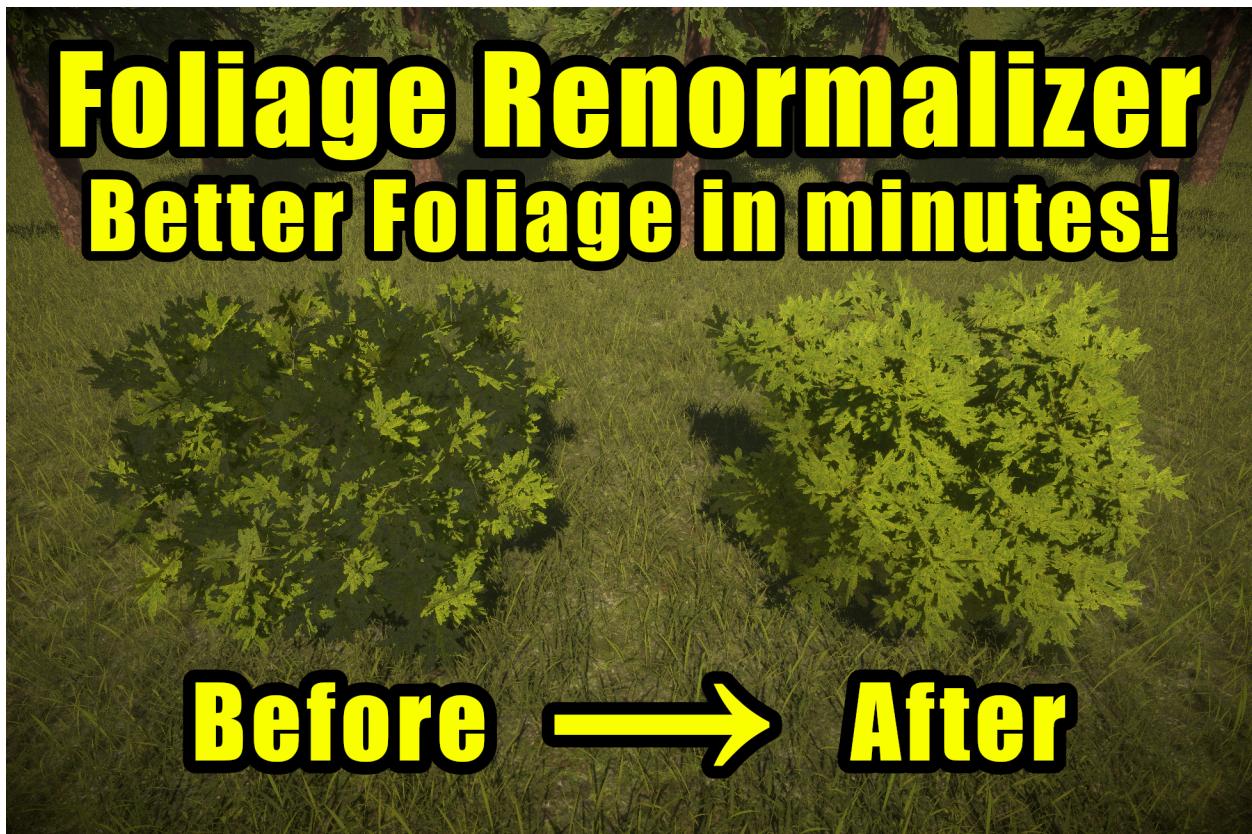


# Foliage Renormalizer Quick Start Guide

First of all, thank you for choosing Ultimate Foliage Renormalizer. **As a small creator, your patronage makes a big difference.** If you're a fan of the tool, I would also greatly appreciate a review on the asset store, as they help me out a ton :)

To support me further, wishlist [Super Ultimate Party Game](#) on steam!



# Guide Summary:

- [Setting up the Demo Scenes](#)
  - [BIRP Demo Setup](#)
  - [URP Demo Setup](#)
  - [HDRP Demo Setup](#)
- [How To Use Ultimate Foliage Renormalizer](#)
  - [First Steps](#)
  - [Grass Mode](#)
  - [General Mode](#)
    - [Proxy Mesh Generation](#)
    - [Normal Transfer and AO bake](#)
- [How To Handle Double Sided Rendering](#)
- [Support Contact](#)

# Compatibility Note:

Ultimate Foliage Renormalizer does \*not\* require you to use the included shader. It is compatible with any shader or rendering system (Such as TVE). When baking AO into vertex color, make sure to select a channel that your shader uses for vertex color AO (in TVE, for example, use the Green vertex color channel).

# **Setting up the Demo Scenes:**

The demo scenes work out of the box for the most part. However, there are a few small steps to make sure things look right depending on your render pipeline

## **Built-In Render Pipeline:**

- Install ShaderGraph (2021.3+)
- To make the grass render on the Terrain demo scene, change the material on the grass prefabs:

### **Prefab:**

Assets/FoliageRenormalizer/Demo/Prefabs/Grass Prefab,

Assets/FoliageRenormalizer/Demo/Prefabs/Grass Prefab Renormalized

### **Material:**

Assets/FoliageRenormalizer/Demo/Models/Grass/BIRP grass.

This is because the grass on the terrain demo uses terrain details, which do not render properly with shadergraph on the built-in render pipeline.

## **Universal Render Pipeline:**

- Nothing, it will work out of the box

## **High Definition Render Pipeline:**

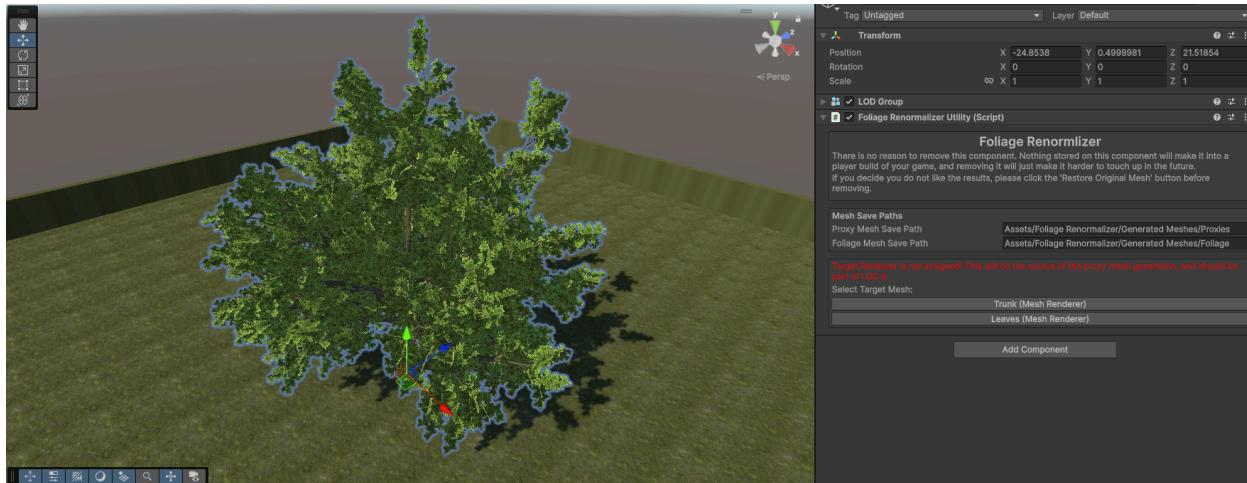
- Import included package Assets/FoliageRenormalizer/Demo/HDRP Demo

# How To Use The Tool:

## First Steps:

### 1) Add the ‘Foliage Renormalizer Utility’ Component to your Foliage.

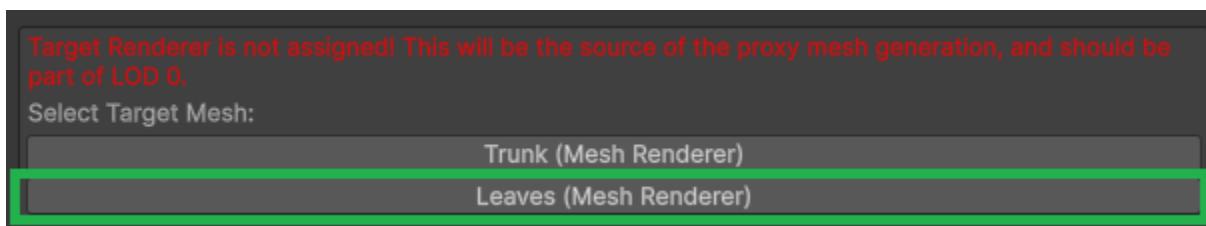
- If you are using LODS, add it to the same GameObject with your LOD group component.
- If your model is separated (such as having separate models for tree trunk and leaves), add it to the parent GameObject.
- Otherwise, add it to your foliage Mesh Renderer and skip to [step 2](#).



#### 1.1) Set your ‘Target Renderer’.

(Separated model and LOD group only)

This should be the model with the actual leaves (not trunk). If using lods, it should also be LOD 0.



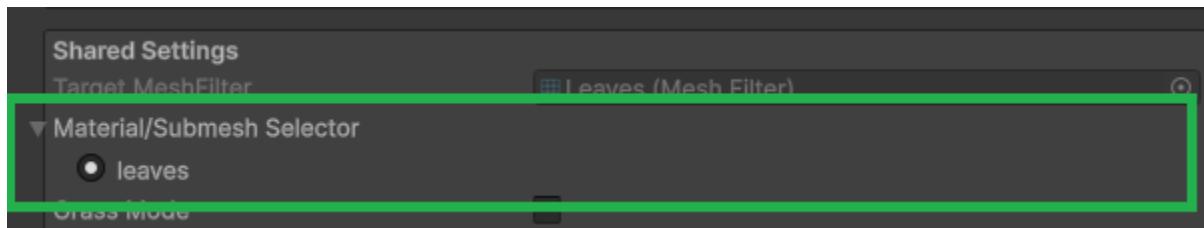
## 2) Set your save paths.

This is saved in Editor Prefs and shared between all instances:



## 3) Select your desired Sub Meshes.

In general, you will want to exclude things like tree trunks, and include the leaves. The generated proxy mesh will only be influenced by the submeshes selected here. If you exclude a submesh here, the final result will also not receive new normals, but it will still receive AO in the vertex colors.



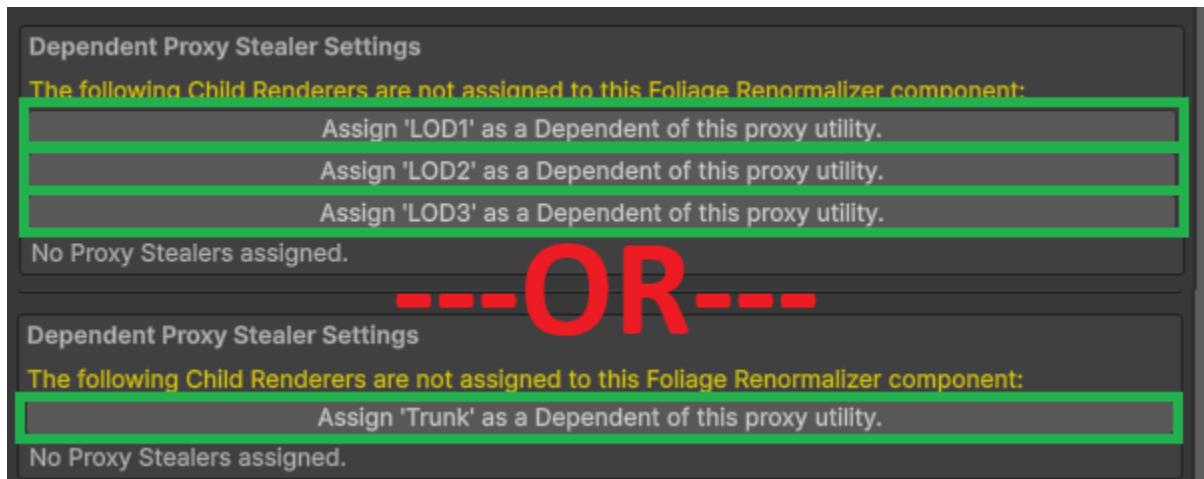
## 4) Add Proxy Stealer Components (Automatic method)

(Separated model and LOD group only)

The Foliage Renormalizer Proxy Stealer component uses the generated proxy mesh and mesh generation settings of a selected “Source” Foliage Renormalizer Utility component.

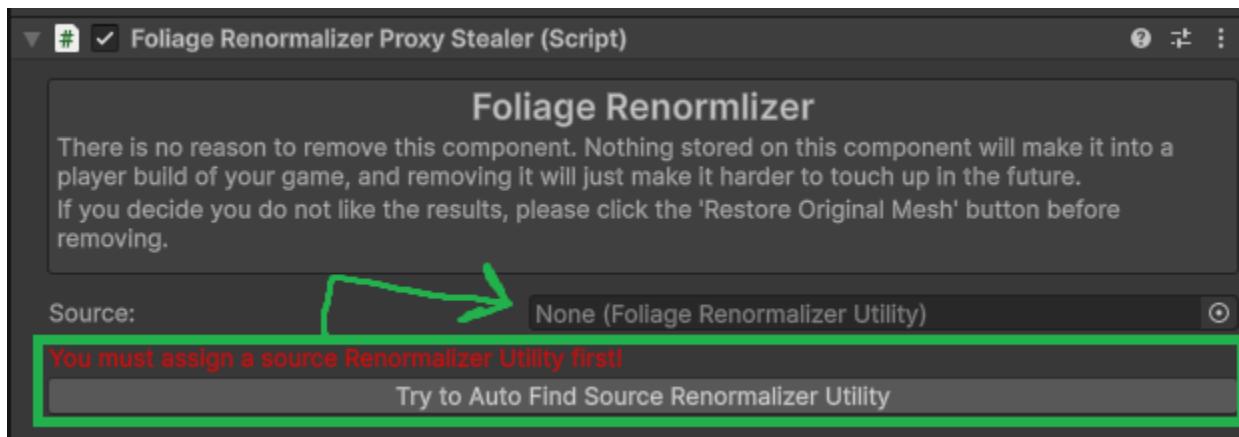
### 4.1) Add Proxy Stealer Components (Automatic method)

You can automatically add proxy stealer components to child renderers using the buttons at the bottom of the component.



## 4.2) Add Proxy Stealer Components (Manual Method)

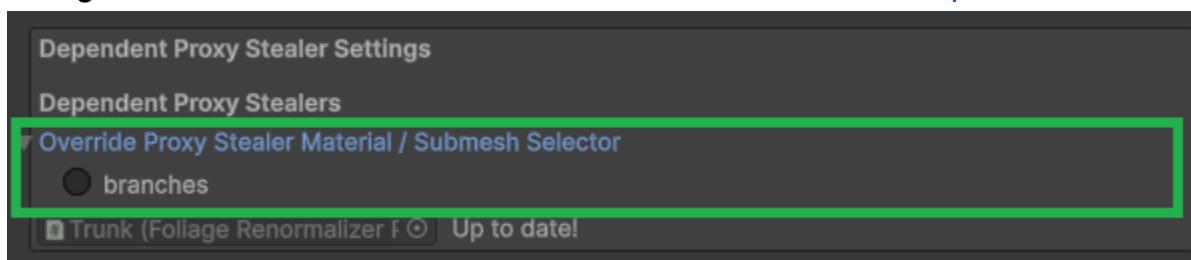
If the automatic method doesn't work for you, you can manually add the Proxy Stealer component to your other renderers. Press the "Try to Auto Find source Renormalizer Utility" button. If this fails, assign it manually.



## 5) Select Submesh / Material Mask for Proxy Stealers

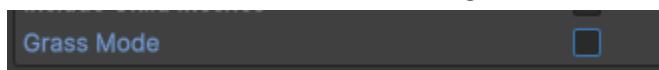
(Separated model and LOD group only)

Only unique materials, that show up only in proxy stealers, will need to be configured in this section. Use the same selection rules as [step 3](#).



## 6) Grass Mode Tickbox

If the foliage mesh is grass (or a similar small detail, like clovers), select grass mode and move on to the [Grass Mode](#) guide. Otherwise, leave unchecked and move onto the [General Mode](#) guide.

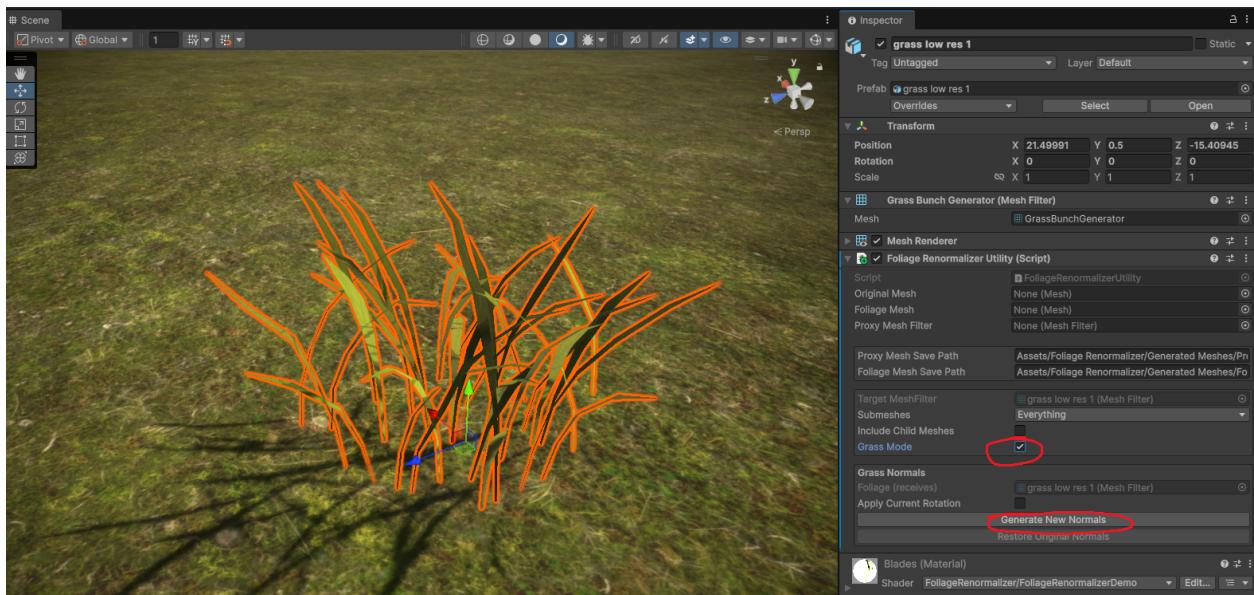
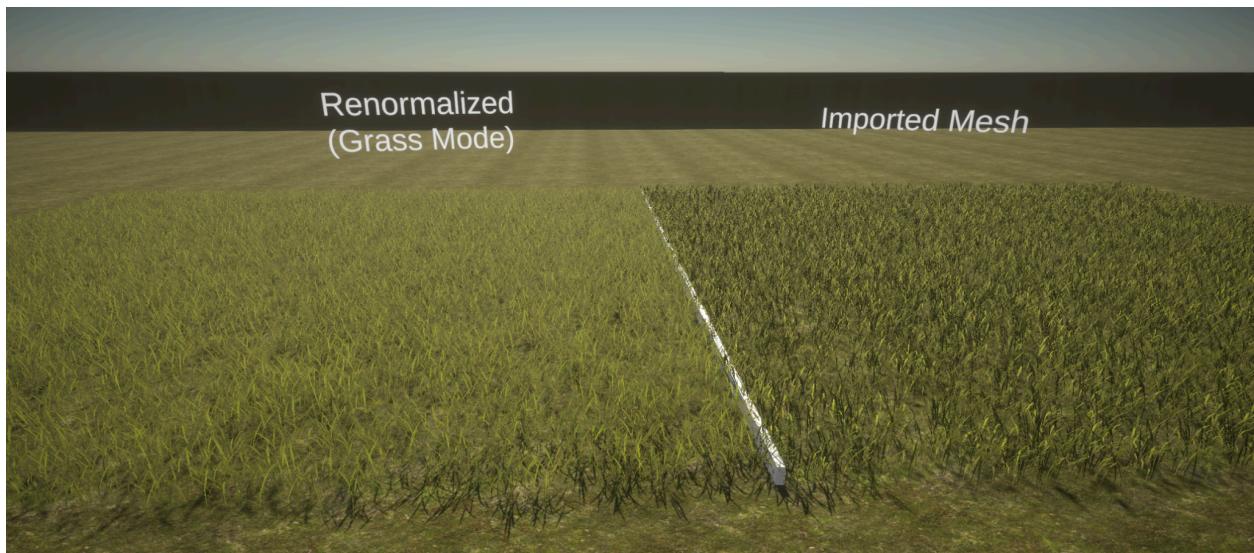


# Grass Mode:

Using Grass mode is super fast and simple, but has a huge impact on grass quality! To use grass mode, simply enable the “Grass Mode” tickbox, and click “Generate New Normals”.

## Options:

- **Apply Current Rotation:** applies the meshes rotation in place, with the transform rotation being set to 0,0,0. Good for if your grass is -90 or +90 on the x axis, and you want to use it for a terrain detail



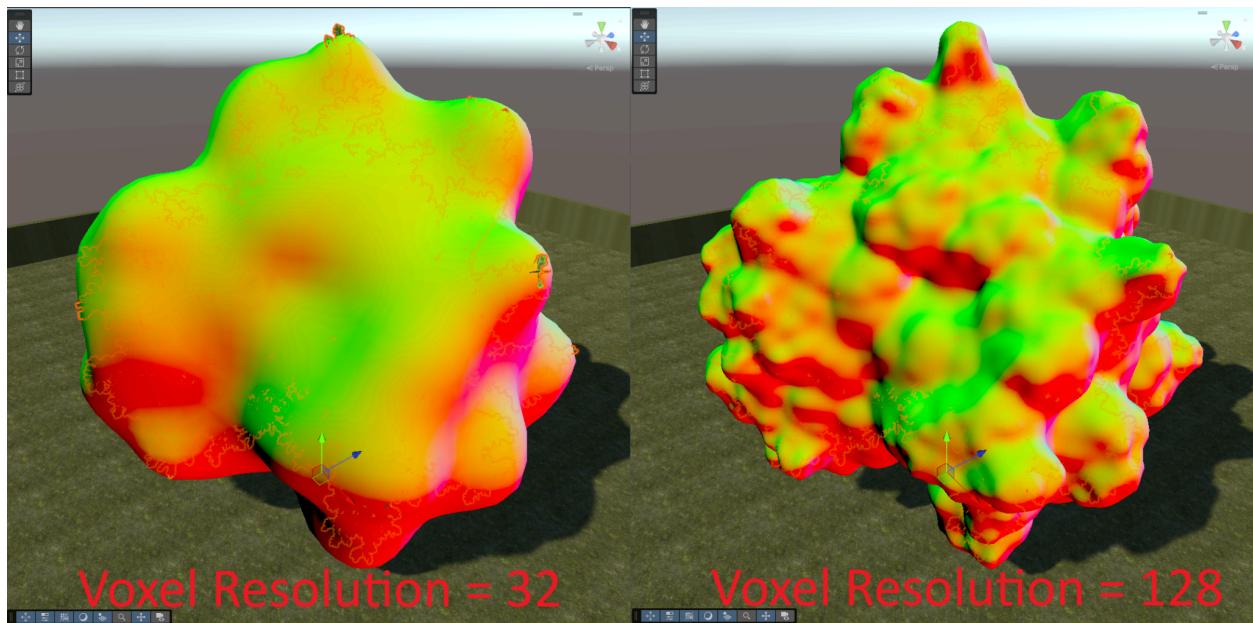
# General Mode:

Using General mode has 2 main steps: [Generating the proxy mesh](#), and then [Generating the Output Mesh](#).

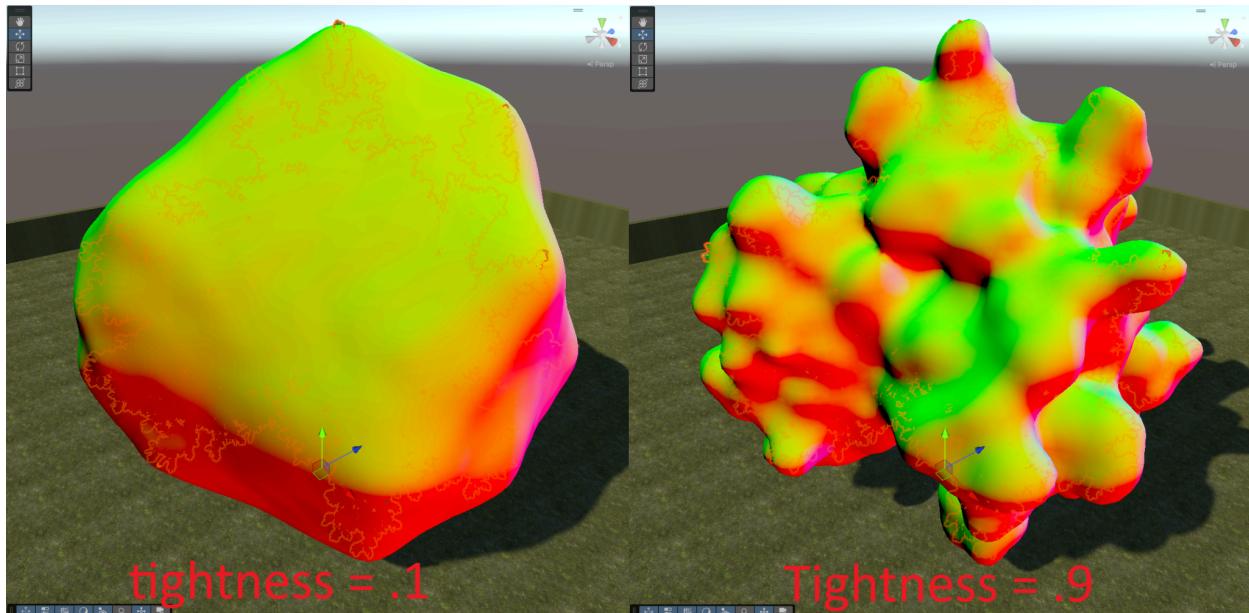
## Proxy Mesh Generation:

The first step in General Mode is generating the Proxy mesh. You will have 3 main sliders to control the final look of the proxy mesh, Voxel Resolution, Tightness, and Blur Iterations. Configure these sliders to your liking, then click “Generate Proxy”. You can then optionally view the generated proxy mesh by clicking “Show Proxy Mesh”.

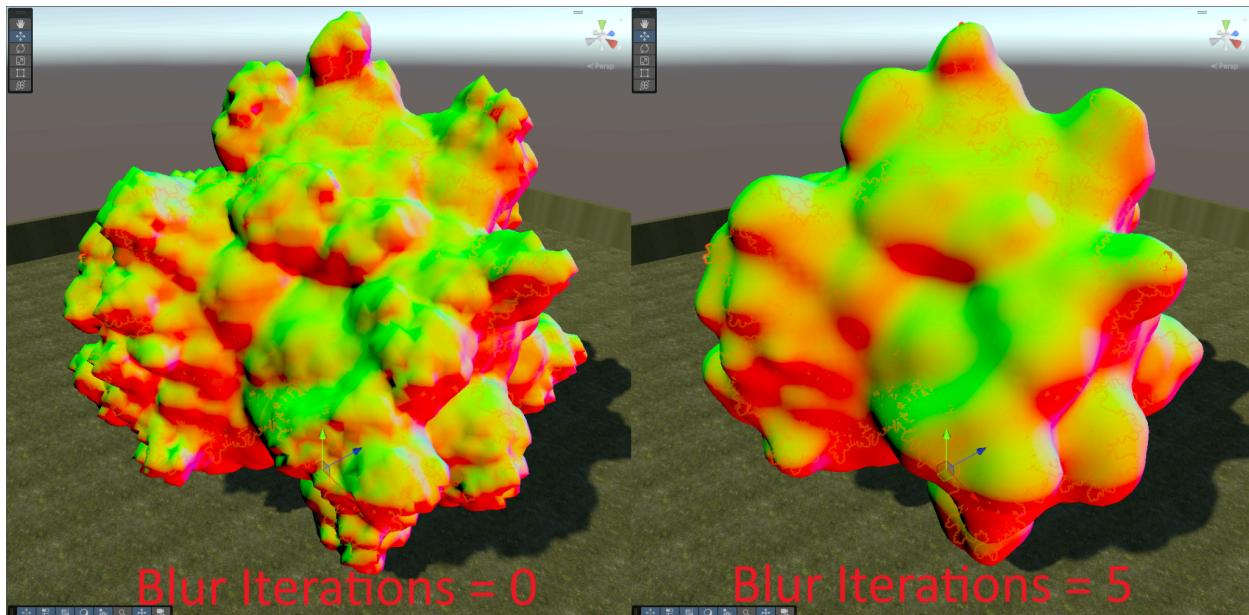
**SDF Resolution** controls how much detail is retained when generating the proxy mesh. Higher voxel resolution generally leads to a tighter proxy mesh, with less padding.



**Tightness** controls how “tightly” the proxy mesh follows the source mesh. Essentially, it interpolates between a Convex Hull mesh (0 tightness), and a “surface hugging” mesh (tightness = 1). **Important Note:** In some cases, if tightness is close to 1, and the foliage has low density, the generated proxy mesh can have undesired “air pockets” inside the model. Reduce tightness until these are eliminated.



**SDF Blur Iterations** controls how many blur passes are done on the SDF (before mesh generation). Higher value = smoother output mesh & normals.



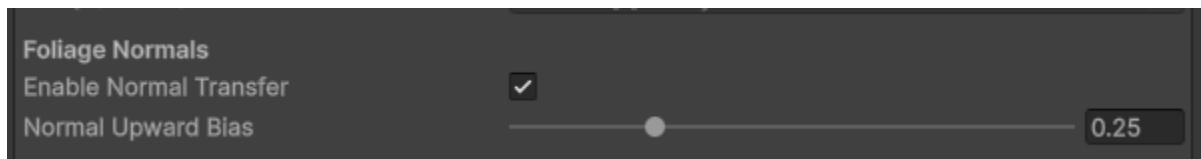
## Normal Transfer and AO Bake:

Once you are happy with your proxy mesh, you can move on to actually generating your output mesh. There are some advanced options you can tune, but for most instances, the default options are good enough.

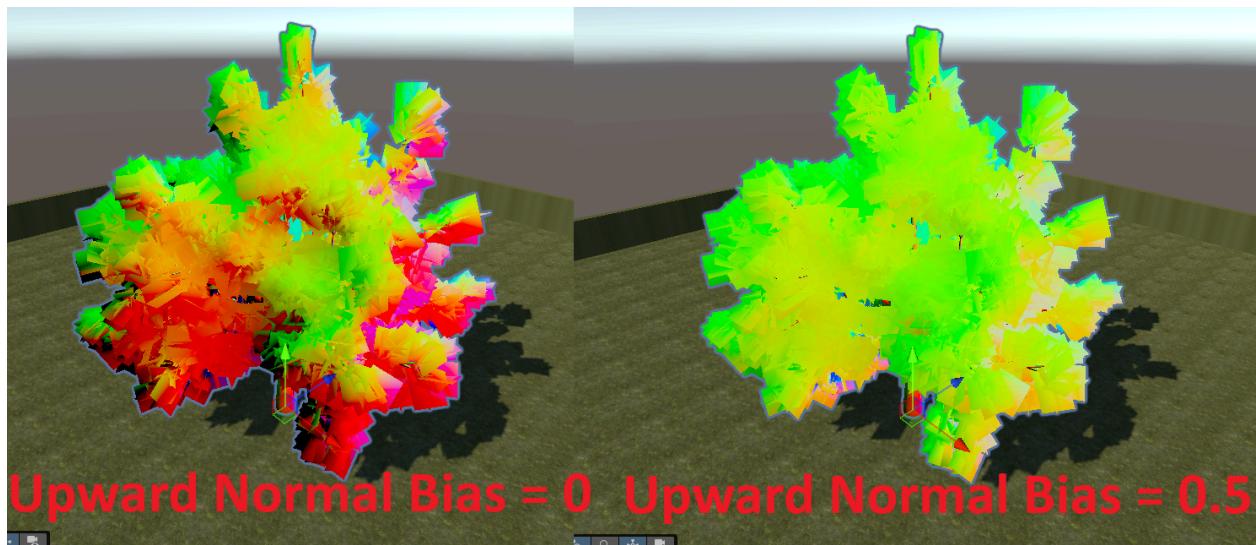
### Normal Transfer Options:

The main feature of the package is the Normal Transfer feature. There are 2 main options:

- **Enable Normal Transfer:** Keep this enabled if you want your foliage mesh to receive normals from your proxy mesh.
- **Normal Upward Bias:** After calculating the new normal for your vertex, spherically interpolate it towards the world up by this value.



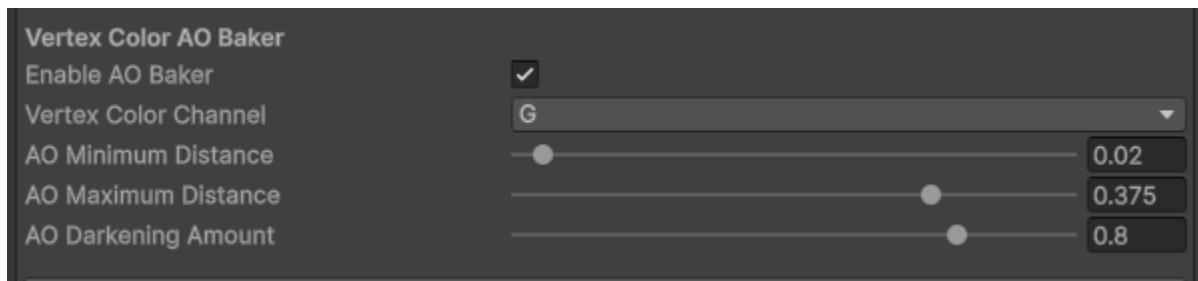
Output mesh Vertex Normals at different Upward Normal Bias values:



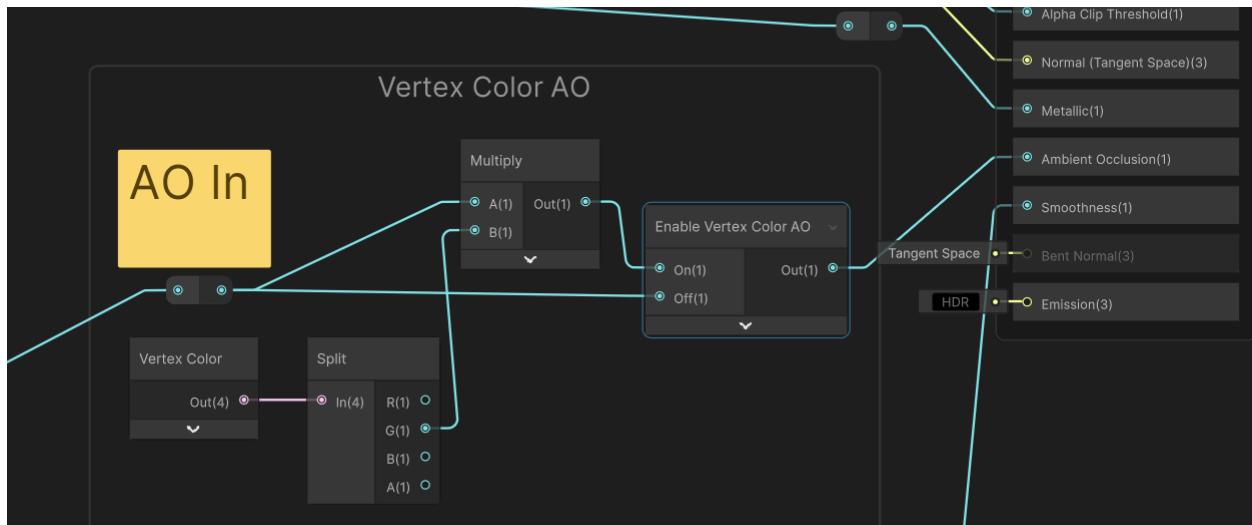
## AO Baking Options:

A Bonus feature we can use the proxy mesh for is generating high quality Ambient Occlusion into the meshes Vertex Colors.

- **Enable AO Baker:** Disable this if you do not want to modify the input mesh vertex colors.
- **Vertex Color Channel:** Select the channel you want to bake AO into, R, G, B, or A.
- **AO Minimum Distance:** The distance from the proxy (as a percentage of the meshes bounds) that there is **no** Vertex Color AO
- **AO Maximum Distance:** The distance from the proxy (as a percentage of the meshes bounds) that there is **maximum** Vertex Color AO
- **AO Darkening Amount:** Controls the AO strength at and beyond “AO Maximum Distance”

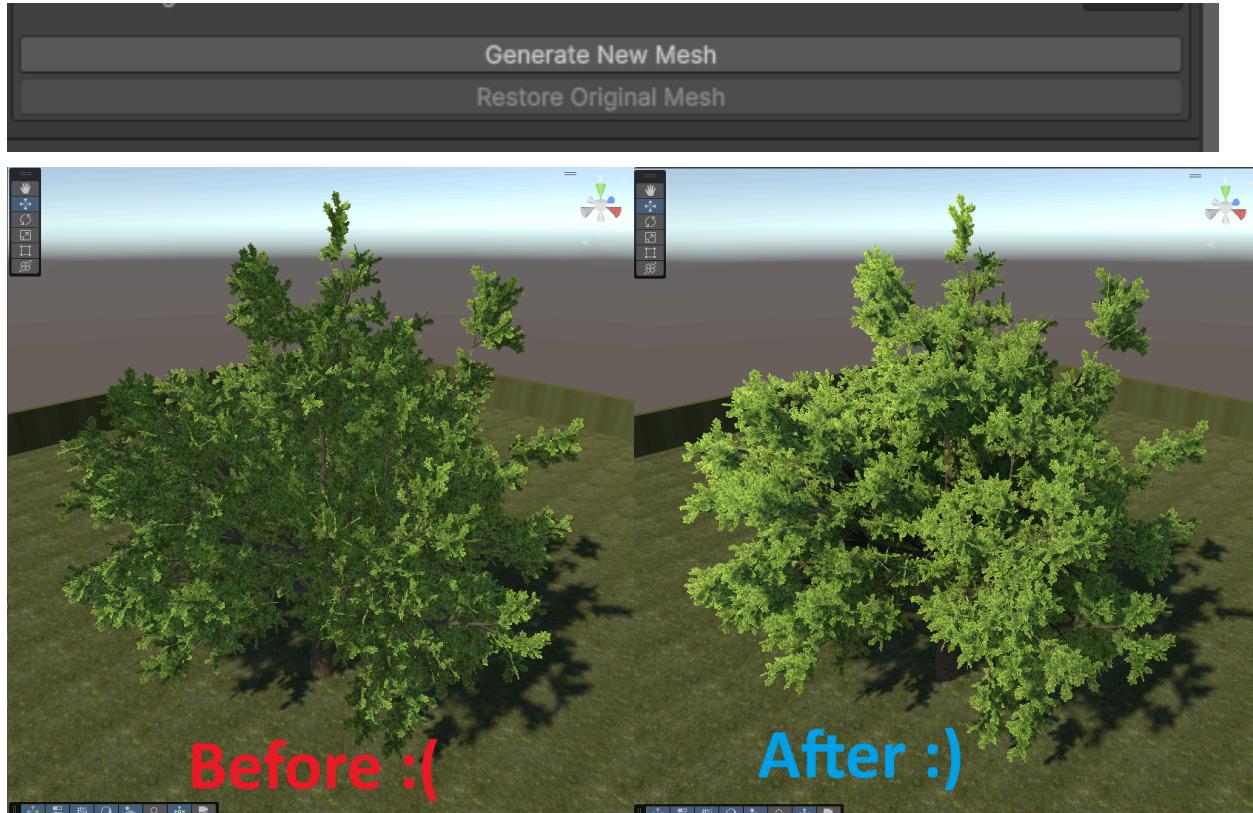


It goes without saying, your shader will need to have support for vertex color AO. Many foliage rendering solutions, such as TVE, support this out of the box. Its also super easy to add to a custom shader. Here is an example of how to add it into a shadergraph shader:



## Generating the output mesh:

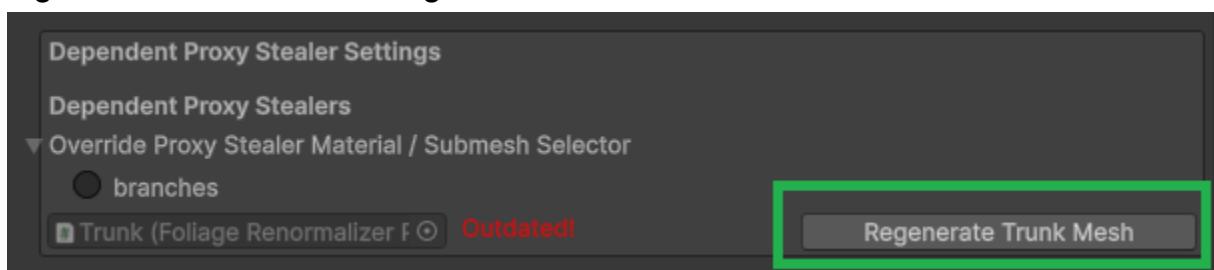
Next, simply click the “Generate New Mesh” Button!



You can optionally revert back to your original mesh/normal with the “Restore Original Mesh” button.

## Generating the output mesh (Proxy Stealers):

After generating your main foliage mesh, you will need to regenerate all your proxy stealers meshes. Double check the proxy stealer submesh selection, and regenerate each mesh using the button shown below:

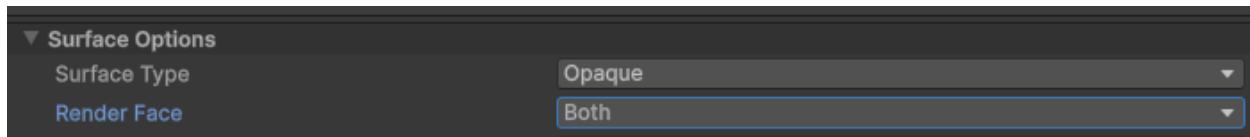


# Material Double Sided Normals tip:

Usually, when using double sided rendering on foliage, you are meant to “flip” the vertex normals for backfaces. When using canopy proxy normals, we actually *don't* want to do this. Below are a few common shader systems, and what you need to do to ensure your foliage is rendered correctly:

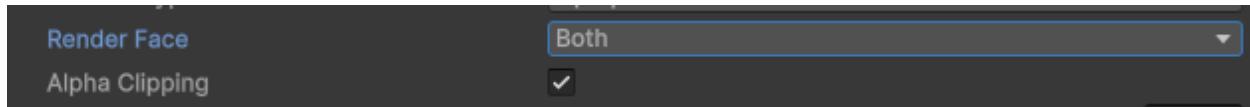
## BIRP ShaderGraph:

Simply set the “Render Face” to “Both”, BIRP Shadergraph does not offer backside face normal modes:



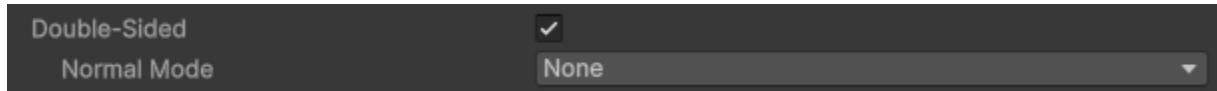
## URP/Lit and ShaderGraph:

Simply set the “Render Face” to “Both”, URP does not offer backside face normal modes:



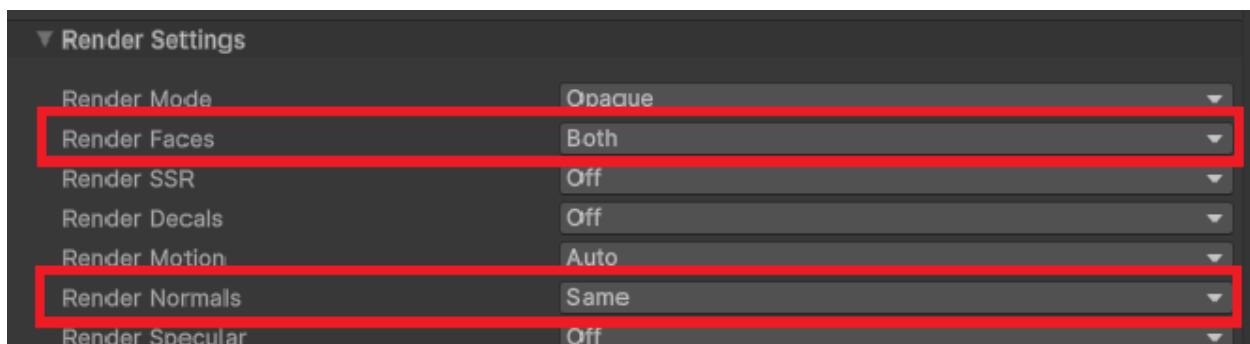
## HDRP/Lit and ShaderGraph:

With “Double Sided” enabled, set the normal mode to “None” on your material:



## Boxophobic TVE:

With “Render Faces” set to “Both”, set “Render Normals” to “Same” on your material:



## **Additional Help (contact support):**

- Join the discord : <https://discord.gg/KSedK9UDn4>