

Forest4 Pack



iToo
collaborative

Documentation

Image by F10 studios

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1 Pages updated for Forest Pack 4.3

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Forest Pack is a plugin for Autodesk 3ds max, and 3ds max design, designed to give a complete solution for creation of vast surfaces of trees and plants.

Forest enables you to scatter millions of proxies, high-poly meshes or billboards, and using custom geometry shaders, create scenes with virtually unlimited number of objects and polygons

Download [Forest Pack Lite](#), the free version of the plugin and use it in your personal and commercial projects.

If you are new to Forest, see the [Getting Started](#) guide for videos, tutorials and more help in your first steps using the software.

2 Getting Started

If you are new to Forest Pack and you're worried about where to start, you've come to the right place! Here is a very simple guide for getting started with the plugin.

To be current of new versions and latest news about our products, please subscribe to [forums](#). You can also [follow us on Twitter](#).

2.1 Release Notes

You can check the most recent changes for your version current version in the [release notes](#).

2.2 Tutorials and Reference

For a fast introduction to the capabilities of the plugin, you can watch the [Basic tutorial](#). It shows how to use 3D high-poly trees with Mental Ray or VRay, in an architectural environment. It can be completed with Forest Lite. Next, we suggest to continue with the [Modern Barn tutorial](#).

Completing it, you will learn to use most of the software options, from areas splines area to advanced materials. It uses VRay or Mental Ray renderer and includes five parts with 90 minutes of video. Finally Autumn Parks will get you quickly acquainted with [Forest Colour](#). You'll find many more tips and and tricks videos in our [tutorials](#) section. They're regularly updated so check regularly!

2.3 HQ Plants models

If you are purchased some of the [HQ Plants libraries](#), see the following tutorial to see how to integrate the models in the library browser. To complete it you will need to download the [HQ Catalog add-on](#) from downloads section.

2.4 Lite & Pro

If you are using Forest Pack Lite, remember that it can be used freely for your personal or commercial projects. Click [here](#) if you want to see the differences with Forest Pack Pro, and the benefits of upgrading to it.

To complete your learning of the plugin, see the full list of [tutorials](#), visit the [Gallery](#) or read the [Help Reference](#). You can also ask to our technical staff, and share your experience with other users in the [forum](#).

Thank you and enjoy using Forest Pack !

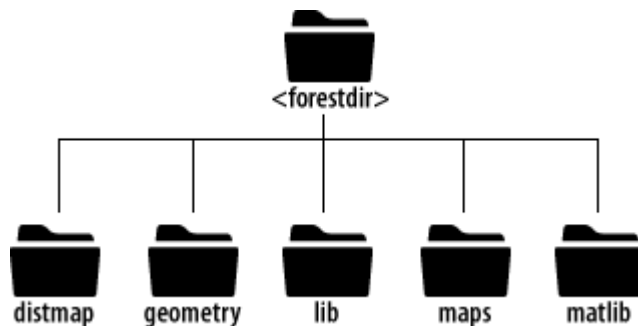
3 Installation and customisation

This guide describes the directory structure of Forest Pack and how to customize it. We will use a default Forest Pro installation, in Forest Lite some files may be different.

3.1 Directory Structure

We define *<forestdir>* as the folder where you installed Forest Pack (C:\Program Files (x86)\ltoo Software\Forest Pack Pro by default) , and *<maxdir>* is your main 3DS directory.

The setup program creates the folder structure shown below in *<forestdir>* :



The plugins and shaders for V-Ray and Mental Ray are copied here:

Folder	Path
3DS plugin	<maxdir>\plugins\ForestPackPro.dlo
Maxscripts	<maxdir>\scripts\ForestPack\forest_utils.ms <maxdir>\scripts\ForestPack\optmat.mse
V-Ray shaders	<maxdir>\ForestV-Ray150sp3.dll, ForestV-Ray20.dll and ForestV-Ray30.dll Note: some files may not exist depending of the Max and V-Ray versions
MR shader library	Max 2010 and before: <maxdir>\mentalray\shaders_autoload\shaders\FShader3.dll Max 2011 and 2012: <maxdir>\mentalimages\shaders_autoload\mentalray\shaders\FShader3.dll Max 2013 and newer: <maxdir>\NVIDIA\shaders_autoload\mentalray\shaders\FShader3.dll

Folder	Path
MR shader descriptor	Max 2010 and before: <maxdir>\mentalray\shaders_autoload\include\FShader3.mi Max 2011 and 2012: <maxdir>\mentalimages\shaders_autoload\mentalray\include\FShader3.mi Max 2013 and newer: <maxdir>\NVIDIA\shaders_autoload\mentalray\include\FShader3.mi

The following entries are created in the Windows Registry:

HKEY_LOCAL_MACHINE\SOFTWARE\Itoo Software\Forest Pack Pro	
MainDir = C:\Program Files (x86)\Itoo Software\Forest Pack Pro	<forestdir> is defined here
UseLicServer = 0	0 to use Stand-alone license, 1 for Network license
LicservHost = <host or ip>	License server hostname, undefined for automatic search
LicservPort = 16720	Protocol port number, by default 16720
TexturePaths (key)	Texture paths
LibraryDir (key)	Library paths

All commercial Itoo Software products use also additional keys for the licensing management:

HKEY_LOCAL_MACHINE\SOFTWARE\Itoo Software\Licenses	
LicenseDir = C:\ProgramData\Itoo Software\Licenses	Forest Pro license is stored here
HKEY_LOCAL_MACHINE\SOFTWARE\Itoo Software\Licenses\Products	
Forest Pack = 9	One entry for each Itoo Software product



In a Windows 64 bit version, these registry keys are duplicated in `HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node`

3.2 Unattended Installation

From Forest Pack 3.9.2 and above, the setup program supports unattended installations using the following parameters:

- `/?` - See available parameters
- `/s` - enable silent installation
- `/maxver=[max9-32, max9-64, max2008-32, max2008-64, max2009-32, max2009-64, max2010-32, max2010-64, max2011-32, max2011-64, max2012-32, max2012-64, max2013-32, max2013-64, max2014-64, max2015-64]`
- `/MAXDIR=<3dmax installation path>`
- `/LICMODE=[rendermode, network, stand-alone]`
- `/LICHOST=[License server host]`
- `/LICPORT=<License server TCP port>`

Example of a silent installation for Max 2013

```
ForestPackPro.exe /S /MAXVER=max2013-64
```

3.3 Network Rendering

You can install Forest on your renderfarm computers using the setup program, or copying the files manually. In Forest Pro select "Render slave node", in Forest Lite use default installing options.

For a manual installation, these are the required files:

Type	Files
Plugin and shaders	As described in the plugin and shaders table

Type	Files
Distribution Maps	from "C:\Program Files (x86)\ltoo Software\Forest Pack Pro\distmaps\images", copy them to any shared texture folder
Tree textures	all textures from "C:\Program Files (x86)\ltoo Software\Forest Pack Pro\maps" and your custom textures, when used

If you use Presets or other elements of the Library, they must be visible by the render nodes. Use the Asset Tracker to locate the texture maps and XRefs used by the scene.

From version 4.0.2, Forest configures automatically in the render nodes the paths listed in the registry at **HKEY_LOCAL_MACHINE\SOFTWARE\ltoo Software\Forest Pack Pro\TexturePaths**. These are the paths included by default by the installer:

c:\program files (x86)\ltoo software\forest pack pro\distmaps\images
c:\program files (x86)\ltoo software\forest pack pro\maps\HShadows
c:\program files (x86)\ltoo software\forest pack pro\maps\Standard
c:\program files (x86)\ltoo software\forest pack pro\maps\Classic
c:\program files (x86)\ltoo software\forest pack pro\maps\presets
c:\program files (x86)\ltoo software\forest pack pro\lib\free models\hqplants free\maps

All these files can be installed on network paths if you configure Max to use them (as shared plugins, Mental Ray shaders and textures). For details, see: *Autodesk 3ds Max Help -> Customizing the User Interface -> Configure Paths*.

3.4 Is it possible to modify the sub-objects of a Forest object from MaxScript?

Yes, but only if the Forest object is in "Custom Edit" mode. there is an interface named "trees" for using it provided by MaxScript. You can see all the functions included with "showinterfaces(\$forest01)". these are the some of them:#

Add a tree in position p (local coordinates), using width, height and geometry ID values

```
<Forestobject>.trees.create p:<point3> width:<float> height:<float> geomid: <integer>
$forest01.trees.create p:[50,50,0] width:10 height:10 geomid:1
```

Delete the tree at position n in the array

```
<Forestobject>.trees.delete n:<integer>
$forest01.trees.delete n:0
```

Modify the properties of the the tree at position n (width, height, geometry ID, random seed)

```
<Forestobject>.trees.edit n:<integer> width:<float> height:<float> geomid:<integer> seed:<integer>
$forest01.trees.edit n:0 width:10 height:10 geomid:1 seed:123456
```

Returns the number of trees of the object

```
<Forestobject>.trees.count()<integer>
$forest01.trees.count ()
```

Move the n-th tree to the position p

```
<Forestobject>.trees.move n:<integer> p:<point3>
$forest01.trees.move n:0 p:[50,50,0]
```

Set the rotation of the n-th tree (angle in degrees)

```
<Forestobject>.trees.rotate n:<integer> angle:<float>
```

```
$forest01.trees.rotate n:0 angle:45
```

4 Lite and Pro



Currently two versions are available: **Forest Pack Lite** and **Forest Pack Pro**. Forest Pack Lite is free for any project, personal or commercial. However, some features are disabled and only available in Forest Pack Pro.

4.1 Forest Pack Lite

This version is **free for personal and commercial use for an unlimited period of time**. It is fully functional with some limitations listed below. You can get it from the [Download](#) page.

4.2 Forest Pack Pro

Forest Pack Pro has advanced features for surfaces, tree placement and importing/exporting tools. Also it includes a full library of planar trees and shrubs that you can edit it and add your own trees and textures. Visit our [Online Store](#) for more information about prices and license options.

Feature list

Rendering	Lite	Pro
Native shaders for Mental Ray	✓	✓
Native shaders for VRay	✓	✓
Billboards optimization	✓	✓
Random tint by item	✓	✓
Tint by element (as leaves on a tree)		✓

Rendering	Lite	Pro
Scattering	Lite	Pro
Unlimited types of plants by object		✓
Up to three types of plants by object	✓	
Unlimited areas by object		✓
Up to four areas by object	✓	
Scattering over uneven surfaces		✓
Diversity / Clusters	✓	✓
Custom Edit mode, to edit items individually	✓	✓
Distribution of items along a path	✓	✓
Real-time camera clipping	✓	✓
Points-cloud viewport mode	✓	✓
Random transformation of position, rotation and scale	✓	✓
Full Animation support, including multiple random samples	✓	✓
Collision checking	✓	✓
Libraries	Lite	Pro
Library browser	✓	✓
Library editor		✓
More than 100 library items, including billboards, 3D models and Presets		✓

Rendering	Lite	Pro
Utilities	Lite	Pro
Real time status window	✓	✓
User presets		✓
Creation tools		✓
Forest tools		✓
Conversion to editable Mesh	✓	✓
Other Benefits	Lite	Pro
Prioritized technical support		✓
Early access to beta versions		✓
Frequently patches and releases		✓

4.3 Software Requirements

- 3D Studio Max 9 to 2014 (32 & 64 bits) or 3D Studio Max Design (same versions).
- V-Ray native shader requires Max 9 with V-Ray 1.50 SP3 or greater.


5 General

5.1 Overview

The General rollout contains plugin-wide settings including tools to create parameter-only presets (for presets that include geometry and other external objects, see the [Forest Library](#) section) . In the event that a render reports "Some forest were not built correctly in the last render " this rollout also contains useful information that can help you to determine the cause.

5.2 Procedures

To check for a newer version of Forest Pack:

- Click the  (Search for updates) button.


To open the help files:

- Click the  (Show Forest Pack Help) button.


To create variations of the current Forest object:

- Change the **Random Seed** number.


To save the current settings as a preset:

1. Set the Forest object's parameters.
2. Type a name for the Preset in the **Presets List** box.
3. Click  (Save current settings as a preset)



To save the current settings as default:

1. Set the Forest object's parameters.
2. Type default in the **Presets List** box.
3. Click  (Save current settings as a preset). Every new Forest object will now inherit these settings.

To save a preset to an external file:

1. Set the Forest object's parameters.
2. Click  (Export preset to external file).
3. Type a name for the new preset file and click **Save**

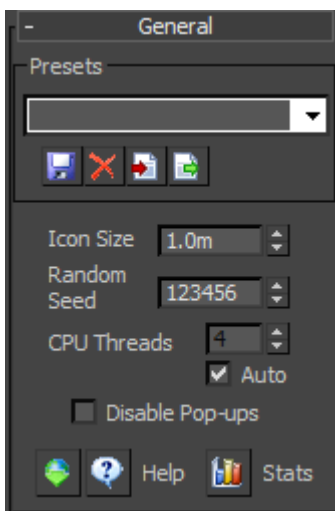
To load a preset from an external file:

1. Click  (Import preset from external file).
2. Select a .fpe file and click **Open**.
3. To add the preset to the drop down list for easy access at a later date, click  (Save current settings as a preset).

To disable Pop Ups





- Click **Disable Pop-ups**. Only Critical messages will now be shown.

5.3 Interface




Presets list

The presets field allows you to select from a list of saved presets or enter a new name and store the current settings as a new preset. Clicking a name from the list overwrites the current numeric parameters and options with those saved in the preset. References to all external objects, for example in the geometry list, surface list, and cameras rollout, remain unaffected. References to materials are saved, but they must be in the scene or the current material library.

	Save current settings as a preset
	Delete preset from list
	Import preset from external file
	Export preset to external file

If a preset is created with the name "default", its values will be used automatically for all new Forest objects.

You can copy the presets to any other computer that has Forest installed by copying the file named "forest_presets.ini", located in the user's folder: %LOCALAPPDATA%\Autodesk\3dsMax\max version\ENU\en-US\plugcfg.

 For most uses this feature has been superseded by loading and saving presets via the [Forest Library](#), however it remains useful as a quick way of copying settings between Forest objects and setting defaults values.

Icon Size

Defines the size of the Forest icon. This will display when the plugin cannot create objects because not all the required parameters have yet been defined, or because of an error condition,

Random Seed

A numeric value used to initialize the random number generator. This number affects any randomised properties of the Forest Pack plugin. For a given seed value, the Forest object will always produce the same results.

CPU Threads

Defines the number of threads used by Forest to build the scattered geometry. The default value (Auto) automatically detects the number of CPU cores. Usually is not recommended that you modify this parameter.

Disable Pop Ups

When enabled all suggestions and warning messages are turned off except for critical errors (this option is global and persistent).

Search for Updates

Checks the installed version of Forest Pack is up to date. If an update is available a dialog box will open with version information and an option to Go to the Update Site.

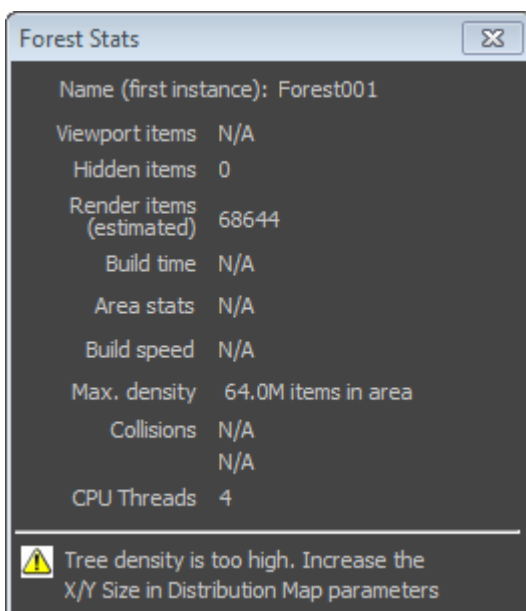
Show Forest Pack Help

Opens Forest Pack's online help files in the user's default web browser.

Statistics Window

Opens a floating window showing statistics of the last selected Forest object, including the number of trees created, build time, maximum density of trees in the area, etc.

If Forest cannot create trees because of an error condition (indicated by displaying an orange "F" icon in the viewport instead of the trees), this window can be used to get additional information about the cause of the problem.



Forest stats showing a "density too high" error

6 Add Geometry

6.1 Overview

Forest Pro enables you to choose from an unlimited number of different objects to scatter, these are managed from the Geometry List. Items can be loaded from the library or picked directly from the scene, any valid geometry object can be used, the table below outlines the types supported by each renderer. There is no need to convert meshes to Proxies, Forest pack use native geometric shaders to automatically creates instances on the fly for compatible renderers.

Renderer	Supported Objects
Scanline	Meshes (or any object that can be converted to mesh).
Mental Ray	Meshes, MR Proxies and RPC objects.
V-Ray	Meshes, V-Ray Proxies
Maxwell	Meshes, Maxwell Proxies
Octane	Meshes
Thea	Meshes
Arion	Meshes
Corona	Meshes

6.2 Procedures

To create a new Forest Object based on a spline area or surface:


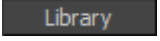
1. Go to Create > Geometry > Itoo Software and click **Forest Pro**
2. Select a mesh, billboard, or preset by clicking the **Select** button and picking from the Forest Library. If the object you wish to use is not in the library, skip this step and a simple plane object will be used. This can be adjusted later to use your own custom objects in the Geometry rollout.

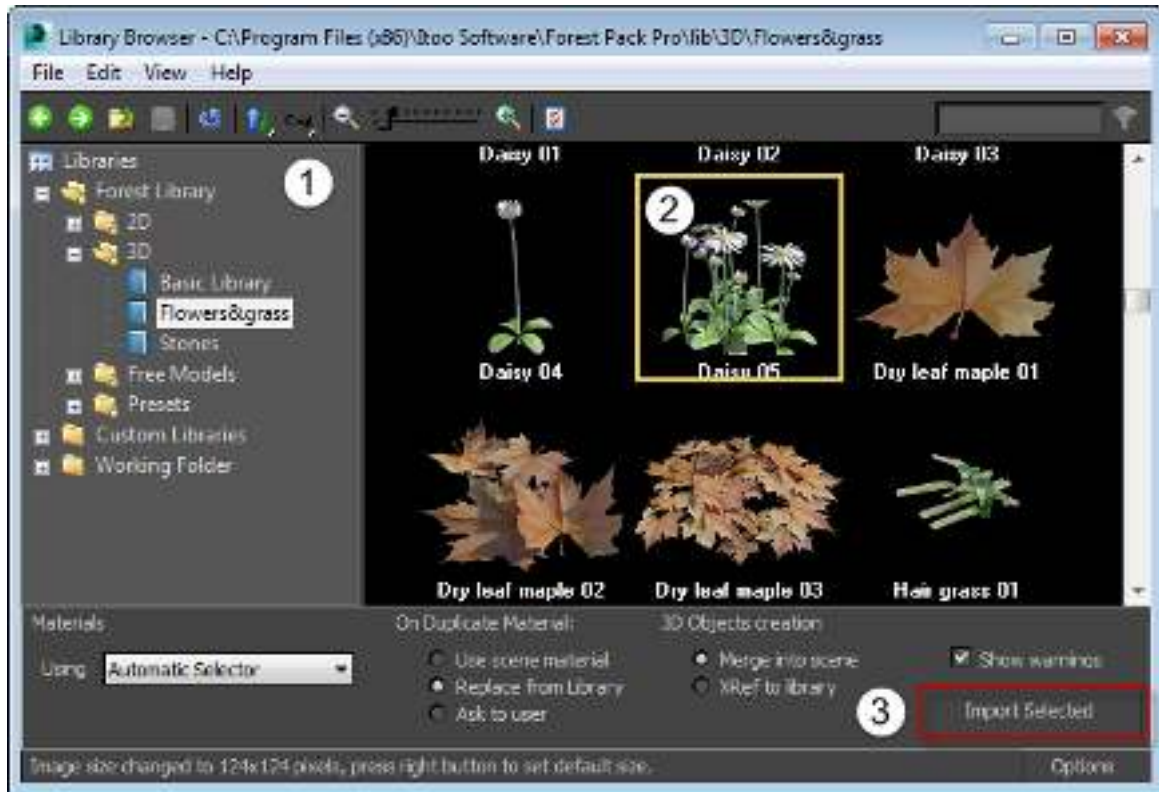
3. Ensure the mode is set to **Generate**.
4. Click a spline area or surface in the viewport. Go to the Modify panel to access parameters for [Add Geometry](#), [Areas](#), [Distribution](#), [Camera](#), [Transforms](#), [Animation](#) and more.

To create a new Forest object using Custom Edit:

1. Go to Create > Geometry > Itoo Software and select **Forest Pro**.
2. Change the mode to **Custom Edit**.
3. Click anywhere in the scene to place trees.
4. When you are finished, right click to exit create mode. Further parameters such as [Add Geometry](#), [Surface](#), [Camera](#), [Transforms](#), [Animation](#) and more can now be adjusted in the modify panel, to further add or modify objects please see the [Tree Editor](#) reference.


To add a new object to the Geometry list from the library:

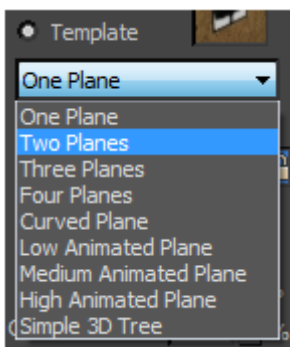
1. Create a new Forest Object as described above.
2. Open the Geometry rollout and click  (Add New Item).
3. The properties section determines the type of geometry to create, to load an object from the library, Click on .
4. The library browser will open, use the directory navigator on the left of the interface to select an library, then pick the desired object from the items view.




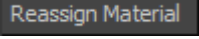
5. To use the selected object, either double click, right click and select Use Item(s), or click Import Selected.

To add a new Billboard object to the Geometry List:


1. Open the Geometry rollout and click on  (Add New Item).
2. From the Properties section select **Template** and set the type of billboard geometry from the drop down list.



3. Set the **Width** and **Height**, To constrain proportions click  (Lock Aspect Ratio) found to the right of the spinners.

4. Apply a material to the planes by dragging or copy and pasting an instance to the Properties > Material pick button. Ensure you assign the material to this button, not the Forest object itself. Forest automatically manages a multi-sub object material based on the materials assigned in the Geometry List rollout. If you do accidentally overwrite this, recover it by clicking . See the reference section below for more information.
5. If necessary, move the pivot position used for rotation by adjusting the Centre Displacement value. This is measured as a percentage of the overall billboard width.


To add a new geometry object to the Geometry List:

1. Open the Geometry rollout and click on  (Add New Item).
2. From the Properties section, change the geometry type from template to **Custom Object**.
3. Click on the Custom Object picker button (marked "none") and select an object to be scattered from the scene. Any materials applied to the object will be retained.


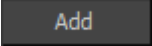
To add a group to the Geometry List:

Adding groups must be done using the name selector. Max does not support picking groups from the scene. A group can be added in two ways.

Either:

1. Open the Geometry rollout and click  (Add New Item).
2. From the Properties section, change the geometry type from template to **Custom Object**.
3. Click on the Custom Object picker button (marked "none") . Groups cannot be selected by clicking on them in the scene, instead open the Select From Scene dialog by pressing H on the keyboard. Select a group from the list and either double click or press the **Use** button.

Or:

1. Click  (Add Multiple Custom Objects) from below the geometry list, this will automatically open the pick from scene geometry list .
2. Select either a single or multiple groups from the list and click  .

Groups (FP4 and above only)


This mode is useful to scatter groups of objects, preserving their composition, for example clumps of plants like flowers or grass. It works well when used in combination with Distribution > Diversity > Clusters.

Once scattered elements of a group are handled as individual items, both for the boundary checking and surface placement. This also has a noticeable impact on the number of items generated, so care should be exercised when scattering groups that contain many objects.


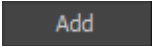
Do not use groups for objects that must be handled as a unique object (for example a tree and its leaves). In this case, attach all the individual parts into single mesh.

To add a blank object to the Geometry List (to create gaps):


To create blank spaces or gaps in a scatter, null objects can be added to the geometry list. This will be taken into consideration as part of the distribution but no geometry will be generated.

1. Open the Geometry rollout and click  (Add New Item).
2. From the Properties section, change the geometry type from template to **Disabled**.
3. Change the probability of a null object being selected using the Properties > Probability parameter.


To add multiple objects to the Geometry List:



1. Open the Geometry rollout and click  (Add Multiple Custom Objects).
2. Select the objects to use from the list. To select multiple object from the list either select individually while holding down control, or select a range by clicking the first object then hold down shift and click the last object.
3. Click  to use the selected objects.

To delete and object from the Geometry List:

1. Select the item from the the Geometry List.
2. Press  (Delete Item).



To Copy and Paste objects:

1. Select the source item from the geometry list.
2. Click  (Copy item values).

3. Select the target item, or create a new one by clicking  (Add New Item).
4. Click  (Paste item values).

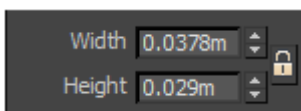
To change the order of objects:


When using forest in custom edit mode items can be created in a sequence instead of randomly selected from the geometry list. When using this feature it is helpful to be able to rearrange the order of the objects in the Geometry list.

- To move an object up the Geometry list, select it and click on  (Move up).
- To move an object down the Geometry list, select it and click on the  (Move down).

To manually set the height and width of a billboard or custom object:

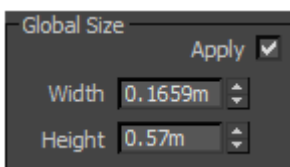
1. Select an item from the Geometry List.
2. If the item is a Custom Object, turn off **Use Objects Dimensions**.
3. Use the Width and Height parameters to set a new size for the object.



4. By default the Width and Height are constrained maintain proportions, uncheck  (Keep Aspect Ratio) to change the width and height independently.

To manually set the height and width of all objects:

1. Turn on **Global Size>Apply**.
2. Adjust the **Global Size > Width** and **Height** parameters, all items in the geometry list will use the new values.



To adjust the size of all objects, retaining the original proportions:

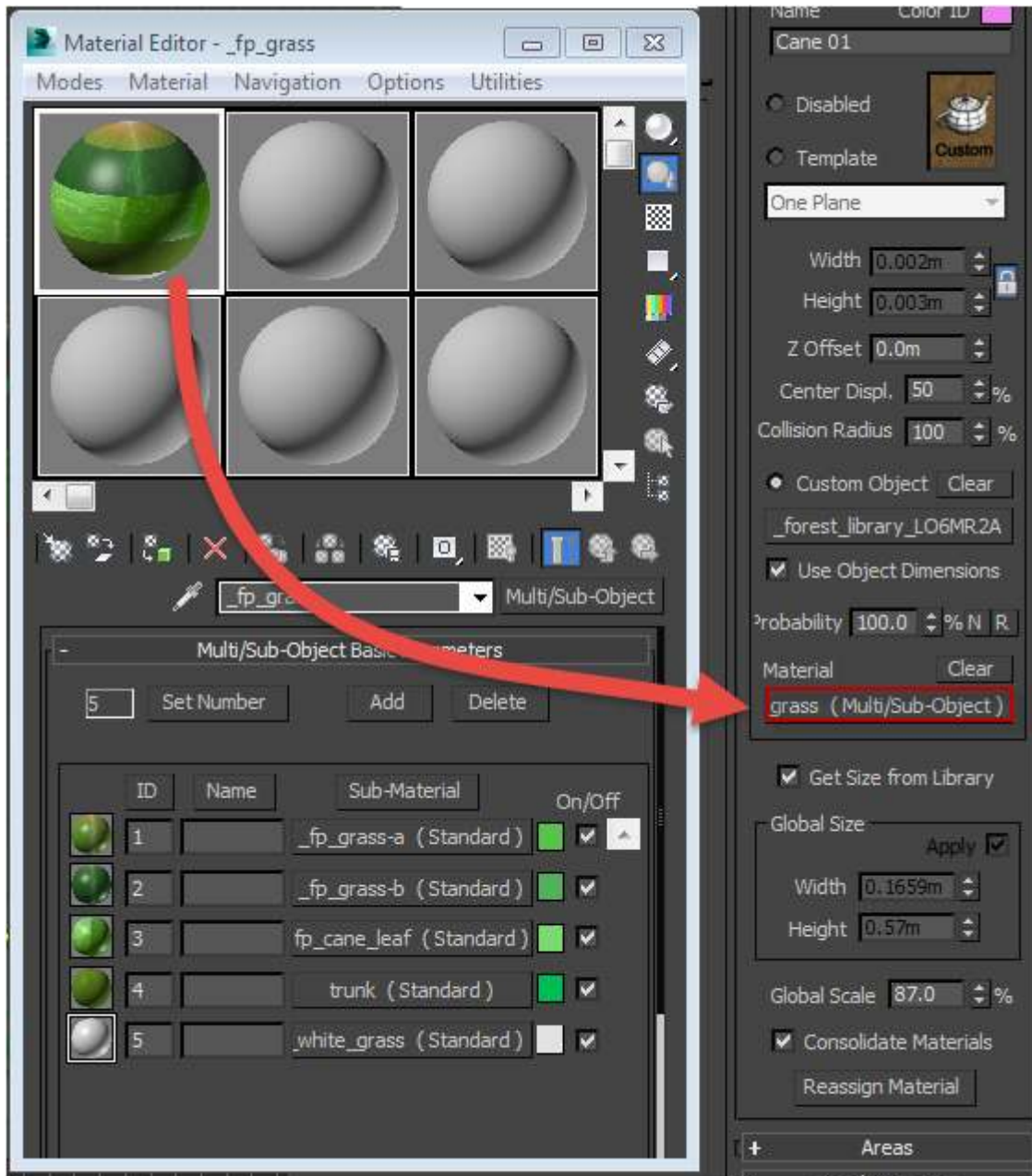
- Adjust the **Global Scale** value, measured as a percentage of either the items original size, or as set in the Properties > Width and Height parameter. The default scale value is 100%.

To assign a color ID:

1. Select an object from the Items List.
2. Click on the Color ID color swatch to open the 3DS Max color picker.
3. Select a new color and click **OK**.
4. Turn on **Display > Viewport > Use Color ID** to display the color in the viewport, or see the [Distribution Map](#) reference to see how to use Color IDs in conjunction with RGB maps to place items.

To assign a material to an object:

- To apply a material to an object in the Items List, select the item from the list then drag a material from the Slate or Compact Editor to the **Properties > Material Name** slot.



To rebuild materials if accidentally overwritten:

- Since any object in Max can only have one material applied, Forest Pack Pro automatically creates a Multi/Sub object material based on the materials assigned to each individual item in the Geometry List. If accidentally overwritten or lost, simply press **Reassign Material** to recreate the Forest auto-material.

To adjust the probability of an object being used:

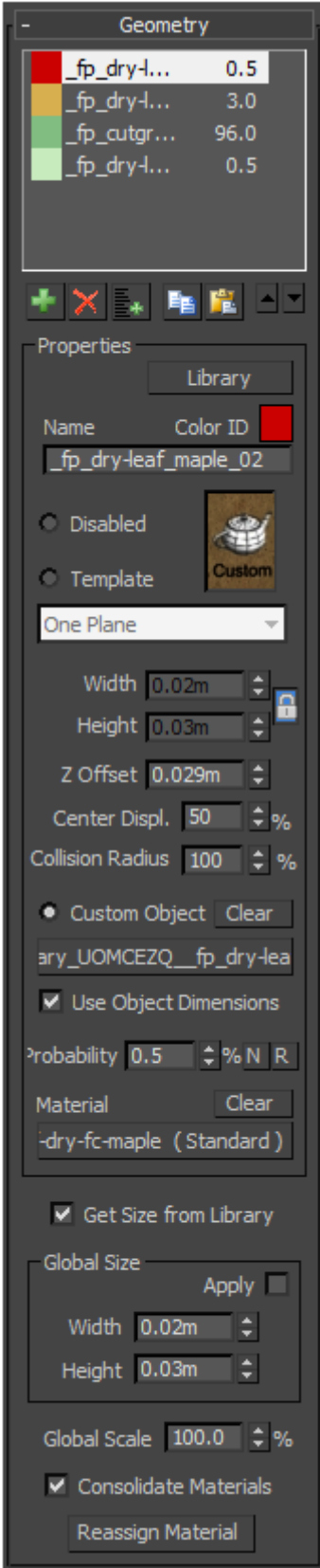
Either

- To manually adjust the chance of an item from the geometry list being selected change the Properties>Probability percentage the value will be displayed next to the name in the items list. The percentages are normalised automatically behind the scenes, however, if you wish to display these values, click **N** (Normalise).

or

- To create randomised values for all objects in the Geometry List, click **R** (Randomize).







6.3 Interface



Geometry Interface

Geometry List

Description of the geometry list

	Add object to the Geometry List
	Remove selected object(s) from the Geometry List
	Add multiple objects to the Geometry List
	Copy selected object(s)
	Paste object(s)
	Move selected object(s) up/down

Properties group

Library

Opens the [Forest Library](#) allowing you to import individual 3d meshes, billboards and complete presets.

Get Size from Library

When on an item will inherit Width, Height, Z Offset, and Center Displacement values from the library. When unselected only the material is imported.



In Forest Pack 4.3 this option is removed and enable by default

Color ID

Used to define the color of items in the viewport when [Display > Viewport > Use Color ID](#) is active . This parameter can also be used in conjunction with [Distribution Map > Diversity > Match Color ID on Map](#). This mode allows you to place items according to pixel information most closely matching the Color ID on a bitmap or procedural map.

Name

Shows the name of the selected item. The name updates automatically to match the source geometry but can also be edited manually.

Disable

Disables geometry for the selected item. This is not the same as deleting the item, it will still be taken into consideration as part of the scatter algorithm, but will not render leaving a space.

Template

Use a predefined geometry template from the drop-down list. Used for billboards, for 3d geometry use the [Forest Library](#)

It is possible to create your own templates by editing an *index.dat* text file and using standard Max scenes for the meshes, see [Installation and customisation](#) for details.

Custom Object

Use a custom mesh. Click this button to select the source object from the scene. when an object is selected the button will display the source name, otherwise it will return *None*. To delete references to the source, click Clear.

Use Object Dimensions

When on, objects use the size of the source object. When off the size is defined by the Width and Height values.




From Forest Pack 4.3 this option is removed. To resize custom objects use the **Scale** value.


Scale **Forest 4.3 Only**

Set the scale of a custom object. Measured as a percentage of its original size.

Width

Set the width of Billboards. (use  to constrain proportions)

Height

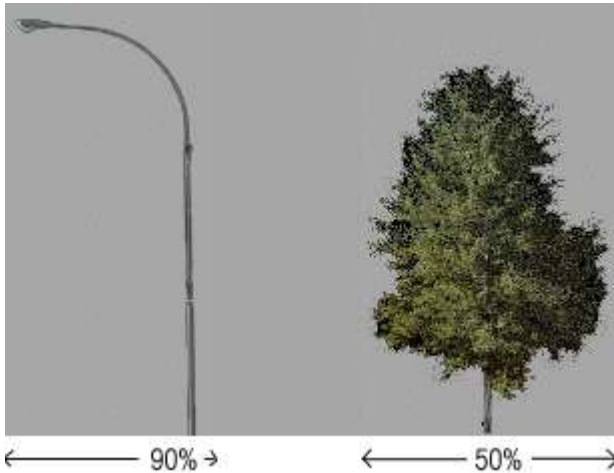
Set the height of Billboards. (use  to constrain proportions)

Z Offset

Sets an offset value on the Z Axis, measured in scene units.

Center Displace

Adjust the lateral pivot position. Useful when using billboards which can rotate on the Z axis to keep them facing toward the camera. Use this value to adjust the rotation point for textures that require an offset pivot.



Collision Radius

Defines the collisions radius for the selected item. This value is multiplied by the global radius parameter found in the [Distribution Map](#) rollout, to compute the distance between objects to detect a collision.

Probability

Defines a percentage probability that the item will be selected in the random distribution. If the sum of all the probabilities in the Geometry List exceeds 100%, the values are normalized internally by the distribution algorithm. You can also use the **N** to normalize the list manually and **R** to randomize the values.

Material

Used to assign a material to the selected item.

i Forest Pack Auto-Material

Forest needs to build a single multi-sub object material combining all the materials applied to the items in the Geometry List. Because creating this material and correctly assigning the material IDs manually would be a complex and time consuming procedure, Forest performs this action automatically.

Subsequently applying materials to items is very different compared with the normal workflow in 3DS Max. The material is NOT applied directly to the object using the Material Editor, but instead selected as a parameter in the Geometry rollout, using the "Material" pick button.

For Custom Objects, if material is not specified, Forest uses the material assigned to the source object.

If you accidentally assign another material to a Forest object, use the "Reassign Material" button to recover the auto-material.

Global Size group



In Forest Pack 4.3 this option is removed although these parameters can still be accessed using maxscript using ("*globsize*", "*width*", "*height*")

Apply

When on, all items take the Height and Width defined in the Global Size group settings. When off Items use their individual height and width settings

Width

Defines the global width value.

Height

Defines the global height value.

Global Scale

Applies a global scale factor to all items in the Geometry List.

Consolidate Materials

Is possible to disable the automaterial feature and assign the materials manually, although is not recommended. For this, uncheck the "Consolidate Materials" parameter in the Geometry rollout.

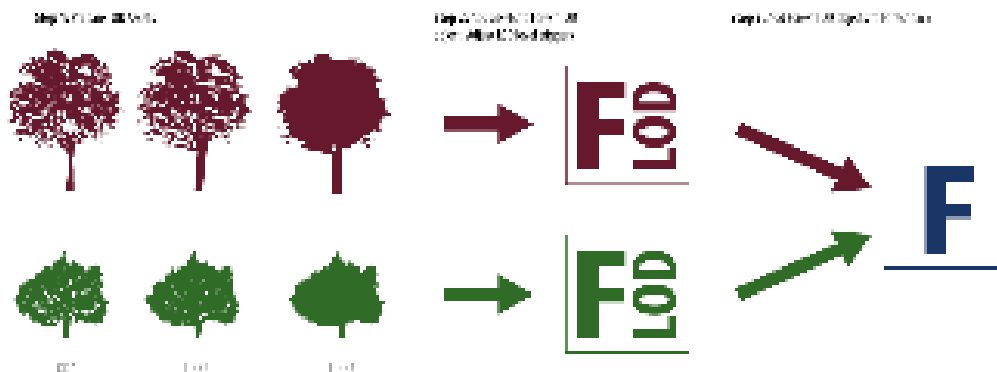
7 Forest LOD

7.1 Overview

Forest LOD allows you to switch geometry objects based on their distance from the camera or their size in the render view. The most common use for this feature is to create Level of Detail models so that less complex models and materials can be used further from the camera to help speed up renders.

Using LOD models with Forest Pack requires a slightly different workflow from using standard geometry objects.

1. Instead of a single model for each object, LOD models require 2 or more models. Each of these optionally can have unique materials.
2. Models are added to a **Forest LOD** object. From here you can configure the trigger distance or size to switch between models, assign materials and blur the transition between LOD levels.
3. Finally the Forest LOD object is scattered by adding it to the Geometry List inside a Forest Pack object. From here it is also possible to override the distances used to calculate the trigger points directly from the Camera Rollout.


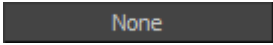

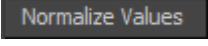


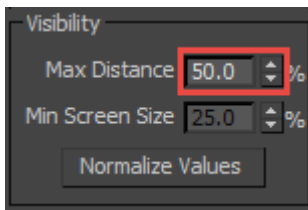
7.2 Procedures

To create LODs based on distance from the camera

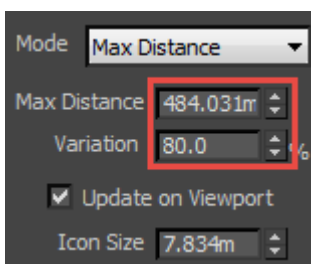
1. Go to **Create > Ito Software > Forest LOD** and click and drag to create a new Forest LOD object in the viewport.




2. Add the objects to the Forest LOD object. To add a single object click on , select **Custom Object**, Click  and pick an item from the scene. To add multiple objects click  and pick 1 or more items from the **Object Picker**.
3. Add **Visibility > Max Distance** values for each LOD level. The lower the value the closer to the camera, so the more complex models should have the smaller values. See [below](#) for a more detailed explanation. Alternatively you can click  to automatically create values based on the object's order in the LOD list.

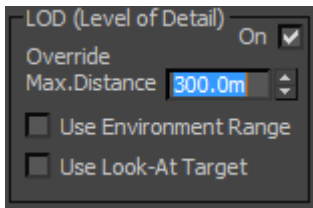


4. Enter a **Maximum Distance** value. This defines the distance range over which the LOD effect is calculated.



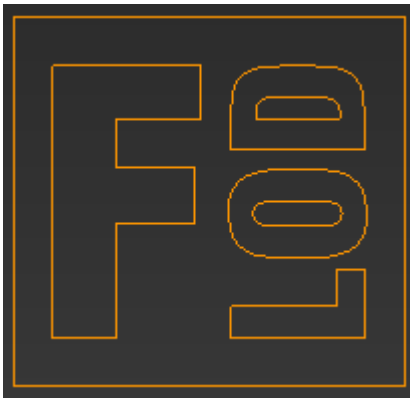
5. Add **Variation** if necessary to blur the transition between LOD levels.
6. Select or create a new Forest Pack object. Go to the [Geometry Rollout](#), click on  and select the Forest LOD object from the scene. There is no limit on the number of LOD objects that can be used.


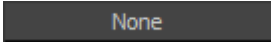

7. If you want to override the maximum distance settings, go to the Camera Rollout and increase the **Max Distance** value. Any value greater than 0 will override the settings used in the Forest LOD object.

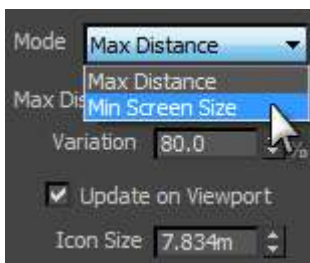


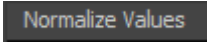
To create LODs based on screen size

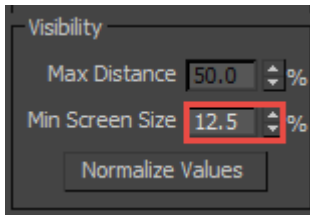
1. Go to **Create > Ito Software > Forest LOD** and click and drag to create a new Forest LOD object in the viewport.



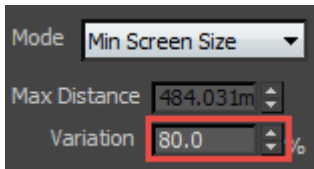
2. Add the objects to the Forest LOD object. To add a single object click on , select **Custom Object**, Click  and pick an item from the scene. To add multiple objects click  and pick 1 or more items from the **Object Picker**.
3. Change the mode to **Min Screen Size**.




4. Add **Visibility > Max Min Screen Size** values for each LOD level. The higher the value the closer to the camera, so the more complex models should have the larger values. See [below](#) for a more detailed explanation. Alternatively you can click  to automatically create values based on the object's order in the LOD list.



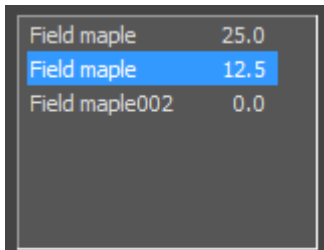
5. Add **Variation** if necessary to blur the transition between LOD levels.



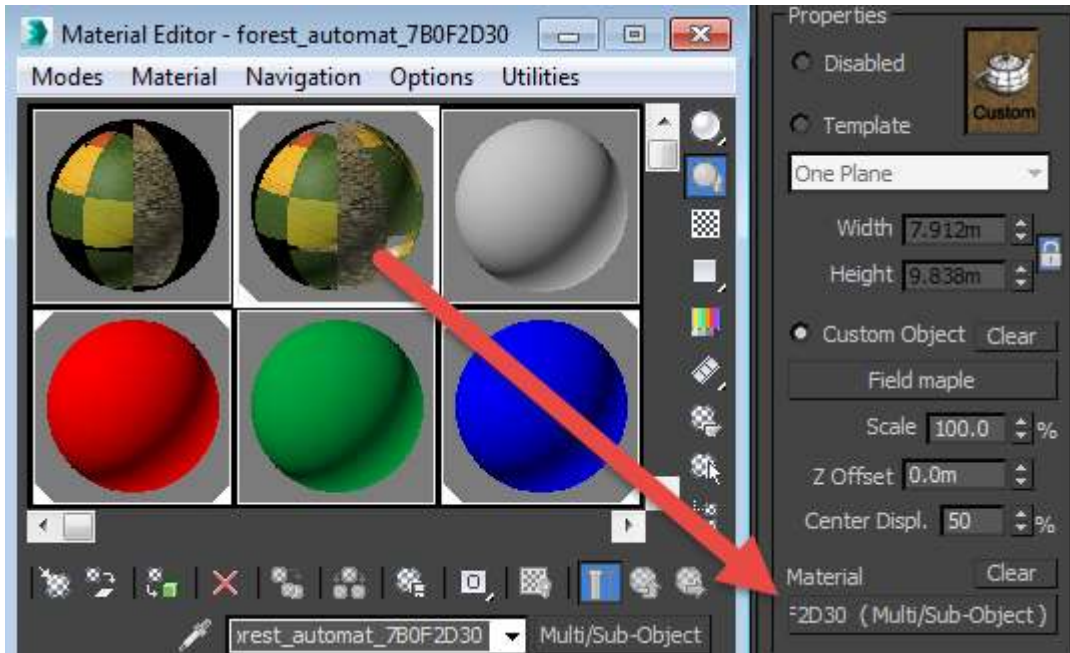
6. Select or create a new Forest Pack object. Go to the Geometry Rollout, click on  and select the Forest LOD object from the scene. There is no limit on the number of LOD objects that can be used.

To assign materials to LOD levels

1. Click on an object from the **LOD List**.



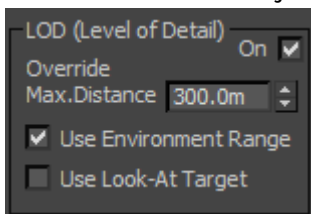
2. Drag a material from the Material Editor to the **Material** slot in the **Properties** group. Simpler materials would normally be used furthest from the camera.



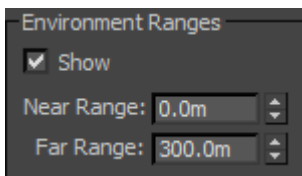
3. Repeat for each object in the LOD List. Alternatively if you have a unique object for each LOD level, you can apply materials directly to the source geometry.

To set Maximum Distance from a camera's Environment Range

1. In the Forest Pack object, go to the Camera rollout and turn on **Use Environment Range**

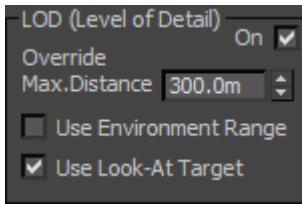


2. Select the camera and you can now use the **Environment Ranges** values to define the Maximum Distance used to calculate the LOD levels.

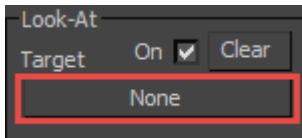


To use a Custom Look-At Target

1. In the Forest Pack object, go to the Camera rollout and turn on **Use Look-At Target**.



2. Assign a Look-At Target from the **Look-At** group









3. Adjust the Max Distance. this will now be calculated radially from the Look At object.

7.3 Interface

LOD List

Use this list to add LOD levels for the current object. Each item on this list represents a single LOD level. The number next to the name shows the percentage of either the distance from the camera or the screen size at which this level becomes active.

To add geometry use the following buttons:

	Add object to the LOD List
	Remove selected object(s) from the LOD List
	Add multiple objects to the LOD List
	Copy selected object(s)
	Paste object(s)
	Move selected object(s) up/down

Properties

Disabled

Disables geometry for the selected item. This is not the same as deleting the item, it will still be taken into consideration as part of the scatter algorithm, but will not render, leaving a space.

Template

Use a predefined geometry template from the drop-down list. Used for billboards.

Custom Object

Use a custom mesh. Click this button to select the source object from the scene. when an object is selected the button will display the source name, otherwise it will return *None*. To remove references to the source, click Clear.

Scale

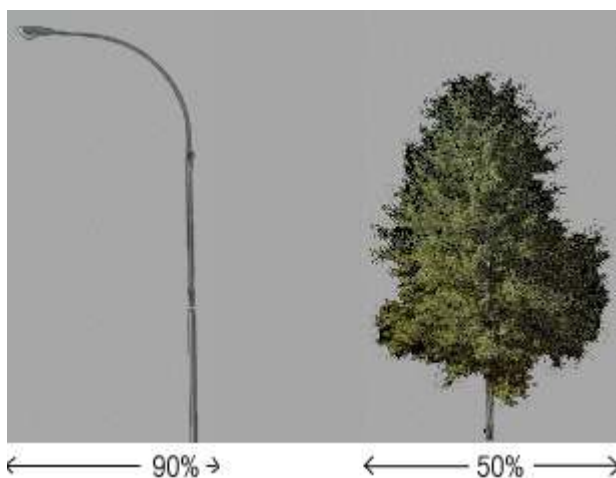
Allows you to proportionately scale the geometry as a percentage of its original size.

Z Offset

Sets an offset value on the Z Axis, measured in scene units.

Center Displace

Adjust the lateral pivot position. Useful when using billboards which can rotate on the Z axis to keep them facing toward the camera. Use this value to adjust the rotation point for textures that require an offset pivot.



Material

Used to assign a material to the selected item. Each LOD level can use a different material

Visibility

The visibility group is used to control the point at which the LOD object switches between levels.

Max Distance

Used to set the trigger distance for each LOD level. Measured as a percentage of the Maximum Distance value. An object is used when it exceeds this distance. If more than one LOD is eligible, the one nearest the current distance value is used.

Min Screen Size

Used to set the trigger size for each LOD level. Measured as a percentage of screen size as viewed from the active camera. An object is used when its size exceeds this value.

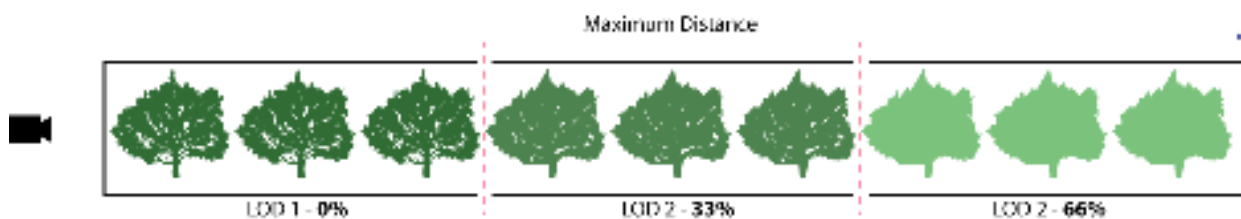
Normalize Values

Click this to automatically assign values to Max Distance or Min Screen Size for all LOD levels. This function used the order of the objects in the LOD list to automatically calculate evenly distributed values.

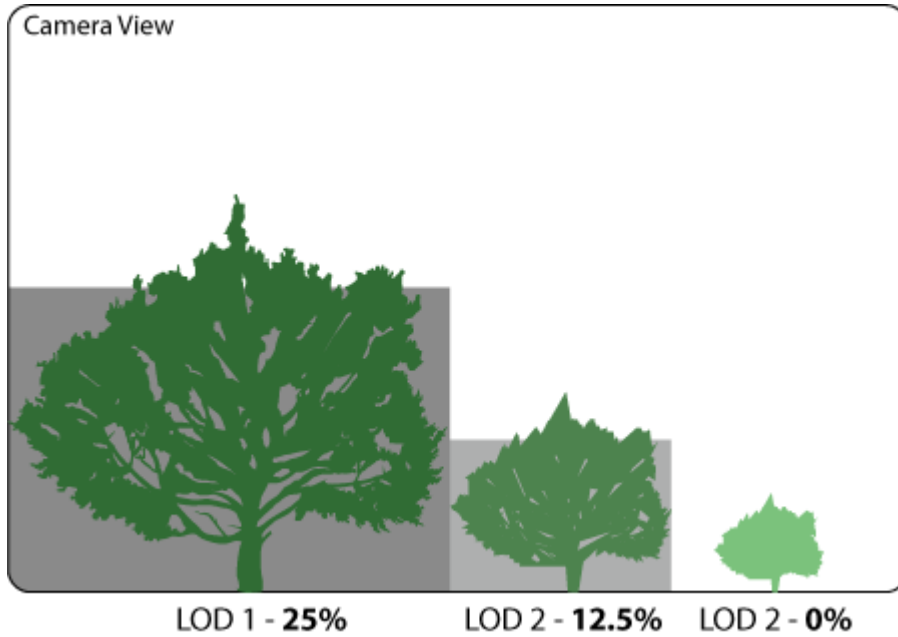
Mode

There are two modes:

- Maximum Distance.** This is the default mode and uses a distance measured in scene units radially from the active camera, or optionally a manually assigned custom look-at target. An LOD level is triggered when its distance from the camera exceeds the percentage specified by the **Visibility > Max Distance** value. In the illustration below LOD 1 is set to 0% so displays immediately. LOD 2 is set to 33% and so becomes active and replaces LOD 1 when an object's distance from the camera is a third of the maximum distance. Finally all objects displayed further than 66% of the maximum distance from the camera are replaced with LOD 3.

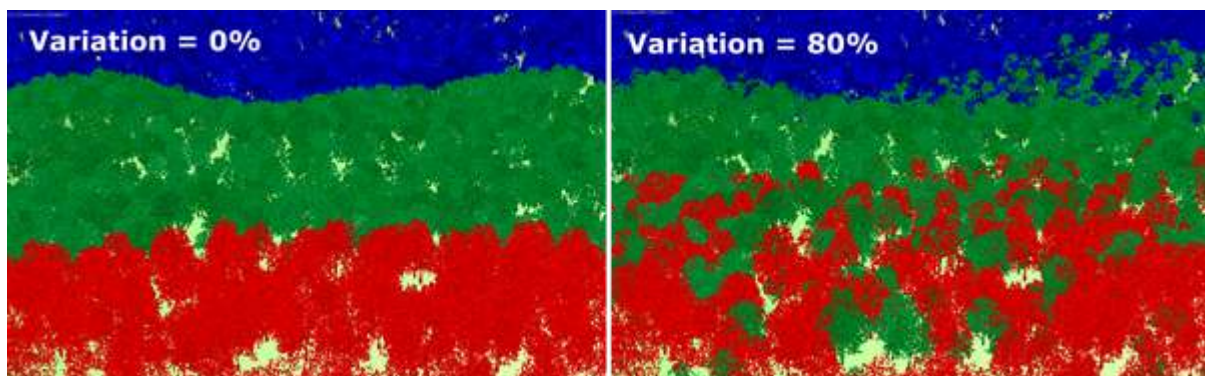


- Minimum screen size:** This mode use the scatter object's size in the camera view to switch between LOD levels. This is measured by comparing the diagonal length of the bounding box to the diagonal length of the screen. In the illustration below LOD level 1 is set to appear only if the tree's diagonal length is greater than **25%** of the screen's diagonal. LOD 2 appears if the diagonal is **below 25%** but **above 12.5%**, and finally LOD 3 will appear when it's diagonal length is **below 12.5%** to infinity.



Variation

Use this to add randomness to the Maximum distance or screen size settings creating a blurred boundary between LOD levels. This helps to disguise the transition from one LOD level to another and reduces obvious popping when rendering animations.



Update on Viewport

When On, LOD effects will be visible in the viewport. When off LOD effects are only visible at render time.

Icon Size

Used to set the size of the Forest LOD icon.

8 Areas

8.1 Overview

The areas rollout is used to define boundaries within which items from the [Geometry](#) list are scattered. There are 5 types of areas that can be used in combination in a single Forest object:

- Splines.
- Objects
- Forests
- Paint.
- Surfaces.

Depending on the type, an area can be set to either Include or Exclude scatter items. Include is an additive mode that creates items within the region, Exclude is subtractive, removing items from the region. The table below illustrates the modes available for each area type.

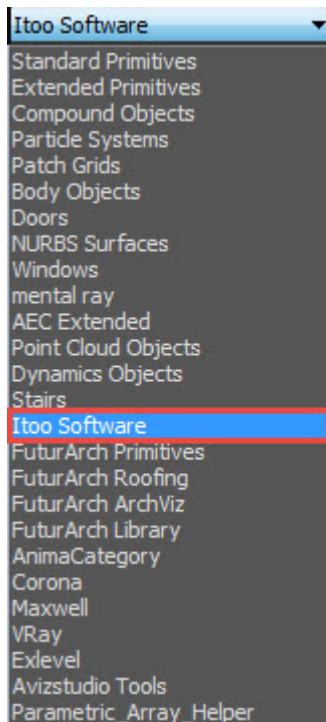
Area Type	Include	Exclude
Spline	✓	✓
Object		✓
Forest		✓
Paint	✓	✓
Surface	✓	

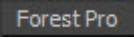
[Surfaces](#) allow you to scatter items on uneven surfaces, it is possible to toggle surface on and off from the areas rollout but adding new surface areas and editing the parameters is handled in a the [Surfaces](#) rollout.

8.2 Procedures

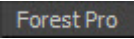
To create a new Forest object based on a spline

1. Open the **Create** panel and select **iToo Software** from the object subcategory list.




2. Click  and then click any spline in the viewport.
3. Open the **Modify** panel and make any necessary adjustment to the spline's settings from the **Area** rollout.

To create a new Forest object based on a surface


1. Open the **Create** panel select **iToo Software** from the object subcategory list.
2. Click  and then click a surface in the viewport.
3. Open the **Modify** panel and make any necessary adjustment to the settings from Surface rollout.

To add a new closed spline area


1. Open the **Areas** rollout.
2. Click  found below the Areas List.



3. Pick a closed spline from the scene.

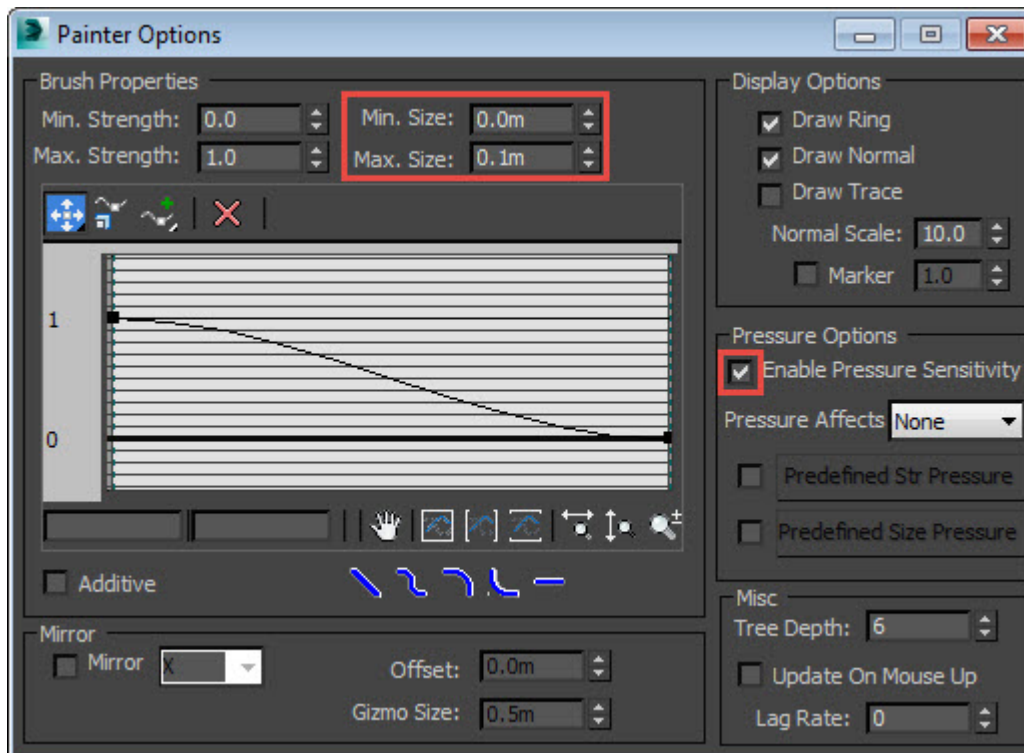
To add a new open spline area


1. Open the **Areas** rollout.
2. Click  found below the Areas List.
3. Pick an open spline from the scene.
4. Adjust the **Thickness** value to define the width to scatter objects either side of the spline.

To add a new paint area


 To use a paint area you must also have a Surface area set to XY mode but this should be switched off in the Areas list to restrict the scatter to only the painted regions.

1. Open the **Areas** rollout.
2. Click  found below the Areas List.
3. Click  to open the Painter Settings.
4. Set the **Min** and **Max** brush size, if you are using a tablet turn on **Enable Pressure Sensitivity** to use pen pressure to control the brush size.

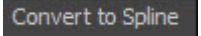
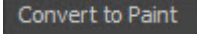


5. Click  and paint on the surface in the viewport.






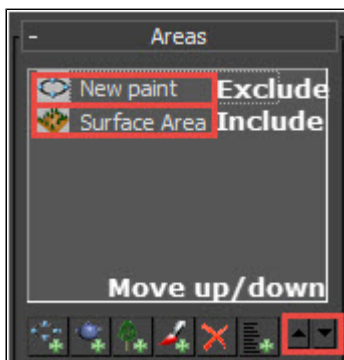
6. Click  and paint on the surface in the viewport to erase paint areas.


To convert a paint area to splines

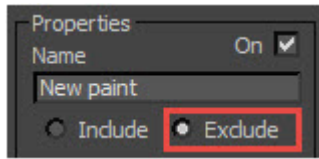
1. Click  .
2. Modify the spline using 3DS Max's standard spline modelling tools.
3. If necessary, click  to restore the spline to a paint area (This can be done with any spline object).

To exclude scattered items using splines


-  In order to work correctly, exclude areas need to be above an include area in the Areas List. To change the order of areas use   .




1. Open the **Areas** rollout.
2. Click  found below the Areas List.
3. Pick a spline from the scene, if it is an open spline enter a **Thickness** value.

4. Click **Exclude**.


To exclude scattered items using an object

1. Open the **Areas** rollout.
2. Click  found below the Areas List.
3. Pick any geometry object from the scene. Where the object overlaps an include area the scatter items will be removed.
4. To improve accuracy for large scenes increase the **Resolution** value (default is 512px).
5. To Increase or decrease the distance between scattered items and the object, adjust the **Scale** value.



 You can also use groups but this is recommended only when the objects are close together. If you need to use multiple objects that are a large distance apart, assign each one as a separate area.

To exclude scattered items using another Forest object

1. Open the **Areas** rollout.
2. Click  found below the Areas List.
3. Select a Forest object from the scene.
4. Adjust the **Scale** value if necessary to change the exclusion size around each tree.
5. Change **Falloff > Exclude** values for Density and scale (see below).

To create a separate region around the base of each tree.

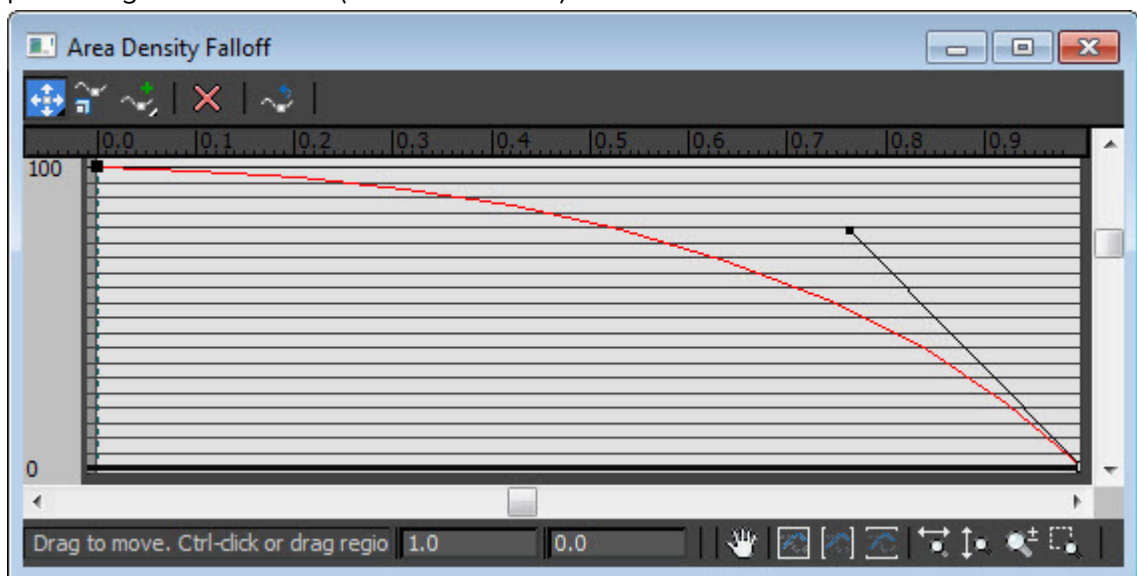
1. Clone the Forest Object use in the last steps
2. Select the the Forest area from the list and click on **Invert Curve**.

3. Adjust falloff, Add Geometry items and Distribution Map as required.

To add scale and density falloff along a boundary

Using falloff controls it is possible to affect the density and scale of objects near an area's boundary.

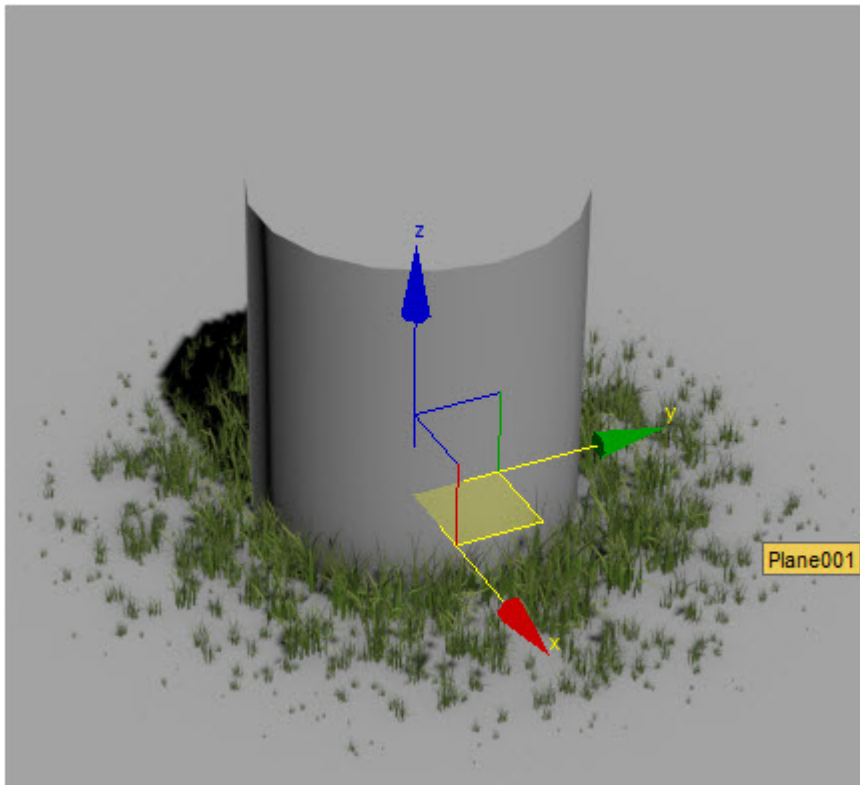
1. Click **Falloff > Density** and **Falloff > Scale**.
2. Enter **Include Range** values to define the distance affected measured from an include area's boundary.
3. Enter **Exclude Range** values to define the distance affected measured from an exclude area's boundary.
4. The default falloff setting is linear, to change the falloff curve click **Edit Curve**.
5. The falloff graphs have the range on the X Axis (from 100% to 0 %) and the Scale or Density percentage on the Y Axis (from 0% to 100%).



To add scatter items around the perimeter of an exclude object

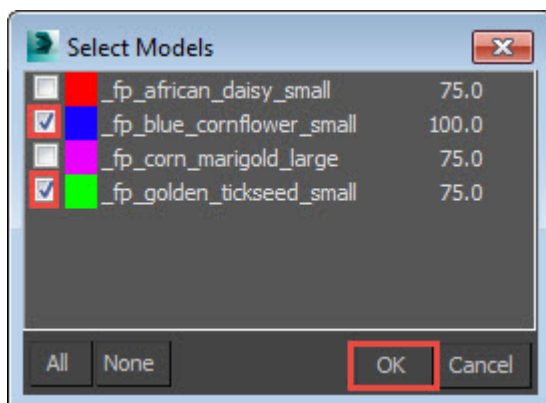
1. Add a Spline, Paint or Surface include area.
2. Add an **Exclude** area above the include area in the Areas list.
3. Turn on **Falloff > Density** and/or **Falloff > Scale** and enter an **Exclude Range** value.

4. Click **Invert Curve**. This will reverse the effect of the falloff curve generating items only around the perimeter of the exclude object.



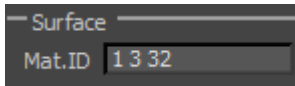
To override the geometry used in an individual area

1. Select the Area to parameterise from the **Areas List**.
2. Click **Plants > Select Models**.
3. Click **Pick** and tick the models to use from the **Select Models** menu. Click **OK**.



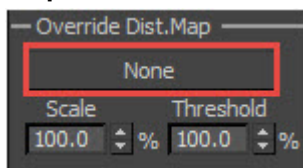
To limit the scatter using material IDs

1. For this feature to work, a Surface must be assigned in the [Surface](#) rollout and Forest must be set to **X/Y Mode**.
2. In the **Mat. ID** list box, enter the Material ID numbers of the faces you wish to use to scatter objects
3. To add multiple IDs simply add a list, ensuring there is a space between each value.



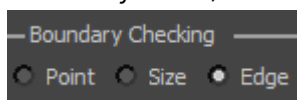
To override the distribution map used in an individual area

1. Adjust the scale of the distribution map by adjusting **Override Dist. Map > Scale**.
2. Adjust the density of the distribution map by adjusting **Override Dist. Map > Threshold**.
3. Apply a new distribution map to the selected area by dragging a map to the **Distribution Map Slot**.

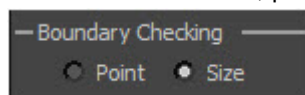


To prevent scattered items from "leaking" outside an area perimeter

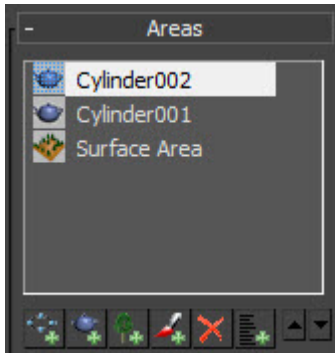
- For V-Ray users, set **Boundary Check** mode to **Edge**.



- For all other renderers, set **Boundary Check** mode to **Size**. To create large areas with well defined boundaries, please refer to the [Grass Edges](#) tutorial.



8.3 Interface






Areas List

The areas list details all the items being used to define the scatter region. The order is important, areas are processed from the bottom of the list upwards, an exclude area will only affect areas that are below it in the geometry list.

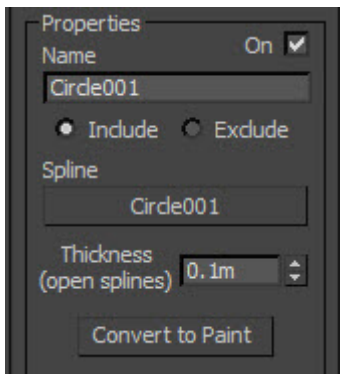


- The areas are not available when working on Custom Edit mode or using UV Surfaces.
- It is important not to overlap multiple Include areas. Overlapping areas duplicates geometry and the issue is not always obvious in the viewports, but you may get strange results in the render because of the coplanar faces.

Icon	Name	Description
	Add spline area	Adds an include/exclude area defined by a spline object.
	Add object area	Adds an exclude area defined by a geometry object.
	Add forest area	Adds an exclude area defined by a Forest Pack object.
	Add paint area	Adds an include/exclude area by painting a spline using the mouse or tablet
	Delete selected area	Removes the selected area.

Icon	Name	Description
	Add multiple areas	Adds multiple areas from a list.
	Move up	Move the selected area up.
	Move down	Move the selected area down

Selecting an area from the list will change the available options in the Properties group. Some properties are common to all types of areas, while other are unique:



Spline Area Properties

On

When active turns the current area on. If unselected the area will be ignored when calculating the scatter regions.

Name

The name of the area. Default behaviour is to inherit the name of the source object but it can also be edited manually.

Include

When active the area creates items within the region defined by the spline.

Exclude

When active the area removes items within the region defined by the spline. Only items generated by areas below it in the Areas List will be affected.

Spline

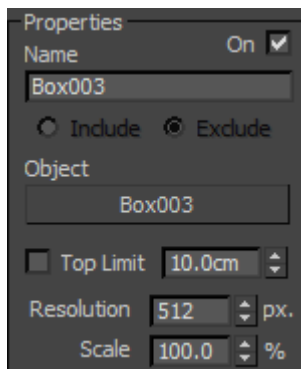
Displays the name of the selected spline. Click this to pick a new spline from the scene.

Thickness

Used with open splines to define the width of the path in which items are scattered.

Convert to Paint

Converts the Spline area to a Paint area.



Object Area Properties

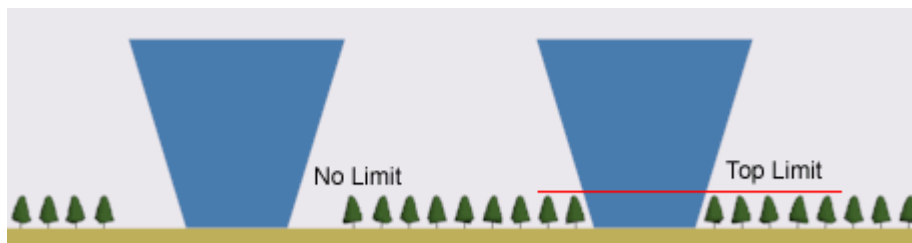
Object areas allow you to use any geometry to exclude scattered objects. Object areas are optimised for high polygon models and work by generating a black and white bitmap map by projecting the geometry onto the surface along the world Z axis.

Object

Displays the name of the assigned objects. Click this to pick a new object from the scene.

Top Limit

Defines a height above which the object's geometry is ignored when calculating the exclusion map. This feature is typically used for objects that are wider at the top than at the bottom.

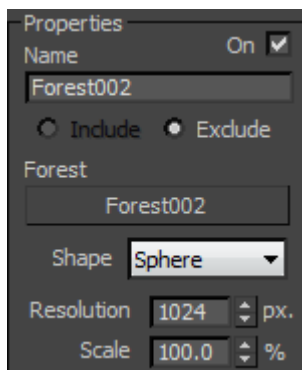


Resolution

Defines the size of the bitmap. Higher numbers result in greater accuracy typically required when using large models. Default value is 512px.

Scale

Scales the exclusion effect. Values of less than 100% will move scattered items closer to the object, values greater than 100% will push scattered items away from the object.



Forest Area Properties

Forest objects work in a similar way to Object areas allowing the use of a Forest object to create an exclude area.

Forest

Displays the name of the assigned Forest object. Click this to pick a new forest from the scene.

Shape

Select from Sphere or Mesh to define the geometry used to create the exclusion effect. Sphere uses a virtual bounding sphere that is much faster though less accurate. The size of the sphere can be adjusted using the Scale value of the area or by changing the Collision Radius parameter for the Items found in the [Geometry Rollout](#).

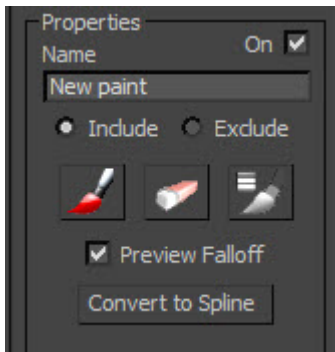
Mesh mode uses the full geometry to calculate the exclusion effect. The approach is more accurate but can be slower when using dense geometry.

Resolution

Defines the size of the bitmap. Higher numbers result in greater accuracy typically required when using large models. Default value is 512px.

Scale

Scales the exclusion effect. Values of less than 100% will move scattered items closer to the object, values greater than 100% will push scattered items away from the object.



Paint Area Properties

Paint areas allow you to paint include and exclude regions with a mouse or tablet directly onto the terrain. Paint areas require a Surface set to XY mode.

Include

When active the area creates items within the region defined by the spline.

Exclude

When active the area removes items within the region defined by the spline. Only items generated by areas below it in the Areas List will be affected.

Paint

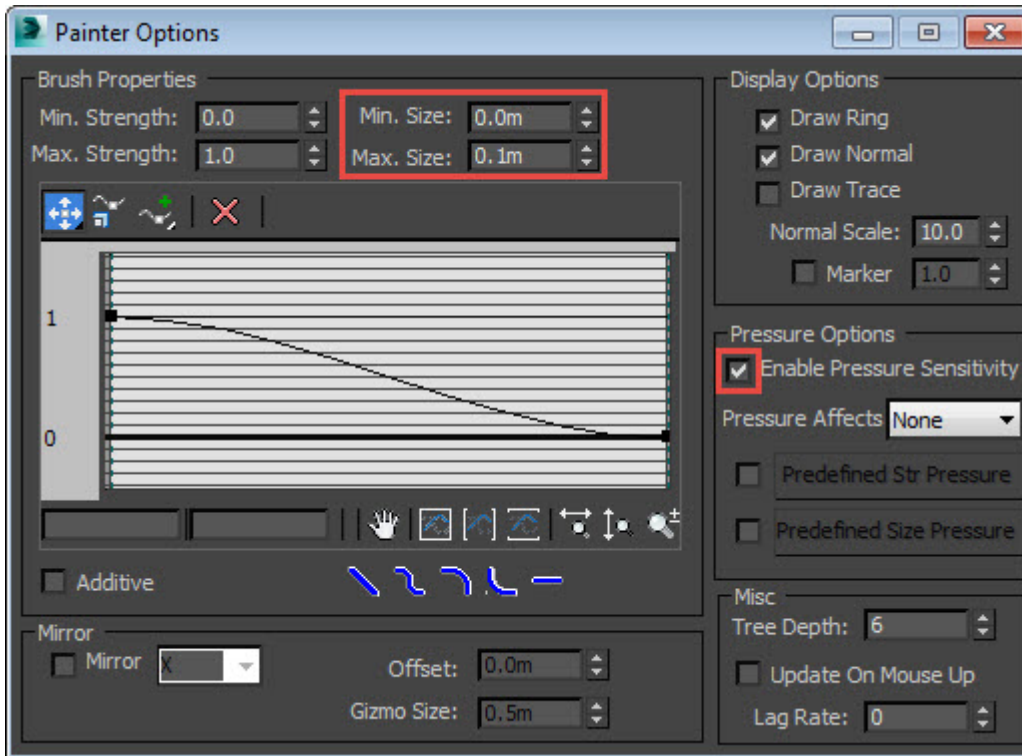
Paint on a surface in the viewport to add to the current area.

Erase

Paint on a surface in the viewport to subtract from the current area.

Settings

Click to open the brush settings. From this menu you can adjust the size and pressure sensitivity of the brush and erase modes.

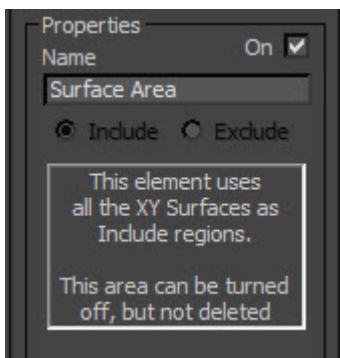


Preview Falloff

When active the falloff effect is visible while painting (enabled by default).

Convert to Spline

Converts the Paint area to a Spline area.



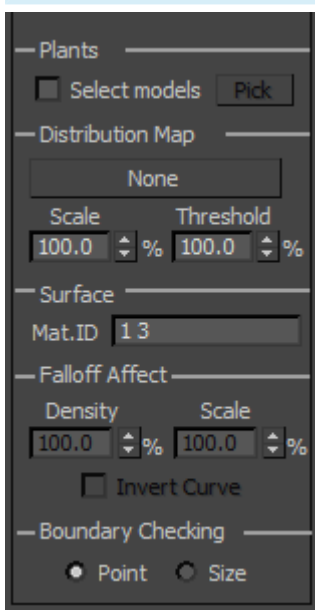
Surface Area Properties

Due to the large number of options the majority of the surface areas settings are found in a separate [Surfaces rollout](#). They do however display in the Areas List and can be toggled on or off from the Areas rollout.

On

Turns the surface on or off.

i Surfaces are often used to define the scattered item's position on the Z axis in conjunction with splines and paint areas to define the region on the X and Y axes. Occasionally you may find that the full terrain is filled with items, even though there are spline areas in the Items List. If this is the case the usual problem is because the Area is on, when using surfaces with other Include areas it is important to turn the Surface off.



Common Properties

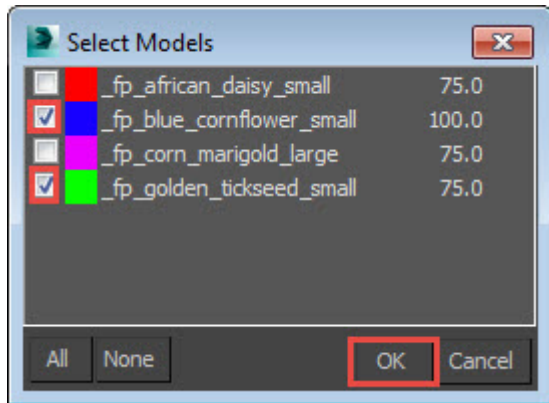
These properties are found in all area types.

Select Models

When active the selected area uses a subset of the models from the Geometry list defined in the Pick menu

Pick

Opens the pick menu. When Select Models is active the current area will use only the models ticked in this list.



Override Distribution Map

Used to override the global distribution map.

Scale

Scales the distribution map only for the selected area.

Threshold

Adjusts the threshold only for the selected area.

Material ID

Limits the scatter surface to use faces with only the material IDs listed. To use multiple IDs, simply leave a space between them.

Falloff Affect

Adjusts the strength of the density and scale falloff curves. Setting this value to zero disables the effect completely.

Invert Curve

Inverts the falloff curve. Commonly use to create scatter items around boundaries and the perimeter of exclude areas.

Boundary Checking

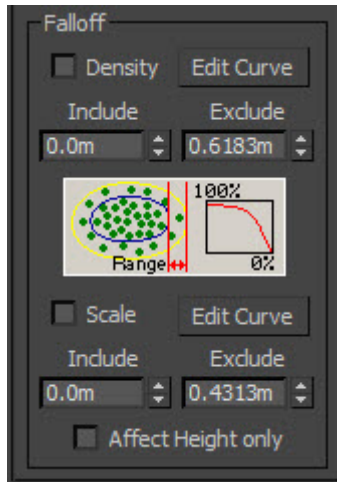
Forest Pack 4.3 can use 3 potential modes to determine if an object falls outside of the scatter area and is removed.



- **Point:** Uses the item's pivot point to check if outside the scatter area. If true the entire item is removed and you may get overlaps.
- **Size:** Uses the item's width and collision radius to check if outside scatter area. If true the entire item is removed and you won't get overlaps but the boundary can be uneven if the item's size is too large.
- **Edge (V-Ray only):** Uses the lowest Z Vertex of each of the item's individual elements to check if outside the scatter area. If true only the individual element is removed creating a clean edge, without slicing the geometry. Note that when using edge mode, an element is defined as a group of connected faces that share the same material ID. These are the same elements used by [Forest Color](#).

Edge Mode does not preview in viewports

To improve viewport performance edge trimming is calculated only at render time. This means the effects of this mode will not be previewed in the viewports. However, previews can be enabled by holding down the left CTRL key and clicking on the Edge radio button .



Falloff

Density

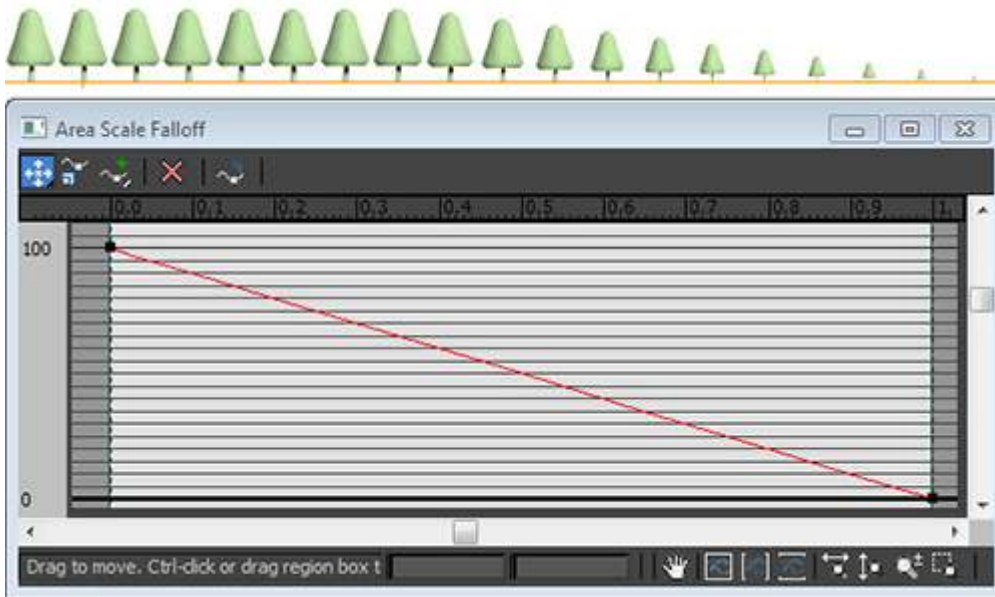
When on, items will change density as they approach a boundary. The distance from the boundary is controlled by the include and exclude range values and the density is defined by a falloff curve.

Scale

When on, items will change scale as they approach a boundary. The distance from the boundary is controlled by the include and exclude range values and the density is defined by a falloff curve.

Edit Curve

Edits the the falloff curves for the density and scale effect. There are separate curves for scale and density.



Include

Sets the range for the falloff effect on the perimeter of Include splines and surfaces.

Exclude

Sets the range for the falloff effect on the perimeter of Exclude objects, forests, and splines.

Affect Height only

When on the scale falloff effect only affects the height of the items. Dimensions on the X and Y axes remain unchanged.

9 Distribution Map

9.1 Overview

This rollout allows the user to specify a map to define the distribution of trees within the inclusion area.

To allow for the most flexibility an image is used. In it, each pixel represents a potential tree position, white pixels are tree locations, black pixels are empty space.

Using this method, we can define any distribution, from random surfaces to very regular groups.

9.2 Interface

Image

Forest can use a bitmap or a map as distribution image.

The plugin comes with some standard bitmaps included (Very Scattered, Scattered, Spread 1, Spread 2 and more). A custom bitmap can be selected as well by clicking the button under "Bitmap". The list of bitmaps is user customizable. In C:\Program Files\ltooSoft\forestpackpro\distmaps, there is a text file named "index.dat". It includes a list of the bitmap names and the associated file names.

To use a map, click the 'Map' button and select it from the Material/Map browser. All Max texture types are supported, from static bitmaps to animated noise maps. Use the "Clear" button to remove it.

The "Map channel " parameter is described in the following section.

Density

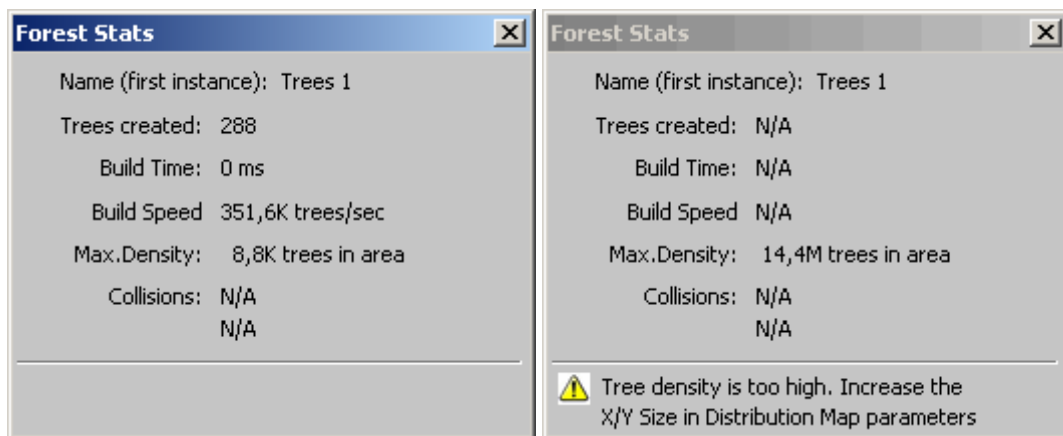
Lets the user choose the scale of the distribution map in the scene. The map is applied in a manner similar to the way texture maps are applied in Max. The image is scaled according to the defined size, and tiled in all directions.

It's important to remember that the perimeter of the forest is always defined by a spline boundary . The distribution map only shows how the trees are arranged within that spline.

X/Y Units

Defines the size of the distribution map in scene's units. If we use small values, we will see how the density of trees and the number of trees grows. Also, the process time and geometry size of the Forest object is higher. The plugin is optimized for speed, but to further speed up the plugin, here are some recommendations:

- If the bitmap has fewer white pixels (less trees) but you set lower X/Y values, the density will be very high but most of the processing time will be wasted in computing gaps. To increase the density of trees, first set a higher density map, then lower the X/Y parameters. You can see in real-time some build parameters (such as density, number of trees) with the "Forest Stats" window. Open it clicking the "View Stats" button in the "General" rollout.



The "Stats" windows also alerts the user to some warning conditions such as when the area spline is not assigned, if the density is too high and other conditions.

-
- There is a limit for the number of trees created in a Forest object. This parameter is defined in the "Display" rollout, and the default value is 500,000. Also, when the resulting mesh has more than 100,000 faces, Forest builds the trees for the viewport using a simplified geometry (adaptive display). All this behavior may be adjusted with the "Display" parameters.

X/Y Pixels

These values are used to adjust the density in procedural maps, without modifying the X/Y Units scale. These parameters are locked when using bitmaps, using the number of pixels of the image as default value.

Image->Map Channel

As alternative of using the X/Y values to define the density of the distribution map, it's possible to get the scale from the UV coordinates of the surface. This mode is useful to adjust the position of trees in more precise way, using a surface map as reference.

To use this mode, a surface object must be assigned in the "Surface" rollout. The Surfaces can work in two operation modes, XY or UV (defined in the Surface rollout):

- XY mode: the UV coordinates are taken from the map channel defined with this parameter
- UV mode: the map channel 1 is always used, and this parameter is locked.

Fit to scene

Allows the user to fit the map exactly over a position on the scene, automatically adjusting the offset and size values. Use Pick Start/Pick End to select on the scene the position of two opposite corners of the map. This tool is useful for adjusting maps which represent exact positions of elements in the image, such as modified aerial views using a white pixel per tree.

Lock Aspect Ratio

Locks the X/Y aspect of the map. When this checkbox is enabled, the Y size for map is ignored and only the X value is used.

Offset

Adjusts the offset of the map over the scene. Values are in the scene's units.

Threshold

Defines how the image pixels are converted to black/white levels when the bitmap is in grayscale or color mode.

Rotation

Rotates the distribution map a specific number of degrees.

Max density

Set the limit of possible tree positions in the area (by default 10 million). Take care: this includes both white and black pixels in the distribution map, so you may reach the density limit using an empty map and low X/Y values, but not get a single tree in the scene.

Draw Gizmo Corners

Draws the corners of the distribution map to adjust it more easily.

See also [Distribution Map - Diversity](#) and [Collisions](#).

10 Distribution Map - Diversity

10.1 Overview

This window defines different modes to select what type of object, from all items defined in the Geometry List, is used when planting a tree for each pixel of the Distribution map.

10.2 Interface

Diversity

Random

Creates plants randomly, using the "Probability" values of the Geometry List. This is the default mode.

Match Color ID on Map

This mode allows you to use colored distribution maps, where the color of each pixel defines a type of plant. In the scattering process, each pixel of the map is matched with the "Color ID" values of the Geometry List, taking the most similar.

Note: the "Probability" values of Geometry List items are ignored on this mode.

Although it's not needed that colors be exact, to get the best results is recommended that "Color ID" values are the most similar possible to those used in the map. Also is better to use high contrast colors as red, blue, yellow, green... The gaps (empty positions) can be defined using dark pixels, where the black level is adjusted using the "Threshold" parameter.

The "Noise" parameter is used to add some random variation to the distribution.

Clusters

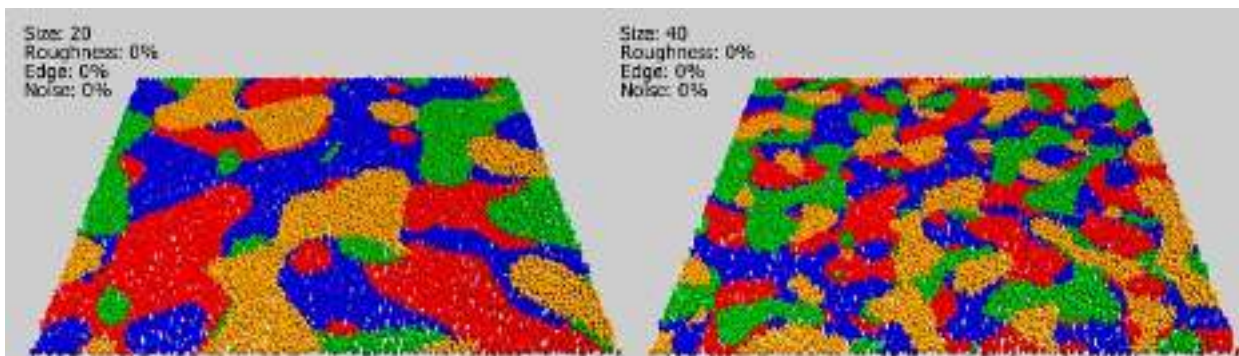
This mode works grouping items of same type, in a similar way that plants are found in the nature. These groups are called clusters.

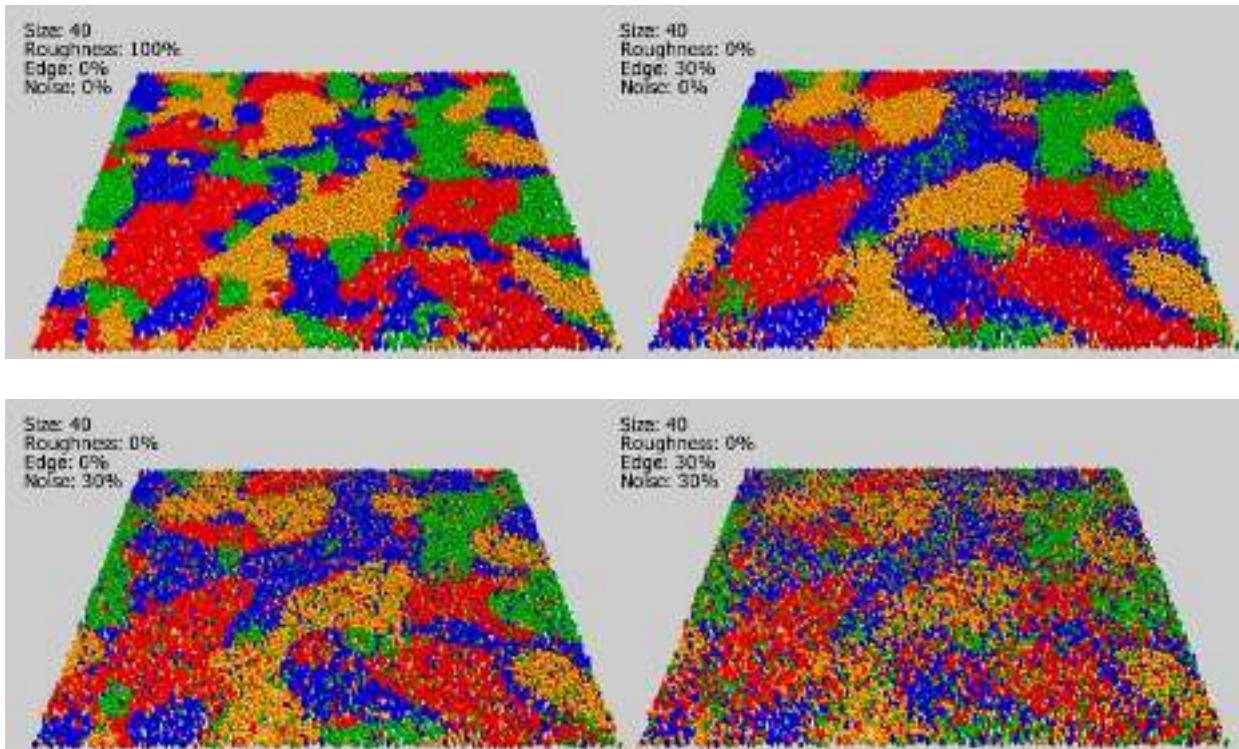


The following parameters are used to define the cluster appearance:

- **Size:** use it to adjust the size of the clusters. This value is expressed in scene's units.
- **Roughness:** set the shape of the cluster (0% = smooth, 100% = rough)
- **Blurry Edge:** modifies cluster edge from sharp (0%) to blurred (100%)
- **Noise:** adds random items to the distribution (0% to 100%)

Clusters require to use more than one item in the Geometry List (grass and flowers, several types of plants, etc). If not, it has no effect.



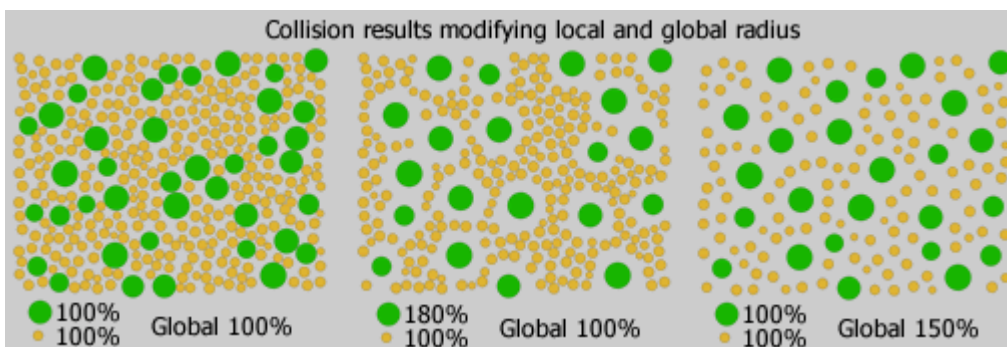


Collisions

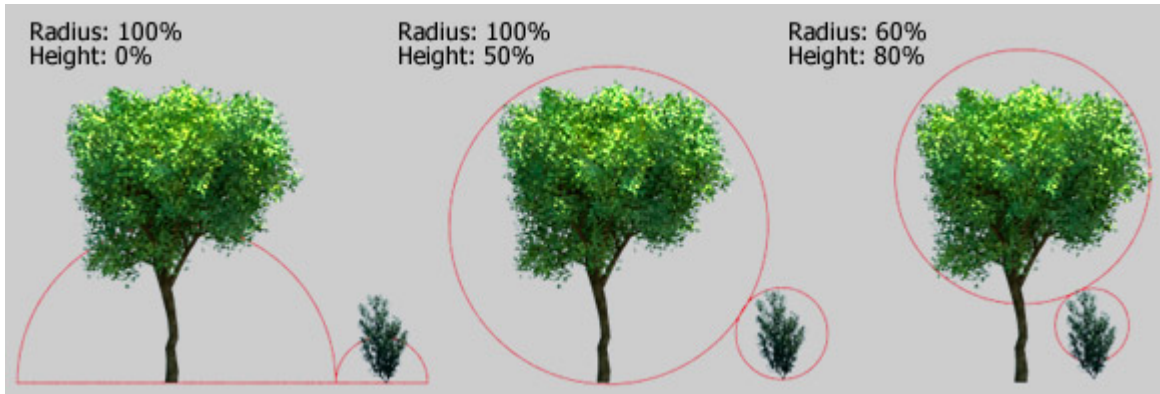
This feature checks the collisions between trees. It works scattering the items, and then deleting those trees that may collide with their neighbors.

Collision checking is based on exploring possible intersections between virtual bounding-spheres that surround each object.

To get the sphere's size of each objet, two parameters are used: Geometry Rollout->Radius, that is defined by each item of the Geometry List, and Distribution Map->Radius, that is a gobal value for the Forest object.. Both parameters are multiplied to get the resulting size. The value is defined in percentage of tree's size (from 100% to 1%).



The "Height" value is used to define the sphere's center in Z axis. The default value (0%) builds the sphere at ground level, increase it to improve the collision detection when using tall trees with large treetops.



Take care when using Collision Detection: if you increase the density of trees (using a dense map or lowering the X/Y parameters), you may get the same number of trees, because most of them are discarded by collisions... but the plugin will have an extra workload in order to process them. This condition is alerted in the Forest Stats window, when the number of discarded trees is greater than 50%.

11 Surface




11.1 Overview


In most Forest scenes, we will not be placing trees over planar surfaces, instead we have hills, mountains, etc. With this panel we can choose the surface that the trees will be placed over.


11.2 Interface

Surfaces List

In the Surfaces list we can choose the objects which represents the terrain. They must be a simple meshes (we cannot use groups, etc.), and the trees will be placed along the local Z axis.

The "Add" button () add a new surface to the list, and "Delete" () removes the selected item.  Add multiple elements from a list of objects selected from the scene.

If we modify the terrain, the objects will not be adjusted automatically over the new surface, the user must press the  button to process the changes through Forest. This may be a limitation for scenes with animated terrain, but it's implemented this way because Forest builds an internal table with the terrain characteristics to optimize the speed of tree placement.

Anyway, this table is common for all Forest objects, so when we have used the same surface for several Forest objects it is only necessary to use the  button in one of them. All trees will be placed automatically. Use the 'Auto' checkbox if you need to update the surface automatically (this may add a performance hit for complex surfaces).

Mode

Forest can use the surfaces in two modes of operation:

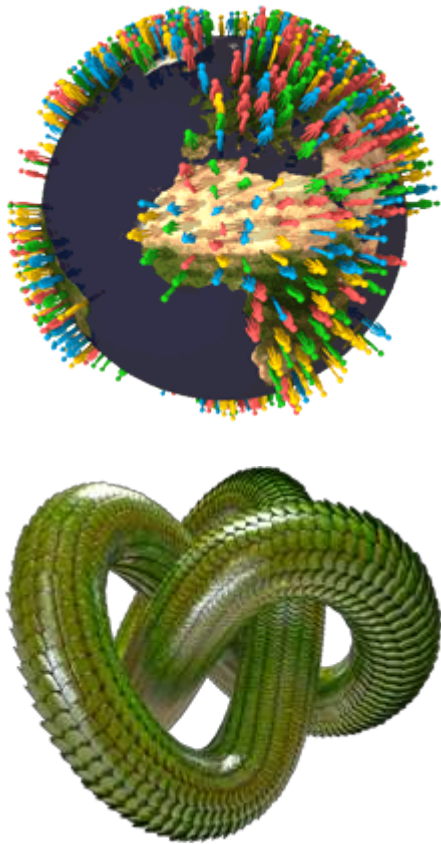
- **XY mode:** the items are scattered using the XY plane of the Forest object (in local coordinates), and then placed on the surface moving each object along its Z axis. This mode is best suitable for smooth terrains and used by default when there is not a surface assigned, using the [Area](#) splines as boundaries.
- **UV mode:** uses the mapping coordinates of the surface as alignment guide for the Distribution map. This mode is best used on rough terrains or to scatter items over convex 3D objects (as a sphere). Note that using this mode, the UV coordinates must be precisely defined to get a coherent result.

Note: Several Forest features are not available in UV mode: Area splines, Bitmap rotation, Dist.Map Channel (locked to 1) and "Link to Surface" on Custom Edit mode.

Randomize Stacked

By default Forest uses the XY position of each item to compute its random seed. If you scatter items that are aligned on the same XY coordinates (i.e. adding several stacked surfaces), all of them will share the same random properties.

Turning on this parameter will avoid this issue, generating different items on stacked surfaces. It is disabled by default, to keep compatibility with scenes created with previous Forest versions.



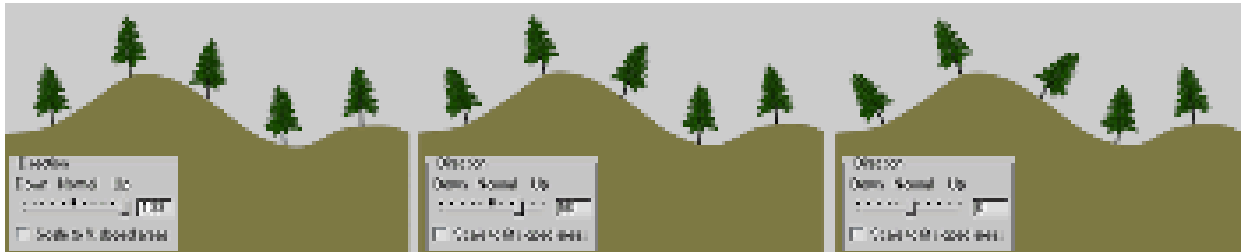
Scattering by UV coordinates

11.3 UV Transform

You can use the UV Transform parameters to modify the alignment and scale of the items according to the UV coordinates. These options are available only in the UV Surface mode.

11.4 Direction

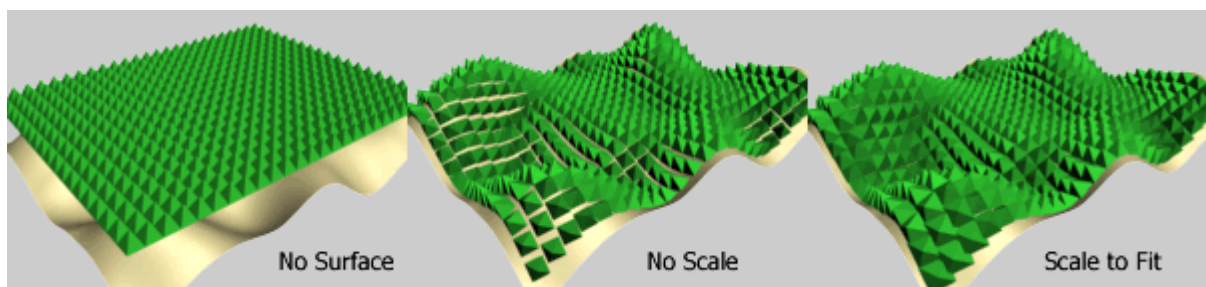
Lets you to modify the direction of the items relative to the surface's normal: -100 (Down), 0 (aligned with the Normal), 100 (Up).



Scale to fit sloped areas

When using sloped terrains on XY mode, this may do that not all trees be equally spaced. This effect is more noticeable in high density distributions (as grass fields). To fix it, you can use this option to scale the items's width proportionally to the surface's slope.

When "Scale to fit" is enabled, the Direction value is fixed to 0 (Normal aligned). This feature is not used on UV mode.



11.5 Altitude Range

These parameters define the altitude limits for tree placement. When the "Limited" checkbox is enabled, trees will only be created in the range specified by Top and Bottom.

The Falloff parameters allows us to define density and scale curves based in the item's altitude. The falloff scale is applied in the range defined by the Top and Bottom values.

11.6 Slope Angle Range

Limits the creation of trees over a range of slope terrain. 0 degrees is equal to a horizontal surface, and 90 degrees is a totally vertical surface.

11.7 Custom Edit Mode only

Since in Custom Edit mode must be possible to move each tree individually (including Z axis), these parameters defines how the trees are placed over the surface: automatically, if "Link to Surface" checkbox is enabled, or manually using the "Place Trees" button.


12 Tree Editor

12.1 Overview

To add scatter items Forest can work in two modes: Generate or Custom Edit. In Generate mode, items are created randomly within the regions defined in the Areas rollout according to the Distribution rules. The Custom Edit mode allow for a precise level of control, allowing you to edit and create individual items manually. A typical workflow might involve working between the two modes by creating an initial scatter of a large area of plants using Generate mode and then switching to Custom Edit to make final adjustments to individual objects to fine tune the composition.

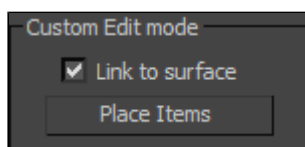
12.2 Procedures

To manually add individual scatter items

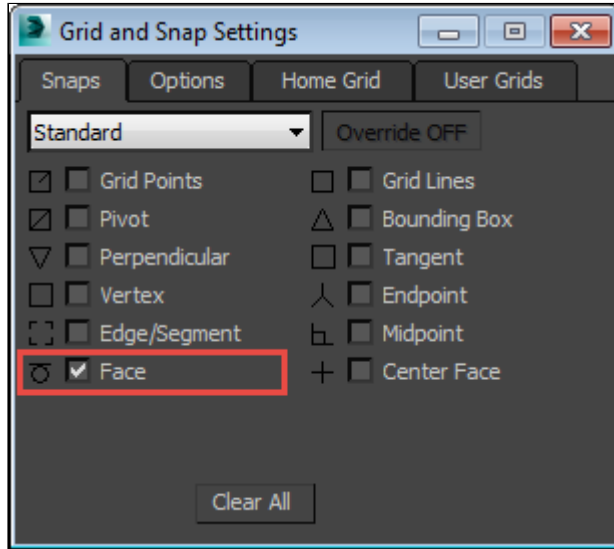
1. From the Tree Editor rollout, click Custom Edit.
2. Enable the tree sub object level from the Modifier Stack Display or by clicking 
3. To determine which items to use from the Geometry list select one of the following modes.
 - To use a specific model, click **Model** and select an item from the drop down list.
 - To use a random item from the Geometry list, click **Random**.
 - To use a sequence of items as defined in the Geometry list, Click **Sequence**.
4. Click **Add**.
5. Click in the scene to place a new item.




- New items will be positioned at zero on the Z axis unless a Surface area is being used and the **Link to Surface** option is active in the Surfaces rollout.

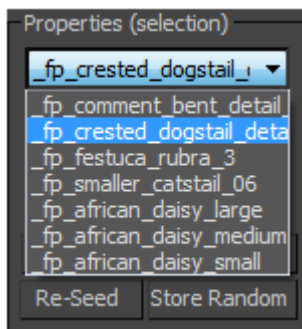


- Alternatively you can set 3DS Max's Grid and Snap settings to **Face** to click on any geometry to determine the Z position of a new item.



To manually edit existing scattered items

1. From the Tree Editor rollout, click Custom Edit.
2. Enable the tree sub object level from the Modifier Stack Display or by clicking .
3. You can now select individual or groups of trees in the viewport. Edit them using the following methods:
 - Manipulate them with the translate, rotate and scale tools in the usual way.
 - Randomise geometry by clicking **Randomise**.
 - Randomise transforms by clicking **Re-Seed**.
 - Specify the geometry used from the items list by selecting an item from the geometry drop-down list



To attach another Forest object

To attach a single Forest object

1. Click **Attach > Single**.
2. Click the Forest object to add from the viewport.

To attach multiple Forest objects

1. Click **Attach > Multiple**.
2. Select the Forest objects to add from the **Attach List**.
3. Click **Attach**.

To detach selected items to a new Forest object

1. In Custom Edit mode, select the items to detach.
2. Click **Detach**.

To create items along a path

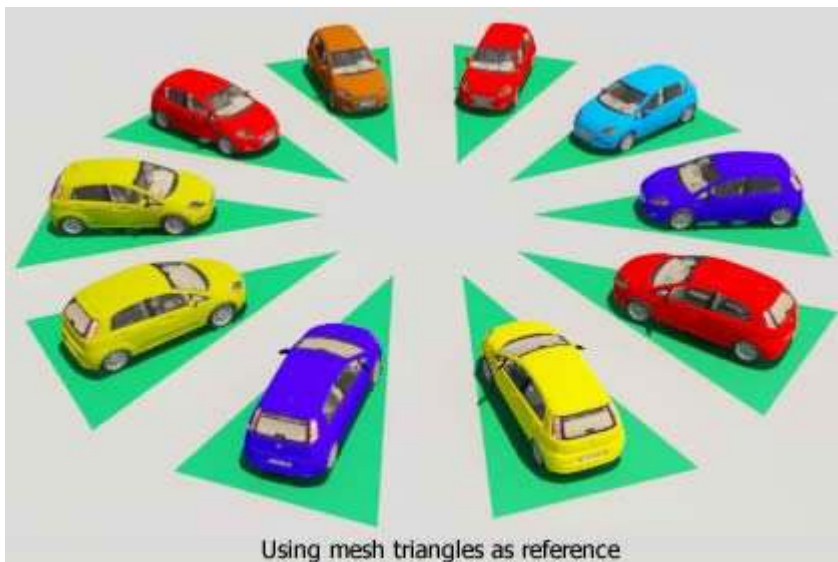
1. Click the **Along a Path** spline picker and select a spline.
2. From the **Properties (Selection)** group, select the mode from Model, Random, or Sequence.
3. In the **Spacing** input, enter the distance between objects. Alternatively click **In Vertex Positions** to place an item on each spline vertex.
4. If the objects should rotate to follow the direction of the spline, click **Follow Path**
5. Click **Create**.



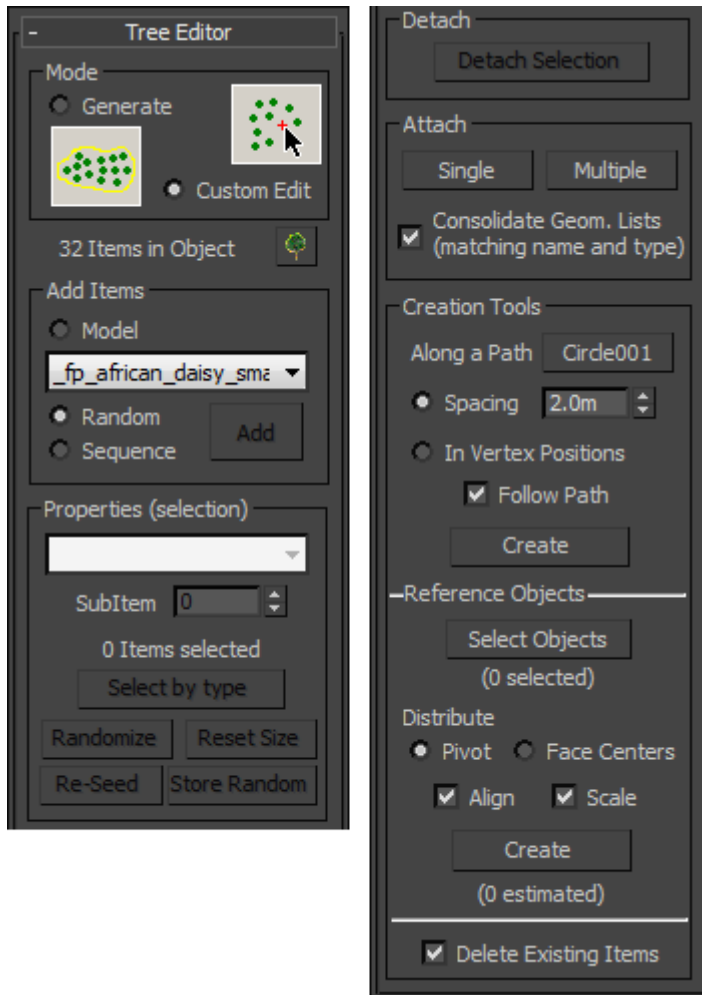
When creating items using paths or reference geometry the default behaviour is to delete any existing items. To retain any items already created in the forest object, deselect **Delete Existing Items**.

To create items on reference geometry

1. Click **Select Objects** and select the reference geometry from the **Create Items in Objects Positions** list.
2. From the **Properties (Selection)** group, select the mode from Model, Random, or Sequence
3. Choose the technique for positioning scattered items:
 - **Pivot** places one object at the pivot point of each selected object.
 - **Face Centers** places one object on the centre of each face of a mesh object.
4. In pivot mode you can click **Scale** to match the scale value of the source objects.
5. Click **Align** to match the rotation of the source objects.
6. Click **Create**.



12.3 Interface



Mode

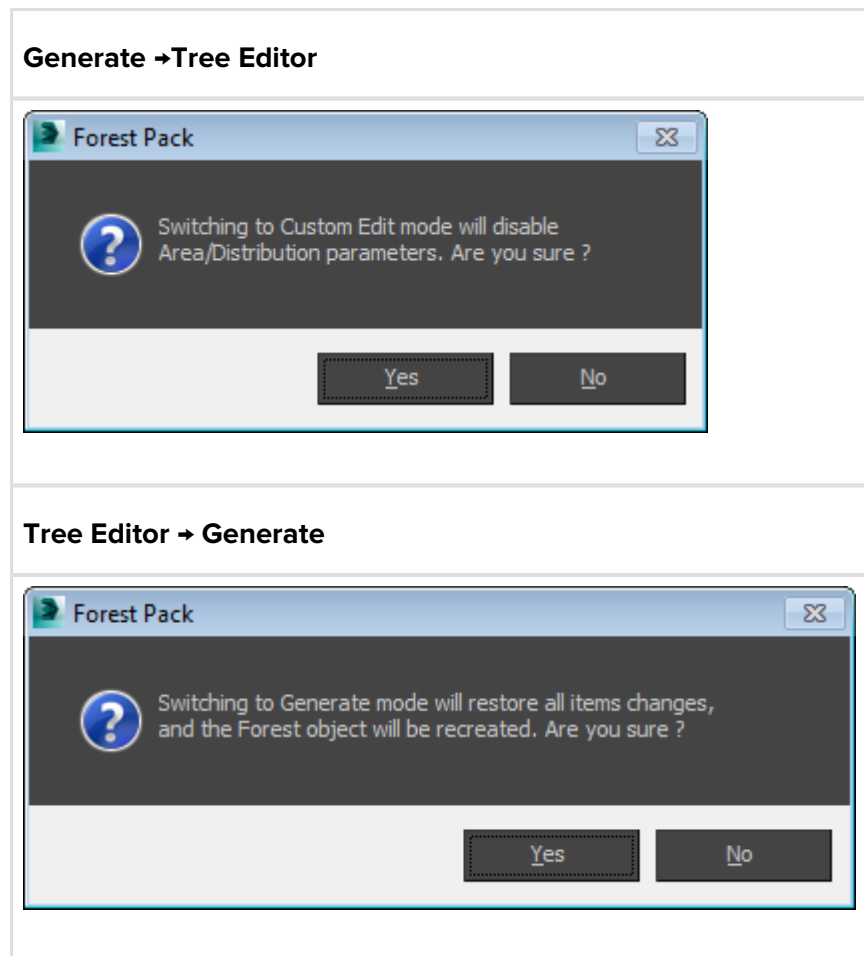
Generate


In generate mode scattered items are placed within regions defined in the [Geometry List](#) according to rules defined in the [Distribution](#) rollout.

Custom Edit

In custom edit mode, items can be created one at a time or distributing along paths or on the pivot points or faces of reference geometry. Once created, scattered objects can be edited manually using Max's default transform, rotate and scale tools.

When switching between Generate and Custom Edit mode, Forest Pack will always display a warning to ensure you don't accidentally lose any changes.



To edit the items, you must also activate the sub-object level using the Modify Stack Display on the Modify panel, or by clicking  .

Add Items

This button creates individual items by clicking in the scene. To use it you must be at the Trees sub-object level.

There are three selectable modes, that work when adding individual items and using the Creation Tools (described below).

- **Selection.** Uses the plant type defined in the Properties combo.
- **Random.** Select a random plant from the [Geometry List](#).
- **Sequence.** Gets the plants models sequentially, as defined in the Geometry List.

Properties (Selection)

Lets you to change the type of plant (from the models defined in the [Geometry List](#).) for the selected items.

Sub Item

When using Groups as Custom Objects this value defines the index of the element inside the group.

Select By Type

Selects all the items that use the type defined in the selection combo box.

Randomize

Randomizes the plant type for all items selected.

Reset Size

Resets the scale of the items selected.

Re-Seed

Applies new random seeds to the selected item's transform setting. Use this option to re-randomize items that have been created by a copying process.

Store Transform

Stores the current random transformations into the items properties, and disables the randomness settings. Useful for attaching Forest objects but maintaining their original randomised transforms.

Detach

Detaches the selected elements to a separate Forest object.

Attach

Attaches items from other Forest objects. You may select a single object or choose from a list.

Consolidate Geometry List

If enabled, the plugin will try to match the Geometry Lists using the Name property and the type of geometry. If not, Forest will append the items from the Geometry List of the attached object.

Creation Tools

These tools are used to automatically build elements inside a Forest object.

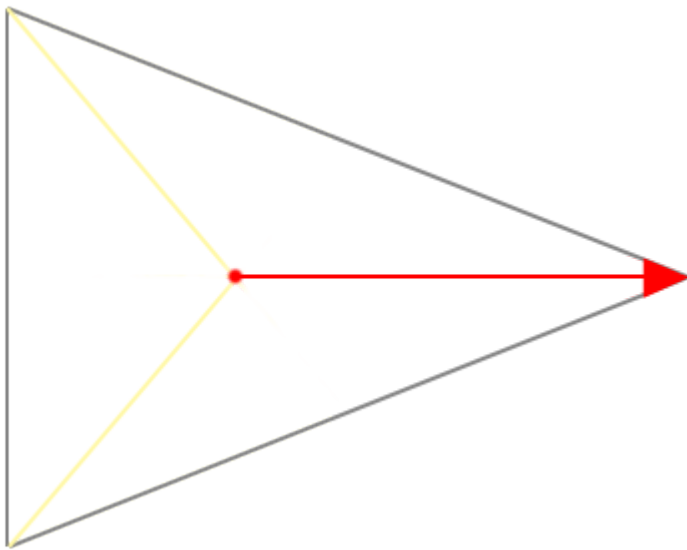
Along a Path

Distributes trees along a path defined by a spline, use evenly spaced to place at a measured distance or create an item for each vertex of the spline.

Reference Objects

Places items using the position of other objects as reference. Several modes are available:

- **Pivot Point:** the point of creation is the Pivot Point of the referenced objects. For example: to create a group of trees in specified points, which have been defined in an external program (such as AutoCad) and imported to 3D Studio Max as dummy reference objects. Align and Scale can be enabled to copy the scale and alignment based on the reference.
- **Face Centers:** creates a element for each face of the referenced meshes. If the Align option is enabled, items are aligned with the face, using as X axis a vector from the center to the farthest vertex in the triangle.



Alignment is calculated using a vector calculated from the center to the farthest vertex.

13 Camera

13.1 Overview

One of the problems with using billboards, is that items must be rotated towards the camera, in order to get a 3D look. Forest can do it automatically, using the Camera features included in this rollout. Also, the plugin allows us to build only the items which are inside of the camera's frustum, allowing to create large areas of vegetation while minimizing the number of scattered items.

13.2 Interface

Camera

With the Camera button we assign a camera in the scene, "Clear" un-assigns it. "Copy" assigns the current camera to all Forest objects in the scene.

Auto assign to active view

This checkbox automatically assigns the camera to the active view, if any.

Apply to Look-At

When on, assigns also the active camera to Look-At target (see below). This is not necessary for billboards (Geometry->Template mode), which do it automatically.

Area

Limit to visibility

Using this checkbox, we limit the items only to the areas covered by the camera's field of view.

Expand

Sometimes (in scenes with camera motion), it's possible that some items will appear or disappear "suddenly" from the edge of view because the vision limit is very narrow. With this parameter, we can widen the field of view. With a 10% or 20% value, the effect is solved in most scenes.

Far Clipping Plane

This parameter limits the creation of items beyond a specified distance from the camera. This value is defined in scene's unit system.

Back Offset

Extends the creation of items behind the camera's position. Use it in combination with the "Expand" parameter, to fix the problem of items and shadows appearing suddenly from the edge of view.

Copy Parameters

Copy the current camera parameters to all Forest objects in the scene.

Look-At

When enabled, rotates the items to look at a specified object (the camera or other node from the scene). This option is commonly used for One-plane billboards, but it also works with Custom Objects.

LOD (Level of Detail)

When on Forest LOD objects added to the scatter are active. This features enables you to switch objects based on distance from the camera or by the size of the objects in the rendered view.

Override Max. Distance

If zero Forest uses the Maximum Distance value specified in the Forest LOD objects. If greater than zero, the value specified in Forest LOD objects are ignored and the value specified here is used.

Use Environment Range

When enabled, the maximum distance is derived from the Environment Range settings of the active camera.

Use Look - At Target

When enabled Forest uses the pivot point of the object assigned in the Look-At Target slot as the origin for the Max Distance measurements. This enables you to separate the camera and origin used for all LOD calculations.

Density/Scale Falloff

Lets you to define density and scale curves for camera distance.

If "Use Environment Range" is on, the range values are taken from the Canera's environment range. This allows us to assign different ranges from each camera easily.

Be careful if you use falloffs with camera motion, because items may appear or disappear suddenly (the distance to camera changes when moving).

14 Shadows

14.1 Overview

The Shadow rollout is used to define the shadow casting behaviour when using billboards. Most of these features are not applied with mesh trees.

Forest can use two types of shadows for the trees: XShadow and Raytrace.

XShadow must be used exclusively with the Scanline renderer, for other render engines as Mental Ray or V-Ray use the Raytrace mode.

In the Raytrace mode, Forest automatically builds some additional planes, one vertical and the other horizontal, which are used ONLY to project the shadows. By default, these planes are not visible in the viewport or rendering.



Raytraced shadows requires Forest Material to work, because this plugin does the job of hiding or rendering the shadow / texture for each plane. Be sure that the material applied to the Forest object uses the "Forest Material" plugin as a base.

14.2 Interface

Use Fake Shadows

This checkbox allows you to disable all XShadow and raytrace options, and cast standard shadows just as any other object in the scene.

XShadow / Raytrace

Vertical

When enabled, this option builds a vertical texture for the trees.

Horizontal

Same as the horizontal shadow. The shadow mask must be defined in the "Forest Material" plugin.

Z Offset

Adjusts the separation of the horizontal shadow from the base of the tree. The value is defined as a percent of the height of the tree. By default it is 5%, you may use higher values if the shadow is hidden by the terrain or the bias parameter in the light is too low.

Width Scale

Use this option to scale the horizontal shadow. A value of 100% will create a shadow of same size as the tree's width. Note: the horizontal shadows created by Forest are squared.

Cast opacity mask for Custom Objects

By default, the plugin casts opacity masks only for trees created from templates. Enable this option to use also on "Custom Object" trees.

Raytrace

Pick/Clear

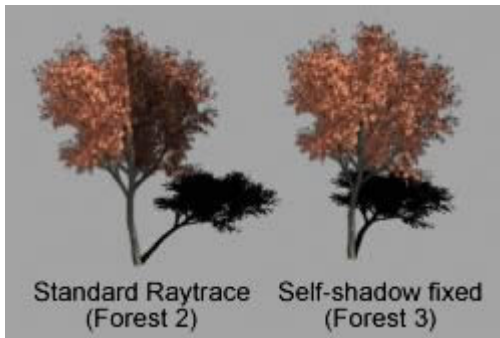
Assigns the light which casts the raytraced shadows. The shadow planes created by Forest will face this light automatically. "Clear" un-assigns it. Without a raytrace light assigned in this parameter, Forest doesn't build the shadow planes. The "Copy" buttons assigns the current Light to all Forest objects in the scene.

Hide Planes in viewport

By default the shadow planes are hidden, use this checkbox if you want to see these additional geometry in the viewports. This checkbox doesn't affect the visibility on the render; if a "Forest Material" is applied to Forest, the shadow planes are not visible but cast shadow. Without "Forest Material" the planes are visible and cast shadow (just as any other geometry in the scene).

Prevent Self-shadow

In Mental Ray and VRay, enable this checkbox to avoid that a tree cast the shadow over itself.



Every tree over itself

Defines how the self-shadowing detection is applied, to the full object (trees don't cast shadows to other trees on the same Forest object) or only each tree to itself.

{If you use Mental Ray, set Shadows Mode to "Simple" or "Sort", but not "Segments" (Render Setup -> Mental Ray Renderer> Renderer> Shadows & Displacement -> Shadows Mode). This mode is not supported by Forest.

i If you use Mental Ray, set Shadows Mode to "Simple" or "Sort", but not "Segments" (Render Setup -> Mental Ray Renderer> Renderer> Shadows & Displacement -> Shadows Mode). This mode is not supported by Forest.

15 Transform

15.1 Overview

In a natural distribution, trees have different orientations and sizes. With this rollout we can apply these variations to the elements.

15.2 Interface

Translation

When enabled, this value defines a random translation of the tree object over its original position. The translation come defined as a percentage of the width of the tree for X/Y and height for Z.

Note: This translation is applied after placing the tree over its position (as indicated in distribution map), so it's possible if we apply a high random translation the tree will be placed outside the area spline. If this happens, we must lower the translation value or modify the area spline until trees are placed in a good position.

Rotation

These parameters apply a random rotation over each axis. The degree of rotation ranges from Min to Max values specified (from 0 to 359 degrees).

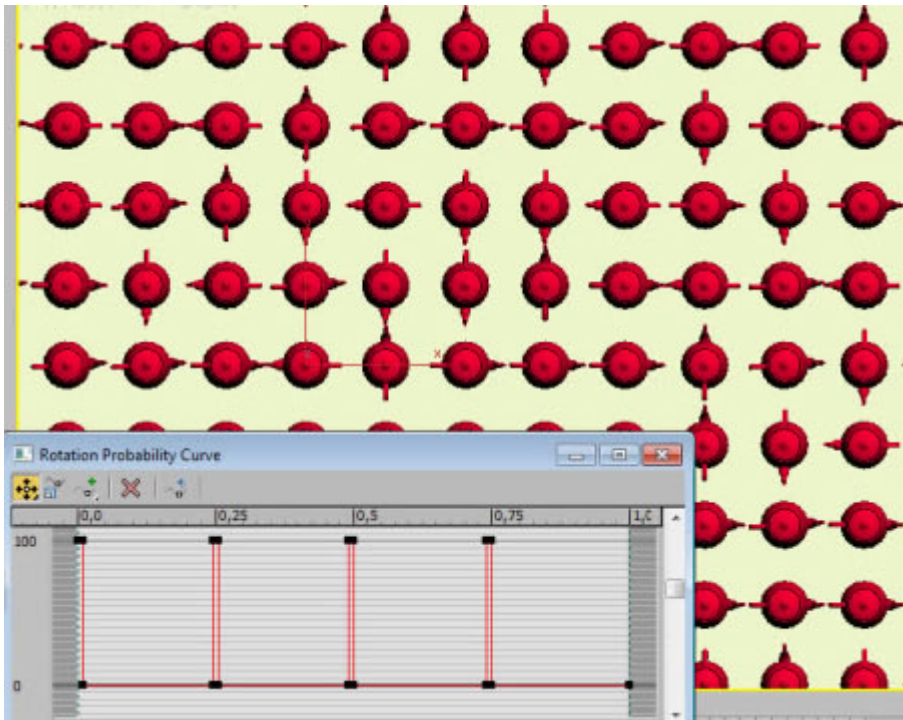
Note: the rotation is not applied if "facing camera" checkbox is enabled in the "Camera" rollout.

Scale

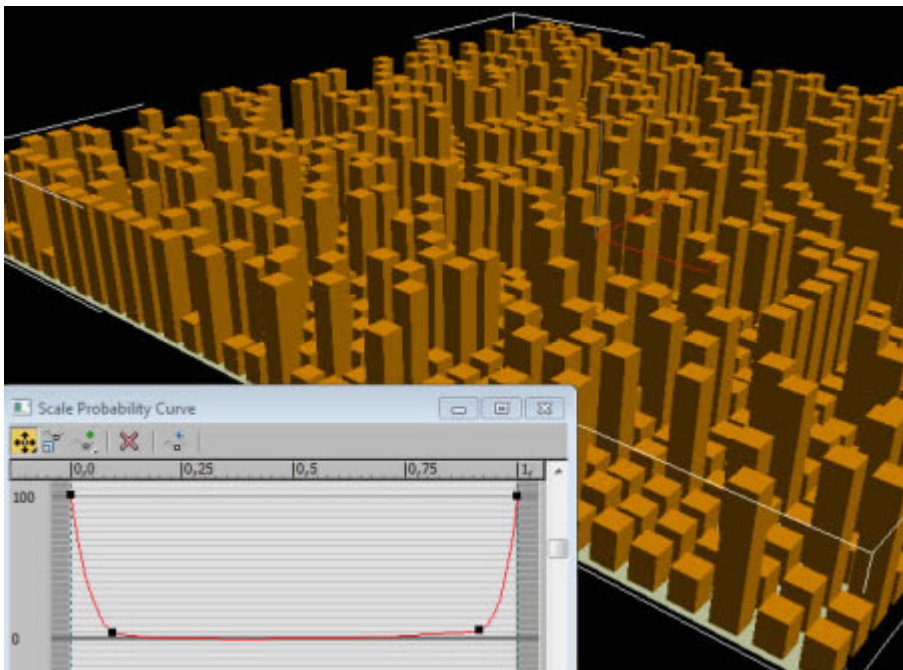
Use this option to apply a random scale for each tree. It's possible to define independent ranges for XYZ, and to lock the aspect ratio with the "Lock aspect ratio" option.

Probability Curves

Lets you to define the probability of each random value in the rotation range (X axis = Min/Max range, Y axis: 0-100% probability).



Rotating to discrete values of 0°, 90°, 270° using a Probability Curve



Non-uniform scale distribution using a Probability Curve

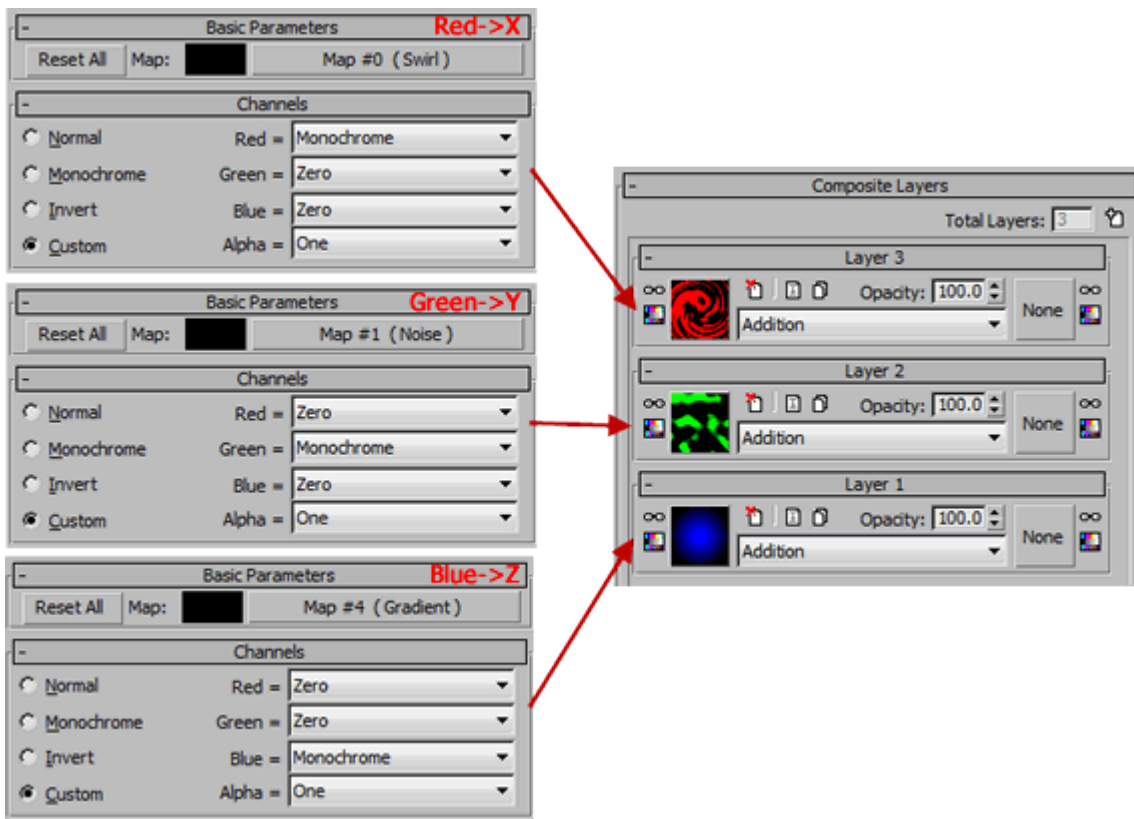
Using Maps

The map parameter may be used to adjust the transform amounts using a texture map.

If the 'Color map' checkbox is off, the map is evaluated in monochrome mode, the white color is considered as the Max rotation value, and the black color as Min.

Turning on 'Color map', the RGB components of the image are used to define the scale for each axis, in this way: Red color-> X, Green color->Y, Blue color->Z.

If you have three monochrome scale maps, one for axis, it is easy to combine them in a unique RGB map using a Composite texture, in this way:



Probability Map

Activating this option uses a map to define a probability amount for the random range defined by the **Min/Max** values. Scatter objects in black areas of the map will not be randomised, objects in white areas will receive a value selected from the full range.



Using a probability map to control scale randomisation. (black = no randomisation, white = full randomisation)

Mirroring

This option flips the tree horizontally, creating a mirror image. It is useful to increase the variation of the textures without using additional maps. By default, it's applied only to trees created from templates, enable the "Use on Custom Objects" checkbox to use on custom object trees as well.

16 Material

16.1 Overview

Applies a random color tint to the items. There are two possible modes of operation, tint by gradient and tint by map.

16.2 Interface

Color Tint

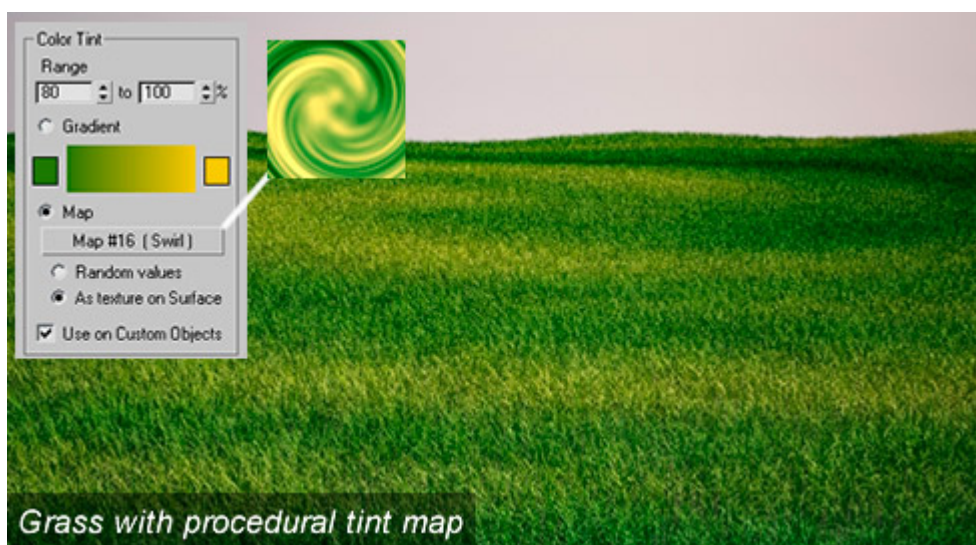
Get Color from Gradient

You may define a Color Range by clicking in the color boxes, and the Random Strength range determine the magnitude of tint applied, from 0 to 100%. Use Min=0 and Max=0 to disable the effect.

Get Color from Map

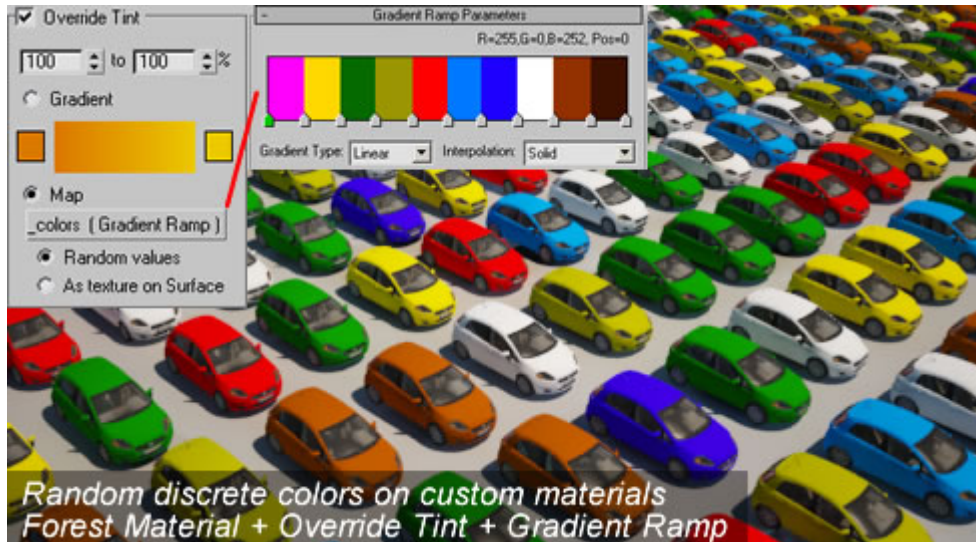
Forest uses a custom map as tinting source. With "Random Values", a random pixel from the map is taken for each tree, and "As Texture" applies it as a standard Max texture.

By default, Forest uses the parameters defined in the Distribution Map rollout (X/Y, offset, rotation ...) for scaling, but it's also possible to get the mapping coordinates from the surface, if there any assigned in the Surfacerollout, and a value greater than zero is assigned to "Map Channel".



Color Tint requires [Forest Material](#) or [Forest Color](#) to work. Be sure that the materials used in the Forest object (assigned in the Geometry rollout or applied directly to the object) use one of these plugins. "Forest Material" is a custom Material included with Forest Pack, and "Forest Color" is a 2D texture map. Without them, Color Tint won't work.

It is possible to customize the tinting options for each material using the "Override" option. See [Forest Material](#) and [Forest Color](#) reference for details.



16.3 Forest Shader

Forest includes a custom shader that enhances the rendering of billboards. Currently, it's only available for Mental Ray. The following parameters adjust the behaviour of this shader. As all options on this rollout, require the use of materials based on "[Forest Material](#)" plugin.

Trace Depth

Maximum raytrace depth used to compute the opacity maps, default value is 3.

Opacity Level

Defines the minimum level of opacity of the mask textures used by Forest Material. As instance, a value of 0.8 considers all pixels darker than RGB=204,204,204 ($255 \times 0.8 = 204$) as opaque. It's used to optimize the computation of opacity maps.

These parameters are used to speed up the rendering, but in some situations using lower values would create image artifacts. To disable them use Trace Depth=99, Opacity Level=1.0.

Self-illum factor

This parameter works as a multiplier of the self-illumination value, for all materials used by the Forest object. Use it to adjust the Self-illum effect, without having to modify each material individually.

Irradiance Color

Defines the effect of global illumination on the Forest object when "Final Gathering" is enabled (Mental Ray renderer options).

To get the best results with these parameters, we suggest this configuration for Mental Ray scenes:

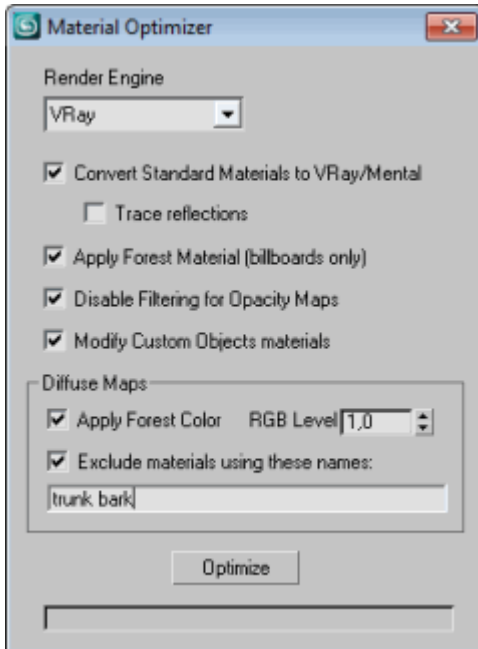
With Final Gathering enabled:

- Forest Self-illum factor: 20% to 100%
- Material Self-illum: 50%. Create all your new materials with this value, you won't need to modify it... use SI factor instead. All materials of the Forest libraries have 50% by default as well.
- Irradiance Color: default
- Use SI Factor + Irradiance to get the desired global illumination over the trees.

Final Gathering disabled:

- Forest Self-illum factor: 20% to 100%
- Material Self-illum: 50%.
- Irradiance Color: not used

16.4 Optimize Materials



This tool helps you to convert and optimize the materials used by Forest, selecting automatically the best settings for each renderer. It includes the following features:

- Convert Standard Materials to V-Ray (VRayMtl) / Mental Ray (Arch & Design).
- Apply Forest Color to the diffuse maps.
- Apply Forest Material (billboards only).
- Disable filtering for Opacity Maps (recommended for leaves using transparencies).

To demonstrate the benefits of the Material optimizer, we have created this free [Alpine Lake scene](#) which uses XFrogPlants. The **render time is over seven times faster** over using standard materials.



17 Animation

17.1 Overview

The animation rollout provides a number of options to allow you to control animated scatter objects. By default animation is turned off so animated scatter objects will appear static, to use animation, choose from one of the following 4 methods.

- **Follow Geometry:** All scattered instances animate in sync with the source geometry.
- **Random Samples:** The starting frame of scattered instances is randomised from a fixed number of sample points along the timeline.
- **Random from Map:** The starting frame of scattered instances is selected using a grayscale map from a fixed number of sample points along the timeline.
- **Frames from Map:** The absolute frame of the scattered instance is controlled by a grayscale map.

See the [Interface](#) section below for a more detailed description of these modes.

17.2 Procedures

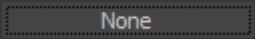
To sync animations

1. Add 1 or more animated scatter objects from the [Add Geometry](#) rollout.
2. From the Animation rollout, activate **Follow Geometry**.
3. To preview the results in the viewport, deselect **Animate Only at Render Time**.

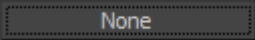
To create randomised animations

1. Add 1 or more animated scatter objects from the [Add Geometry](#) rollout.
2. From the Animation rollout, activate **Random Samples**.
3. Set the number of samples using the **Count** value. Higher numbers create a greater variation.
4. Set the number of frames between each sample using the **Time Offset** parameter. Time Offset and Count work together, for example a time offset of 10 and count of 3 will randomly select between animation start points at frames 0, 10, and 20.
5. To preview the results in the viewport, deselect **Animate Only at Render Time**.

To control the starting frame of an animation using a map

1. Add 1 or more animated scatter objects from the [Add Geometry](#) rollout.
2. From the Animation rollout, activate **Random From Map**.
3. Set the number of samples using the **Count** value. Higher numbers create greater variation .
4. Set the number of frames between each sample using the **Time Offset** parameter. Time Offset and Count work together, for example a time offset of 10 and count of 3 creates samples at frames 0, 10, and 20 that will be selected by the map.
5. Click  in the map group to open the Map Browser and select a grayscale image or procedural map. Alternatively assign a map by dragging onto this button from the Material Editor.
6. To preview the results in the viewport, deselect **Animate Only at Render Time**.

To control the absolute frame of an animation using map

1. Add 1 or more animated scatter objects from the [Add Geometry](#) rollout.
2. From the Animation rollout, activate **Frame From Map**.
3. Define the animation range to be controlled by the map by entering the appropriate frame numbers from the timeline in the **Start** and **End** value boxes.
4. Click  in the map group to open the Map Browser and select an **animated** grayscale image or procedural map. Alternatively assign a map by dragging onto this button from the Material Editor.
5. To preview the results in the viewport, deselect **Animate Only at Render Time**.

17.3 Interface

Disabled

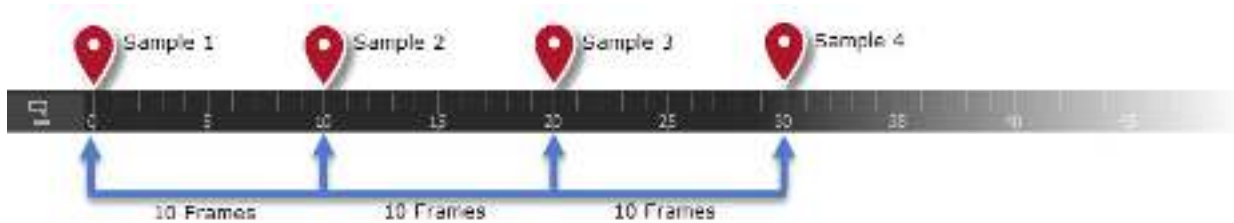
The plugin doesn't apply animation to the trees. All geometry, including templates and custom objects remain static.

Follow Geometry

Forest follows the mesh animation of the source trees (defined in the Geometry rollout), for each frame. If you use the built in billboard templates, only the "Low/Medium/High Animated Planes" templates have animation applied. For "Custom Object" trees, the animation depends on the the selected objects.

Random Samples

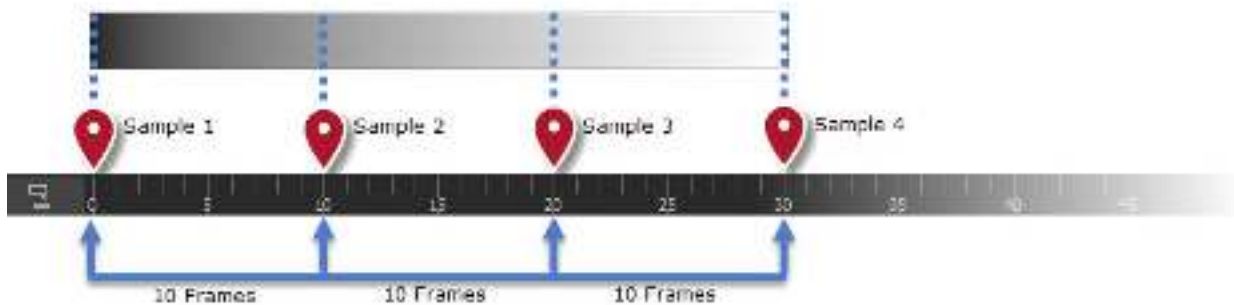
Using this option, Forest takes several sample points along the timeline, and selects them randomly to set the starting point for the animation. The "Samples" parameters, defines the number of mesh samples, and "Time Offset", the difference in time between them, starting from time 0.



In this example, **Count=4**, **Time Offset=10** (using frames as unit-time), will take four mesh samples at frames **0, 10, 20, 30**.

Random from Map

This option works similar to Random Samples, but uses a grayscale map to select the sample point from which the animation will start. The UV coordinates for the map are derived from the surface assigned in the [Surfaces](#) rollout.



Following the above example of **Count=4**, **Time Offset=10**, a black pixel in the map will take an animation sample at frame 0, a white pixel at frame 30, and interpolated samples for pixels in the gray range.

Frame from Map

Using this option you can control the absolute frame of an animated object using a grayscale map. This map can then be animated to control the playback of the scattered objects. The animation range controlled by the map is defined using the **Start** and **End** parameters.



In this example the **Start** is set to 0 and the **End** is set to 30. A black pixel on the map will set the object to frame 0 and a white pixel sets the object to frame 30. Other grayscale values smoothly interpolate between these two frames.

18 Display

18.1 Overview

18.2 This rollout allows the user to define different levels of visualization for viewport and render modes.

18.3 Interface

Display

Mesh/Adaptative/Proxy

These options allows Max to display the items using the original geometry or a proxy (Planes, Pyramid, Box, Thin Box, Plant). For proxy objects, it's possible to adjust the transparency and display them in wireframe mode.

The Adaptative option, automatically switches the display mode when the number of faces exceeds the specified value.

Points Cloud

This is an ultra-fast view mode which lets you to see a 3D preview of plants on Viewport. Some of its features are:

- Adjustable density of points, both to the local object or global to all Forest objects.
- Color by ID or from Material. Forest gets the material color from the Diffuse slot.
- See Random Tint colors in real-time.
- Fake shading effect, to enhance 3D look. Adjust it using the Shade slider.

Max Items

Defines the maximum number of items drawn on screen. This is an approximated value, Forest adjusts the density of the distribution to not exceed this limit.

Manual Update

Set the update mode of the selected Forest object: automatic or manual (clicking the Update button).

Disable Object

When enabled the object is disabled in the viewports and the render.

Freeze All

This option allows you to Freeze ALL Forest objects in the scene, except before rendering a frame. It is useful to reduce the load on 3D Studio when there are a lot of objects.

Render

Mesh/Adaptative/Proxy

These options allows Max to render the items using the original geometry or a proxy (Planes, Pyramid, Box, Thin Box, Plant).

Simplification Level

With "Simplification Level" we can reduce the number of items created by the plugin. With the 0 value, all trees are built, and with 1,2, etc., the number of trees is reduced progressively.

Normally, we leave the simplification level to 0 for normal render. Higher values are used to quickly reduce the final density of trees over the scene without changing the distribution map parameters.

Render Mode

This parameter defines the behaviour of Forest when it creates the elements for rendering. The possible values are "Automatic" and "Meshes".

In "Automatic" mode, the plugin uses all capabilities of the renderer to get the best results in complex scenes, creating automatically instances, meshes or proxies according to the type of objects defined in the Geometry rollout. Currently, this mode is used only in Mental Ray and V-Ray.

In "Meshes" mode, Forest creates a single mesh containing all trees. This mode may be useful, as an instance, if you want to create a Forest object that uses another Forest as tree sample (this must use "Meshes" mode to work with MR/V-Ray).

Max Items / Max Faces

Limits the maximum number of items or mesh's faces created by the plugin. The default value is 500,000 objects and 5 million faces. When this limit is reached, the plugin builds an "F" icon instead of trees, and the [Forest Stats](#) window shows a warning message.

Note: The "Max Faces" value is ignored in Mental Ray / V-Ray and "Automatic" mode, since these renderers are not limited by the number of faces when working on this mode.

Hide Custom Objects before rendering

If this option is on, the plugin hides from the render the objects assigned in the Geometry->Custom Object rollout. Use it to avoid rendering the high-poly meshes, proxies and other objects that are used only as source geometry for Forest.

19 Library Browser

19.1 Overview

The library browser allows you to easily organise, access and share objects and presets that you use regularly. Forest Pack comes with an expanding range of objects including 2D Billboards, flower, grass and rock 3d models and grass, leaf and stone presets. Additional libraries from XFrog, Evermotion and HQ Plant can be purchased that integrate easily with the library browser, or custom libraries can be created from your own objects.

i Object types



The library is able to store three types of object:

- 2D Billboards use bitmap textures stored in a material library. These are mapped to 2D planes generated automatically by the plugin. No geometry is stored in the external file
- 3D Objects use geometry stored in an external .max file. When used the object can be either XReferenced or merged into the current scene. Forest Pack will use the material assigned to the object in the original file unless specifically overridden.
- Presets import complete Forest Pack objects, including any combination of Billboards and 3D objects plus all the rules that govern their distribution and appearance. Using presets allows you to quickly share and reuse complete styles without having to set the Forest Parameters for each use. Presets are simply created by referencing a completed Forest Object in an external .max file.

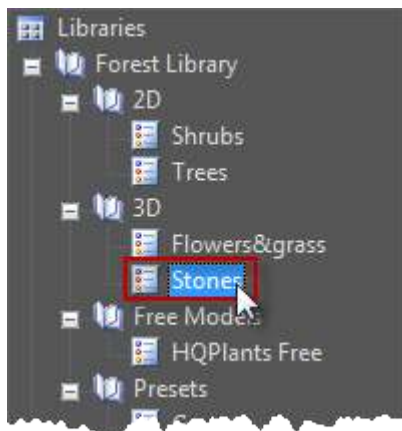
19.2 Procedures

To open the Library Browser

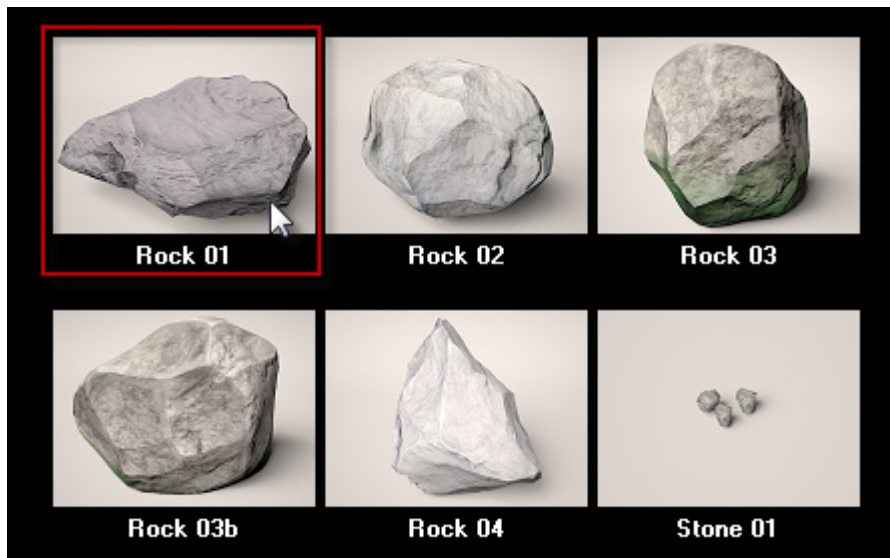
- To access the library go to the Geometry rollout, select or add a geometry item and click on Properties>Library to open the Library Browser.

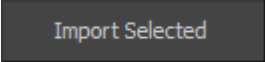
To use a library object

1. Use the **Tree Navigator** to locate your library.



2. Select the library object you wish to use from **Items Grid**.



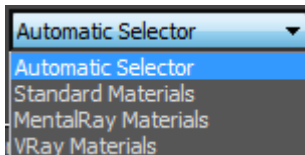
3. Either double click, right click and select use item, or click  to use.
4. Set area, distribution, transform and other settings as appropriate.

To use a preset

1. Use the **Tree Navigator** to select your presets library.
2. Select the preset you wish to use from the **Items Grid**.
3. Either double click, right click and select **Use Item**, or click **Import Selected** to use.
4. Most of the Forest Pack parameters will be imported, update the Area or Surfaces controls if required.

To manually choose a material for a renderer

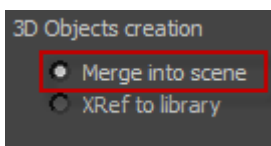
1. Select the item you wish to use, note that not all library objects have multiple materials assigned.
2. From the options bar at the bottom of the Library Browser, go to **Materials > Using** and select the renderer you wish to import a material for from the drop-down list.



3. Either double click, right click and select Use Item, or click Import Selected to use.

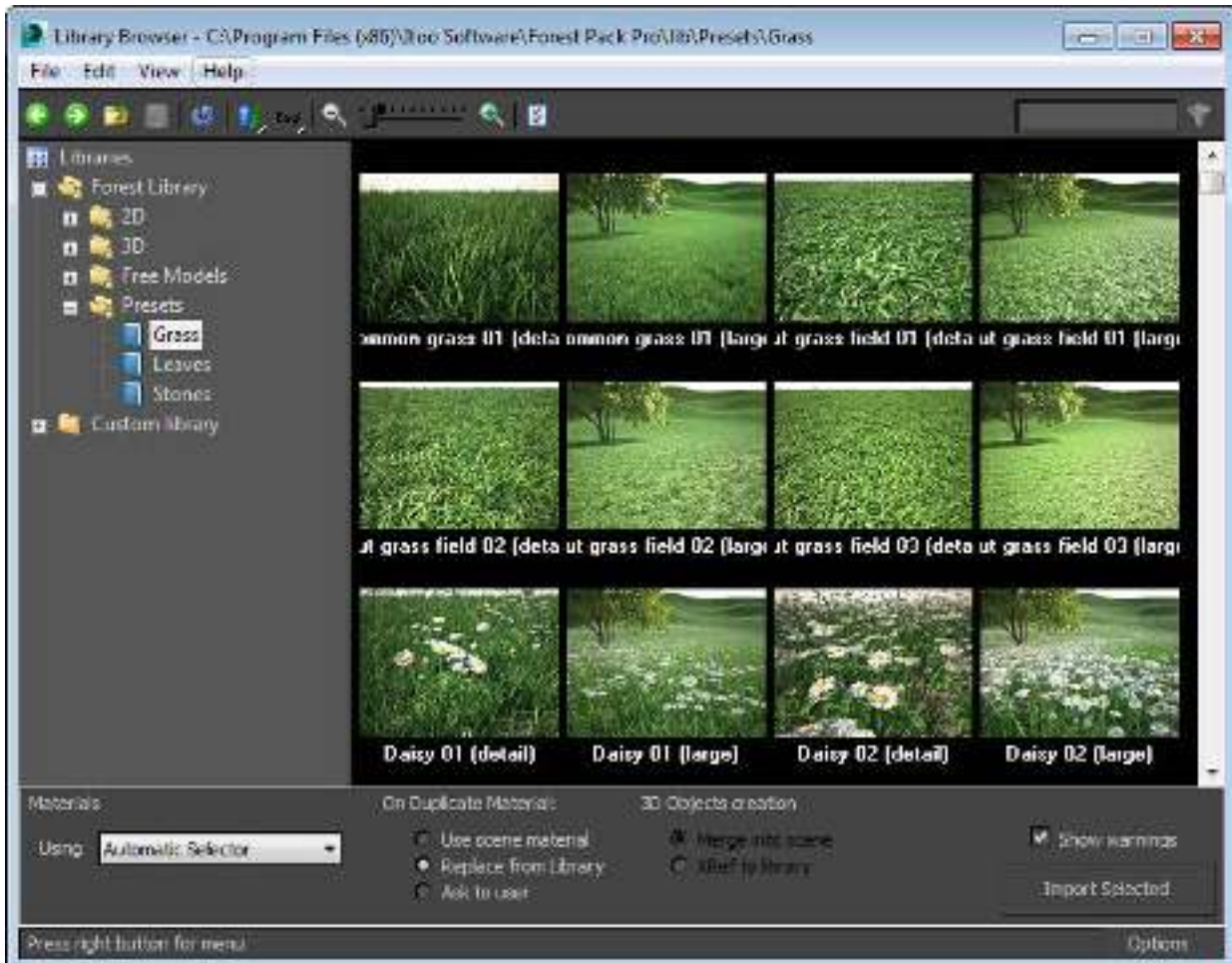
To merge the library object's geometry into the scene

1. Select the item you wish to use.
2. From the Options bar at the bottom of the library browser, change the 3D Objects Creation mode to Merge into Scene



19.3 Interface

The Library Browser is divided into three parts. On the left is the tree navigator, where you select, edit and open your libraries. These are organised into two types of folder. System folders, represented in blue, are the default libraries that come with Forest Pack. These are read-only and cannot be modified. Editable user folders are green and are where your custom libraries can be found. On the right is the Items grid, where the contents of the selected library are shown. Along the top is the toolbar, with several command buttons.



Tree navigator

The tree is used to navigate, edit and select libraries. To use simply use the mouse or keyboard to expand folders and select libraries as you would in Windows Explorer, the following operations also apply:

- To open a library: left click on it.
- To move libraries: left click and drag to the new location.
- To copy libraries: left click + CTRL key while dragging.

As mentioned system wide folders are read-only, if you wish to modify them, simply make a copy to a User's library folder. Libraries can be copied between computers or shared in a network.

Items grid

To choose an item, use the mouse or the arrow keys. The selected item is identified by a yellow border. To use the selected item in Forest Pack Plugin, press return, double click, right-click>use item, or press "Import Selected". To add multiple items at same time, select while pressing the SHIFT or CTRL key and press Enter

When using Billboards, each item has an associated Width, Height, Z Offset and Center Displacement values. To use these parameters in the Forest object, ensure the "Get Size from Library" checkbox in the Geometry panel is on.

Options Bar

At the bottom of the screen are the options to control various aspects of how the library item is imported into the scene

Materials Using.

Library items can be configured to use a different materials dependant on renderer. This drop down list allows you to manually select which materials to import, or to let Forest Pack automatically select the best material for the current renderer, leave on automatic.

On Duplicate Material.

Determines what to do in the event that a material applied to an item shares a name with a material already in the scene. Options include using the scene material, replacing the scene material with the library material, or prompting a decision from the user for each item.




3D Objects Creation.










Defines how to import the geometry, the default option is to XRef to the library files but it is also possible to merge the original geometry into the scene.

Show Warnings.

Turns on/off any warning prompts related to these settings.

Toolbar

Icon	Name	Description
	Previous folder	Go to previous folder.
	Next folder	Go to next folder.
	Up one level	Go to parent folder.

Icon	Name	Description
	Refresh view	Forces the reload all folders, libraries and items from disk.
	Ordering	Choose to view items ordered in alphabet or inverse order.
	Language	Choose to view the common name or scientific names in the grid.
	Zoom out	Decrease size of thumbnail images.
	Zoom in	Increase size of thumbnail images.
	Zoom slider	Click and drag right to increase size of thumbnail images and left to decrease size of thumbnail images.
	Save changes	Saves to disk the changes in current library.
	Edit preferences	Open the catalog preferences window.
	Search	Write text to filter items.

20 Editing a library

20.1 Overview

In addition to the tree libraries included with Forest Pack and a comprehensive range of Xfrog, Evermotion and HQ Plants expansions it is often desirable to create and edit custom libraries to re-use and share commonly used assets. The library browser allows you to easily organise and edit your libraries and create new 3d objects and billboards.



- User editable libraries are available to Forest Pack Pro users only.
- Only user libraries are modifiable, to change the built in libraries they must be duplicated to a users location.

In this Section:

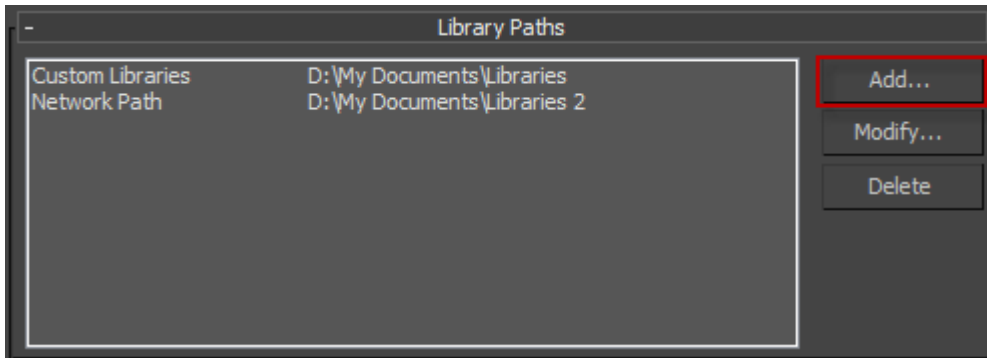
20.2 Procedures

To add and modify library locations

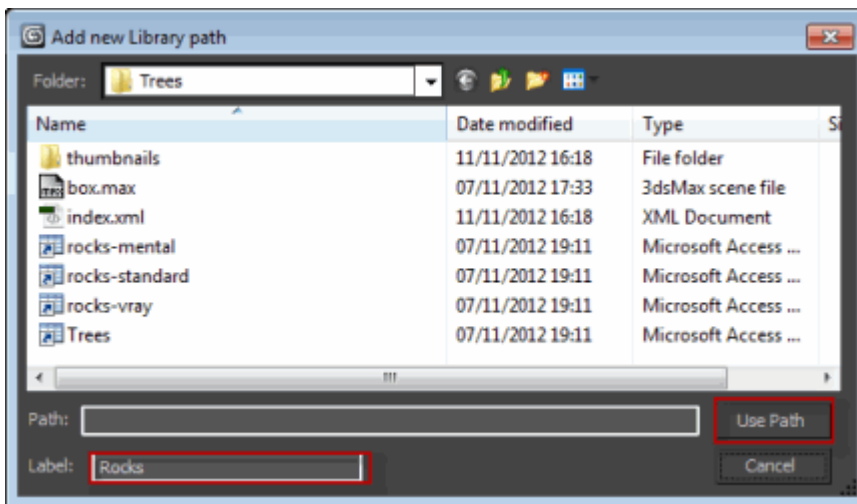


Forest Pack can access objects from a number of different libraries. These are located automatically from a list of folder paths defined in the preferences. Folders can be stored locally or in a shared network location.

1. With the library editor open go to **File>Preferences...** or click the preferences button from the top toolbar.
2. The **Library Paths** rollout shows a list of all the locations currently being used. To add a new location click on the **Add** button and navigate to the folder for your libraries.




3. In the **Label** field enter a location name to display in the tree navigator.
4. Click **Use Path** to add the location to the library and return to the preferences.



5. Click **OK** and you should now see all the sub folders and libraries displayed in the tree navigator on the left hand side of library browser.

Alternatively to modify or update an existing location:

1. With the library editor open go to **File>Preferences** or click  from the top toolbar. Setting button.
2. To modify a location select it from the library paths list and click **Modify**.
3. Navigate to the root folder of the new location and select **Use Path**.

To organise and Create new libraries.

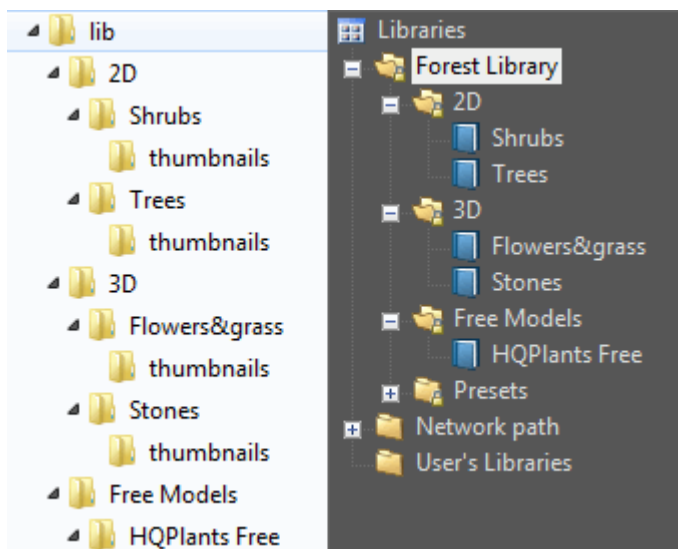
Each library location path can be further organised into subfolders. Forest Pack will scan these subfolders and replicate the directory tree in the tree navigator found on the left hand side of the library browser window. From this panel folders and libraries can be created and deleted using the procedures outline below, and the directory structure easily reorganised using drag and drop

To create a subfolder:

1. With the Library Browser open, in the tree navigator on the left hand side, right click on a user library and select **Create Folder**.
2. A new folder has been created. The name will be highlighted, type in a new name for the folder.

Alternatively to create the subfolders directly in Windows Explorer:

1. Navigate to the library location in Windows Explorer or locate it automatically using the Library Browser by right clicking its name from the tree navigator and selecting **Open in Shell...**
2. Create your directory structure in the usual way using Windows Explorer
3. When you are done, update the view in the Library Browser to reflect the new directory tree by clicking on the **Refresh** button (button image) from the top toolbar or select from the View menu.



The same directory shown in Windows Explorer and the Tree Navigator

To create a new library:

When you create a library Forest Pack creates a new folder that includes an XML file and sub folders for thumbnails. This and any other sub folders found in the library location will not be displayed. This allows you to add additional directories for models, maps and materials used by the library without them cluttering up the tree navigator.

1. In the tree navigator, right click on the folder where you would like to save your new library and select **Create Library**
2. The library name will be highlighted, enter a title and press return
3. If you need to rename your library at a later date, simply right click on it and select **Rename**

To delete a library or folder

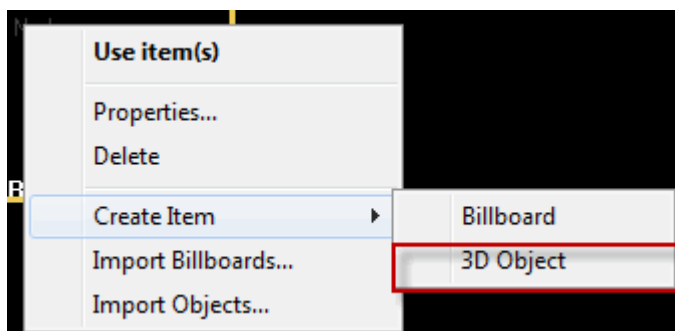
1. To delete a folder or library, simply right click and select **Delete**.

To add a new 3D object to a library

3D geometry can be added to any library saved in a user location (represented in the tree navigator as a green folder). Items are stored in .max files located anywhere on your computer or network. However sharing is simplified if the files and any material libraries and bitmaps use relative paths and are located in the library folder. If images with the same name as the object are placed in the thumbnails folder, these will be used automatically.

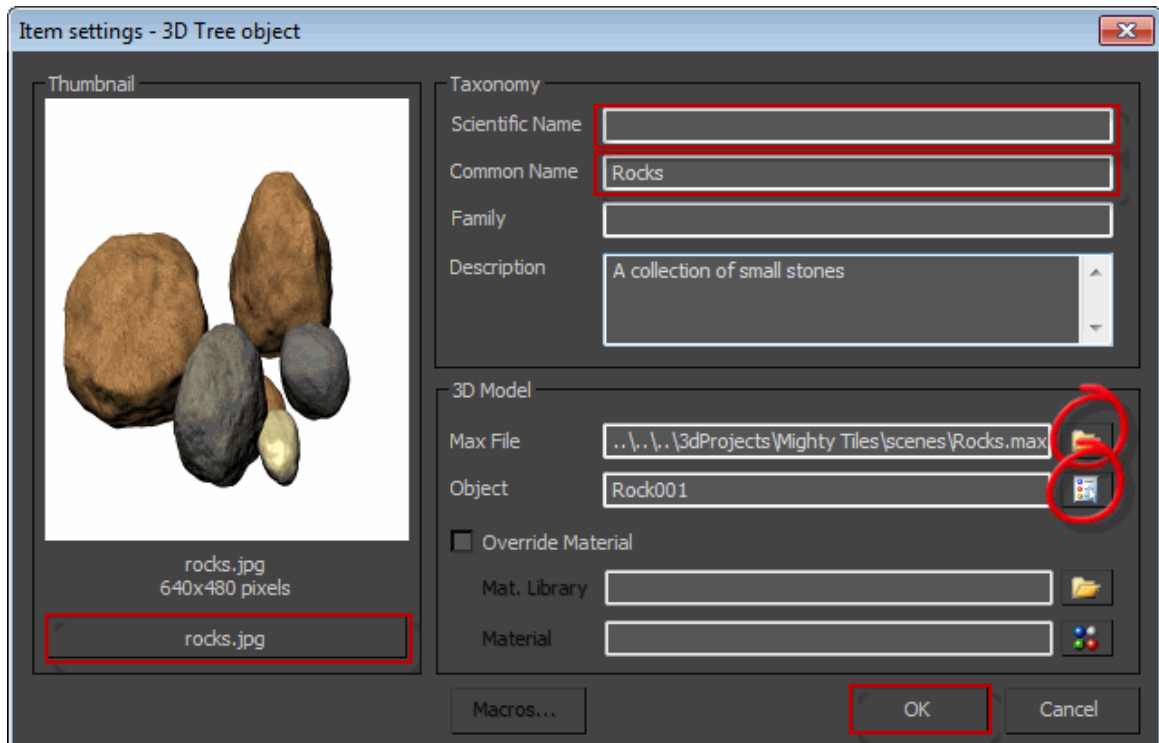
To add a new 3d object:

1. From the navigator on the left, select a user's library.
2. Right click in the browser and select **Create Item>3d Object**



3. A new blank 3d item will be created in the item browser. To edit, right click on the item and select **Properties...**

4. Fill in the **Taxonomy** values, note that the common name is the text displayed by default in the library browser though this can be toggled to display the Latin name. Other values can be left blank if not required




5. Click on the folder item next to the **Max File** field to select the .max scene file that contains the new object
6. A list will open containing the objects in the scene, pick the item you wish to add to the library.

i Adding grouped content


If an item is grouped instead of a single object its elements can automatically attached into one mesh upon import. To do this, when selecting your the item from the objects list, simply select select the group name containing the object's elements.

1. If the object had a material applied this will be also be used in Forest Pack. It is also possible to override the material from an external material library. In order to do this enable the **Override Material** tick box.
2. Select the material library by clicking the folder icon next to the **Mat. Library** field. Find the library and click **Open**
3. Next click the **Select Material** button, this brings up a list of the contents of the material library. Highlight the material to be used and click **OK**.

4. Add a thumbnail by clicking the **image file** button below the thumbnail preview window. Select an image file and click **OK**.
5. Click **OK** to accept the changes
6. Save the library by going to **File>Save** or selecting  from the top toolbar.

To create a new preset

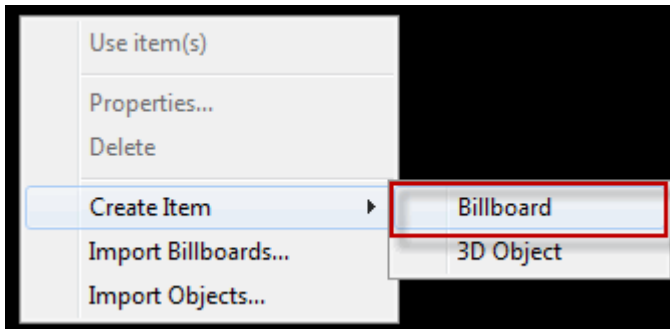
Creating a new preset is the same as creating a new 3d object, the only difference being that you select a pre-made Forest object in an external file instead of a mesh.

1. First prepare **.max** files, these will contain a separate Forest object for each preset. Configure the Forest object's parameters as you would normally including geometry, distribution, transforms, materials, diversity etc.
2. Save the max file to your Forest library folder, see below for more information on file structures.
3. Open the library browser and from the navigator on the left, select a user library.
4. Right click in the items grid and select **Create Item>3d Object**
5. A new blank Preset will be created in the item browser. To edit, right click on the item and select **Properties...**
6. Fill in the **Taxonomy** values if required
7. Click on the folder icon next to the **Max File** field to select the .max scene file that contains the preset (created in step 1).
8. A list will open containing the objects in the scene, pick a Forest object that you wish to use as a preset. A single max file can contain multiple objects, geometry and presets that be combined in a single external file without problems.
9. Add a **thumbnail** by clicking the image file button below the thumbnail preview window. Select an image file and click OK.
10. Click OK to accept the changes
11. Save the library by going to **File>Save...** or selecting  from the top toolbar.
12. To use the preset, select in the same way as though it were a 3d object. See the [Library Browser](#) reference for more information.

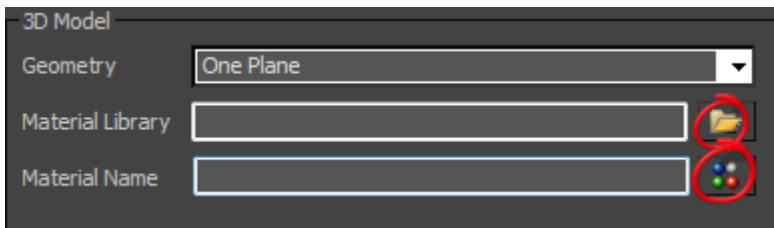
To add a new billboard object to a library

2D billboards can easily be added to a user's library. These are loaded from a material library file that can be saved anywhere on the local machine or network though for ease of sharing it is common to move the files to the library folder and use relative paths.

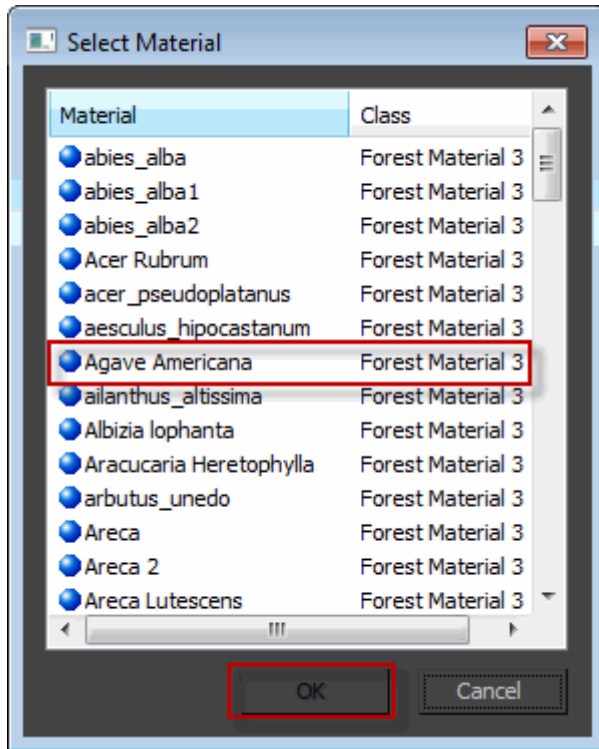
1. From the navigator on the left, select the library you wish to add a new object too.
2. Right click in the browser and select **Create Item>Billboard**



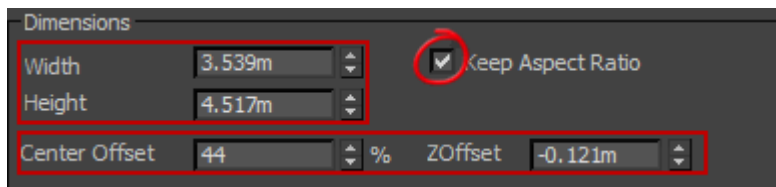
3. A new blank billboard item will be created, to edit it right click on the item and select **Properties...**
4. As above, fill in the **Taxonomy** values.
5. Choose the material library by clicking on the folder icon to the right of the **Material Library** field, select the library and then **Open**.



6. Choose the material from the library by clicking on the **Select Material** button to bring up a list of the contents, select a material and click **OK**.



7. Add a thumbnail by clicking the **image file** button below the thumbnail preview window. Select an image file and click **OK**.
8. Set a **Default Height** and **Width** from the **Dimensions** settings. To retain the proportions of the image ensure **Keep Aspect Ratio** is turned on.



9. The center point for the rotation, scale and position can be adjusted using the **Center Offset** and **ZOffset** attributes, represented as a percentage. A dashed line on the thumbnail illustrates the effect of these settings. Typically the lines should intersect at the base of a plant's trunk or stem.



10. Click **OK** to finish and save the library by going to **File>Save Library** or pressing **F2**

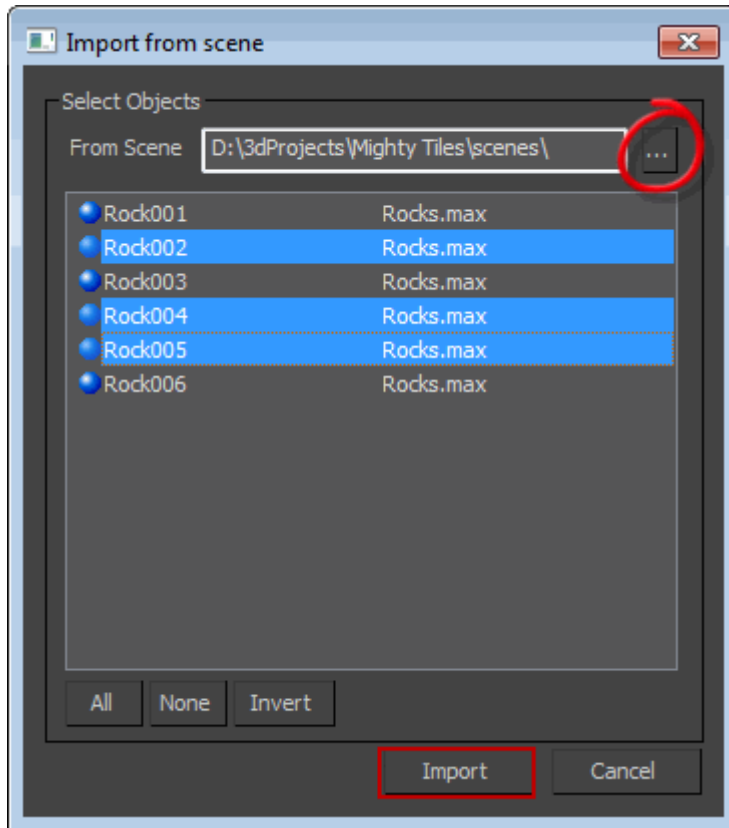
To adding multiple 3D objects to a library

The library editor can speed up the creation of libraries by loading multiple objects from a single scene file

Prerequisites

To automatically create thumbnails, preview images that share the same name as the scene objects should be moved to the thumbnails folder.

1. Open the **Library Browser** and use the tree navigator to locate the library you wish to add items to.
2. Right click anywhere in the items grid and select **Import Objects...**
3. An **Import From Scene** window will open, select the .max file containing the objects by clicking on the ellipsis (...), locating the files and clicking **Open**.
4. You will now see a list of all the objects in the scene. Select the items you wish to add to the library. Use control and shift to select multiple objects in the usual way.



5. Click import. If bitmaps are located in the thumbnails folder with the same name as the items being loaded, these will be used as previews in the item browser.
6. If necessary edit the objects as described above.

Adding Multiple Billboards to the Library

The library editor can greatly speed up the creation of libraries by loading multiple billboards contained within a single material (.mat) file. When creating libraries using this process thumbnails can be generated automatically and materials can remain in the original location or be consolidated into a single material file in the library folder.

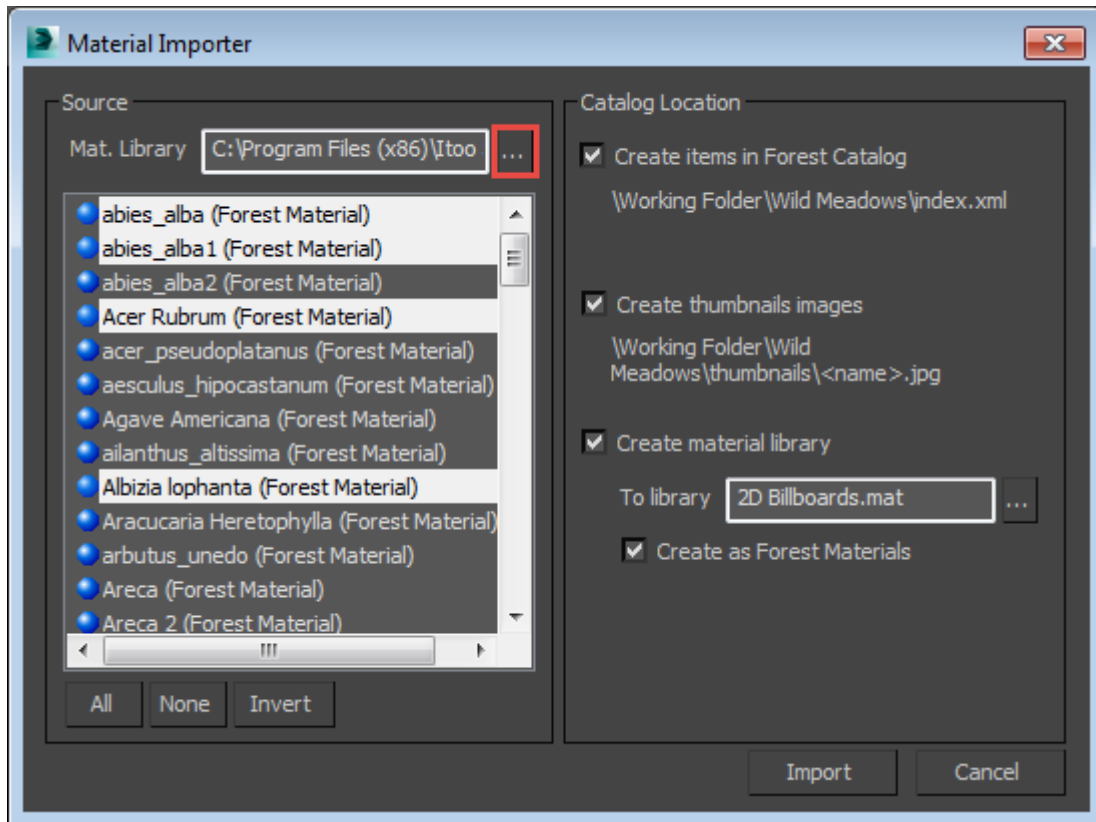
Prerequisites:

- A single .mat file containing multiple billboard materials.

To add multiple billboards:

1. Open the **Library Browser** and use the tree navigator to locate the library you wish to add items to.
2. Right click anywhere in the items grid and select **Import Billboards...**

- The **Material Importer** will open. Select a material library by clicking on the ellipsis under the Source section. Locate a material library and click open. Highlight the billboards you wish to import.



- Under the **Catalog Location** section tick the desired options:

Create Items in Forest Catalog adds the selected materials as billboards to the active library

Create Thumbnail Images automatically generates thumbnails from the diffuse maps of the selected materials

Create Material Library consolidates the selected materials into a single material library located in the library folder. There is also an option to automatically convert them to Forest Materials.

The default settings are generally OK.

- Click **Import** and the materials will be added to the library.

To add a macro to assign a material according to the active renderer

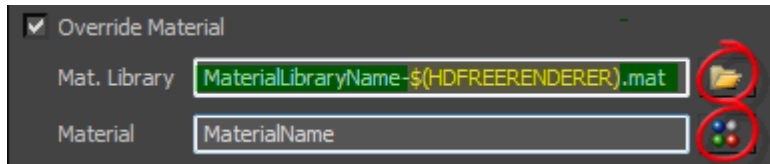
When creating libraries it is possible to use macros to add variables to an item's property fields. This is very useful for creating flexible libraries that can dynamically respond to individual installations or changeable 3DS Max settings. One common usage is the creation of library items that automatically load appropriate materials based on the active renderer.

Prerequisites

- Items are created in the usual way but materials are taken from a separate material library. In this example we assume three libraries, one for each of the three supported renderers: Mental Ray, V-Ray, and scanline.
- Each material library's name should have two sections, one part that will be identical for all three files and a second part that matches the variable names assigned by Forest Pack's macro. [libraryName][macroValue].mat
- Forest Pack uses "**mental**", "**vray**", and "**standard**" as values for the renderer macro. The following three file names demonstrate appropriate file names.
MaterialLibraryName-mental.mat
MaterialLibraryName-vray.mat
MaterialLibraryName-standard.mat
- The actual materials contained in each library should have identical names irrespective of the render. This allows you to dynamically switch between materials by automatically loading a different library for each renderer.

Auto-loading a material library by renderer:

1. Either create a new object as described above, or right click and select **Properties** to edit an existing item.
2. Turn on **Override Material**, this allows you to use a separate material library to texture the object. In this example it will automatically select a different material library according to the current renderer.
3. In the **Max File** field type the parts of your material library name that is common to all files. In the examples given above you would type MaterialLibraryName-.mat
4. Position the cursor where you want to add the renderer variable, in this case it would after **MaterialLibraryName-** and before **.mat**
5. Click on **Macros...** and select **hdfreerenderer** from the subsequent list. Click **OK** to add the variable to the filename. The material filename should now read **MaterialLibraryName-\$(HDFREERENDERER).mat**.



6. Select an appropriate material by clicking the **select material** button and picking one from the list. If the materials are identically named in each library, this macro will change the material depending on the currently selected renderer.

20.3 Interface

Library Browser Preferences

To access the Library Browsers go to **File>Preferences** or click  from the toolbar



Name	Description
Use scene material	

Name	Description
	When selected in the event of a a duplicate material the version already in the scene will be used
Replace material from library	When selected in the event of a a duplicate material the version in the library will be used
Ask user	When selected in the event of a a duplicate material the which of the two options above should be used
Merge into scene	When adding objects the geometry will be merged into the scene.
XRef to library	When adding objects the geometry remains in a external file and is XRef is used to add to the scene
Add...	Adds a new library location.
Modify...	Modifies the location of an existing library.
Delete	Deletes a library location.
Evaluate	Shows the current values for all macros.

Folder and Library Addition

Use the context menu accessible by right clicking in the tree navigator to create new sub folders and libraries, and reorganise your directory using the mouse to drag and drop folders and libraries.

Commands available in the tree navigator context menu :

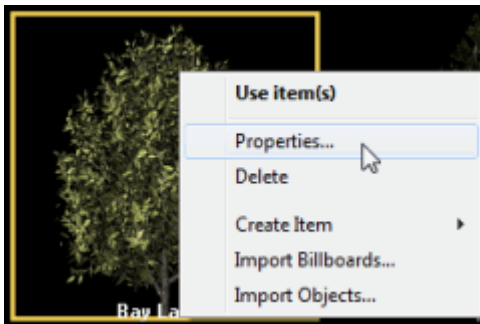
Name	Description
Open in Shell	Opens the file location of the library in Windows Explorer.
Create Library	Creates a folder with and a new "index.xml" file.
Create Folder	Creates an empty folder on the disk.

Name	Description
Rename	Renames a Folder or Library.
Delete	Deletes a Folder or Library with all its contents. Use with caution !

Item Addition

To access the commands to edit a library's content, right click anywhere in the item grid. Note that changes are only stored in the system memory until the library is saved to disk.

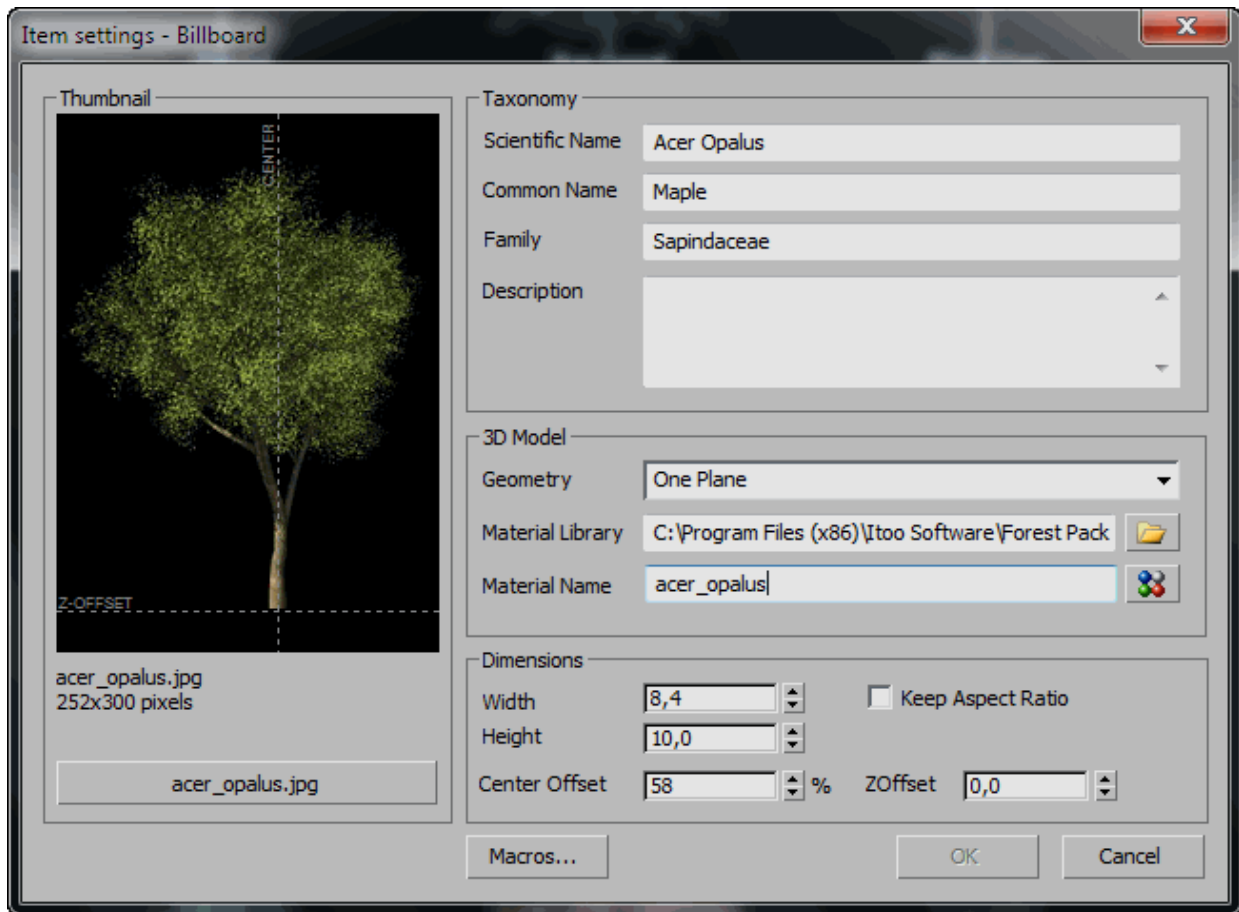
Commands available in the item context menu :



Name	Description
Use Item(s)	Adds the selected item to Forest's geometry list..
Properties	Shows the Item Settings dialog box.
Delete	Delete the selected item.
Create Item	Creates either a billboard or 3d object
Import Materials	Loads multiple billboards from a .mat material library Material Importer .
Import Objects	Loads multiple 3d objects from a .max scene file Object Importer .

Item Settings, Billboards

This window is used to set the properties for a billboard item. The Forest plugin uses this settings to construct the plant object, most of them match properties in the plugin [Geometry](#) panel.



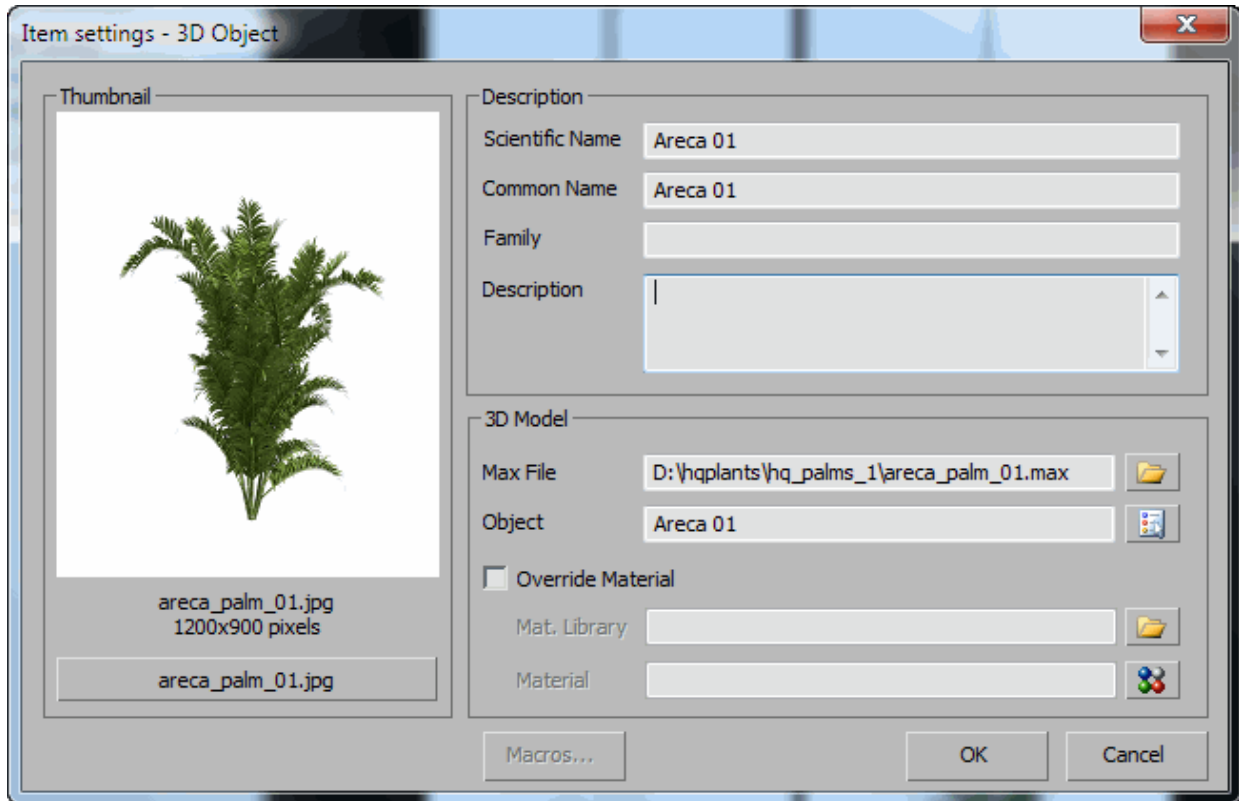
Settings available for items :

Name	Description
Scientific name	Latin plant name.
Common name	Common plant name.
Family	Botanical family of plant.
Description	Textual description about the plant.
Geometry	3D Geometry applied to the plant when is generated. Choose one of the general Forest geometry templates.
Material library	3DS Material library for material.

Name	Description
Material name	Name of the material to apply. Choose one of the materials in the selected material library.
Width	Width of the tree object in world units.
Height	Height of the tree object in world units.
Keep aspect ratio	Keep the width/height of the object synchronized with map aspect ratio.
Center Offset	Center of rotation for the object in % of width.
ZOffset	Elevation offset from the floor level.
Thumbnail	Preview image of object, represented with the same aspect ratio as real object.
Thumbnail Selector button	Press this button to change the thumbnail image.

Item Settings, 3D Objects

This window is used to set the properties for a 3d object item. The Forest plugin uses this settings to construct the plant object, most of them match properties in the plugin [Geometry](#) panel.



Settings available for items :

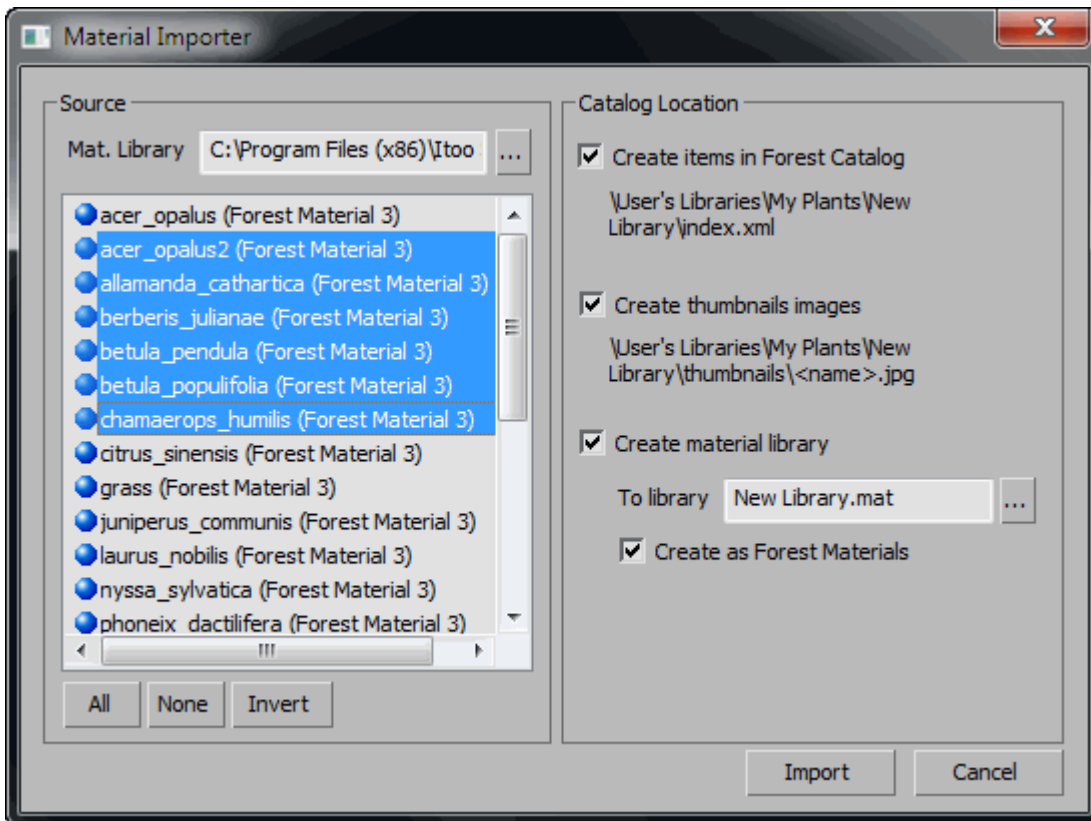
Name	Description
Scientific name	Latin plant name.
Common name	Common plant name.
Family	Botanical family of plant.
Description	Textual description about the plant.
Max File	The location of the scene file containing the item geometry
Object	The name of the object in the scene file.
Override material	When on the object uses a material from a separate material library.
Mat. Library	The location of the material library

Name	Description
Material	The name of the material to be used if override is on.
Thumbnail	Preview image of object, represented with the same aspect ratio as real object.
Thumbnail Selector button	Press this button to change the thumbnail image.

The settings are similar as for billboards, however instead loading a material we supply a 3dsmax scene with a object name. Optionally is possible to set a material override. The loading process can be done merging or XREF the object into our scene.

Material Importer

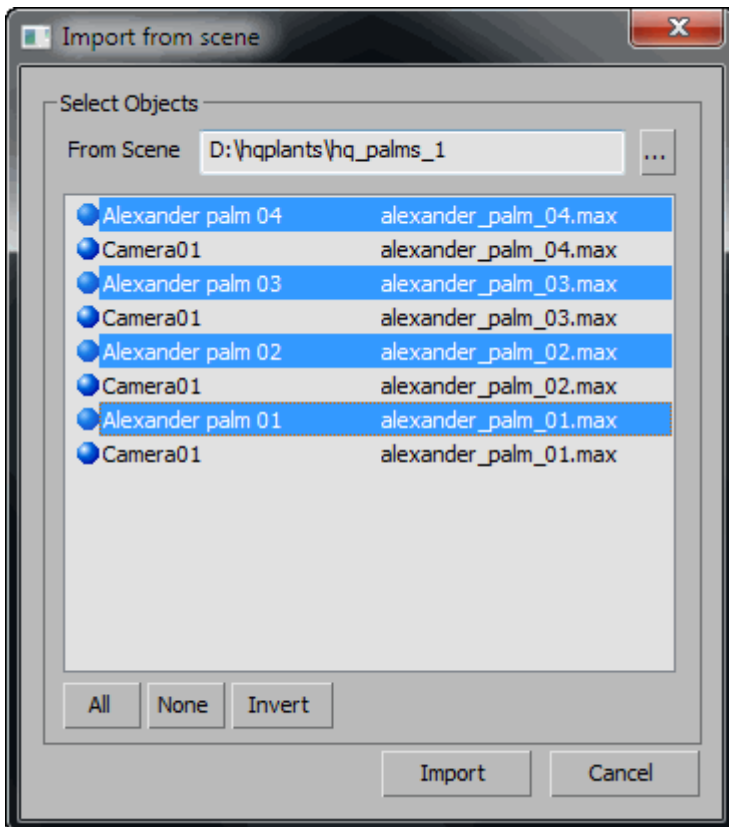
If you have a 3DS material library with tree materials and textures, you can import them directly into a Forest Library as billboards using this window. Forest and Planes Materials are recognized in the process and their properties (such as plane size or offsets) are copied to the new items.



Name	Description
Mat. Library	Used to select a material library to import billboard materials from.
Create items in Forest Catalog	When activated adds the selected materials to the current library.
Create thumbnail images	When activated automatically generates thumbnail images and saves them to the thumbnails folder.
Create material library	When activated adds and consolidates the selected materials to a new material library.
Create as Forest Materials	Saves new billboards as Forest Materials.

Object Importer

As for materials, you can import a whole directory of 3DS Max objects into a library automatically.



Name	Description
From Scene	Used to select a Max scene to import geometry.
Object list	Lists all the objects found in the selected scene.
All	Selects all objects.
None	Deselects all objects.
Invert	Inverts the current selection.

File Structure



A library is a special folder on the disk which contains an **index.xml** file, where the items are listed. This file points to the files necessary to define a library item. The browser stops to scan directories when an **index.xml** file is found, so a library folder can't contain other libraries and all subfolders are hidden in the interface, this permits to you to organize the data in several subfolders.

Each library item points to a single template object in a **.max** file or to a material in a **.mat** file. Each time you select a library item, all settings in the template object are loaded and applied to the current Forest object. You can group several objects in a single file, or have separate files for each one. You can also use macro substitution (see section below) to use conditions or complex structures.

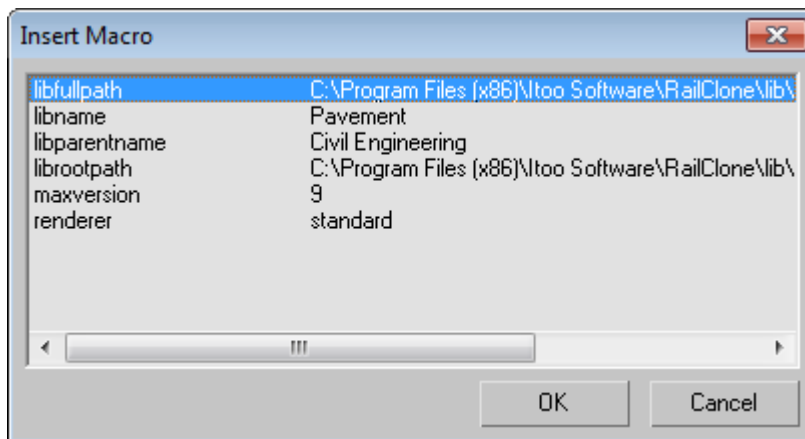
Each library item also has an associated image file, typically stored in the **thumbnails** folder. This image is used to show the image preview in the library and you should have one image for each library item. If you name the files using the same name of the object, the image is automatically selected in the editor.

Additionally, you can have **materials libraries** to override the object's default material. This way you can have several library items with the same geometric base, but with different materials and textures.

Macros

In some fields, such as filenames and object or material names, you can use macro substitutions to add more flexibility to your library structures. These macros represent the library root location, current folder, or 3dsmax state values. The macros are instanced using the **\$(NAME)** format.

To open the Insert Macro window, press the **Macros...** button in the properties window, select a macro and click OK, the selected macro will be inserted in the current field of the properties.





21 Forest Tools

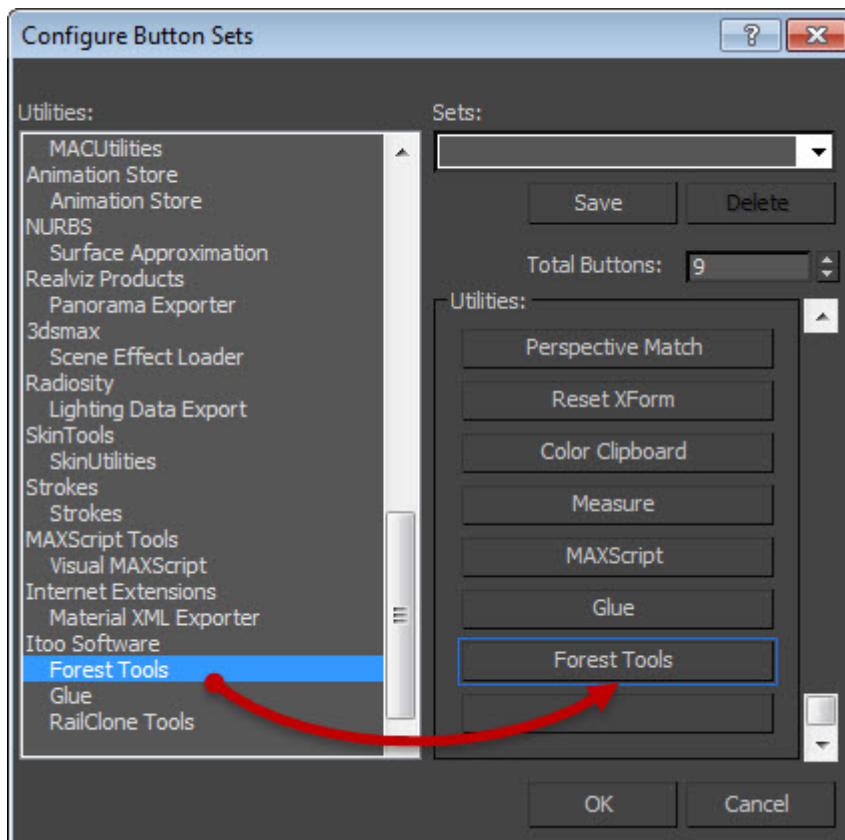
21.1 Overview

Forest Tools is a utility that allows you to convert a forest object to individual instanced geometry. This can be used when you need to share a file with someone who does not have the forest plugin, use a renderer that does not natively support Forest Pack, or export the scene to another program.

21.2 Procedures

To add Forest Tools to the Utilities panel

1. From the Command Panel click  to open the **Utilities Panel**.
2. Click  to open the **Configure Button Sets** menu.
3. From the Utilities list on the left, drag **Itoo Software > Forest Tools** to an empty button slot on the right. If necessary increase the number of buttons using the **Total Buttons** spinner.



4. Click **OK**.

To create instances from a Forest Pack object

1. Select the Forest object to instantiate.
2. Open **Forest Tools** from the **Utilities Panel**.
3. In the objects group activate **Move to layer** and enter a name for the new layer.



It is also possible to add instances to the current layer or add them to a new group, however creating a new layer is recommended for more efficient scene management.

4. Optionally select the **Freeze** checkbox to freeze the layer and select the **Boxes** checkbox speed up viewport performance by displaying instances as boxes.
5. Click **Instantiate**.

To delete existing instances

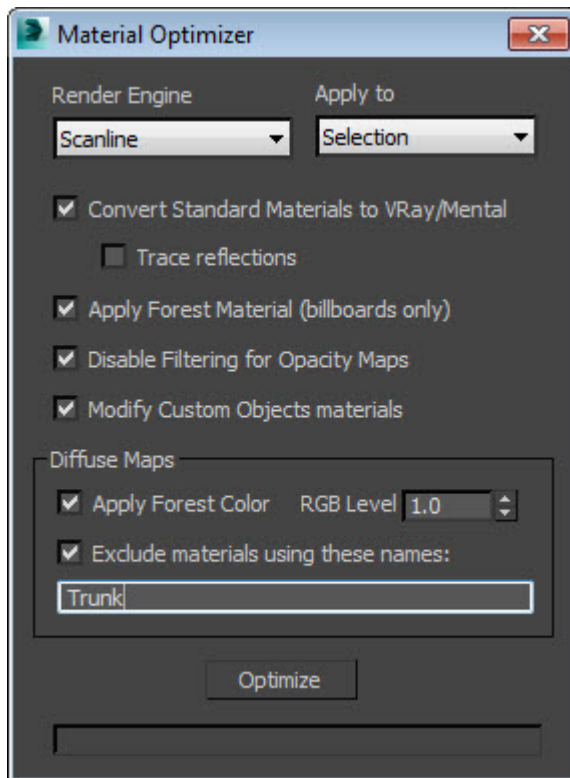
1. Select a Forest Object that has previously been used to create instances.
2. Open **Forest Tools** from the **Utilities Panel**.
3. From the **Objects** group, click **Delete**.

To update instances

1. Select the Forest object to update.
2. Open **Forest Tools** from the **Utilities Panel**.
3. If there are instances already in the scene that you need to replace, from the **Objects** group click on the **Auto delete old items** checkbox. This will delete any existing instances before creating new ones. Alternatively to remove them immediately click on **Delete**.
4. If the forest object is disabled, click **Enable** and make the necessary changes. If the Forest object is disabled and you do not need to enable it to make the changes, ensure that the **Enable before start** checkbox is selected.
5. To automatically disable the Forest object after instances have been created, select the **Disable at end** checkbox.
6. Click **Instantiate**.

To optimise materials for the active renderer

1. Open **Forest Tools** from the **Utilities Panel**.
2. Click **Optimize** in the **Material Optimizer** section. The material optimizer tool will open.

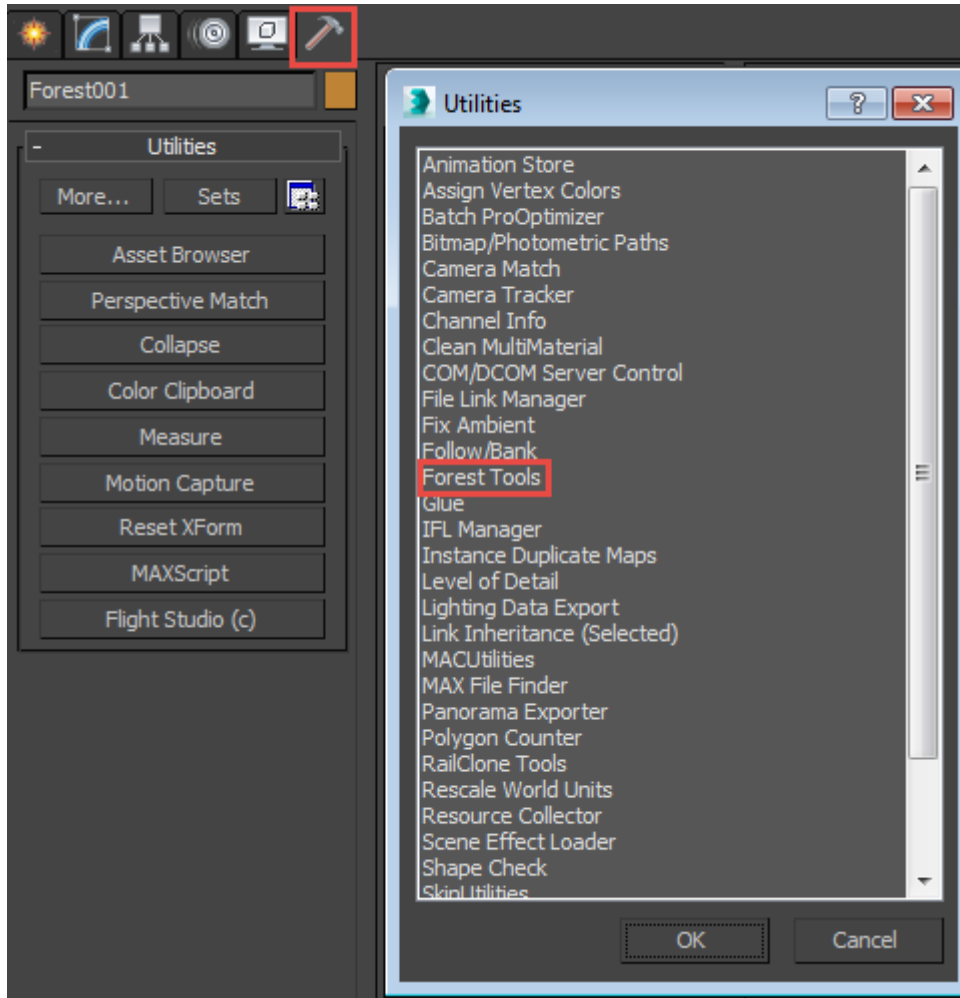


3. From the **Render Engine** drop down list, pick the current render engine (this should be automatic).
4. From the **Apply to** drop down list, select whether to run the optimizer on the current **Selection** or the **Material Library**.
5. For most situations the default settings are suitable. To exclude specific diffuse maps from being optimized, enter their names, separated by commas, in the **Exclude materials using these names** text box.
6. Click **Optimize**.

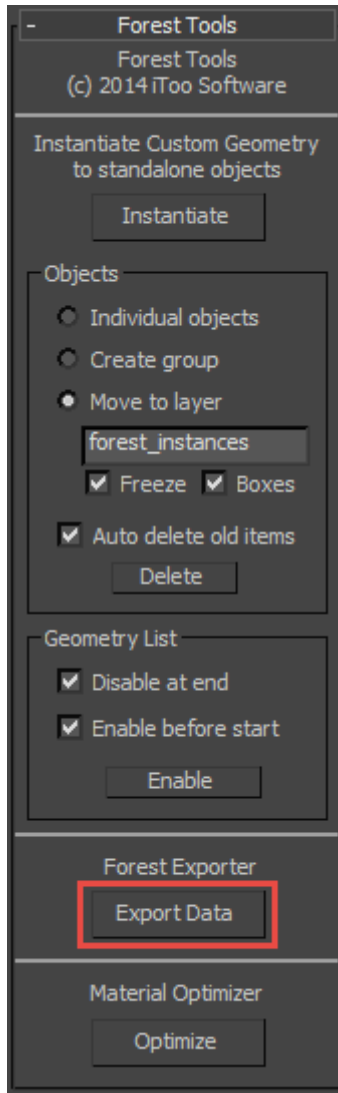
To export XML data


1. Select a Forest Pack object

2. Go to the **Command Panel > Utilities** and click **Forest Tools**.



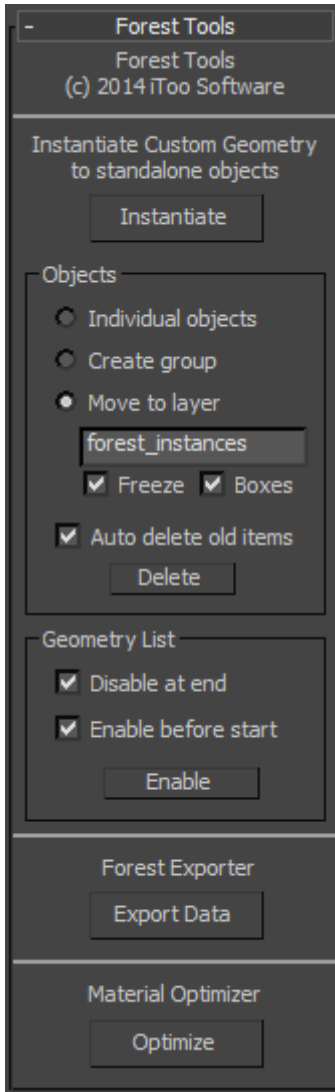
3. Click **Export Data**.



4. From the **Forest Data Exporter** utility set a save path by clicking 
5. Enable the **IDs** of the channels you want to export.
6. Click **Export**.



21.3 Interface



Instantiate

Converts the geometry items of the selected Forest object to instances.

Objects

Individual objects

When enabled, creates instances as stand-alone objects.

Create group

When enabled, adds all instances to a new groups.



3DS may be very slow handling a huge number of objects in a group, most of times is better to put them as non grouped objects in a separate layer.

Move to layer

When enabled, creates a new layer and moves the instances to it. Use with the following options:

- **Freeze.** Freezes the new layer
- **Boxes.** Displays new instances as boxes, useful for improving viewport performance with large numbers of instances or complex meshes.

Auto delete old items

When enabled, old instances are removed before creating new objects.

Delete

Removes instances manually. This only works if the instances and the Forest object and the have not been renamed .

Geometry List

Disable at end

When the instances are created, we don't need anymore the trees created by the Forest object in the scene. To hide them, Forest Tools set the elements of the Geometry List to "Disabled". So, if you would like to recover the Forest mesh, set the Geometry back to "Custom Object". If this checkbox is disabled, Forest Tools doesn't modify the Geometry List.

Enable before start

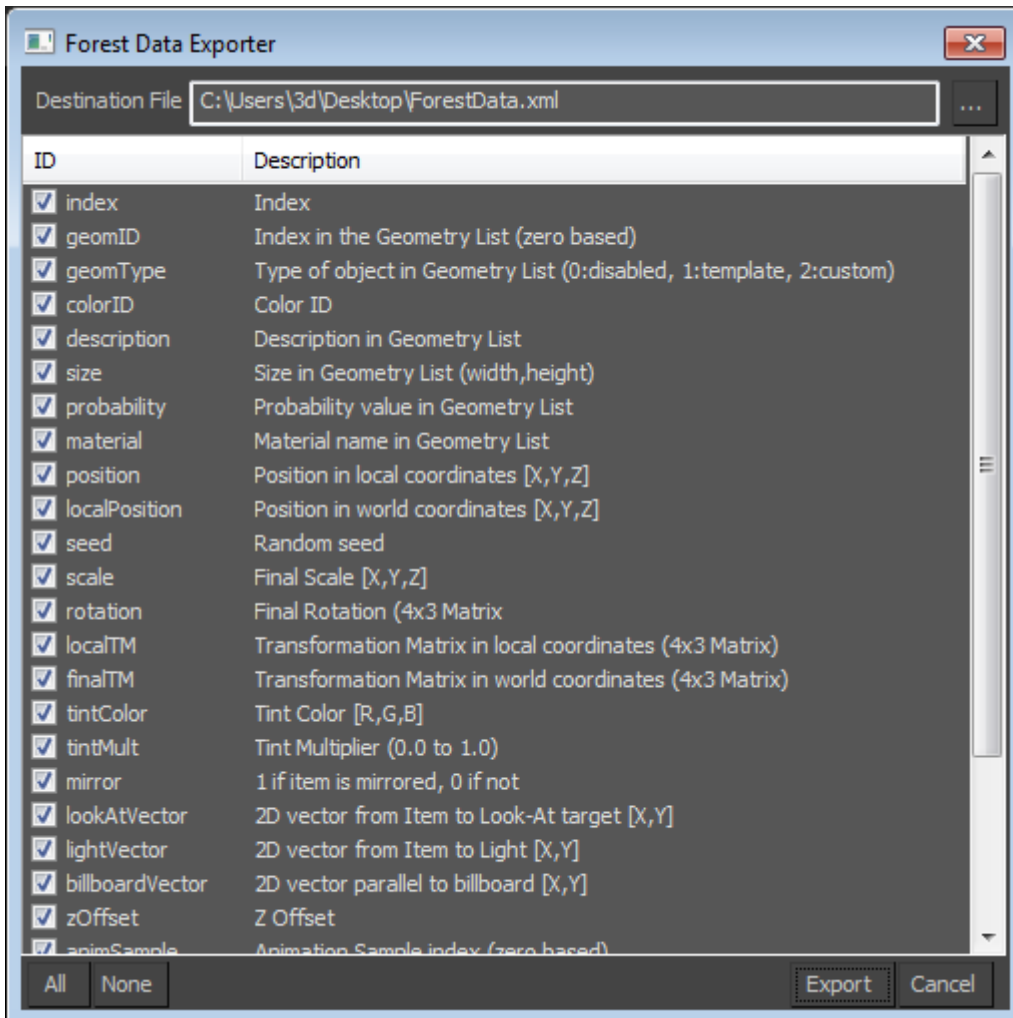
Sets the Geometry to "Custom Mesh" automatically before creating the instanced objects.


Enable

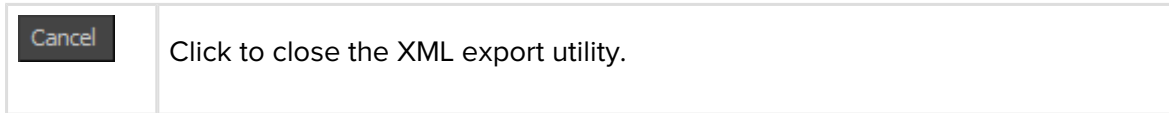
Used to set the "Custom Mesh" mode in the Geometry List manually (of the selected Forest object).

Forest Exporter

Export Data. Click this button to open the XML exporter tool. Using this menu you can export most of the internal options in a standardised format for use in advanced pipelines and to aid interoperability between software.



	Click to set the save path for the XML file.
ID <input checked="" type="checkbox"/> ...	Enables the data channels to be exported. By default all are selected.
All	Click to select all IDs.
None	Click to deselect all IDs.
Export	Click to save the XML data to disk.



Material Optimizer

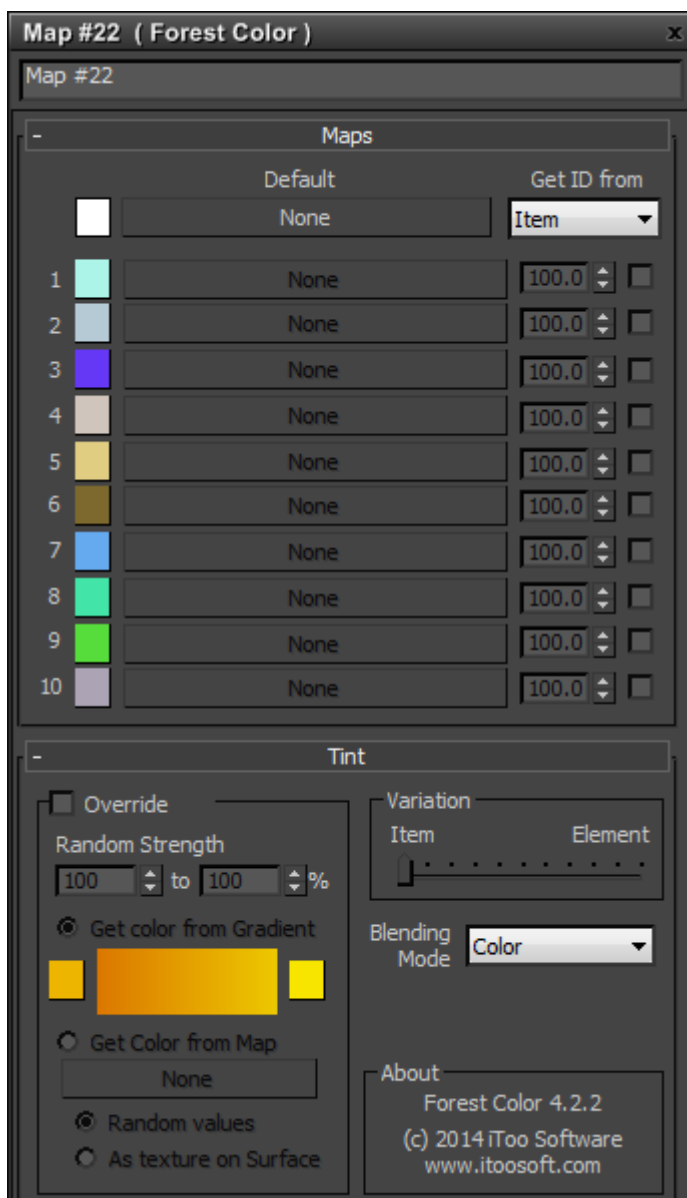
Runs the Material Optimizer for the selected Forest objects. See [Materials](#) for more information about this tool.

22 Forest Color

22.1 Overview

This 2D texture map is used to add color variation to the Forest items. It works similar to [Forest Material](#), but it is a 2D map instead a material. Usually, Forest Material is used for billboards and Forest Color for 3D objects

22.2 Interface



Maps

You can define up to 10 texture maps to Forest Color, that are assigned randomly on two selectable modes: by 'Item' or by 'Element':

- The Items are the base objects assigned in the Geometry List, and scattered by Forest creating the main distribution, for example the trees on a nature scene.
- The Elements are the mesh pieces that define an Item, as the leaves or the branches of an individual tree. Note that the Elements are not the faces of a mesh, but an upper hierarchy. Internally, Forest Color considers an Element as each group of adjacent faces of a mesh that share the same material ID.

The "Default" map is used as default texture when the other 10 map slots are disabled.



To use Map and Tint by Element, you must use V-Ray or Mental Ray and standard meshes as Custom Objects, other type of objects as proxies are not supported.

Tint

By default Forest Color applies the Color Tint defined in the Material rollout of Forest object to the resulting map. This includes Color Range, Min and Max values and the other parameters (see Forest->Material for details). You can override these values on each instance of Forest Color, turning on the "Override" checkbox.

In this rollout you can find some additional parameters that define how the Color Tint is applied to the map:

Variation

Defines the amount of Color Tint applied by Item or by Element (see above the definition of these concepts), using a weight scale from 0% (Item) to 100% (Element). See the following images for some examples of use.



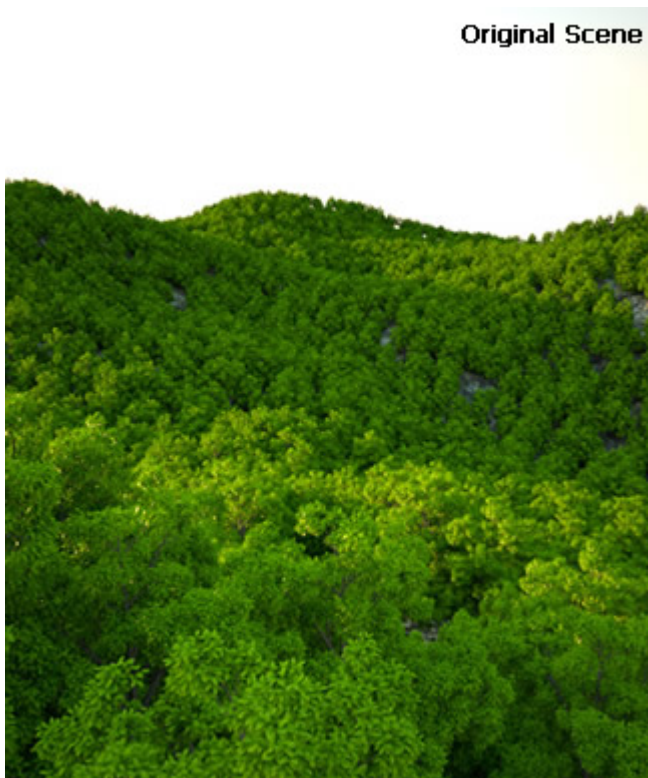
"Get color from map->As Texture on Surface" works only at Item level, it's not compatible with tint by Element.

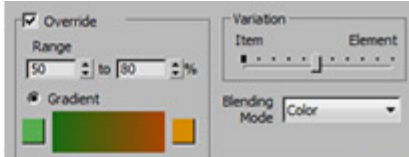
Blending Mode

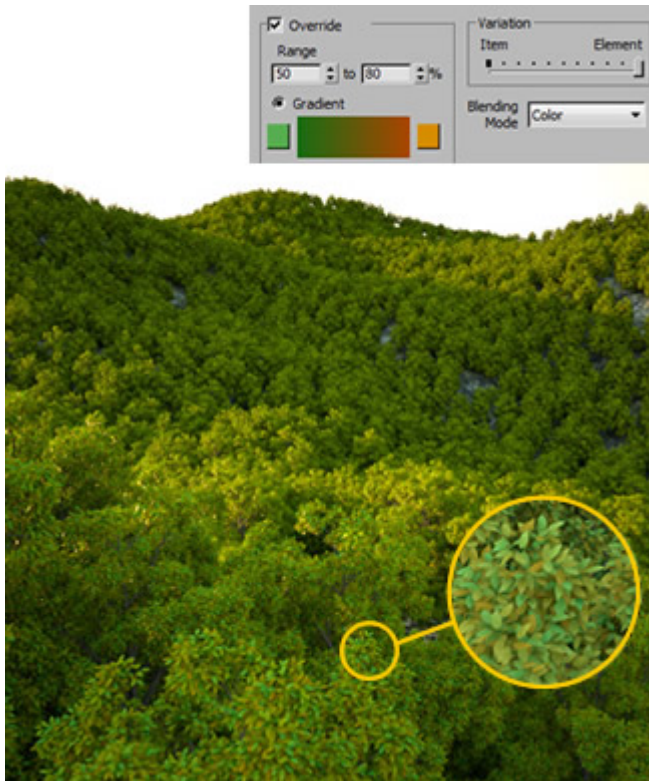
Use the drop-down list to choose how the Color Tint is mixed with the map. The following modes are available: Normal, Color, Additive, Average and Multiply. These modes work in the same way that the Composite map included in Max.

Sample Images

A Forest scene using different values of Color Tint. Note how changes the Variation weight from trees (Item), to leaves (Element)







This scene uses a clump of grass as custom object, using Tint by Element to apply a different colour to each blade of grass



23 Forest Material

23.1 Overview

This material plugin is used for some advanced features of Forest, as Random Tinting or Fake Shadows.

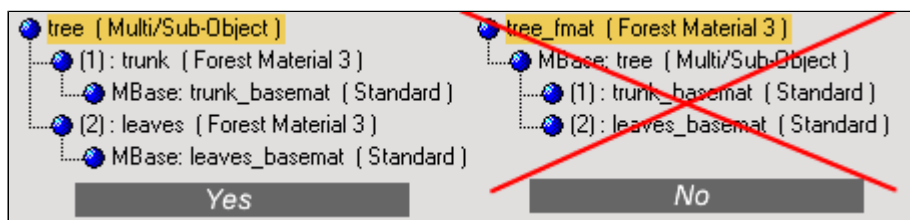
It is mainly used on billboards, if you want to add color variation on 3D objects, we suggest to use Forest Color, that is a 2D texture map.

It works as an enveloping layer over the base material used on the object, and modifying the result of this (applying the tint, or hiding the shadow planes).

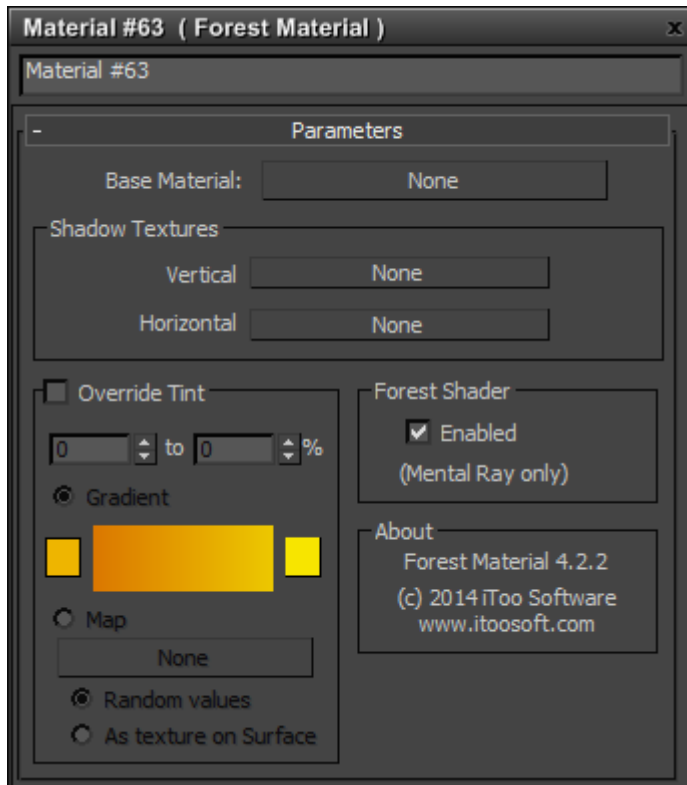
You can use any material as base (from Standard Mat. to V-RayMtl), but for billboard trees we suggest to use a Standard Material (specially with Mental Ray), because some features only work with it.



On Multi-sub materials, always use "Forest Material" as a sub-material, in this way:



23.2 Interface



Shadow Textures

When billboard trees are used, Forest has native support of shadows using our XShadow plugin or raytraced lights. For each tree, two opacity textures are used: vertical and horizontal.

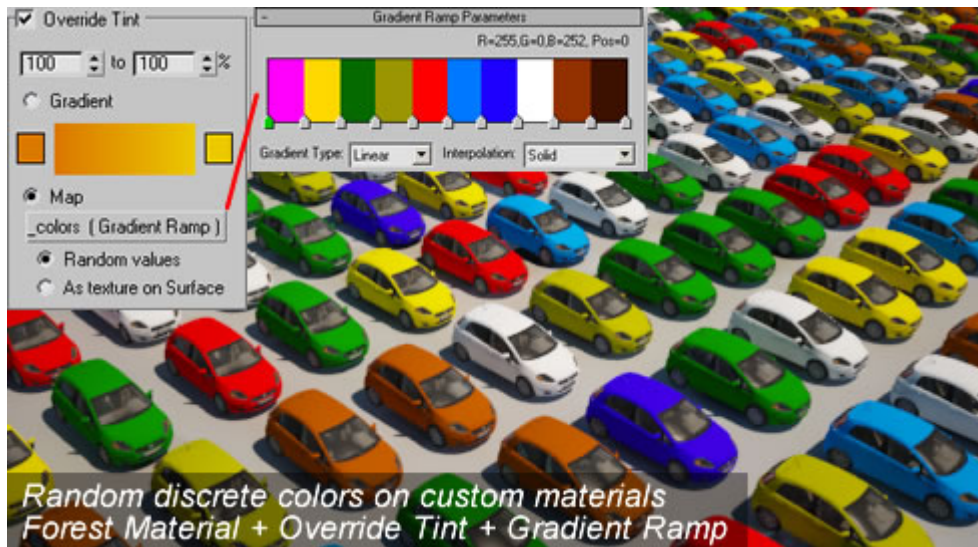
By default, XShadow searches automatically in the the material tree to find the vertical texture (Standard, Multi Sub-Object and "Forest Material" only) but this can be defined explicitly in Planes Material using this parameter. The horizontal texture must always be assigned here.

Raytraced shadows and Mental Ray need "Forest material" to work, because this plugin does the job of hiding or rendering the shadow / texture for each plane. Be sure that the material applied to the Forest object uses the "Forest Material" plugin as a base.

Override Tint

By default, Forest uses the Random Tint values defined in [Forest->Material](#) rollout for all tree samples used in the object, but those parameters may be overridden here for each material.

This feature is specially useful for mesh objects that use a Multi-sub material (as mat.ID 1 for trunk, mat.ID 2 for leaves), allowing to apply different tint for leaves and trunk (or disable tinting setting Min/Max values to 0).



Forest Shader (Mental Ray only)

Forest includes a custom shader that enhances the rendering of billboard trees. It fixes some problems inherent to planar trees, as the illumination or the slow transparency computing in raytracing modes. Although the shader must work in all modes, if you are experiencing some material issue or get unexpected results, you can disable it from here.

Forest Shader works only if a "Standard Material" is used as base material. This is specially important for billboard trees, for Custom Objects you can use other type of materials if you like.

The behaviour of Forest Shader is defined by some parameters of the Forest object as well. See [Forest reference->Material](#) for details.

24 X Shadow

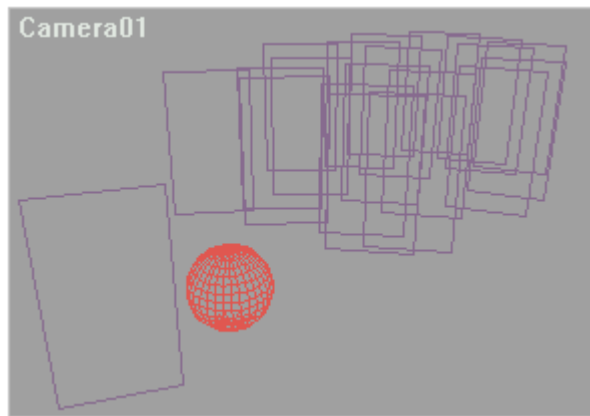
24.1 Overview

Shadow is a plugin to create realistic shadows for billboard trees.

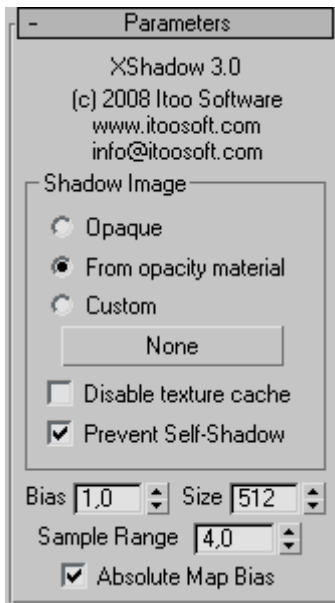
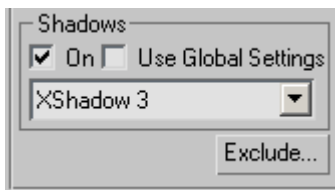
⚠ This plugin is used only with Scanline renderer, it's not compatible and there is not any benefit for using with Mental Ray or V-Ray.

24.2 Interface

When you create trees using planar geometry, they cast ugly rectangular shadows. You must use Raytrace Shadows to get a good projection, but it's very slow. This plugin builds a perfect shadow for Forest objects in all conditions. It works as a Shadow Map and there are no problems at render time:



This is a shadow plugin, and must be chosen in the shadow parameters of each light. At present, it only works with directional lights (with spots and omnis it doesn't create any shadows for trees):



Shadow image

XShadow uses two opacity textures to build the shadow: one vertical and the other horizontal.

By default, the plugin searches automatically in the material tree to find the vertical texture (Standard, Multi Sub-Object and "Forest Material" only). The horizontal texture must be defined in a "Forest Material" (see [Forest Material reference](#) for details).

These parameters define the vertical texture in the XShadow plugin:

Opaque

Builds the rectangular original shadow (from Forest mesh)

Opacity material

Use the opacity texture applied for each tree as shadow.

Custom

Lets you choose a custom texture map.

Disable texture cache

The plugin builds an optimized cache buffer to increase the render speed. In the most scenes, it works well, but if you get some "blocky" shadows or other visual problems, use this option to disable the cache (you can use it also to compare the render time in both states).

The other parameters works the same as standard shadow maps, and for non Forest objects the shadows obtained are the same.

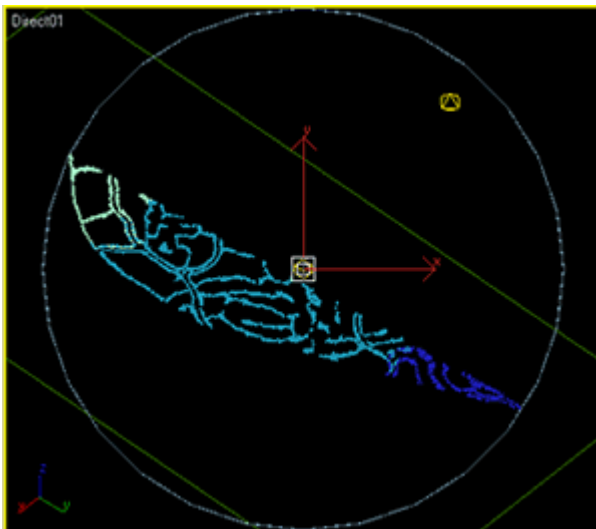
Prevent Self-Shadow

Enable this checkbox to avoid that a tree cast the shadow over itself.

Optimizing XShadow

To get the best results with XShadow, we must understand how shadow maps work:

The "size" parameter in XShadow defines that Max will use a bitmap of that number of pixels to draw the shadows on it. But this map is applied **ONLY** to the light's hotspot area. So, to get better shadows you must close the hotspot to surround only the objects to shadow. This is a sample of a well adjusted hotspot for XShadow (seen from a light viewport):



Light hotspot adjusted to object

Using a well adjusted hotspot, a shadow map of 4000 pixels should be enough for most scenes. For very large terrains, we suggest you use different cameras and lights, adjusting them individually to shadow only the trees visible in each view or use raytraced shadows.

XShadow needs large buffers of memory to work, and if the scene is complex, Windows might not have enough free memory for it. If this occurs, XShadow stops and displays an error.

And sometimes adding more memory to the system may not solve the problem, especially if you are using a 32 bit version of Windows, because there are other limits due to the 32 bit architecture, for instance memory fragmentation is an issue (when there is free memory that cannot be allocated in a contiguous space).

This is not only an XShadow problem. When Max uses its standard shadow map plugin, and there is not enough memory for the buffers, it doesn't build the shadows but doesn't show any error! This may be annoying for the user, who doesn't know why shadows are not working. In XShadow, we prefer to display a warning message. In order to fix the problem, here are some possible solutions:

- If you have at least 4 GB of memory, always use Windows 64 and 3D Studio 64 bit versions.
- Don't use a higher value than 4000 for the "size" parameter in XShadow. The memory needed grows exponentially with this value. Also, optimize the shadow hotspot of the light (see previous section in this FAQ).
- In XShadow, enable the checkbox "Disable exclusivity buffer" to reduce memory used for XShadow by half. When this option is enabled, the plugin doesn't check to see if each tree shadows itself... but this effect is not noticeable in most of scenes.
- Use raytraced shadows, which are natively supported by Forest.



- XShadow works only with directional lights (targeted or free).
- If you use other lights in scene with shadow enabled (without using XShadow), they cast rectangular shadows for Forest objects... the Forest mesh always exists, of course.
- When using Forest Pro and custom meshes, XShadow builds the standard shadow of an object, except if you enable the checkbox "Cast opacity mask for Custom Object" in Forest's Shadows rollout.

25 Rendering Best Practice

Forest Pack includes native geometric shaders for the renderers listed below, making it possible to render scenes with millions of high poly trees, meshes and proxies:

- Mental Ray
- V-Ray
- V-Ray RT
- Maxwell Render
- Octane Render
- Arion Render
- Corona Renderer
- Thea Render
- Moskito Render

Usually these techniques push the rendering engine to its limits. In the following notes, we include technical information that can help you to optimize your renderings, and avoid some problems.

25.1 Common Tips

- Minimize the use of opacity maps in your plants. Raytracers are slow computing transparencies, when possible use mesh leaves instead masked textures, although number of polygons be higher. If you need to use opacities, disabling the filter map may help to speed up the render.
- You can use the [Material Optimizer](#) included with Forest Pack, to converts the materials to V-Ray /Mental Ray and tune up the texture maps. A good example of use are the [XFrog Plants](#) libraries.
- When possible, use Max 64 bit. The 32 bit versions are very limited, and you may get memory errors when rendering complex scenes.
- Don't mix 32 bit and 64 bit environments for rendering, you would get unexpected results. Because the different numeric precision of both architectures, some problems may appear as: misaligned objects, color variation and others. Generally, it's not a good idea to mix 32 bit and 64 bit nodes in 3DS Max, to avoid issues as rendering flickering or glitches in procedural textures.
- [XShadow](#) is not compatible with Mental Ray and V-Ray. This plugin, based on Shadow maps, was written for Scanline renderer but is obsolete with the new rendering engines. Instead it, use raytraced shadows in Mental Ray or V-RayShadow in V-Ray. If you use billboards, don't forget to assign the main light in the [Shadows](#) rollout.

25.2 Mental Ray

- To get acceptable rendering times in large scenes, it's necessary to use **BSP2 as raytrace method**. It is available only in Max 2009 or greater. For previous versions, or small-to-medium size scenes, you can use BSP instead.

- Always **disable "Scanline"** checkbox (in "Rendering Algorithms" rollout), and we suggest to **enable "Use Placeholder Objects"** (in "Translator Options"). These settings are specially necessary when rendering complex scenes with large number of instances.

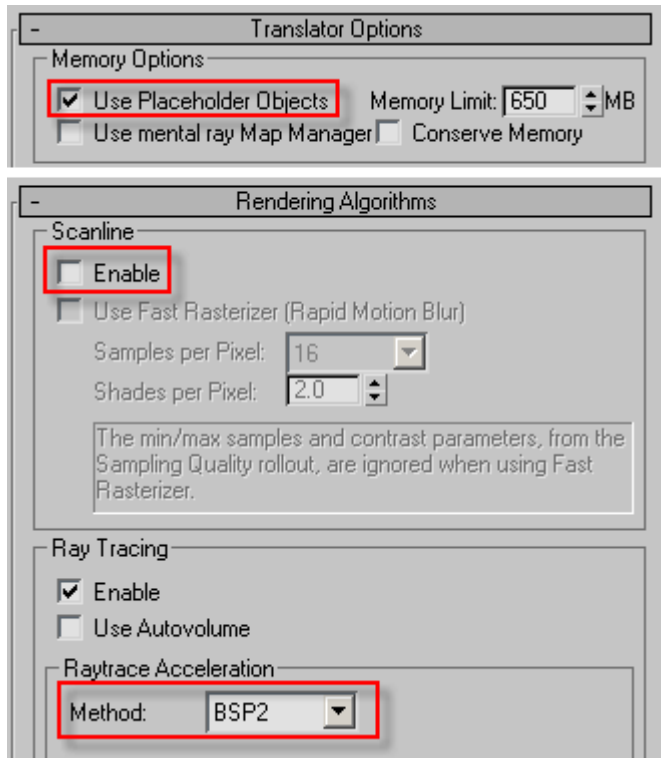
Note 1: The use of Placeholder objects is incompatible with the G-Buffer channel "Coverage". This channel is used in the RPF format, for some Render Effects and by third-party plugins as "PSD Manager" from Cebas. If the Placeholders are enabled, the channel is rendered as pure black. Unfortunately, this is a Mental Ray limitation and there are not known workarounds for it.

Note 2: We also found that the Placeholder objects feature crashes with some types of proxy elements used on Civil View (3DS Max Design), specifically the Street Lamps. Be care if you use these elements in your scene.

- You can use assign billboards, meshes, mrProxies or any other object for your trees. In our sample scenes, we have not found differences (in render time or memory used) between using meshes or proxies, but we suggest that you make your own tests.

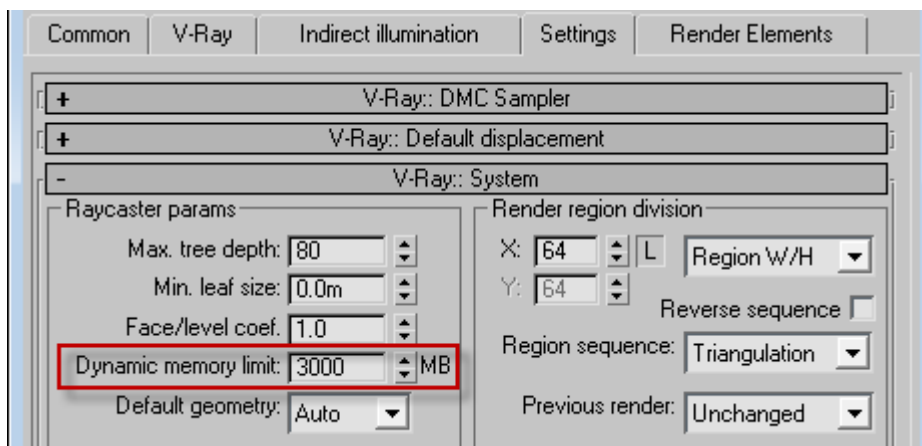
- Mental Ray versions before to Max 2010 was not fully stable using a high number of objects (above 100.000 trees). Some errors would occur as crashes, "accessing unknown tag" messages, etc. This problem has been solved in latest Max releases.

- Rendering times with more than 500.000 trees grows exponentially. This seems to be the limit of Mental Ray handling large number of instances.



25.3 V-Ray

- V-Ray native shader requires Max 9 with V-Ray 1.50 SP3 or greater.
- To render high-poly objects or proxies, increase the Dynamic Memory Limit from the default value to a percentage of your total RAM. The optimal value depends of the complexity of the scene, but usually a minimum of 2000 or 3000 Mb. is required. In V-Ray 2.0 and later, you can set this to 0 to remove any limit in that case, V-Ray will take as much memory as needed.
- You can use billboards, meshes, or V-Ray proxies in Forest. In our test scenes, we have found that meshes usually render slightly faster than proxies.



25.4 V-RayRT / Maxwell Render / Octane / Arion / Thea Render / Corona Renderer

Due to technical restrictions, support for these engines is limited, and the following features are not available:

- Forest Color.
- Forest Material.
- Material->Random Tint.

26 Forest Release Notes

Full release notes are [online](#).

27 Forest Pack Licensing Guide

27.1 Overview

Software License Management is available in two models, Stand-alone and Floating/Network licenses. Under a stand-alone license, any given product is constrained to a certain host. A license is needed for each computer that the software will be installed on. In floating license mode, a pool of licenses is available on the server, for use in any computer on the network. You only need to have licenses for the maximum number of simultaneous users expected, not for each computer where the software will be installed.

Depending on the size of your business and expected use of the software, one of the two models is usually preferred. In small sites with few computers, the Stand-alone licenses is fast and easy to deploy, the licensing process is part of the software installation, leaving the software ready to use in one step. For larger sites, the floating network licensing is preferred because it provides more flexible use of licenses, you only pay for simultaneous users and not for nodes, while the centralized management tool simplifies control of all your licenses.

Stand-alone License

The Stand-alone license ties a single software application to a single computer. This method of licensing requires a machine's unique identifier (SID) to be incorporated in the license activation process. After buying the product, a generic license code is sent to you, the license is installed and activated. In the activation process the license is linked to the computer and can be used only for that computer.

Floating Network Licenses

Network licenses (also known as floating licenses) allow multiple users to share a limited pool of licenses in a local network. After installing the License Server on a server machine, the server will handle requests for licenses from the users computers. If you have a team of 20 people and 10 licenses for a product, the entire team will share access to the 10 licenses, while no more than 10 people can use the software at the same time.

While Stand-alone licenses use a license file installed and activated for each computer, and can be used only in that machine, the network licenses are installed and activated only one time in a server. When a license request arrives, the server determines whether the proper license for a requested product is available. If an appropriate license is present and not in use, the server will allow access to the software.

As the licenses are stored on a server, you cannot use the software if you are not connected to the network. Although the server software does not require a powerful system, it is mandatory that the computer hosting the license server be running and available while there are computers using the licensed software.

27.2 License Activation

When you acquire a license from Itoo Software, a generic license code is sent to you. Before using the software, this license must be linked to your hardware, this process is called activation. You can activate the license during the software installation (only for Stand-alone mode), or from the License Manager once the software is installed.

During the activation of a license, you can choose two different methods, Automatic or Manual. With Automatic activation you must be connected to the Internet, the software will connect with our activation server through a secure connection, and the activation codes will be sent and installed automatically. No personal information is sent during the process.

If you experience difficulties with on-line activation, or the computer where you are using the license does not have Internet access, you can use Manual activation instead. In this case, the software gives to you the necessary codes and a link to our secure activation page. In this web page, you enter the codes and the activation key is generated. Write or print out this code, and provide it when the Activation Wizard runs, then the license will be activated and ready to use.

For security reasons, our activation server allows you to activate a license only a certain number of times (5 by default). If you exhaust the maximum number of activations, please send us an email at activate@itooosoft.com, we will increment the activation counter associated with your license. In the authorization process, the server informs you of the number of activations remaining.

In either case, if you have trouble during the activation, please contact us at activate@itooosoft.com.

27.3 Network rendering licenses

Our commercial plugins require a license for each computer, to open or edit the scenes, but NOT for network rendering nodes. The installation for slave nodes is much simpler, and does not requiring licenses or activations.

27.4 Floating/Network licenses

Introduction

Network licenses (also known as floating licenses) allow multiple users to share a limited pool of licenses in a local network. After installing the License Server on the computer being used as a server, the server will handle requests for licenses from users computers. If you have a team of 20 people and 10 licenses for a product, the entire team will share access to the 10 licenses, while no more than 10 people can use the software at the same time.

While Stand-alone licenses use a license file installed and activated for each computer, and can be used only in that machine, network licenses are installed and activated only one time on your server. When a license request arrives, the server determines whether the proper license for a requested product is available. If an appropriate license is present and not in use, the server will allow access to the software.

As the licenses are stored on a server, you cannot use the software if you are not connected to the network. Although the server software does not require a powerful system, it is mandatory that the computer hosting the license server be running and available while there are computers using the licensed software.

In order to deploy Network Licenses you must:

1. Install the **License Server** on the server computer.
2. Install and activate one or more **Network Licenses** on the server using the **License Manager**.
3. **Configure each client** to retrieve the licenses from the license server.

License Server Installation

To be able to use network licenses, a computer in the network must be designated as the license server. Once you have selected it:

1. First make sure that you have *administrative rights* on the target computer.
2. Download the **License Server** software from the links you received after purchasing the software (in the registration email).
3. Run the **setup** program and follow the steps.

The License Server will be installed as a system service named "Itoo Software License Server". A shortcut to the License Manager is also created on the start menu.

License Manager

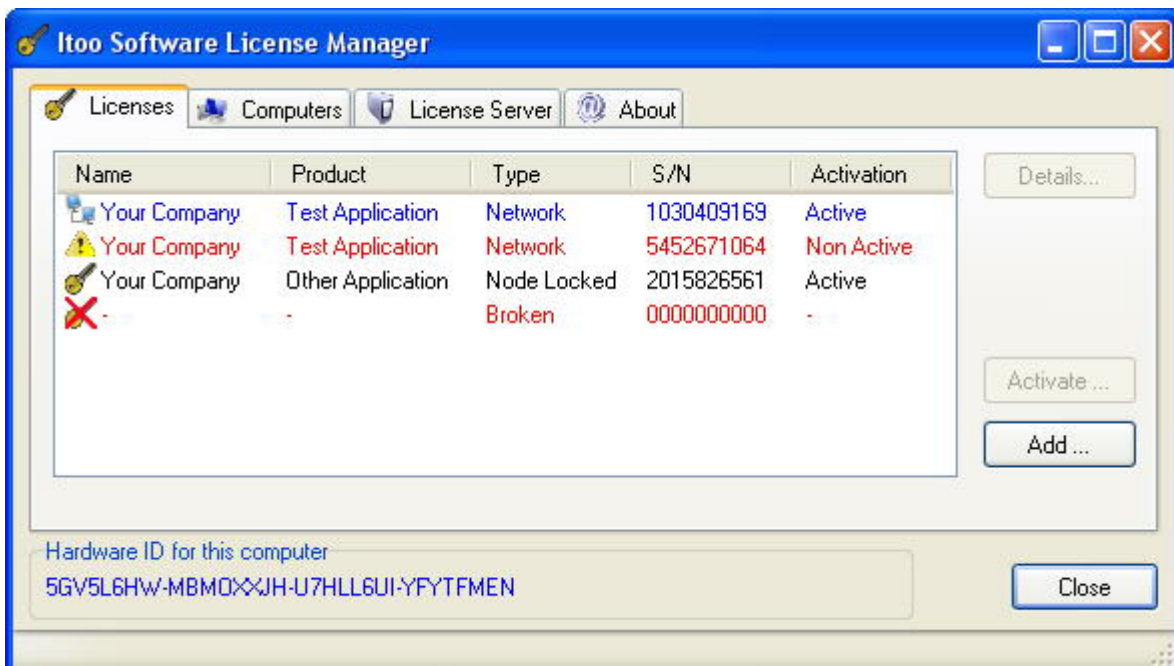
You must use this tool to manage the licenses of all products purchased. It's the same one used to manage the Stand-alone licenses.

To use it, select the **License Manager** in the **Itoo Software/ License Server** group of the Start menu. There are four tabs in this tool, two of them are only available if you have a license server installed:

- **Licenses:** On this page the licenses are listed and managed
- **Computers** (only with License Server installed): Here you can see which computers are connected and manage them.
- **License Server:** (only with License Server installed) On this page, the system administrator controls the License Server. You can check the status of the service, start and stop it.
- **About:** Here you can find information version and contact information.



Licenses

When opened, the License Manager displays the installed licenses. You can retrieve license details, check its status, activate it, or add new licenses as shown below:



Licenses can appear in different states, depending on the type of license and its activation status:

- **Activated Stand-alone licenses:** Shown in black text, these licenses are not used by the License Server (see [Stand-alone license](#)).
- **Activated Network Licenses:** Shown in blue text, these licenses are activated and ready to be shared on the network.

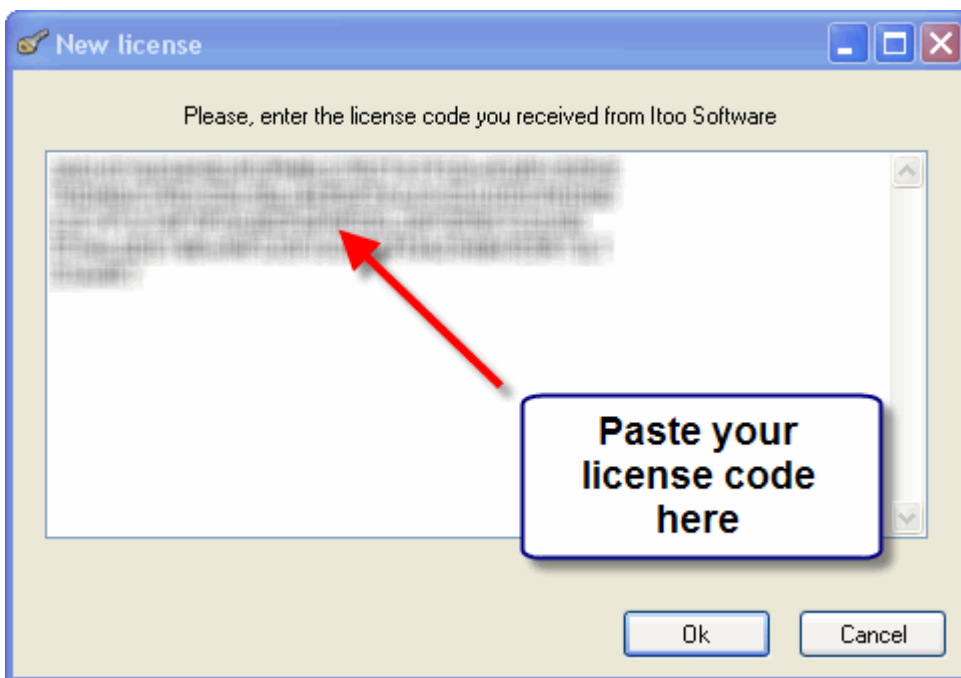
-  **Un-activated licenses:** Red text with an warning icon, these licenses are valid but have not yet been activated. You must activate them before using.
-  **Broken licenses:** Red text with an error icon . These licenses have corrupted data and can't be used in any form. They must be reinstalled.

To obtain more information about a license, use the **Details...** button, here you can see the data stored on it.

Installation of new network licenses

Unlike Stand-alone licenses, that are authorized for use only on a single workstation (the computer on which its installed), a network license allows for concurrent usage for a specific number of workstations. This number is shown in the license's details as "Licensed for x users". For instance, if you purchase 5 network licenses, you won't receive 5 separate license codes, you will only receive one code that once installed creates a license for 5 users in the License Manager. Later, if you purchase licenses for 3 additional workstations, you will receive a new license code for 3 users, that must be added in the License Manager.

When you acquire licenses from Itoo Software, in the e-mail you get the license code, as a block of letters and numbers. To install it, use the "Add.." button on the Licenses tab. Copy and paste the code in the window. Please be sure that you do not include any text other than the code itself :



If the entered code is valid, press Ok. The license is installed on your computer and ready to be activated.

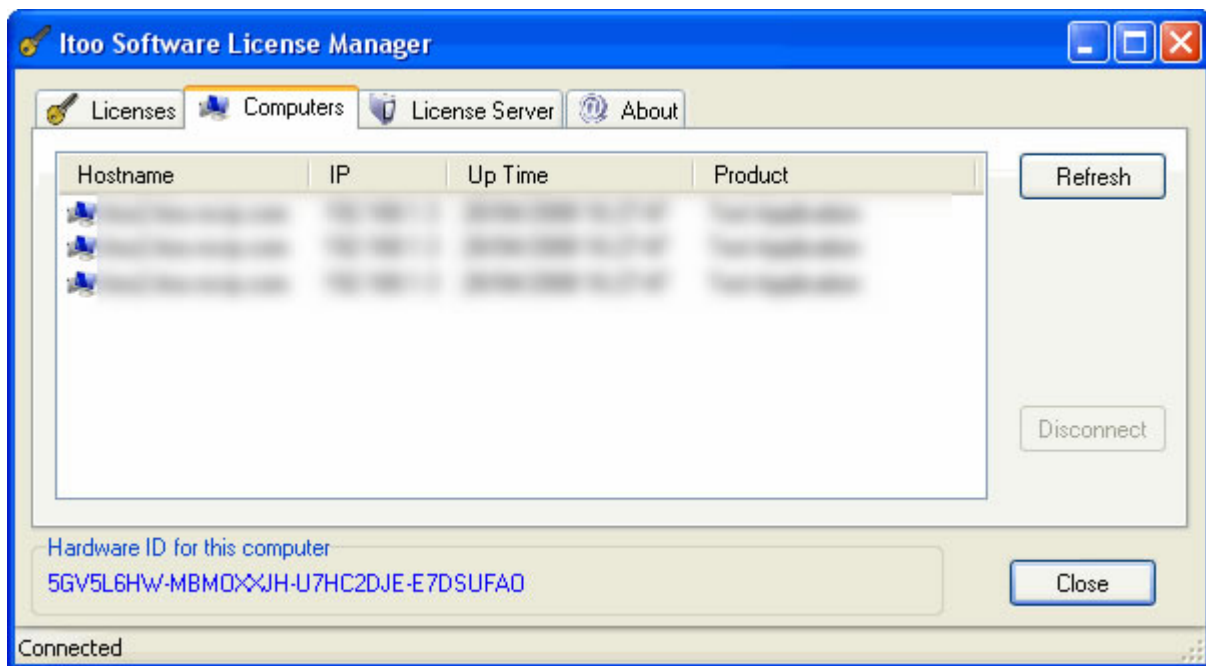
License activation

The activation process is identical for Network as for Stand-alone licenses. The difference is that the network licenses are activated and linked to the hardware of the License Server.

After an new license is installed, you'll be asked to start the activation wizard. You can activate manually using the "Activate" button as well. Please, see the [activation process](#) in Stand-alone licenses for instructions on how to do this.

Computers

In the "Computers" panel, you can see all clients that are connected to the server, what licenses are being used and how long each computer has been connected.

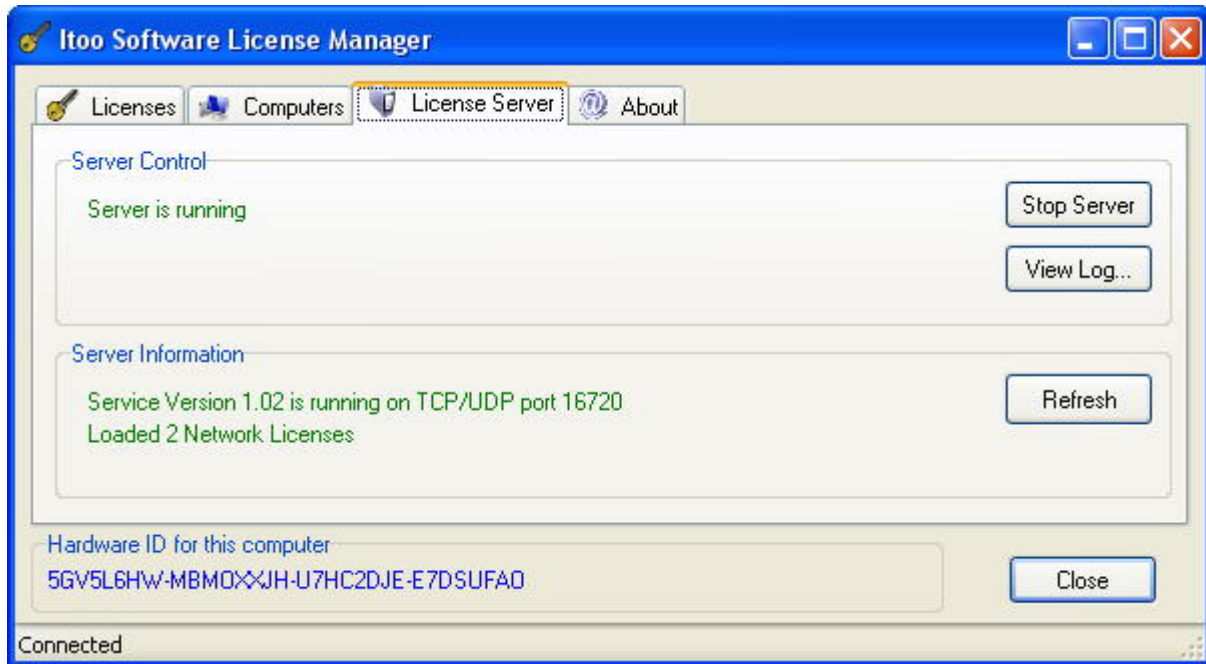


Each time that a workstation uses a network license, it connects to the License Server and starts a lease of the license for a limited time period. Before that period expires (by default ten minutes), the license must be refreshed or the lease will be lost and the license can be requested by another user.

Using the "Disconnect" button you can force the server to disconnect a computer before the lease time expires. The typical use of this control is when a workstation has locked up, and it's license is locked to that computer. In this case, you can unlock the license by manually forcing a disconnection. If a workstation doesn't reply after the lease time period, it is disconnected automatically by the server.

License Server

On the "License Server" page, you can check the status of the service, start and stop it. A detailed log of the server activity is also available, to diagnose any problems.



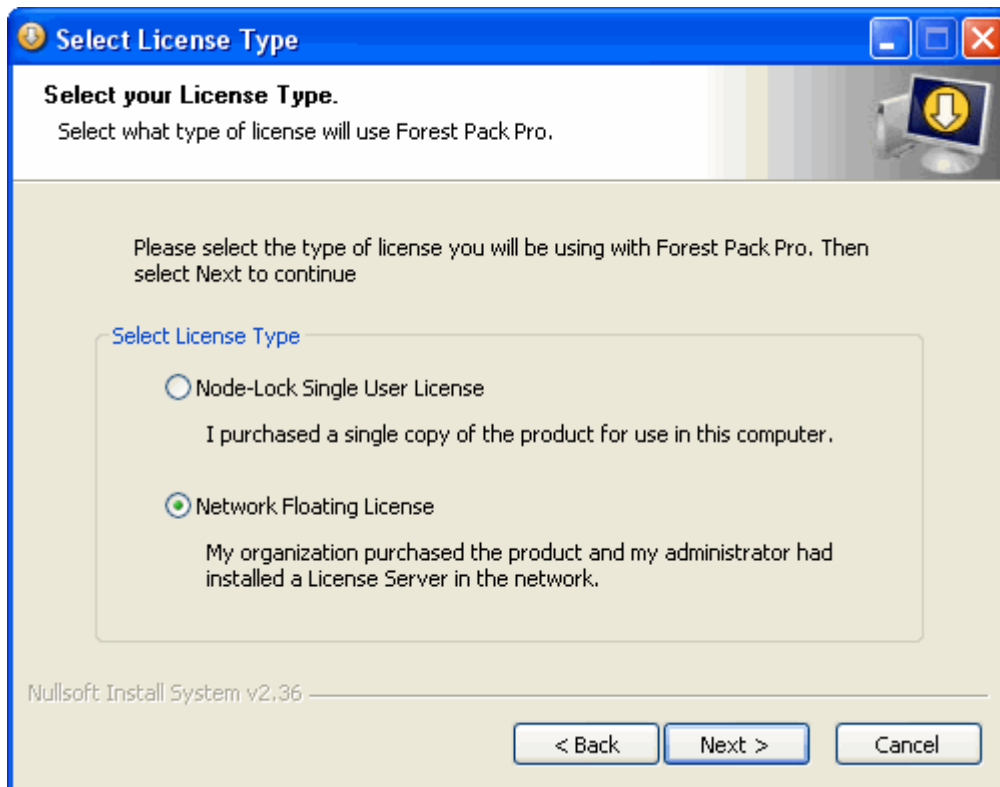
The top panel shows information about the windows service, whether it's installed correctly and if the service is started. Using the "Start/Stop Server" button you can stop the service and restart it at any time, please note that if you stop the service, all connected clients will lose their leased licenses and will try to reconnect.

The bottom panels gives you more detailed information about the service, such as the server version, TCP ports used and the total number of connected users. This data is updated each time you enter this tab, or by clicking the "Refresh" button.

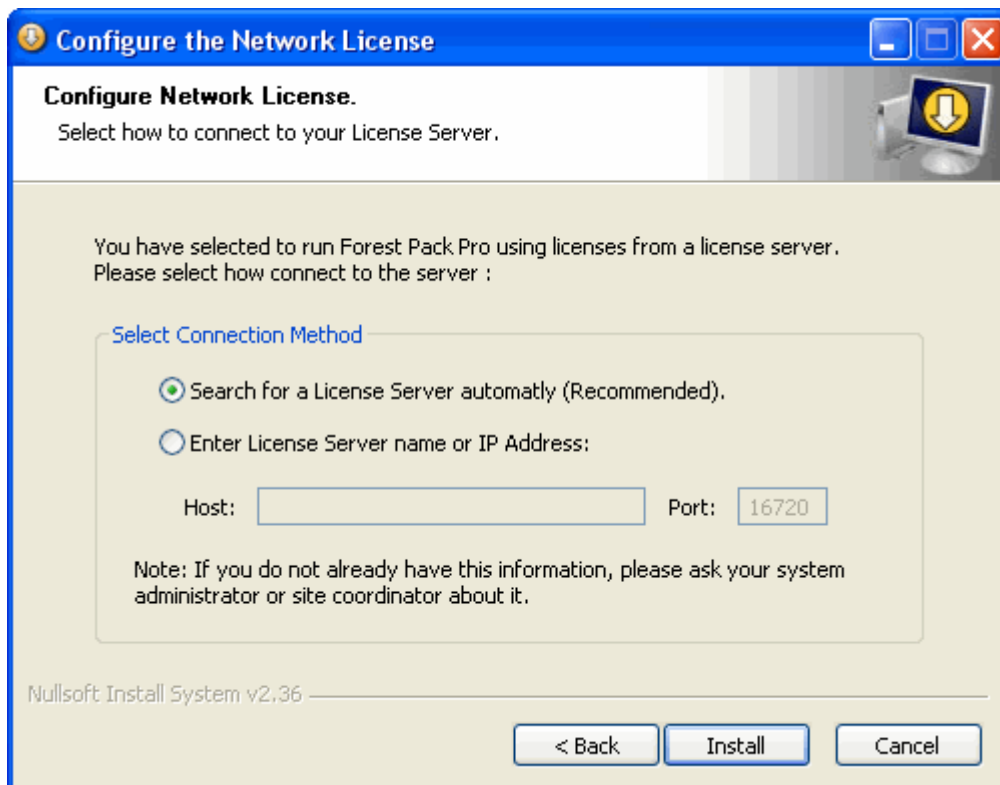
Configure Clients

A network license can be used from any computer that can connect to the License Server over the network. The license server or network licenses should not be installed on the client computer. To configure your software for using network licenses, please follow the procedure below:

From the Start menu, search for the application group and select "Change License Mode". You will get the license configuration window:



In this window, you select with type of license the software will use. The first option uses a locally installed Stand-alone license. Selecting the second option, the software will use network licenses . You will be asked how to connect to the license server in this dialog box:



The first method is the recommended procedure, the client will search for an active server over the local network using a broadcast query. The server will be located each time that a license is needed by the software. If the server is accessed through a router, and the automatic method doesn't work, you must use the manual configuration and enter the IP address used to retrieve the license.

Please note: If you have installed multiple commercial Itoo Software products, each one has its own license configuration. You can use one product with a Stand-alone license, and another with a corporate network license. Please make sure that each product is configured to use its license correctly.

Accessing the License Server through a Firewall

The License Server installer checks for the Windows Firewall and adds the necessary rules if it is present. If you use another firewall software, or a physical firewall between the server and the client computers, the following ports must be opened:

- TCP Port 16720
- UDP Port 16720

27.5 Stand-alone Licenses

The Stand-alone licenses tie a given software application to a single machine. This method of licensing requires a machine's unique identifier (SID) to be incorporated in the license activation process. After buying the product, a generic license is sent to you. This license must be installed and activated before you can use the software. In the activation process the license is linked to the hardware.

License Installation

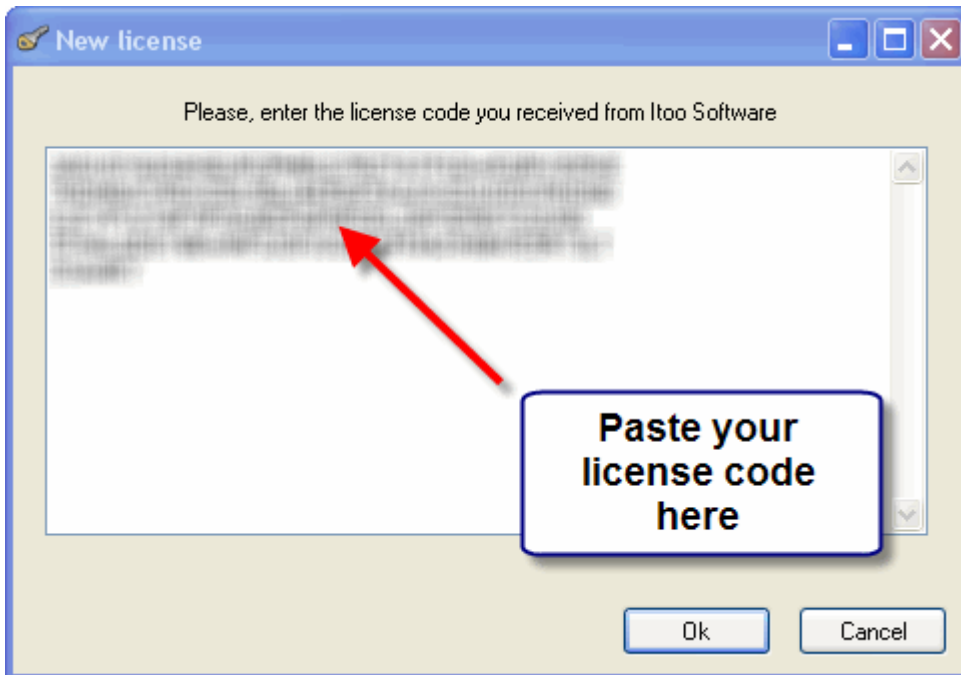
As soon as your order is authorized, we will send to you an e-mail with the license code and links to download the software. On this page, we explain how to install and activate a Stand-alone license.

To install a Stand-alone license, you must:

1. Obtain the License Code from the registration e-mail.
2. Install the license during the software installation, or later using the License Manager tool.
3. Activate your license.

Installation of the Stand-alone license

In the e-mail sent after purchasing the product you will find the license code, in the form of a block of letters and numbers. When you are asked for this code, copy and paste it in the window. Please make sure that you do not include any other text besides the code itself:



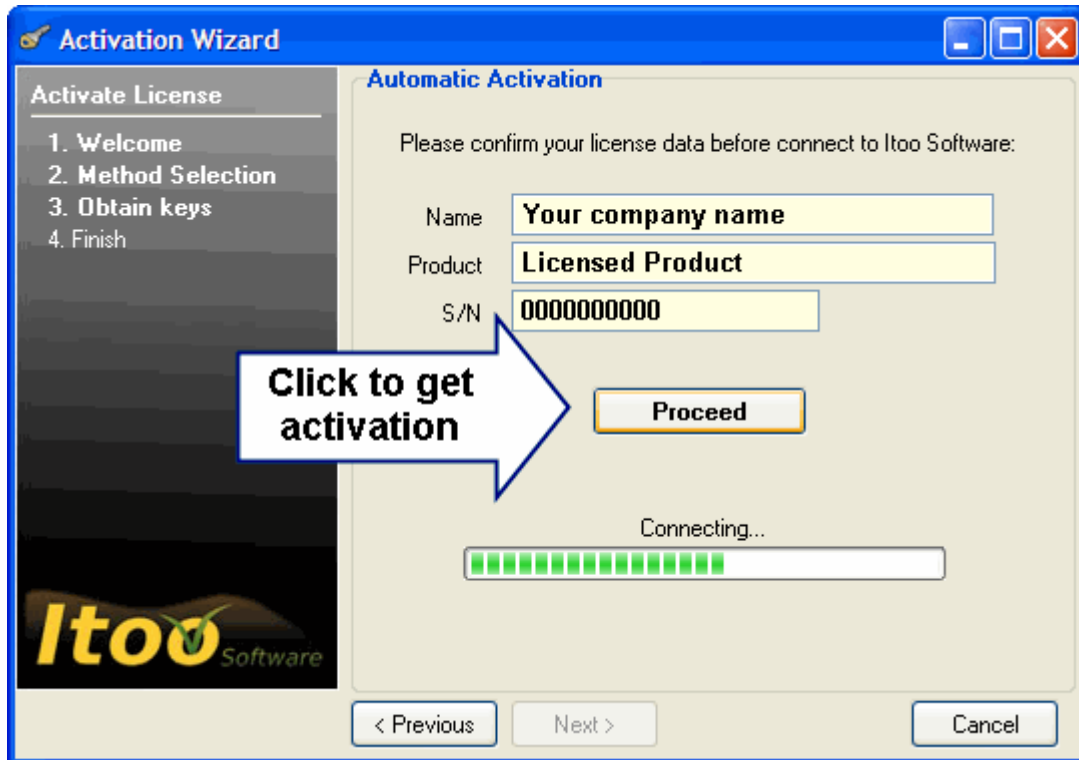
If the entered code is valid, press Ok. The license is installed on your computer and you can continue with the installation process. You can also review and activate the license later, using the License Manager tool.

License Activation

When a new license is installed, you're asked to activate it. In this process the license is linked to your hardware. You can choose two different methods:

Online activation

If you have an Internet connection, you can activate your software online. The License Manager will connect with our activation server through a secure connection, and the activation codes are sent and installed in one step.



1. Select "Activate Online" as the activation method.
2. Check that the license data is correct and press "Proceed" to start the activation process.
3. The software connects to our Activation Server through a secure connection (no personal information is sent during the process). After few seconds your license will be activated, and your software will be ready to use.

Manual activation

If you have trouble with the on-line activation, or the computer where your are using the license does not have Internet access, you can use Manual activation.

1. Select "Activate Manually" as the activation method.
2. Open a link to our [Activation Web page](#) and enter the codes given by the dialog.
3. Following the steps indicated in the page, you'll be given an Activation Code, enter this code in the dialog box when requested to activate your license.

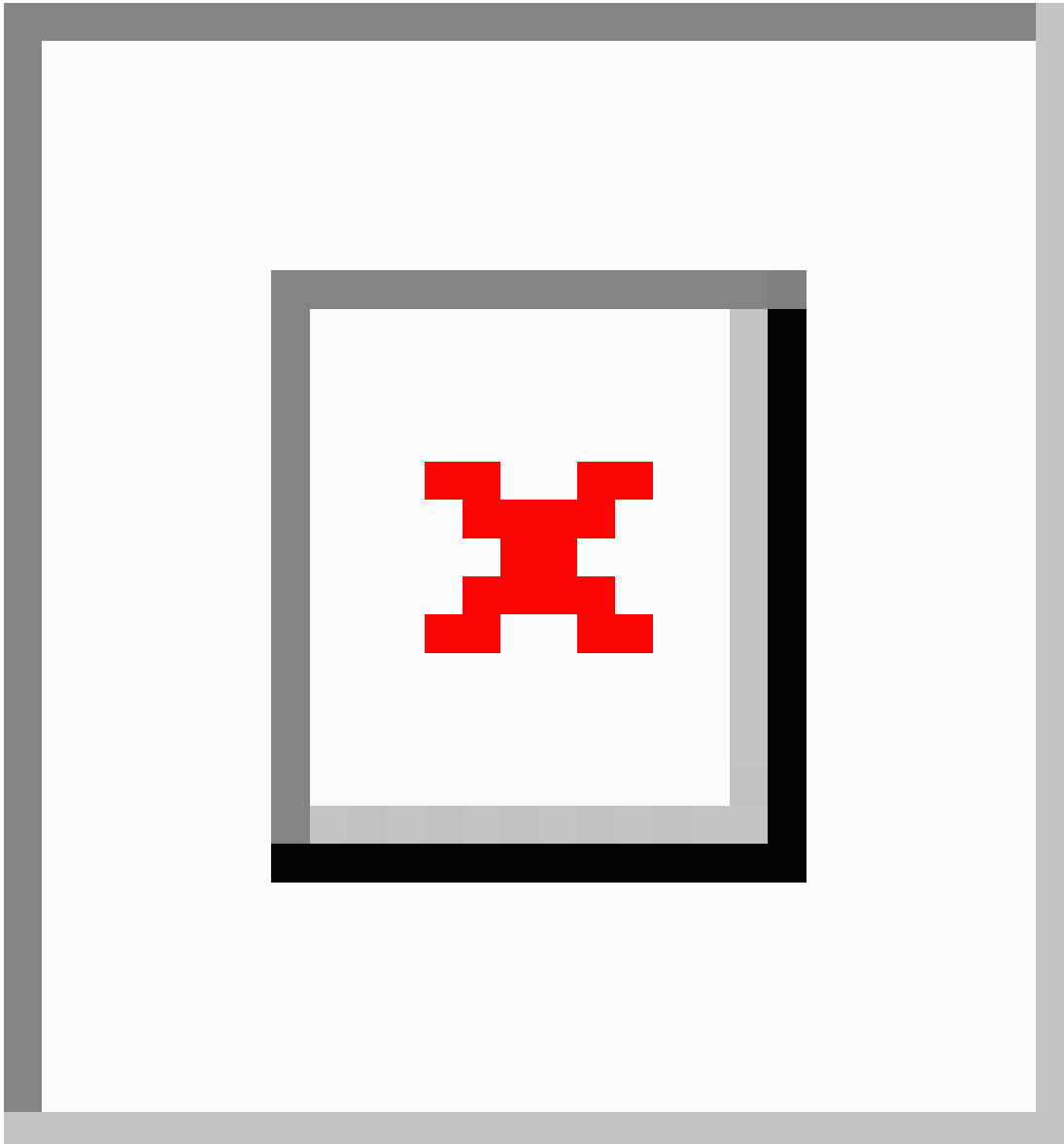
In either case, if you have trouble during the activation, you may contact us at activate@itoo.com.

License Manager

When you install any Itoo Software commercial product, the installer also includes the Itoo Software License Manager. This tool is used to manage the licenses of your purchased software.



To open the License Manager, select "License Manager" in the "Itoo Software" group of the Start menu. There are four tabs in this tool, two of them are only visible if your computer acts as a license server (not applied for Stand-alone method, see [Floating/Network](#) licenses):


When opened, the License Manager displays the installed licenses. You can retrieve license details, check its status, add new licenses or activate them as show below:



License Panel

Licenses can be in different states, depending of the type of license and its activation status:

-  **Activated Stand-alone licenses:** Shown in black text, these licenses are ready to be used.
-  **Un activated licenses:** Red text with a warning icon, these licenses are valid but have not yet been activated. You must activate them before using.

-  **Broken licenses:** Red text with an error icon . These licenses have corrupted data and can't be used in any form. You must reinstall them.

For more information about a license, you can click on the "Details..." button, where you can see the data stored in the license.

Installation of new licenses

If you have not installed a license with the software installation process, use the "Add.." button in the licenses tab. The installation process is the same as the one described above for the installer.

Activation of the selected License

When a new license is installed, you're asked to activate it. In this process the license is linked to your hardware. The activation process is the same as the one described above for the installer.