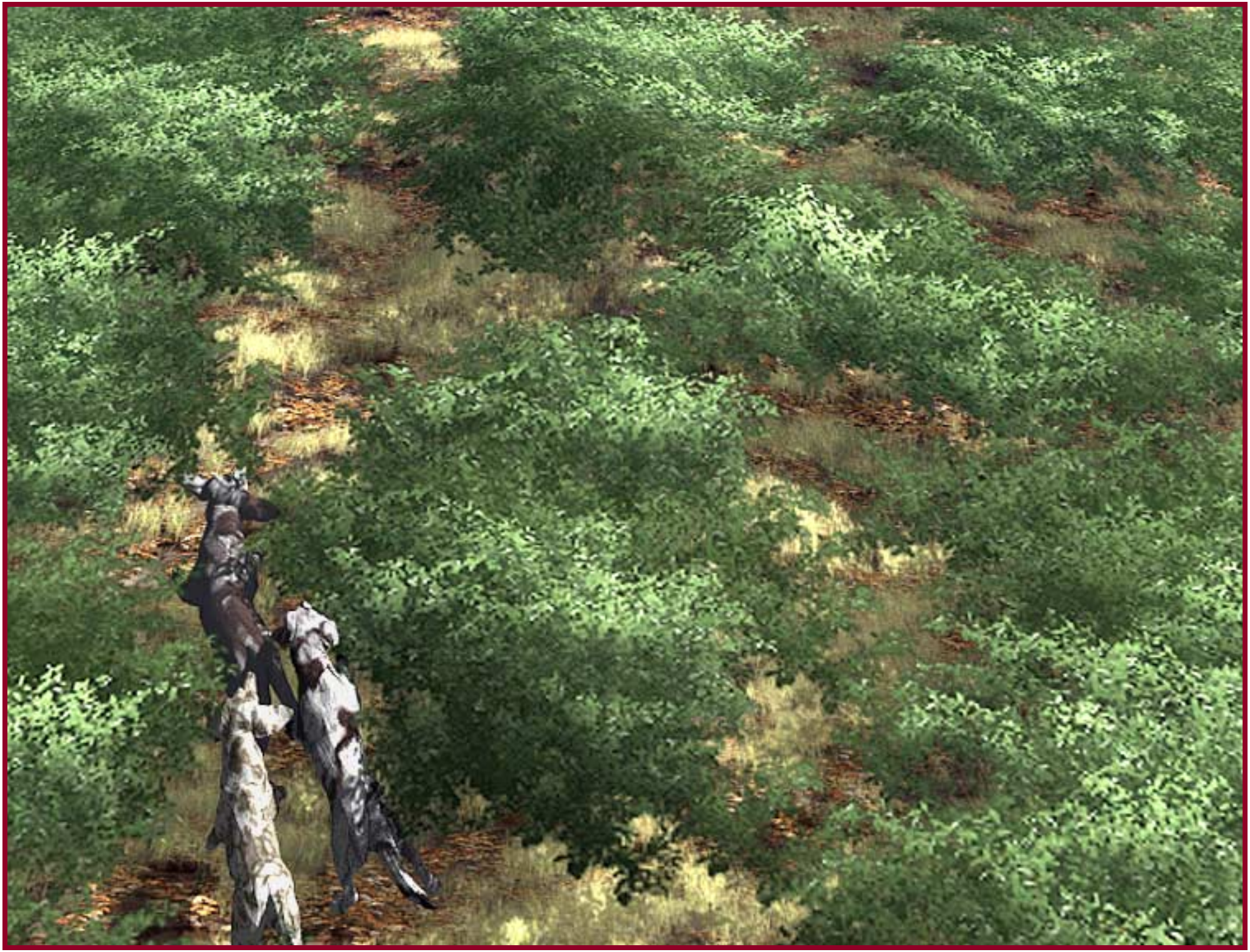


Painting Tiling Foliage Textures

Jungle 3D can do many things. One of our favorites is to paint tiling textures of foliage. These dimensional foliage textures can create highly realistic and detailed forest canopies that follow the form and contour of a terrain model.

Ever seen an aerial view of a forest canopy? Not only does the canopy have an irregular dimensional form, the canopy also flows with the contour of the underlying geography. If the geography is rolling hills, then the forest canopy rise and fall to follow it. This tutorial uses a similar approach to painting foliage textures. You'll learn how to use Jungle 3D to paint foliage canopies you map to actual terrain models..

Conceptually, it's somewhat different than painting individual trees. Here, you're painting foliage canopies as seen from above rather than from the side. You're still painting foliage growth patterns, but they characterize the overall environment of your scene, not just a tree.

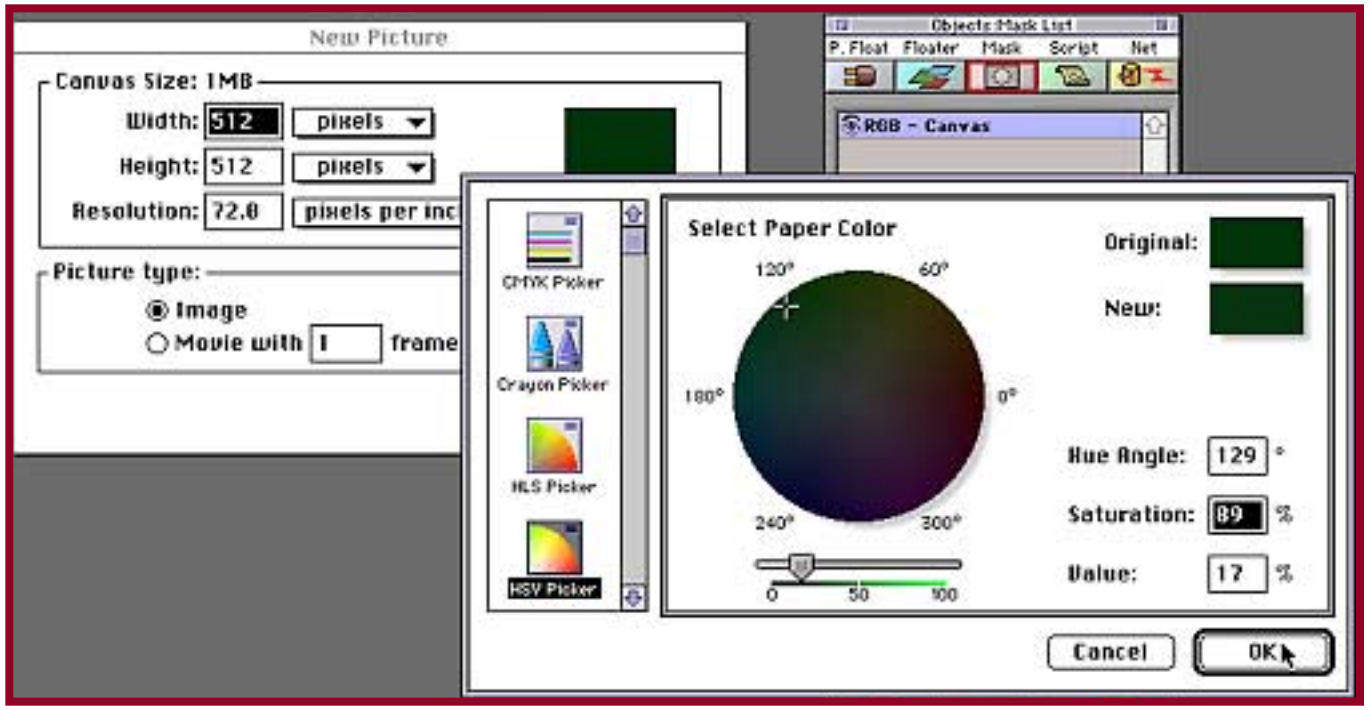
(If you're running on Windows, be sure to open the file Properties window and remove the "Read Only" setting for any files you copy from the CD.)

1) Open a New file at 512 x 512 pixels or larger (Cmd + N or Ctrl + N)

2) When the New Picture window appears, click on the Paper Color swatch to open the Color Picker.

3) Select a very dark version of the foliage color. This establishes the default paper color for the layer and prevents halos or white bands around the edges. If the dark background is distracting, close the layer eye.

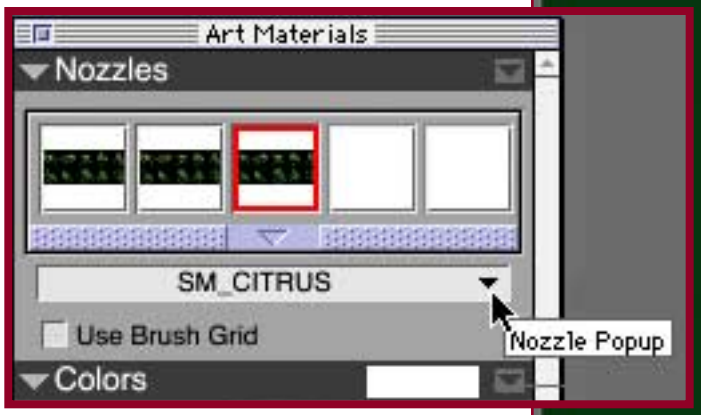
4) Copy the Citrus or Berries nozzle library from the CD onto your hard drive. If you don't own Jungle 3D, download the Extras file linked from the web page.



5) Select the Load Library command found at the bottom of the Nozzle Popup on the Art Materials palette as shown below left.

6) Choose the Citrus, Berries or Extras library and choose the SM_ (small) version of the nozzle.

7) Click on the Secondary color icon found on the Color palette. Set the color to black (Cmd or Ctrl + 3 opens the Art Materials palette.).

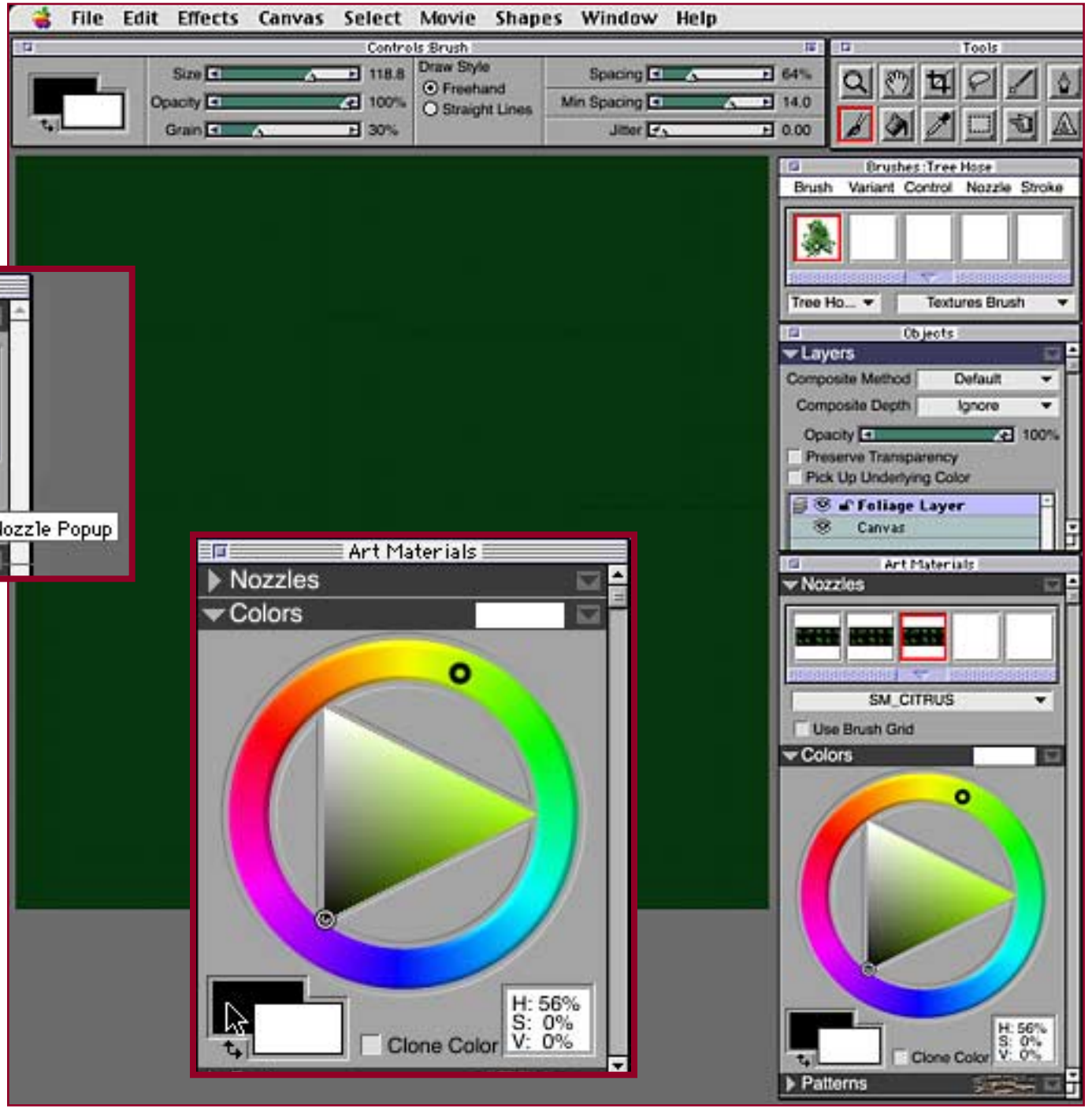


8) Display the Controls (Cmd-Ctrl + 5), Tools (Cmd-Ctrl + 1), Objects (Cmd-Ctrl + 4) and Brushes (Cmd-Ctrl + 2) palettes as well.

9) Create a new Foliage Layer.

10) Load the Texture brush library. Select the Textures Brush (or use the Extras Tutorial Brushes). Adjust the Grain setting to 30% on the Controls palette.

11) Painter 6 & 7 can paint tiling brush strokes on a layer. If you want your texture to tile as a seamless pattern, make the new Foliage Layer active



and select the Define Pattern command on the Art Materials: Pattern pull-down menu.

12) To provide some context, Define Pattern makes your brush stroke tile from one side of the layer to the other. Setting Grain to 30% makes the nozzle paint with darkened foliage.

    Define Pattern allows you to paint a seamless foliage texture. Being seamless, the texture can be scaled within 3D application to fit the model.

13) The Grain setting uses the secondary color to control the tint of the nozzle application. When the secondary color is black, a low grain setting makes the nozzle spray with darker foliage.

    Adjusting the Grain upwards lightens the nozzle's application. That means you can apply dimensional shading to the foliage simply by adjusting the Grain setting from dark to light.

    Three passes are made with the nozzle. Each uses a different Grain setting. The first pass paints the bottom most foliage, which is fully shaded. The second pass paints the middle section of foliage, where some light gets through. The final pass paints the canopy, which is in direct light.

14) The trick is to be sparing. If you make a mistake, don't hesitate to use Undo (Cmd/Ctrl+Z) or Select All (Cmd Ctrl+A) and Delete to clear the layer.

15) Start by painting the "underneath" foliage. Make sure to run your strokes off of the edge. You want the foliage to appear as a natural sequence of growth depicted as it would appear if you were looking straight down from above.

If you are painting the texture as a seamless pattern, try to maintain a randomized pattern of growth. Diagonal strokes work well, but it still takes some getting used to. The tendency is to concentrate strokes near the edges. Unfortunately, that will creates a box like tiling pattern.

Similarly, don't fill the layer with foliage. The gaps between the foliage add to the realism. They allow light passes through to the ground below.

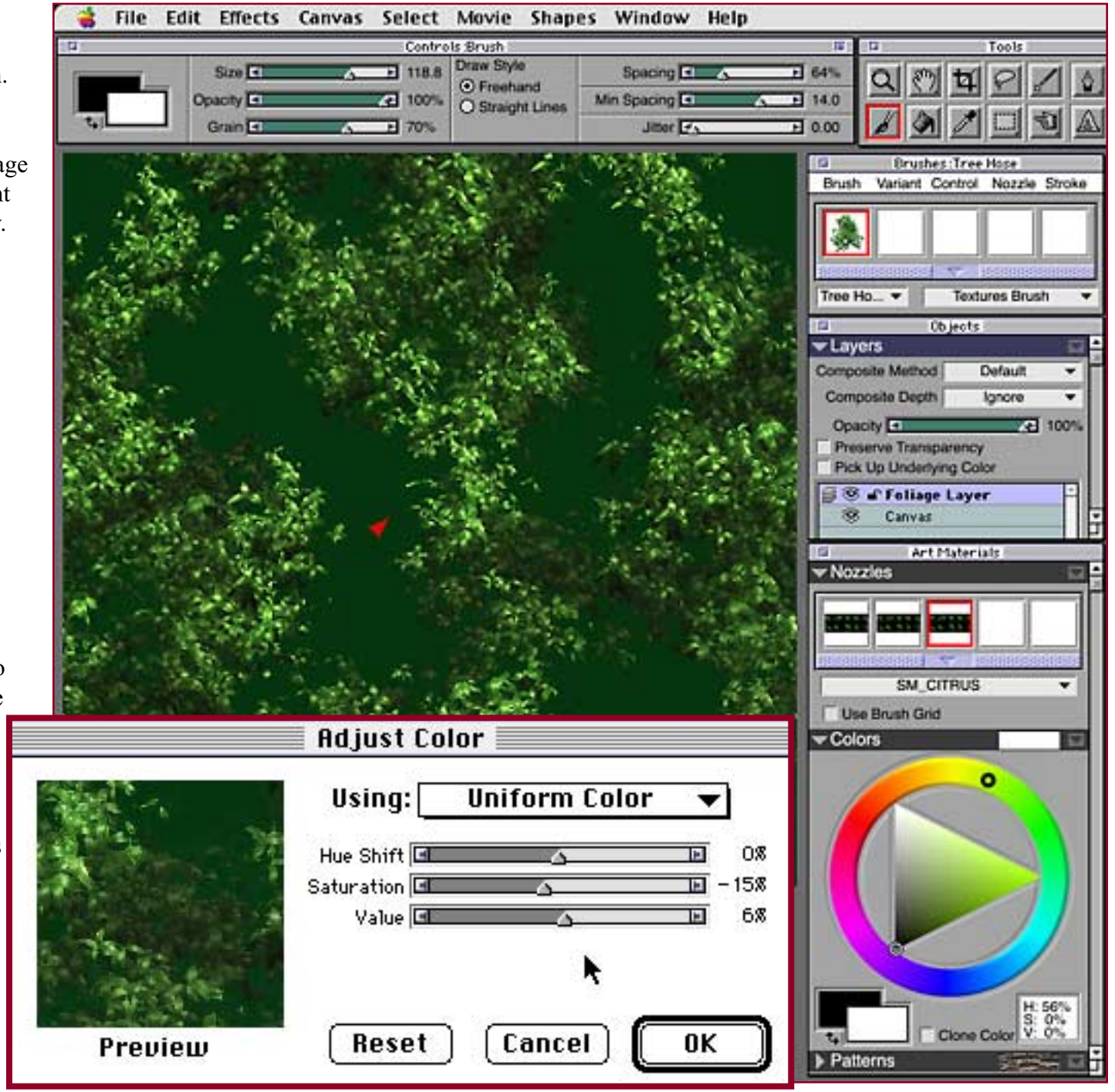
16) When you've finished painting the bottom layer of leaves, move the Grain slider to 70% and begin painting the mid-level foliage.

17) Apply the mid-level leaves less densely, almost as though you are highlighting the surface of the previous application. Leave occasional gaps so portions of the bottom foliage remain visible.

18) Once you've finished the middle section, move the Grain slider up to 100% and paint the topmost foliage canopy.

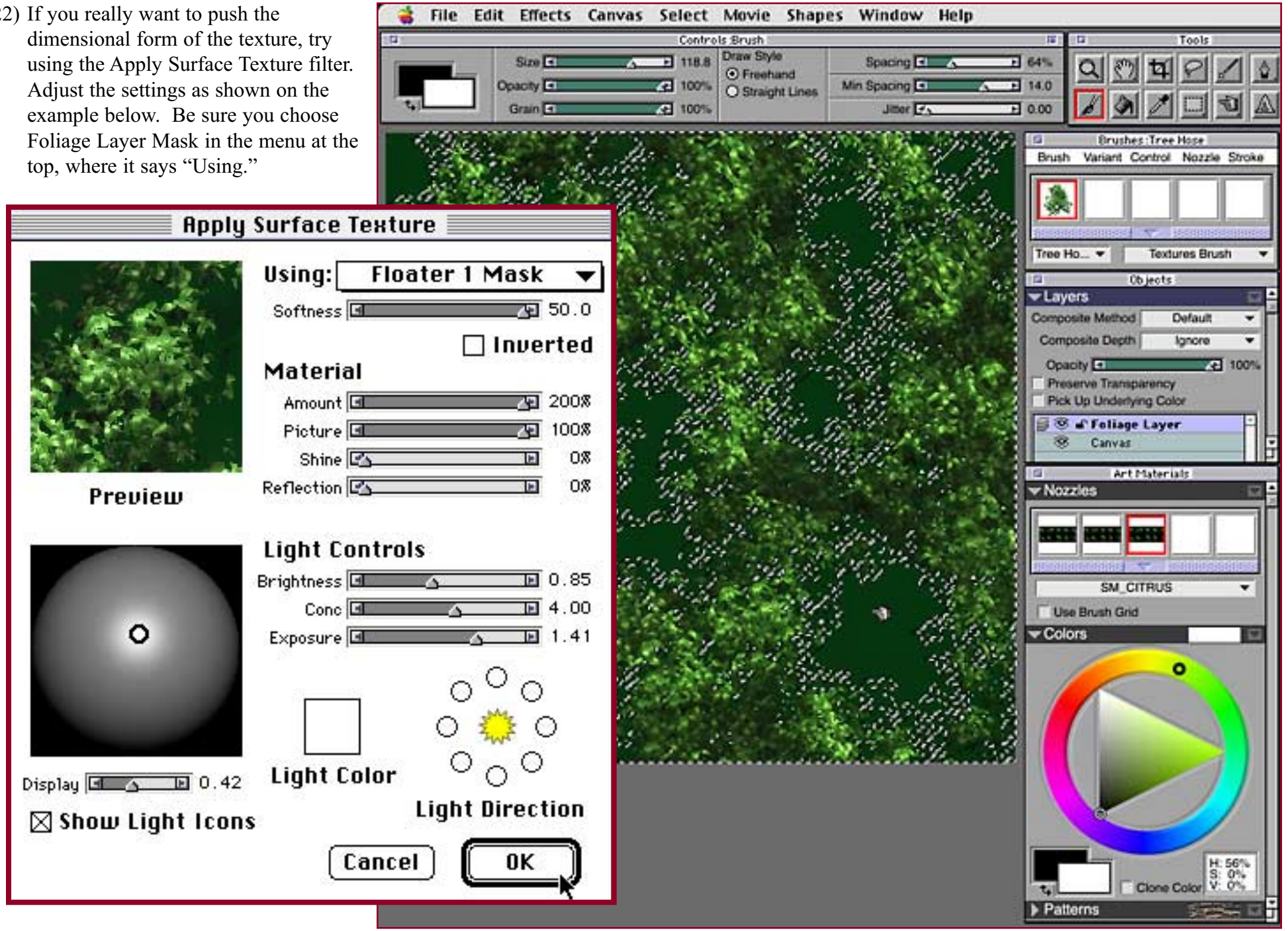
19) That's it! You should have three distinct applications of nozzle foliage so that the varying darkness reflects the vertical depth of the foliage.

20) Okay, this is where you add seasoning. For example, I've found adjusting color can produce a more realistic result in a render.



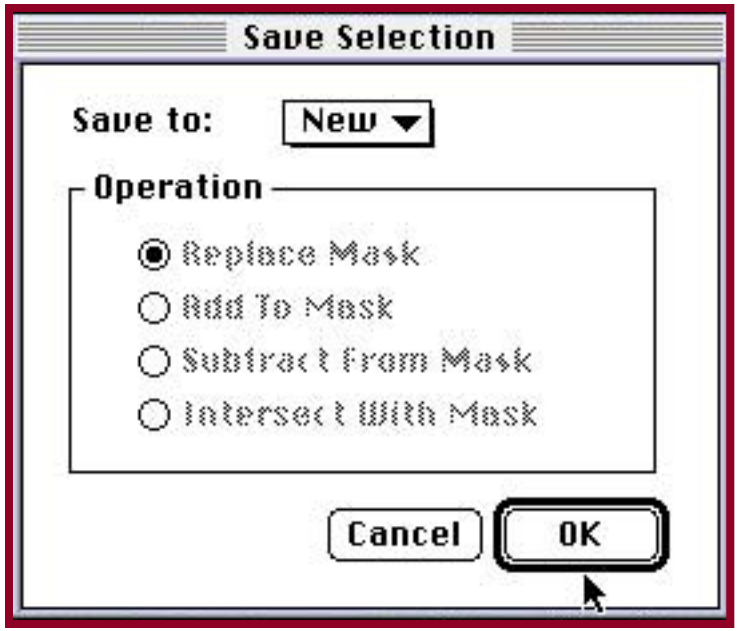
21) Similarly, I've found that Bryce tends to soften 2D textures, so Sharpening helps too.

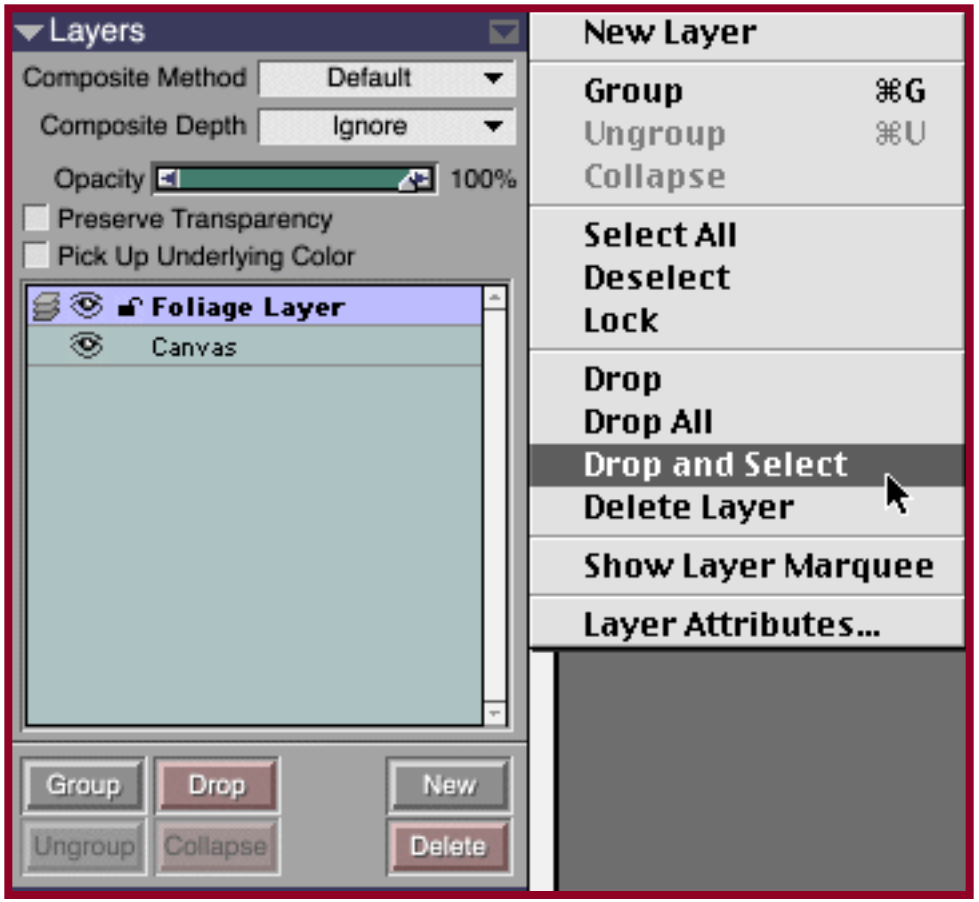
22) If you really want to push the dimensional form of the texture, try using the Apply Surface Texture filter. Adjust the settings as shown on the example below. Be sure you choose Foliage Layer Mask in the menu at the top, where it says "Using."



23) When you are done seasoning the image, choose Drop and Select from the pull down Layer menu. Once the layer is dropped, you should see the "marching ants" shown above.

24) Click the Save Selection button on the Objects: Mask palette, then choose OK to save the selection as an alpha channel. (You can also use the Save Selection command at the bottom of the Select menu.)





25) That's it. You're done, at least as far as Painter is concerned.

Name the file "Canopy" and save it in the file format your 3D application prefers. Be sure to use a format that preserves the alpha channel (.tif, .psd, etc.)

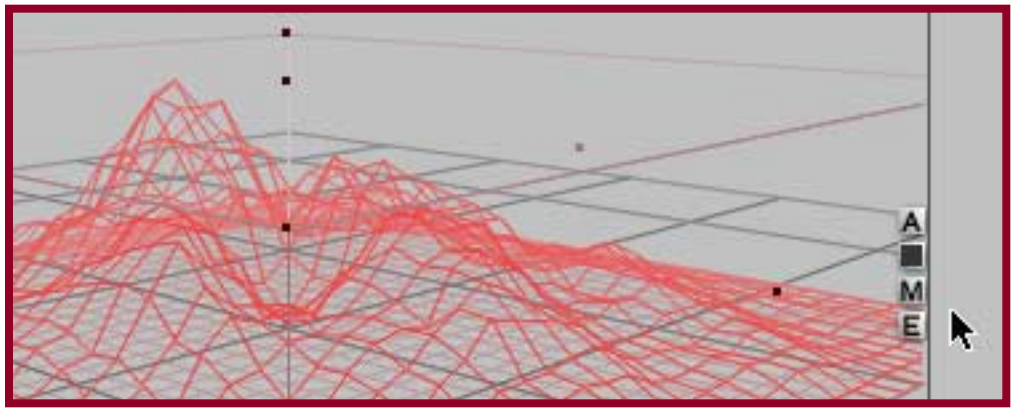
26) Close Painter and launch Bryce or the 3D application of your choice. You're ready to apply the foliage canopy as a tiling terrain texture map.

* If you are using Bryce and want to see how the textures are applied, continue with the tutorial. Experienced 3D modelers and artists working with other applications may want to skip to step 42 to see how the textures and models work together in a scene. Otherwise you're done.

27) From this point the tutorial uses Bryce, but the principles apply to most 3D programs.

28) Create a Terrain model. You will need to lessen the vertical dimensions and smooth out any sharp angles since they distort the texture and destroy the illusion.

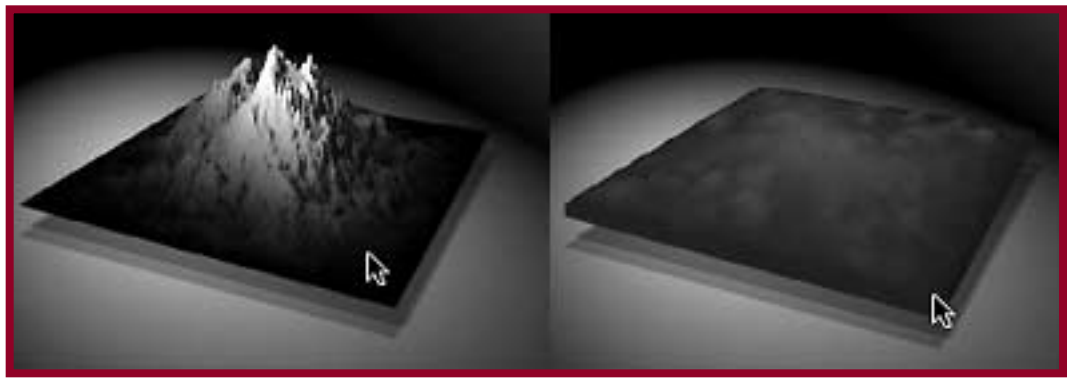
29) The problem with the default terrain is the angles are too severe. If you map the texture to this type of terrain, the sharp angles and vertical surfaces will radically distort the image and destroy the illusion or realism. So you need to minimize vertical surfaces and lessen the sharp angles.



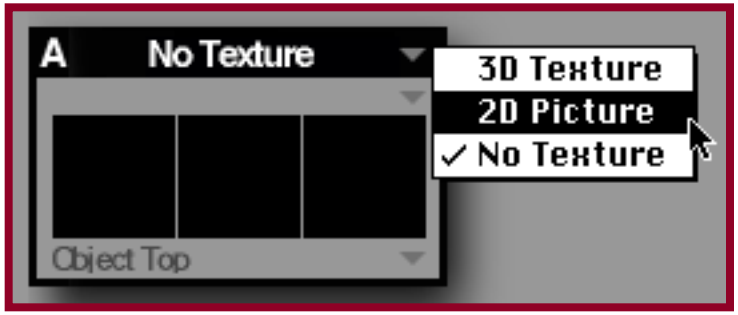
30) Use the Edit Object command from the Objects pull down menu (Cmd/Ctrl+E) to access the terrain editor. You can also click on the E next to the model.

31) Use the Lower and Smoothing controls along with the Mounds, Dampen and Equalize tools to edit the terrain model. You can also create a new model that better suits the requirements for the model using the New and Fractal controls. Either way, you want a model with modest angles and semi-flattened contours.

32) The two examples below demonstrate the modification. Though an actual canopy would have steeper characteristics, vertical dimensions in the model tend to distort the image. To correct for that problem, dimensional shading was applied to the 2D painted foliage. Here, the 3D modeling simply augments the illusion and allows the modeler to apply 3D lighting characteristics to a terrain that follows the contour of the underlying ground.



33) Though always subtle, the 3D shading effect becomes evident when the texture is mapped to the model. To do that, select Edit Material from the Objects pull-down menu. This opens the Materials Composer.

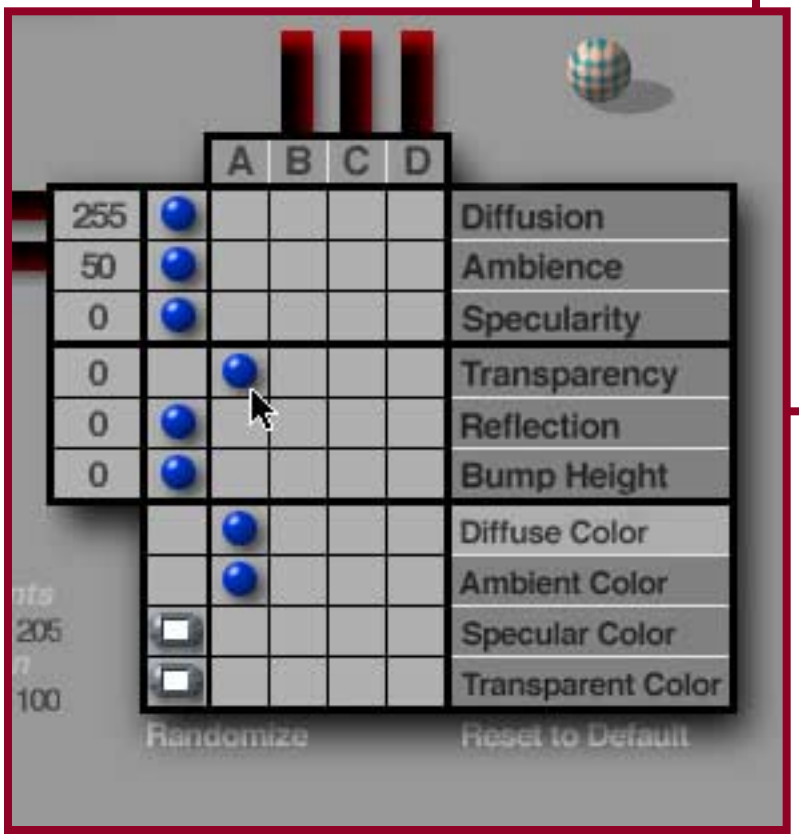


34) Select "2D Picture" from the top of box A.

35) At the bottom of box A, select Object Top from the pull-down menu. This setting makes the image apply once, as it appears in the painting.

36) Click in one of the little squares. That opens the Pictures window.

37) Once the Pictures window is open, click on one of the gray squares then select Load and open the "Canopy" file.



38) Once the Canopy image is loaded, click on the ✔ to close the Pictures window.

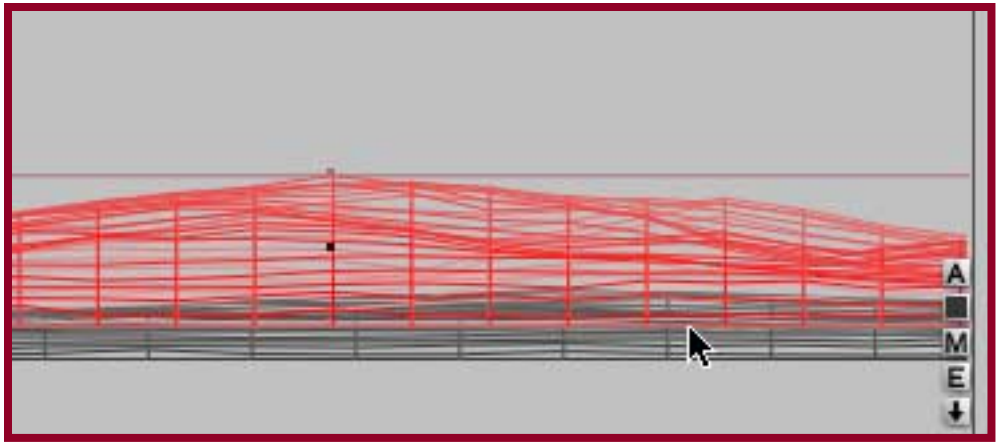
39) Now move the blue Transparency, Diffuse Color and Ambient Color icons into column A as shown at left.

40) When you've completed the various adjustments. Click on the ✔ at the bottom of the Materials window to accept the changes.

41) The foliage texture is now mapped to the terrain model.

42) Here are some tricks to augment the illusion of a dimensional canopy of foliage. Use the Copy and Paste commands to make a duplicate of the terrain model.

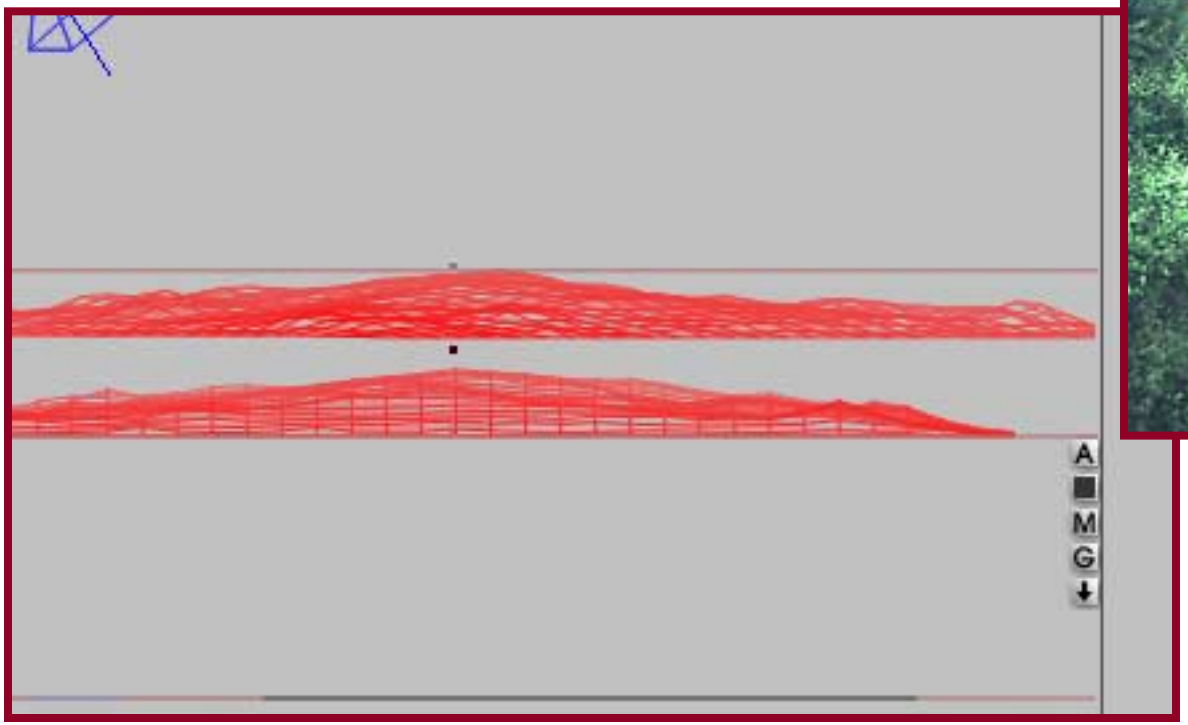
43) Take one of the terrains and move it so that it's slightly higher than other. (In the side view example at right, the bottom ground model, has been flattened a bit more than the canopy model.)



44) What you're doing is separating the foliage canopy from the ground, just the same as foliage grows in nature.

45) Select the lower terrain, return to the Materials composer and apply one of the ground textures. Click on the ✔.

46) Change the camera angle so that your POV (point of view) is roughly 45 degrees above the terrain and render the image. The example shown here uses the Berroes or Olive nozzle. By keeping the terrain relatively close to the ground, the texture map applies more as brush rather than trees.



47) For a more complex, tree like foliage, you can use three or more terrain models. The example at left has an Infinite Ground at the bottom and two identical terrain models above. One terrain has been rotated to hide that it's a copy.

48) The render at right shows the whole image. The small image below depicts a more oblique POV taken from a larger render. It also uses different aspect ratio that the image at right. The bottom image uses the same aspect ratio but has the foreground as the point of focus.

49) Notice how the two layers create a layered canopy effect? You can also see how the layered painting design works to augment dimension. This style does require an elevated POV, but otherwise it works very well.

The stuff below is the ground and the shadows the canopy casts on it. That's why the mask is so important. It gives you a real look both above and below the canopy.

50) Because the texture map is a tiling image, it can be scaled on a terrain or ground using the Frequency setting at the top of column A in the Materials Composer.

Have Fun!

Here are some tricks we used in the hunting dogs image. We used 5 mostly identical terrain models. Four models have foliage textures painted the same way this tutorial describes. The bottom model uses a simple Bryce texture.

The biggest problem with the result is that I painted the textures way too small. The foliage textures are only 500x500 pixels, so when the camera is moved in, the begin to pixelate. Painting larger textures using bigger nozzles solves that problem.

The mapping possibilities and variations using tiling foliage textures are challenging. They're also expansive. If you discover something new, send us an email and we'll share it with others.

Painting Tiling Texture Maps is the third tutorial in the Jungle 3D series. It compliments the *Painting Trees* and *Painting Shadows* so be sure to read those as well. Try the *Painting QTVR Panorama* and *Turkey Club* tutorials also.

Best of painting.

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