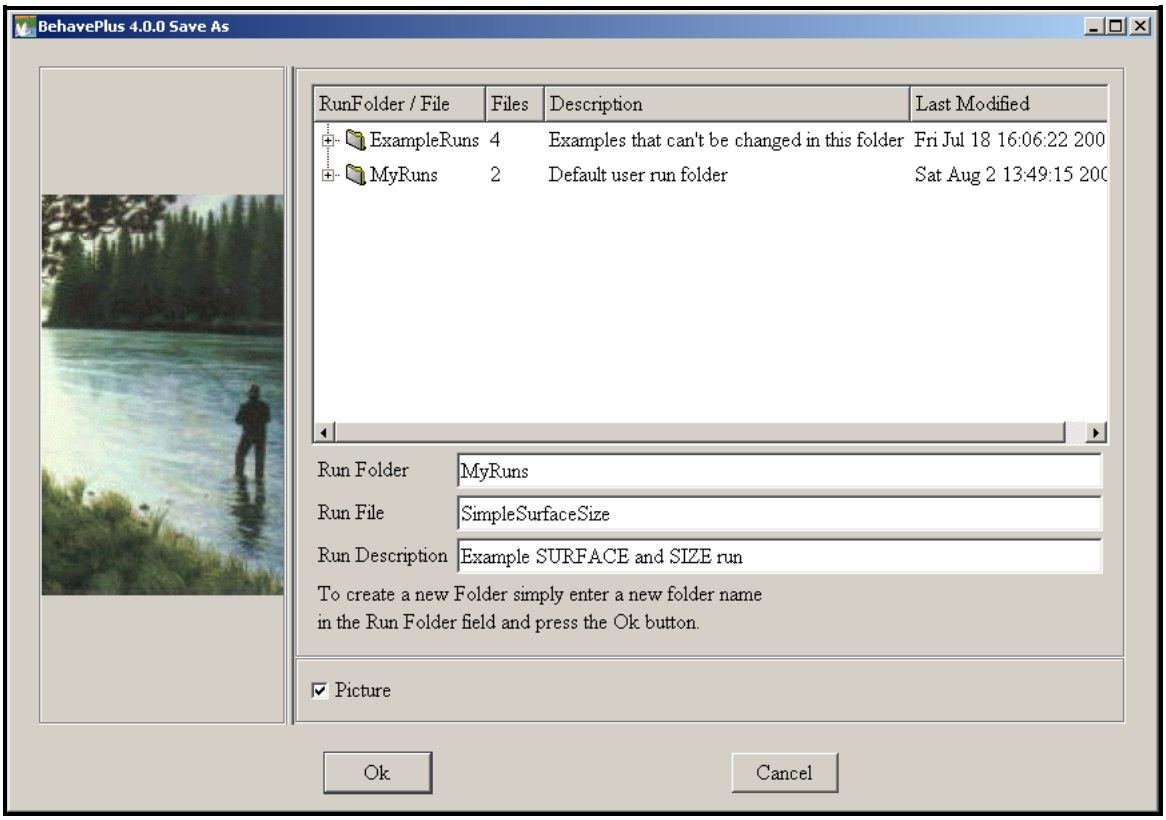


- Click **File > Save as a run**.



The default folder for saving Runs is **MyRuns**, which is where we will store this Run.

- Type "SimpleSurfaceSize" in the **Run File** box.
- The **Run Description** comes from the **Description** box on the Worksheet.



- Click **Ok** to save the Run.
- Click **Ok** to verify the location of the saved Run.

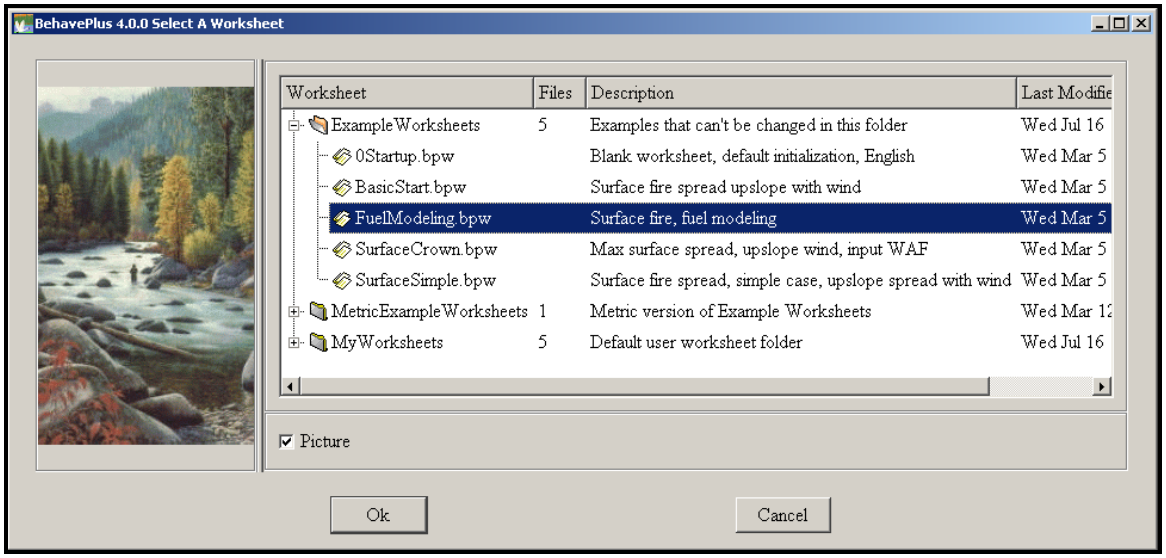
This will store the new Run under your current Workspace (**BPWS_TinpanWFU**).

Fuel Model Folder

BehavePlus allows users to store custom Fuel Models in the current Workspace in a folder called **FuelModelFolder**.

We will create a simple custom Fuel Model.

- Open the **FuelModeling.bpw** Worksheet from the **ExampleWorksheet** folder.

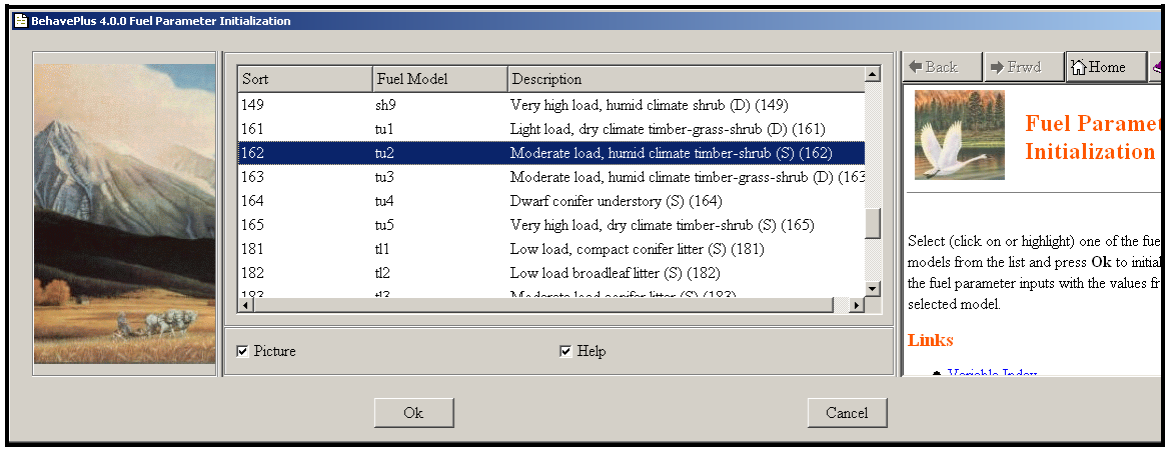


This Worksheet is configured to allow the entry to Fuel Model parameters which can be saved as a custom Fuel Model.

We will start with one of the standard Fuel Models and change parameters to create a custom Fuel Model.

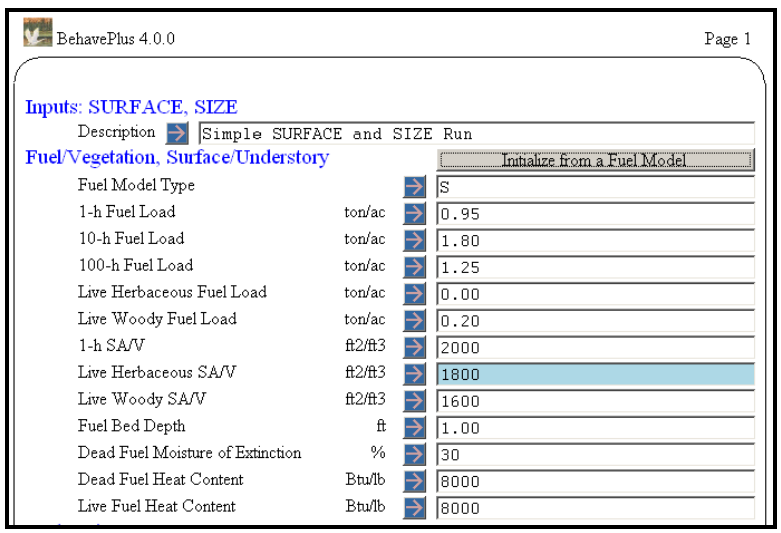
- Click on **Initialize from a Fuel Model**.

- Select Fuel Model “tu2” as shown below:



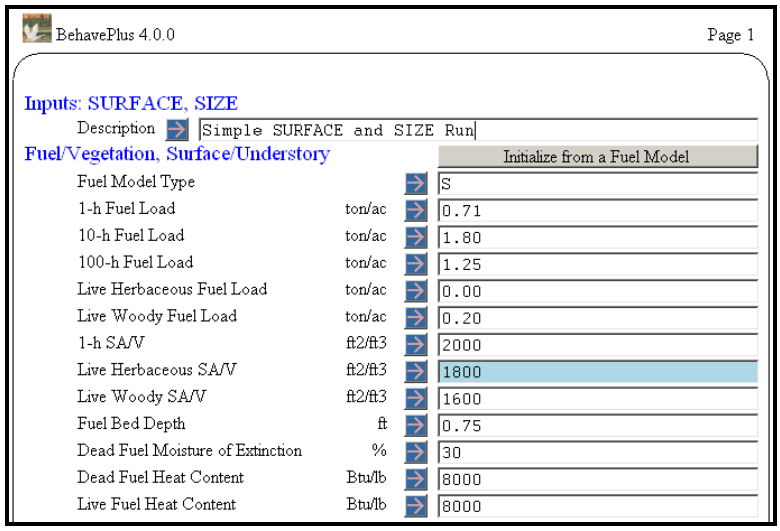
- Click **Ok**.

The fuel parameters are assigned as shown below for Fuel Model tu2:



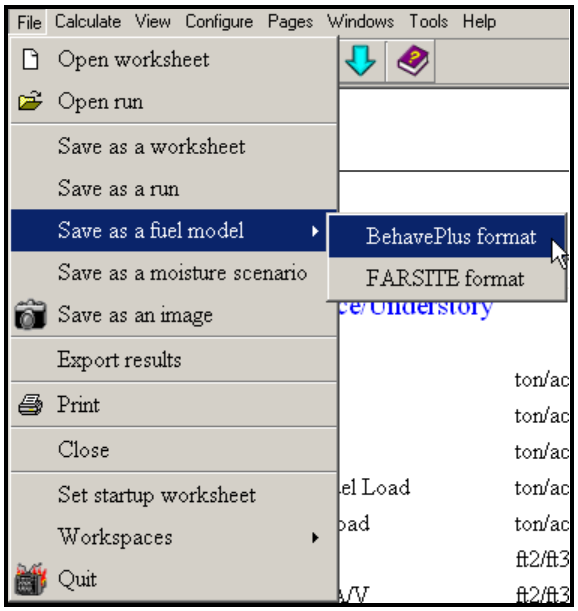
We will enter a 1-h Load and Fuel Bed Depth that are ¾ of the original values.

- Change the Fuel Bed Depth from 1.00 to 0.75.
- Change the 1-h Fuel Load from 0.95 to 0.71.



Recall that there is much more to developing a custom Fuel Model than this. This is a first step, which would be followed by testing and evaluation.

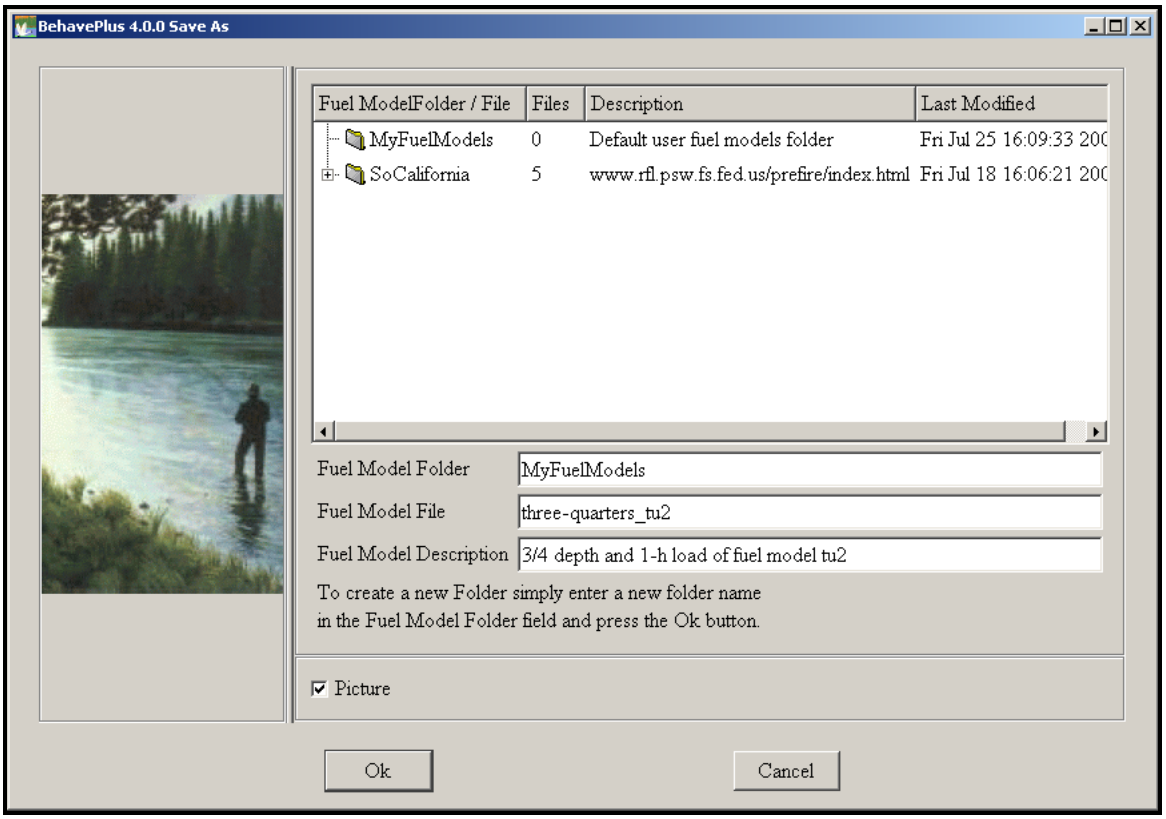
- Click on **File > Save as a fuel model > BehavePlus format**.



By default, the Fuel Model will be saved in **MyFuelModels**. You can save your Fuel Models in whichever folder you prefer, but in this example, we will use the default folder.

- Type “three-quarters_tu2” in the **Fuel Model File** field.

- Type “3/4 depth and 1-h load of fuel model tu2” in the **Fuel Model Description** field.



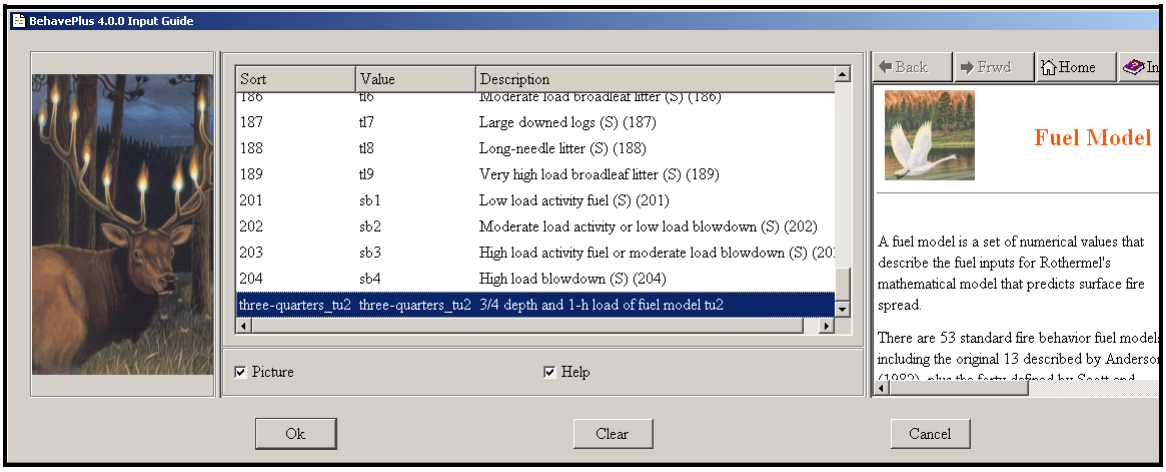
- Click **Ok**.

A window will open verifying that the new Fuel Model has been saved.

- Click **Ok**.
- Close the Worksheet.

- Reopen the Run entitled **SimpleSurfaceSize.bpr**.
- Click on the Guide button ( ) next to **Fuel Model**.

- Scroll to the bottom of the list and click on **three-quarters_tu2**.



- Click **Ok**.

- Type in "200" for Live Fuel Moisture.
- Click on **File > Save as a run**.
- Change the **Run File** to "SimpleSurfaceSize_Mod".
- Click **Ok** twice.

We will now examine the effects of our changes to the Fuel Model on the calculated fire behavior by comparing the original and the adjusted Fuel Model tu2.

- Click on the guide button by **Fuel Model**.
- Select (Highlight) both **tu2** and **three-quarters_tu2** (You can select multiple Fuel Models by clicking one time on each model separately. The currently selected models will be highlighted in blue.).
- Click **Ok**.

- **Calculate** the Run. Notice that the table of outputs spans two pages.

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Example SURFACE and SIZE run

Fuel Model	ROS (max) ch/h	Heat per Unit Area Btu/ft2	Fireline Intensity Btu/ft/s	Flame Length ft	Max Wind Exceeded	Fire Area ac >
tu2	9.7	387	69	3.2	No	90.8
three-quarters_tu2	5.7	342	36	2.3	No	31.6

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Example SURFACE and SIZE run

Fuel Model	Fire Perimeter ch
tu2	104
three-quarters_tu2	60

Changing the two Fuel Model parameters (1-h Load and Fuel Bed Depth) made a large difference in the calculated Surface Rate of Spread and Fire Perimeter.

Do not close the Worksheet. We will continue using it in the next section of the lesson.

Note: If you have to close BehavePlus prior to continuing this lesson, you will need to *attach* the Fuel Model folder called MyFuelModels before continuing.

To do this:

- Click on **Configure > Fuel model set selection**.
- Highlight the folder called **MyFuelModels**.
- Click **Ok**.

This will <u>attach the custom Fuel Models</u> that you have created in this folder of the Workspace.

Moisture Scenario Folder

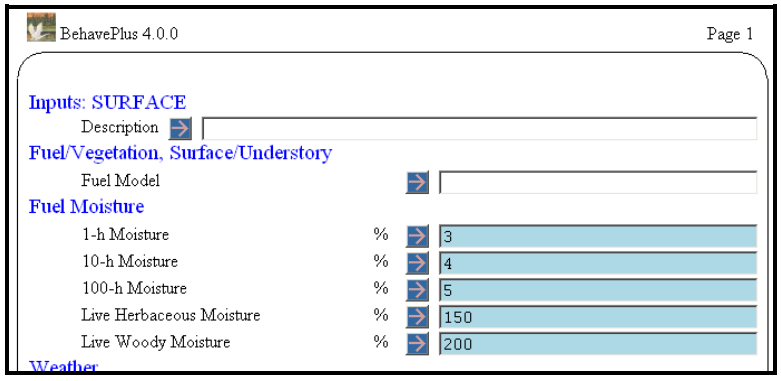
BehavePlus allows the user to save a set of moisture conditions that can easily be used in multiple model Runs. These are called Moisture Scenarios. When using this option, the user does not have to enter individual fuel moisture values but rather selects a fuel Moisture Scenario from a list that describes the fuel moistures of all fuel classes and categories.

We will now create and save a Moisture Scenario.

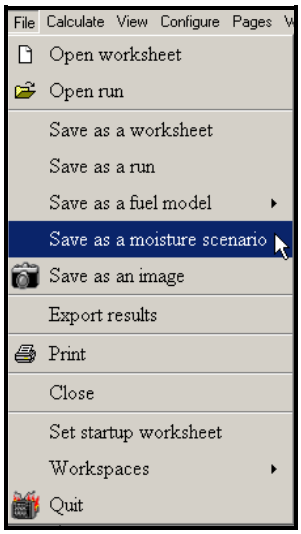
- Open the **BasicStart.bpw** Worksheet. (leave **SimpleSurfaceSize_Mod.bpr** open)

Notice that the fuel moisture lines are blue because a Fuel Model has not been entered. Moisture Scenarios require values for *all* fuel moisture values, whether or not they are used in a given Fuel Model. Therefore, we will fill in all five values.

Enter values for each of the Fuel Moisture variables as follows. It is not necessary to enter values for the other input variables.



- Go to **File > Save as a moisture scenario**.



Save the Moisture Scenario in the folder called **MyMoistureScenarios**. You can also create a new folder if you would like.

- Enter inputs as follows:

Moisture Scenario Folder	MyMoistureScenarios
Moisture Scenario File	Spring
Moisture Scenario Description	Spring(3,4,5,150,200)

It is a good practice to include the values in the name for easy reference. Recall that the Moisture Scenario names are listed with the codes on the last page of a Run.

- Click **Ok**. You will receive confirmation that the Moisture Scenario was created.

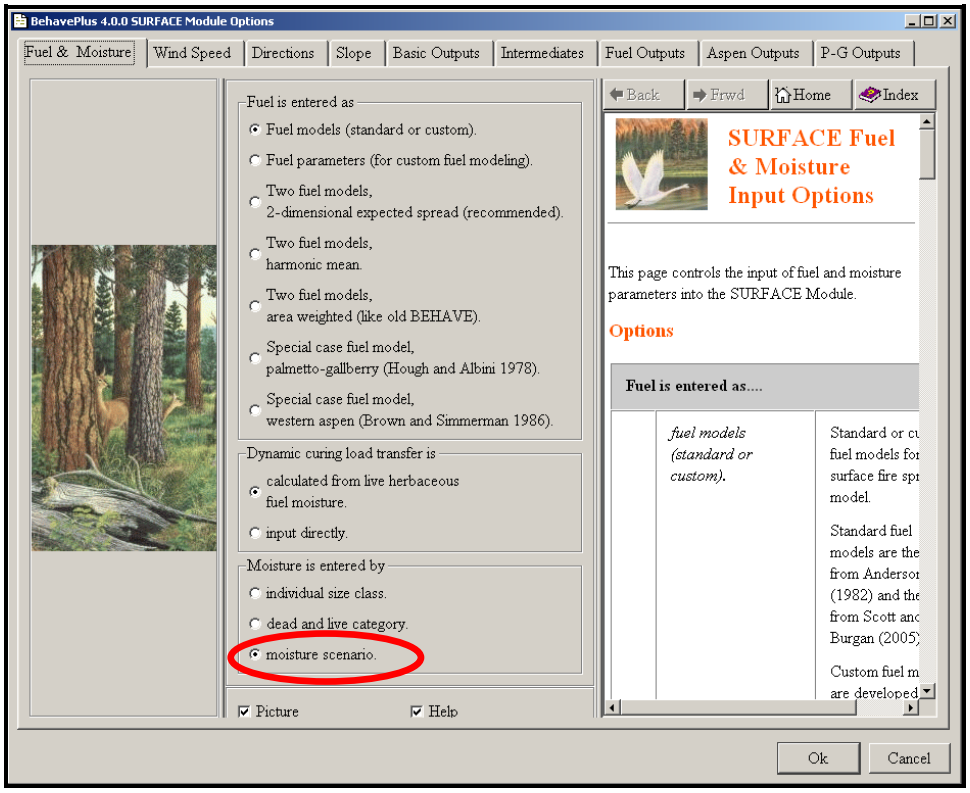
Note: It is recommended that you enclose the fuel moisture values in parenthesis that are saved in the Moisture Scenario in the **Moisture Scenario Description** box. For example, a typical Moisture Scenario description might end with "(3,4,5,30,60)". This would indicate the fuel moisture values (%) for 1-h, 10-h, 100-h, live herbaceous, and live woody fuels respectively.

- Close the **BasicStart.bpw** Worksheet

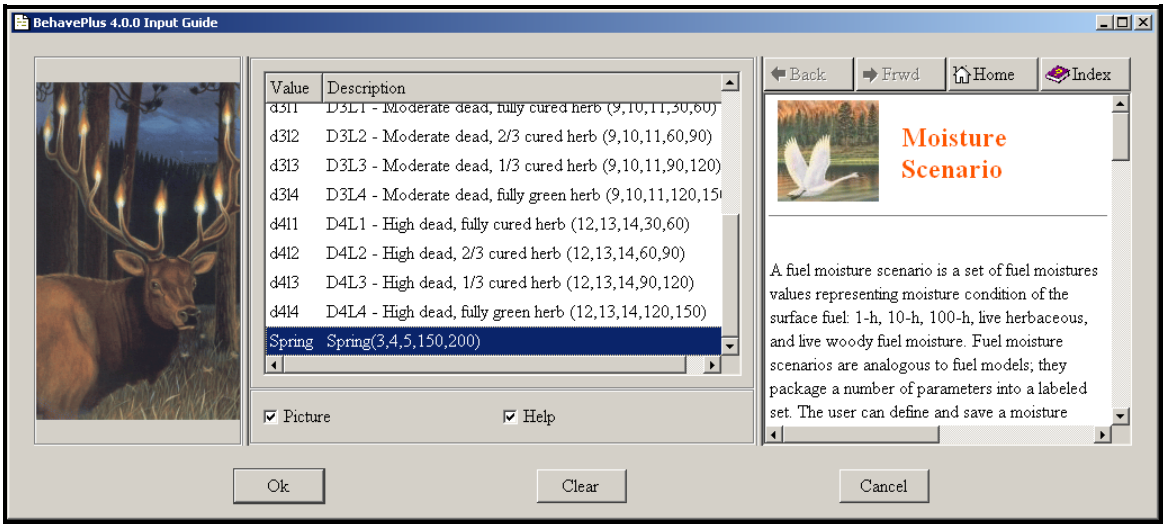
The previously used Worksheet should still be available. If it isn't, reopen **SimpleSurfaceSize_Mod.bpr** before continuing.

- Click on **Module Selection > SURFACE Options…**.
- Go to the **Fuel & Moisture** tab.

- Change the radio button for **Moisture is entered by** to **moisture scenario**.



- Click **Ok** twice.
- Click on the guide button by **Moisture Scenario**.
- Scroll down the list and select the new **Spring** Moisture Scenario.



- Click **Ok**.
- Calculate the Run.

The results should look as follows.

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Example SURFACE and SIZE run

Fuel Model	ROS (max) ch/h	Heat per Unit Area Btu/ft2	Fireline Intensity Btu/ft/s	Flame Length ft	Max Wind Exceeded	Fire Area ac
tu2	10.8	460	91	3.6	No	111.7
three-quarters_tu2	6.1	403	45	2.6	No	36.1

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Example SURFACE and SIZE run

Fuel Model	Fire Perimeter ch
tu2	133
three-quarters_tu2	76

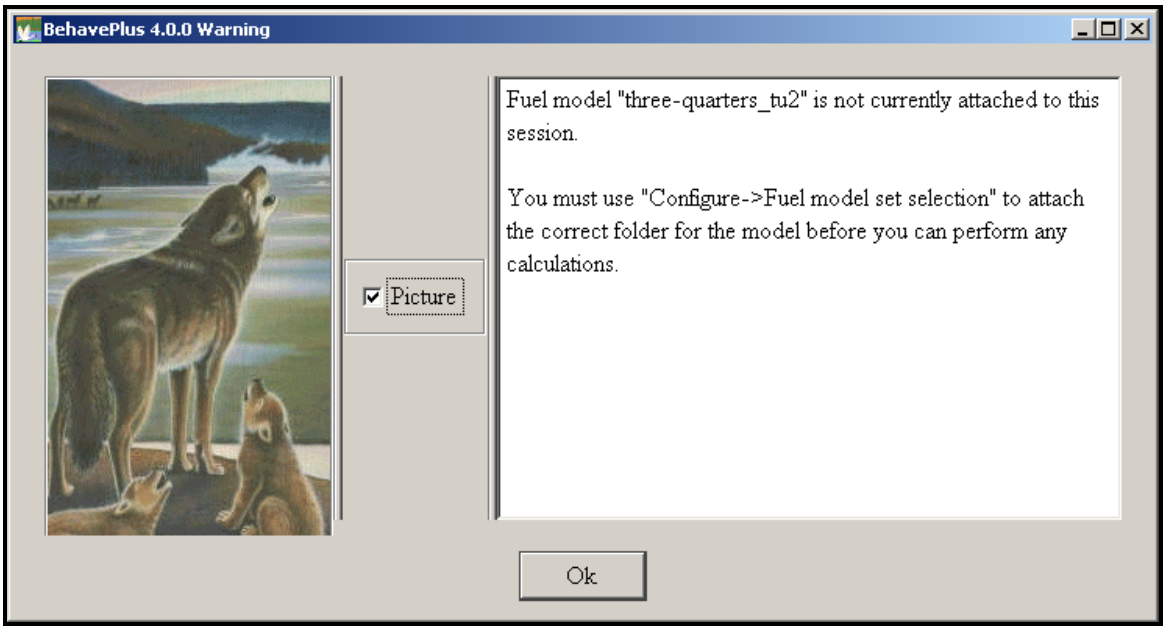
- Save this Run as **SimpleSurfaceSize_Mod2.bpr.**
- Close BehavePlus.

Using the New Workspace

In this lesson you created custom Fuel Models and Moisture Scenarios. When you want to use them in future BehavePlus Runs, you must attach the appropriate folders to the current session. These files were saved in a different Workspace than the default, so you *must* migrate to that Workspace. Fortunately, BehavePlus will inform you when these files are missing.

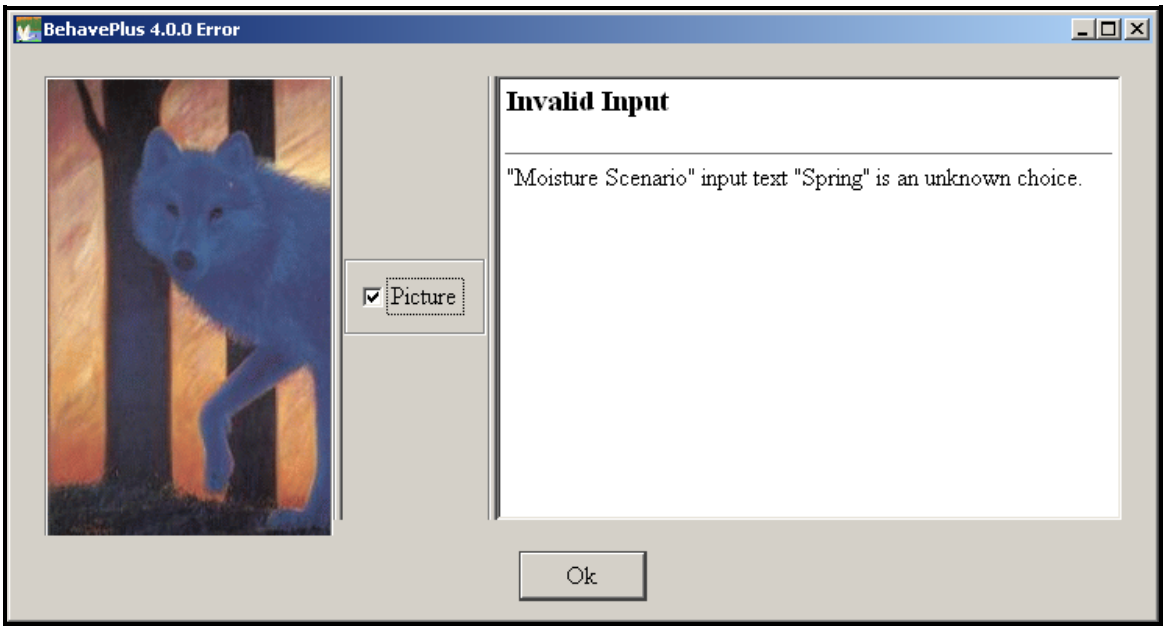
- Open BehavePlus.
- Open the Workspace entitled **BPWS_TinpanWFU**.
- Open the Run entitled **SimpleSurfaceSize_Mod2.bpr**.

You should receive a warning window stating that "**Fuel model "three-quarters_tu2" is not currently attached to this session**".



- Attach the Fuel Models in the folder **MyFuelModels** (**Configure > Fuel model set selection**; highlight the correct folder; and click **Ok**).
- Calculate the Run.

You should receive an Error window stating that "**'Moisture Scenario' Input text 'Spring' is an unknown choice.**"



- Click **Ok**.

- Attach the Moisture Scenarios in the folder called **MyMoistureScenarios** (**Configure > Moisture scenario set selection**; highlight the correct folder; and click **Ok**).
- Calculate the Run again.
- Click **Ok**.
- The results will be the same as those in the previous section.

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Example SURFACE and SIZE run

Fuel Model	ROS (max) ch/h	Heat per Unit Area Btu/ft2	Fireline Intensity Btu/ft/s	Flame Length ft	Max Wind Exceeded	Fire Area ac
tu2	10.8	460	91	3.6	No	111.7
three-quarters_tu2	6.1	403	45	2.6	No	36.1

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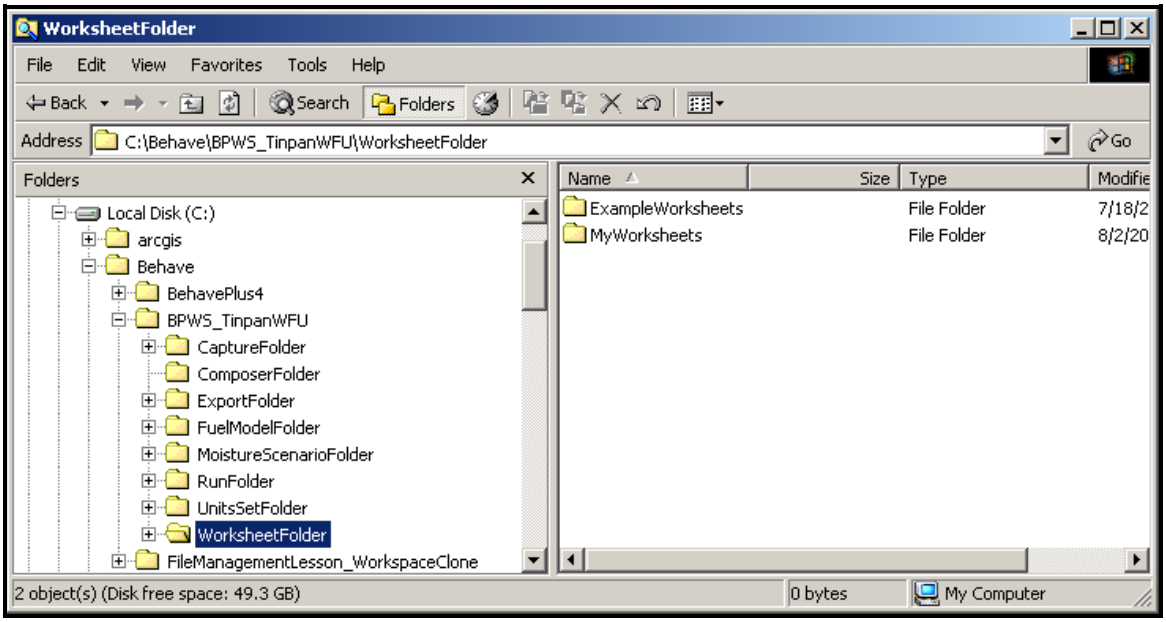
Example SURFACE and SIZE run

Fuel Model	Fire Perimeter ch
tu2	133
three-quarters_tu2	76

Copying, Moving and Deleting BehavePlus Files

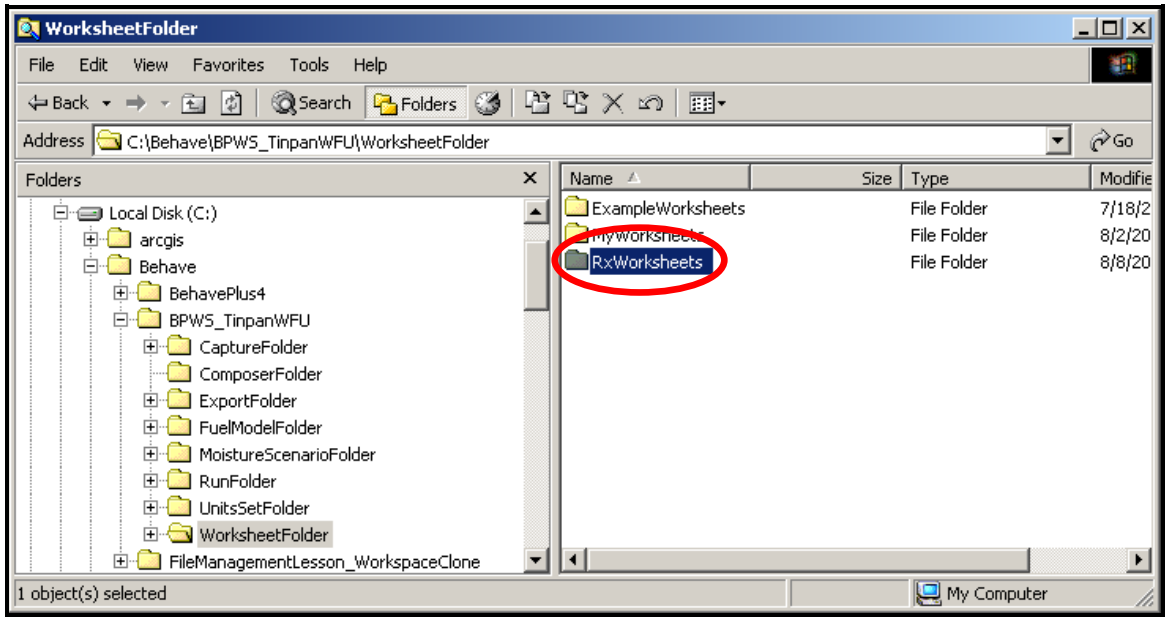
In addition to using Workspace commands to create BehavePlus folders, you can move and delete BehavePlus files and folders using Windows Explorer®. This method does not create a description file in the new folder, so no description will appear for the new folder in subsequent folder selection dialogs.

- Close BehavePlus.
- Open Windows Explorer®.
- Navigate to the folder you created entitled **BPWS_TinpanWFU**.
- In **BPWS_TinpanWFU**, highlight **WorksheetFolder**.



- Click on **File > New > Folder**. A highlighted **NewFolder** folder appears in the right pane.

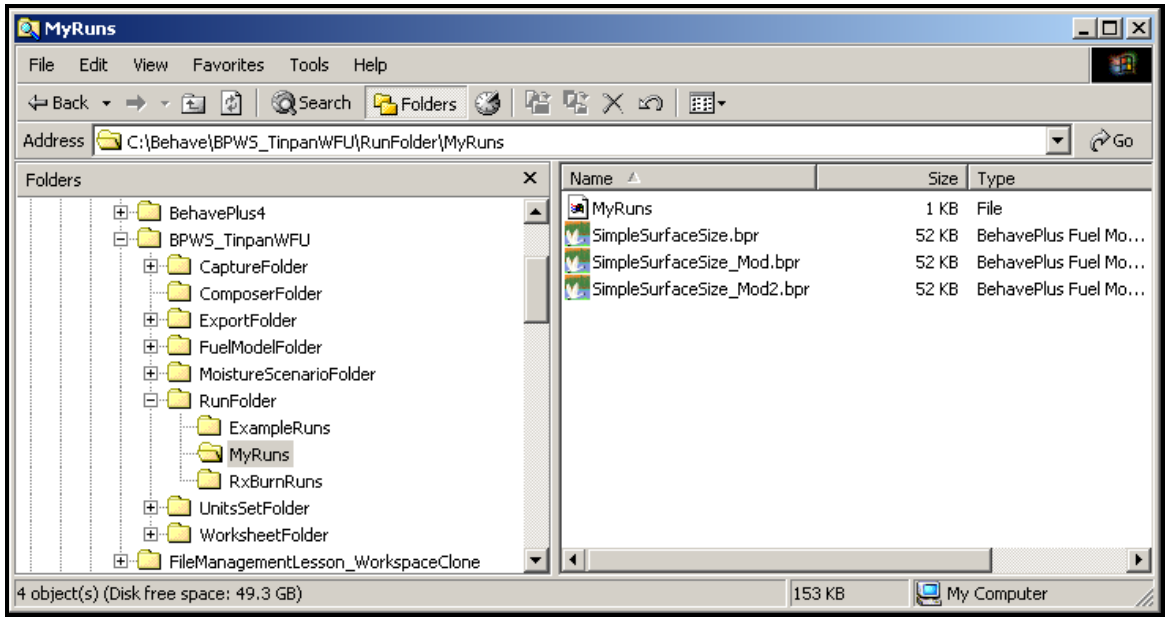
- Type “RxWorksheets” to rename **NewFolder** and press Enter.



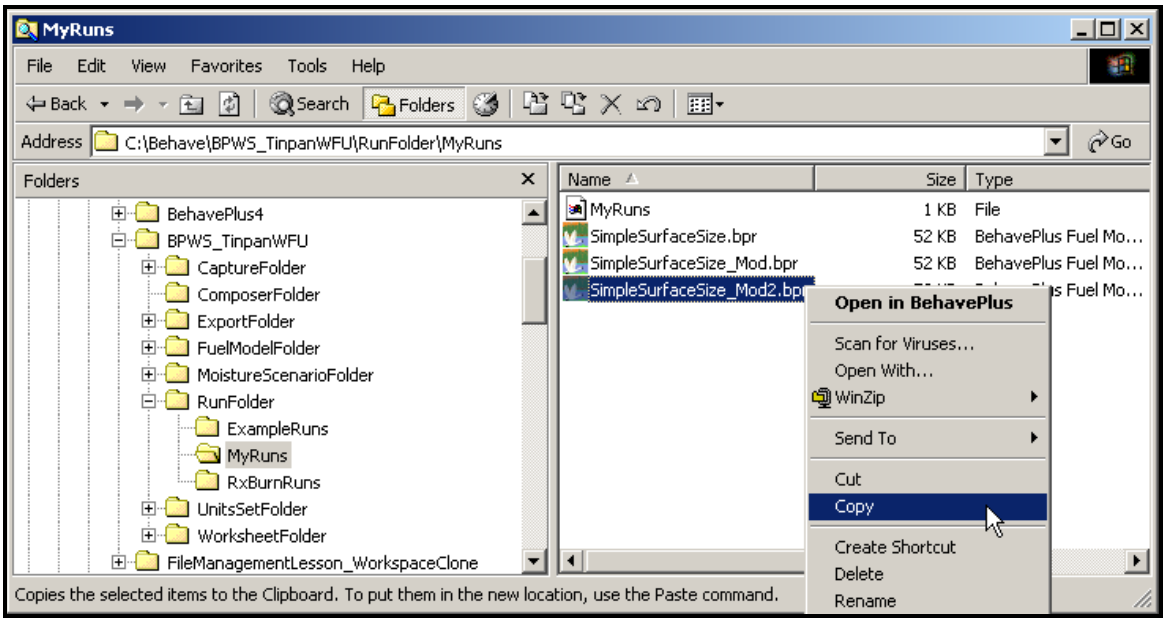
- Repeat to create a folder in the **RunFolder** called “RxBurnRuns”.

Copying or moving files one at a time

- In the left-hand pane, select the **RunFolder > MyRuns** folder to display its contents in the right-hand pane.



- Right-click on the file marked **SimpleSurfaceSize_Mod2.bpr** and select the **Copy** command from the shortcut menu.

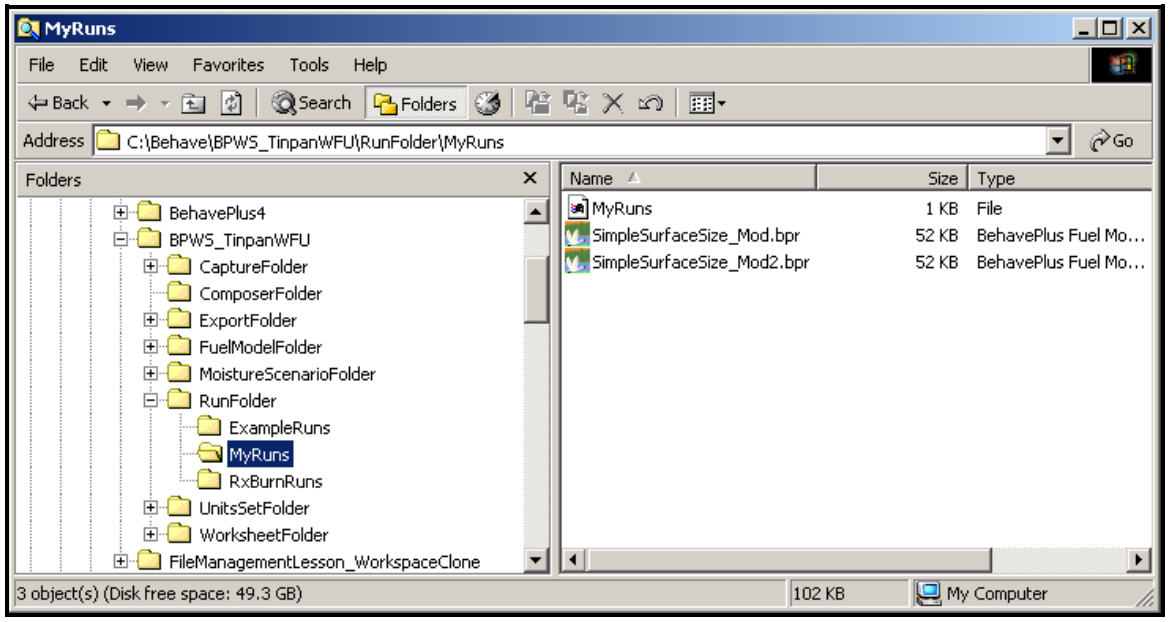


- Right-click on the **RxBurnRuns** folder in the left pane and select the **Paste** command from the shortcut menu.

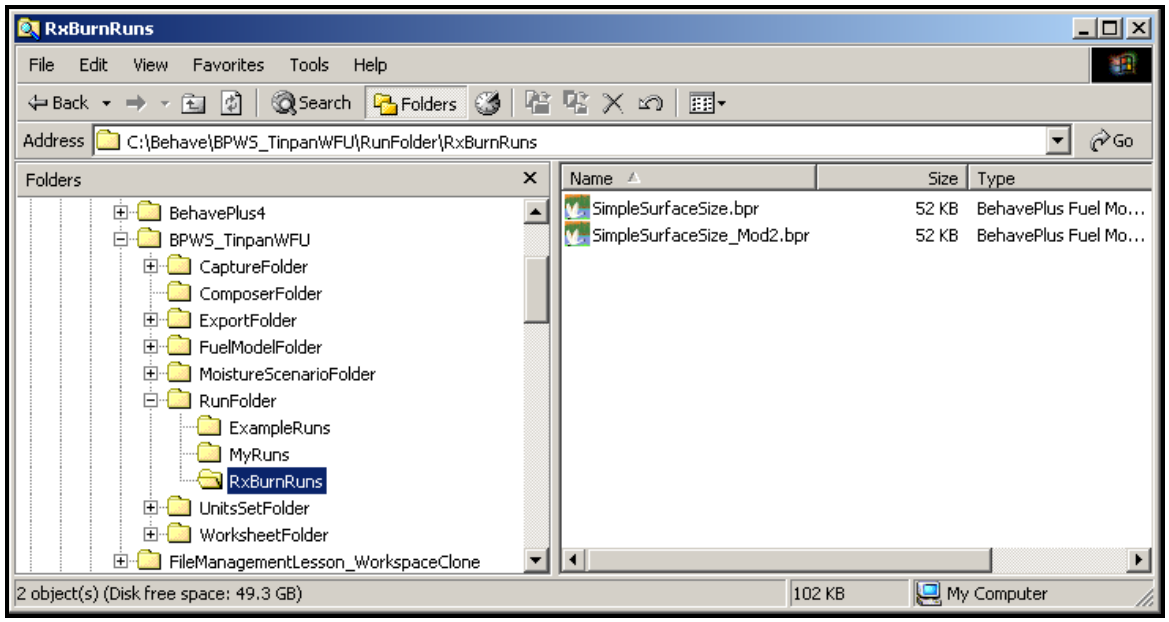
- Now, in the right-hand pane, right-click on the file marked **SimpleSurfaceSize.bpr** and select the **Cut** command from the shortcut menu.

- Right-click on the **RxBurnRuns** folder in the left pane and select the **Paste** command from the shortcut menu.

The **MyRuns** folder should look like the following.



The **RxBurnRuns** folder should look like the following.

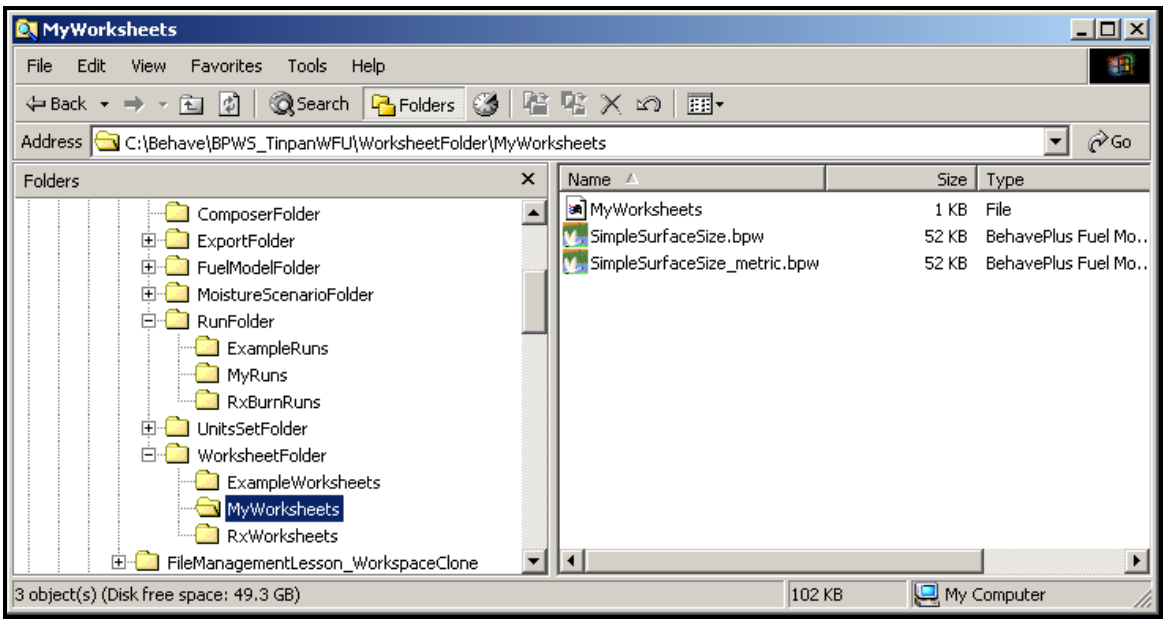


Notice the difference in the **Copy** and **Cut** commands. **Copy** duplicates the file "SimpleSurfaceSize_Mod2.bpr" while **Cut** moves a single file "SimpleSurfaceSize.bpr" to a new location. You can use the **Copy** method to backup your work.

Copying or moving groups of files

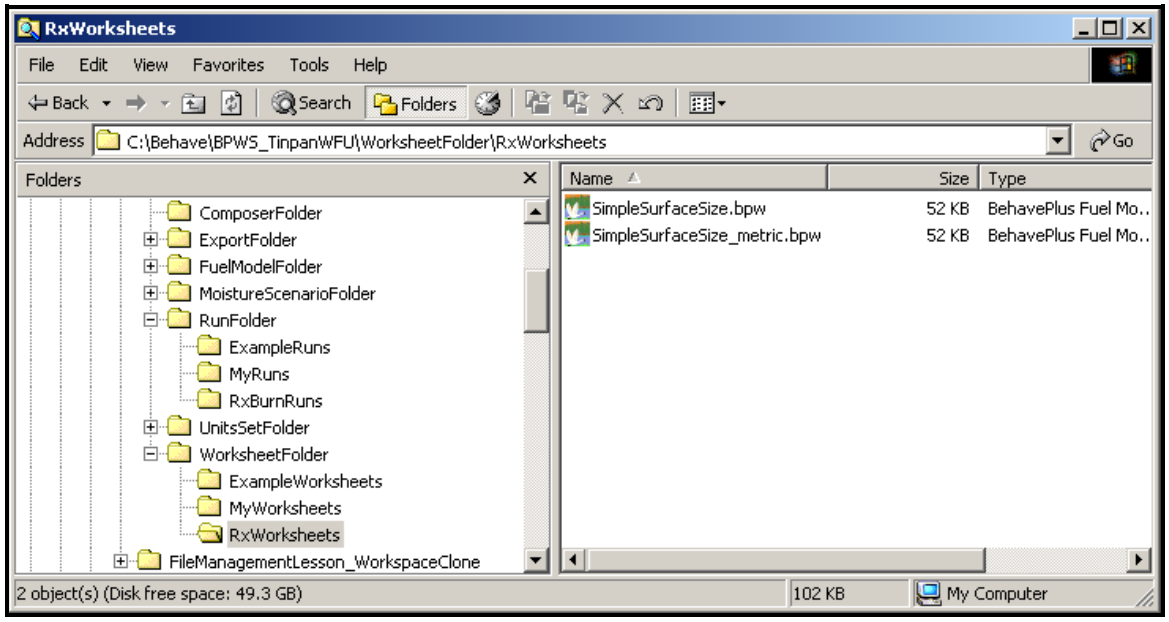
- In the left-hand pane of Windows Explorer®, click on **WorksheetFolder > MyWorksheets** folder.

The **MyWorksheets** folder should look like the following.



- Click on **SimpleSurfaceSize.bpw**.
- Hold down the **Ctrl** key and click on **SurfaceSimple_metric.bpw**.
- Right-click on either file and select the **Copy** or **Cut** command.
- Right-click on the **RxWorksheets** folder in the left-hand pane and select the **Paste** command.

Both files should now be in the **RxWorksheets** folder.



Deleting files

BehavePlus files and folders can be deleted using Windows Explorer®.

- Click the **MyRuns** folder in the left-hand pane of Windows Explorer to show its contents in the right pane.
- Either right-click on the file **SimpleSurfaceSize_Mod2.bpr**.

If the file is located on a local hard disk, you have a choice of moving the file to the Recycle Bin (the default) or deleting it permanently from your local hard drive.

- Selecting the **Delete** command from the shortcut menu will move the file to the Recycle Bin where you can retrieve it later if needed.
- Holding down the **Shift** key while selecting the **Delete** command removes the file permanently from your hard drive.

Summary

You can effectively use BehavePlus without a complete understanding of its file management structure. However, understanding folders, files, and Workspaces will increase your options for using the program. BehavePlus Workspaces are an easy way to organize and document your fire behavior and fire effects predictions into a single, shareable resource. Workspaces allow users to store all Worksheets, Runs, unit definitions, custom Fuel Models, Moisture Scenarios, and captured graphics in a single location. Workspaces are ideal for organizing documentation for a particular project, such as a prescribed fire burn plan or a wildland fire behavior assessment.

Exercises

1. Describe how you might use Workspaces for prescribed fire planning.

2. Describe how you might use Workspaces for training.

Exercise Answers

1. Describe how you might use Workspaces for prescribed fire planning.

Workspaces can be used to save model calculations performed during both the planning and implementation of a prescribed burn. During burn plan development, the Workspace can be used to save the Runs used to estimate the prescription windows such as the use of the table shading options in BehavePlus. The same Workspace can store a user-defined Worksheet that can be used to estimate fire behavior on the day of the burn. Prior to implementing the prescribed burn, the user simply needs to open the predefined Workspace and subsequent Worksheet, fill in the Worksheet with the expected conditions for the day and perform the calculations. These calculations can then be saved in that Workspace as a Run and can be included as part of the documentation for the burn. Using a single Workspace for the entire lifecycle of a prescribed burn from planning to implementation ensures that all of these calculations can easily be recreated if necessary.

Managers can also use the clone Workspace feature to simplify this task. For example, if the user already has a Workspace created for a given burn and simply needs to duplicate these calculations for another burn, they can open the existing Workspace and use the **File->Workspaces->Clone current workspace** option to create a new Workspace from the existing Workspace. All the Workspace components from the current Workspace will be copied into a new Workspace and these components, such as Runs, Worksheets and custom Units Sets, will be available in the new Workspace. Then the user simply makes any necessary changes to the Workspace components and saves those changes.

2. Describe how you might use Workspaces for training.

Workspaces can be used in a training environment to simplify and organize learning and evaluation exercises. They allow the instructors to focus on developing an appropriate level of understanding of the model rather than the mechanics of the BehavePlus modeling system. Instructors can develop a single Workspace for a given instance of training and this Workspace can include both Worksheets and Runs. Worksheets are useful in a learning environment when the students are required to determine model inputs on their own from external resources such as from a spot weather forecast, map calculations or look-up tables. The Worksheets can be pre-configured with all the necessary modules and options and the students can focus on determining the best input choices rather than how to setup the Worksheet appropriately. Runs are useful when the emphasis is on learning the dynamics of a particular model not the mechanics the modeling system. In this way, the inputs to a particular model can be determined and provided beforehand and the students can focus on interpreting the BehavePlus output for a given model. This prevents time lost when students are unfamiliar with the modeling system and they have trouble finding a particular option or setting.

Similarly, Workspaces can be used in a testing environment to create containers of the student’s work that can easily be referred to by an instructor to determine where a student might have gone wrong on a given question. Quite often, a student may be asked to perform a fire behavior assessment for a given location and a single poor choice in inputs

may affect the entire answer. If the students were required to save all of their work as Runs in a Workspace and give that Workspace, along with any written work, to the instructors, the instructors could refer to the student's Runs to provide more tailored feedback.