

Microdetail Terrain System

Microdetail Terrain System is a powerful and flexible tool designed to enhance your terrain by adding realistic microdetails such as rocks, sticks, grass, and leaves etc. With intuitive painting tools, automatic random variations, and seamless integration into Unity's terrain system, you can easily bring your environment to life with natural small-scale features. Designed for high performance, this system allows for dynamic, customizable, and efficient microdetail placement, making it an essential addition for any realistic outdoor scene.

Preface

While the system is designed to be as performant as possible, every technology has its limitations—nothing comes entirely free. In general, using microdetails to render a large number of small objects is significantly faster than rendering the same number of individual meshes. However, it's still possible to exceed the system's rendering capacity if not used wisely.

To ensure optimal performance, consider the following best practices:

- Use only as many microdetails as necessary for your scene. For example, avoid placing microdetail grass in areas already covered by dense standard grass assets.
- Keep the resolution of converted assets as low as possible to maintain efficiency.
- Lower screen resolutions can improve performance significantly—this asset, for instance, benefits greatly from technologies like DLSS.
- The number of layers generally has minimal impact on performance, but keeping it within reasonable limits is still recommended.

Always test your scenes thoroughly, and if you encounter any issues, don't hesitate to report them.

 **Currently supports HDRP. Support for URP and the Built-in Render Pipeline is under consideration.**

 **This tool is designed for Unity's default terrain system.**

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If you have any questions about Microdetail Terrain System, please check the [FAQs](#) first, as you might find your answer there. If you're unable to find a solution, feel free to report the issue or reach out to us via email at pirate.parrot.software@gmail.com or through our [Discord](#) community.

When reporting a bug, it helps us a lot if you include clear steps to reproduce the issue. This allows us to identify and fix the problem faster.

Please bear with us if it takes some time to respond — we receive many messages daily, but we'll get back to you as soon as possible.

Lastly, if you have a feature idea or improvement suggestion, don't hesitate to share it with us. Some of our best features have come directly from user feedback!

★ We'd Love to Hear Your Feedback! ★

Introduction

Microdetail Terrain System is a powerful tool designed to enhance terrain with high-detail microfeatures such as rocks, sticks, grass, and leaves. This system allows for highly efficient placement and rendering of microdetails while maintaining performance.

Key Features:

- Procedural SDF-based microdetails for realistic terrain decoration.
- Customizable layers and density settings.
- Advanced shading and tinting options.
- Optimized rendering to maintain high performance.

This documentation will guide you through installing, configuring, and effectively using **Microdetail Terrain System** to enhance your environments.

Requirements:

- **Supported Unity versions:** 6000.0.23f or higher.
 - **Supported platforms:** All HDRP capable platforms
 - **Supported renderers:** High Definition Render Pipeline (HDRP).
 - **Hardware requirements:** The greater GPU you have the better the performance is going to be. Something relatively modern should work fine. It has small requirements on the CPU side.
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Links to tutorials and promotional materials:

- [Microdetail Terrain System – Overview & Setup](#)

Installation and Setup

Importing the Asset into the Project

To install **Microdetail Terrain System** using Unity Package Manager, follow these steps:

1. Open your Unity project.
2. Go to **Window > Package Manager**.
3. Go to **My Assets**, locate **Microdetail Terrain System**, and click **Import**.
4. Follow the on-screen instructions to complete the import.

Converting Models to SDF Assets

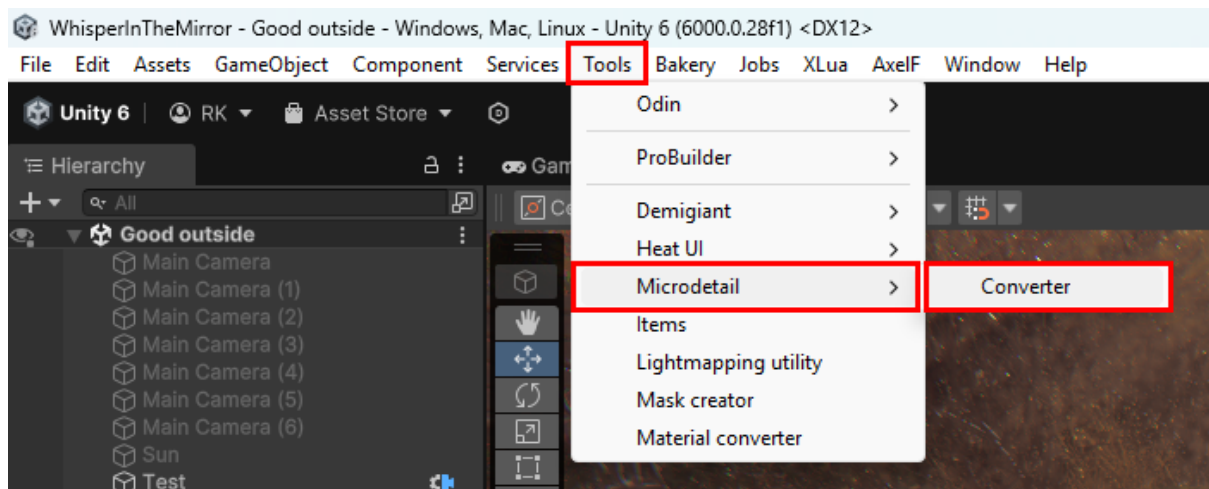
To prepare your models for use with the **Microdetail Terrain System**, they need to be converted into SDF assets. Follow these steps:

1. Create a Palette Folder

For convenience, create a folder named **Microdetail Palette** (or any preferred name) inside your Unity project. This will store all converted objects.

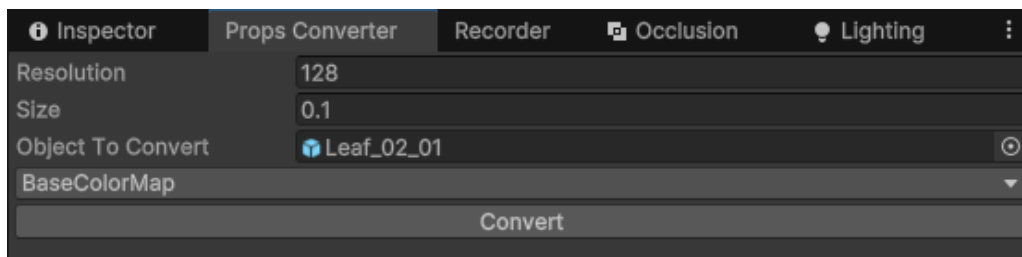
2. Open the Converter

- In the Unity menu, go to **Tools** → **Microdetail** → **Converter**.
- This will open the **Props Converter** window.



3. Set Up the Conversion Parameters

- **Object To Convert:** Drag and drop the model you want to convert into this field.
- **Resolution:** Set the texture resolution. (⚠ This value can only be decreased later, not increased.)
- **Size:** Define the initial size of the object in world space. (⚠ You can adjust this later using the size curve parameter.)



Once these steps are completed, your model will be converted into an **SDF asset** and will be ready for further use in **Microdetail Terrain System**.

Creating Layers

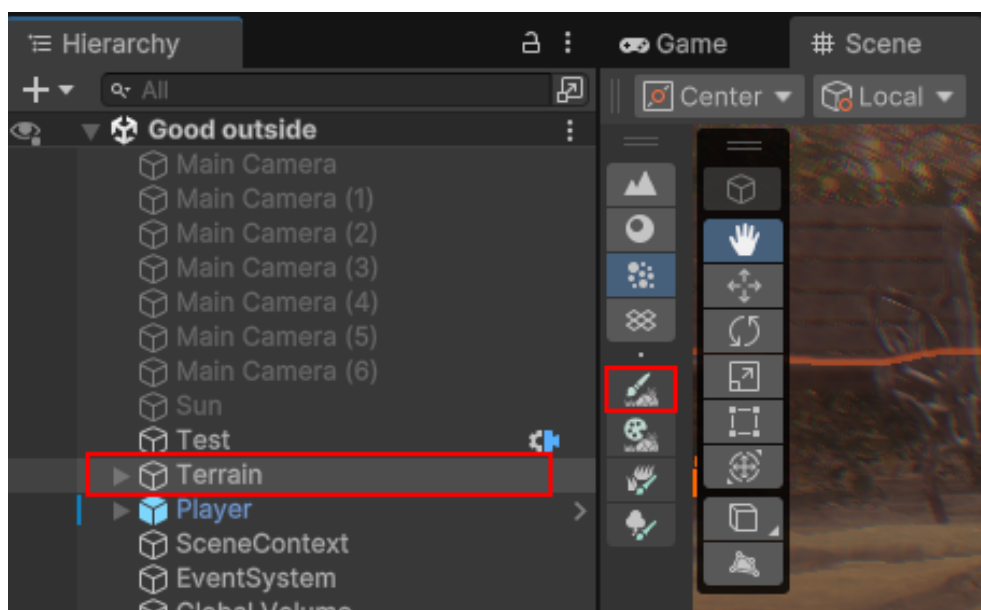
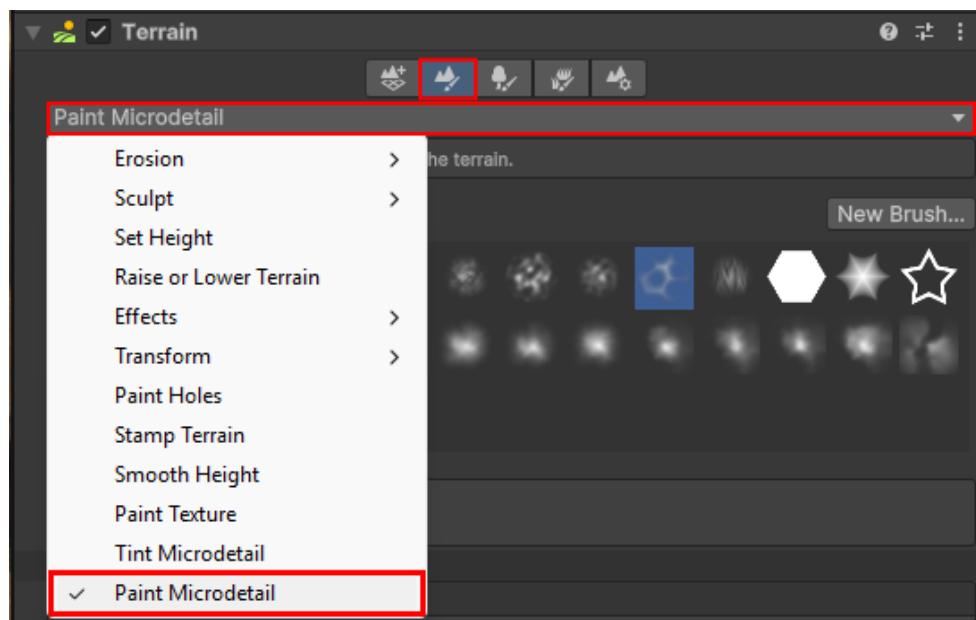
Once you have converted your models into SDF assets, you can create layers to organize and apply them to the terrain. Follow these steps:

1. Select the Terrain

- Click on the terrain in the **Scene View** or select it from the **Hierarchy** window.

2. Enable Paint Microdetail Mode

- In the **Inspector**, click on the **Paint Terrain** button.
- In the dropdown menu below the button, select **Paint Microdetail**.
- *(Alternatively, you can quickly enable this mode by clicking the **Paint Microdetail** button in the Scene View under Terrain Tools.)*



3. Create a New Layer

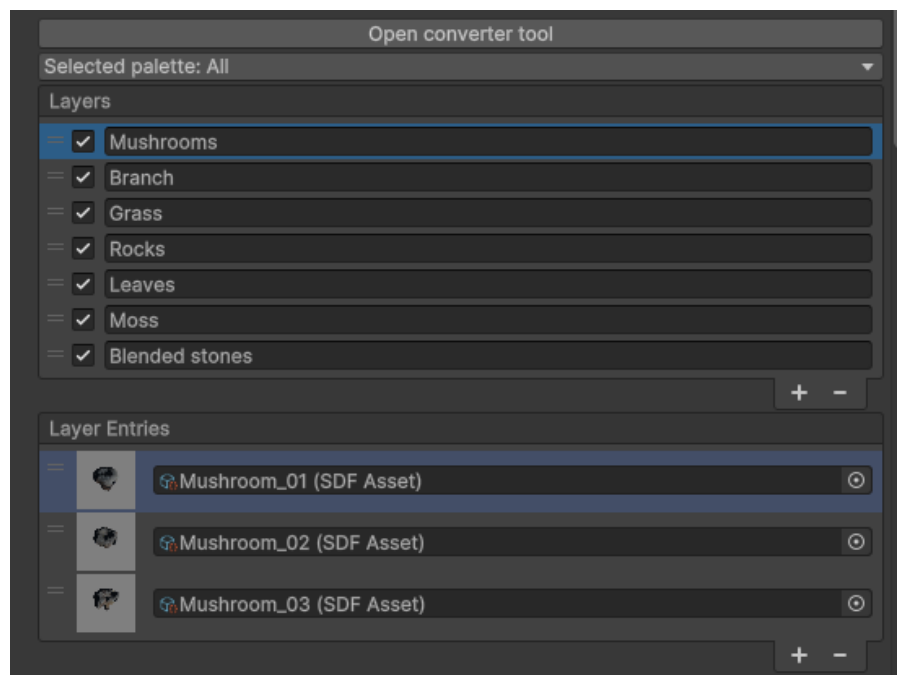
- In the **Inspector**, locate the **Layers** section.
- Click the **+** button to create a new layer.

4. Add an Asset to the Layer

- In the **Layer Entries** field, click the **+** button.
- Select an SDF asset (previously converted) that you want to use in this layer.

5. Managing Layers Visibility

- To temporarily hide a layer in the scene, click the **checkbox** next to it in the **Layers** field.



Now your layer is set up, and you can start painting microdetails onto the terrain!

Important Note:

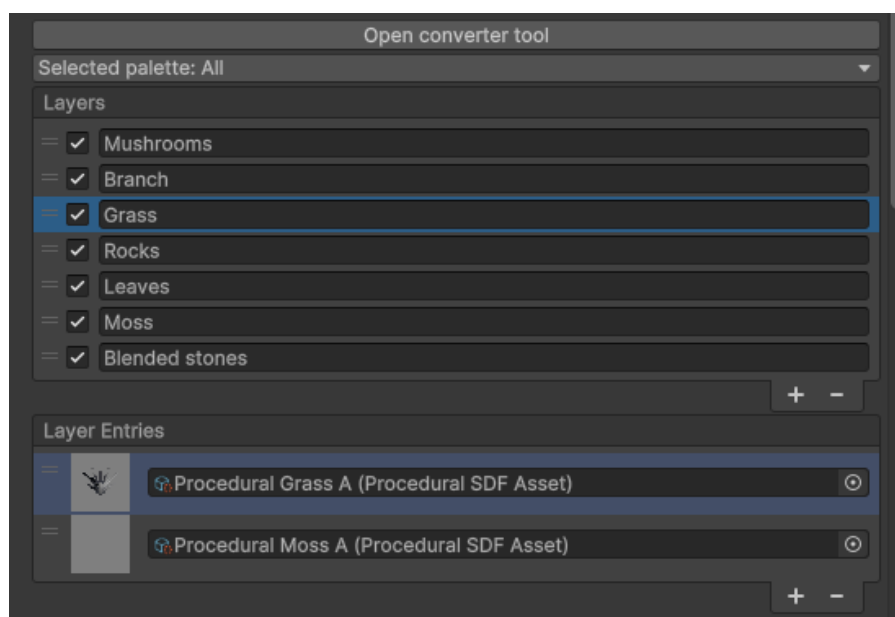
If you use the same asset (e.g., **grass_01**) in multiple layers and change its settings in one layer, the changes will apply to all instances of that asset across layers. To avoid this, duplicate the asset and rename it before making modifications.

Using Procedural Grass and Moss

Microdetail Terrain System includes **ready-to-use procedural grass and moss assets**, which can be used without additional conversion. This grass and moss are **highly optimized** and look great at medium and long distances.

To use it:

1. **Create a new layer.**
2. In the **Layer Entries** field, click **+** and select **Procedural Grass** or **Procedural Moss**.
3. Adjust its parameters (density, size, tint) as needed.



This allows you to quickly add realistic grass to your terrain while maintaining high performance.

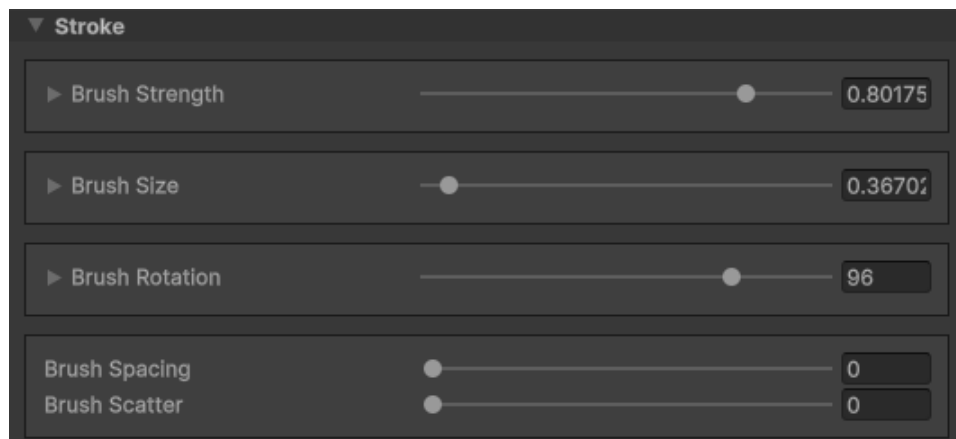
Layer Settings

After creating a layer and adding SDF assets, you can adjust their appearance and behavior.

Using the Brush for Preview

Before adjusting the layer parameters, it is recommended to:

1. Use the standard brush settings in the **Stroke** section.
2. Paint a small area with microdetails on the terrain to see real-time changes when adjusting layer settings.

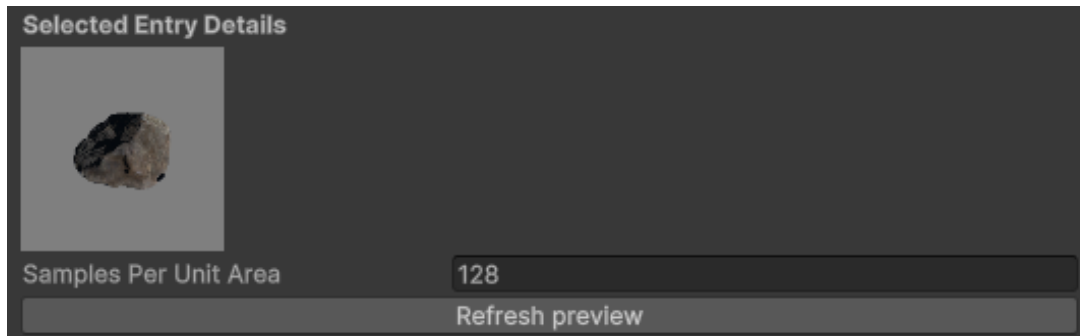


Individual Settings for Each Asset

- If multiple assets are in the same layer, each one needs to be configured separately.
- **⚠ Important!** Changing an asset's settings will affect all layers where it is used. If you need a different configuration for the same asset, create a duplicate.

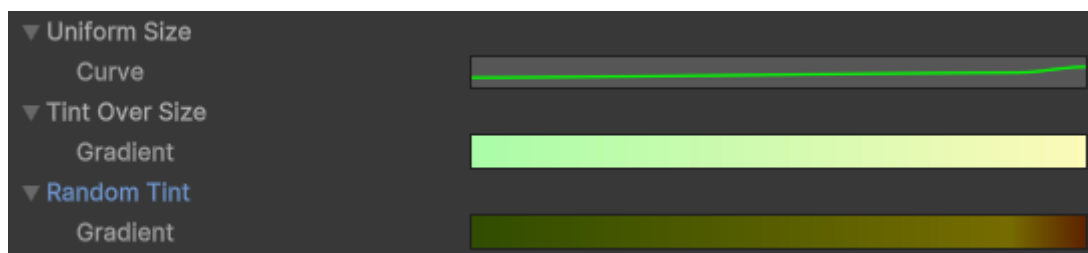
Density and Display Settings

1. **Samples Per Unit Area** – Controls the density of microdetails on the terrain.
2. **Refresh Preview** – Updates the scene view if microdetails are not displaying correctly after modifying settings.



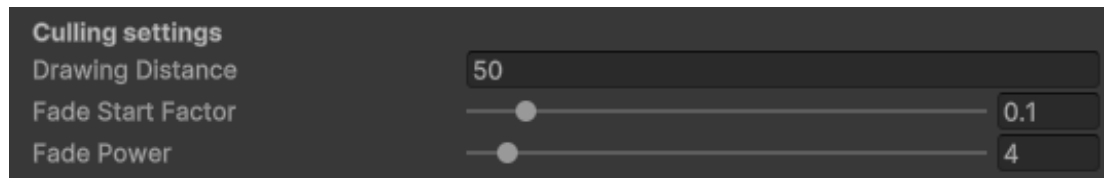
Size and Tint Settings

3. **Uniform Size (Curve)** – Adjusts object size variation. You can keep all objects the same size or introduce gradual variation.
4. **Tint Over Size (Gradient)** – Defines a tint gradient based on object size.
 - The left side of the gradient affects smaller objects.
 - The right side affects larger objects.
 - Example: This can be used to create a natural effect where younger grass looks greener among older grass.
5. **Random Tint (Gradient)** – Applies a random color tint to objects, independent of their size.



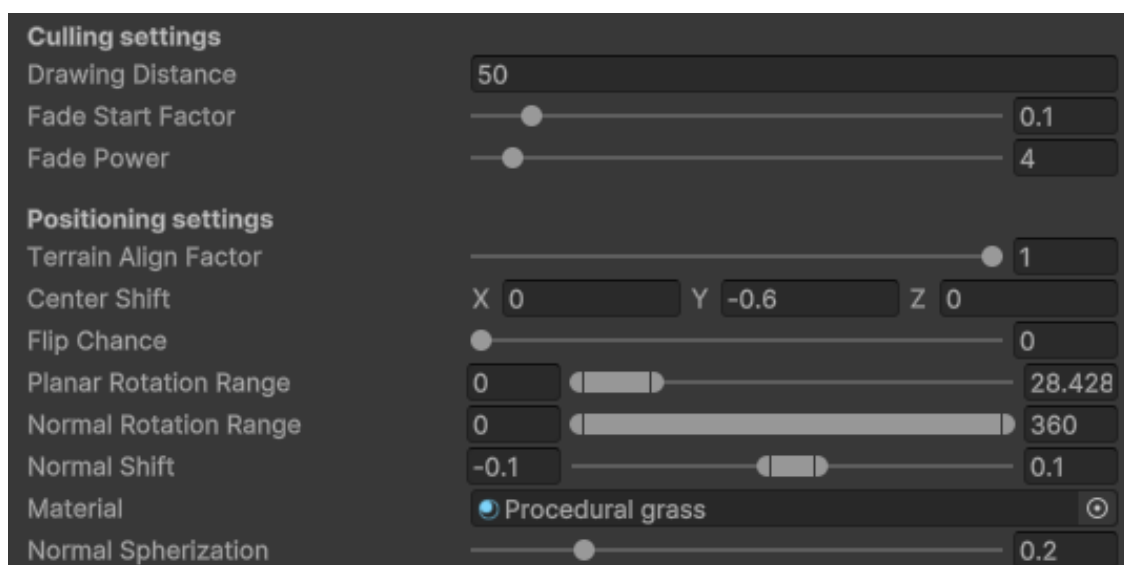
Culling Settings

1. **Drawing Distance** – Sets the maximum distance from the camera at which microdetails remain visible.
2. **Fade Start Factor** – Starts fading objects earlier than the **Drawing Distance**, creating a cut-off effect.
3. **Fade Power** – Smoothly fades objects out between the **Fade Start Factor** and **Drawing Distance**, preventing harsh visibility edges.



Positioning Settings

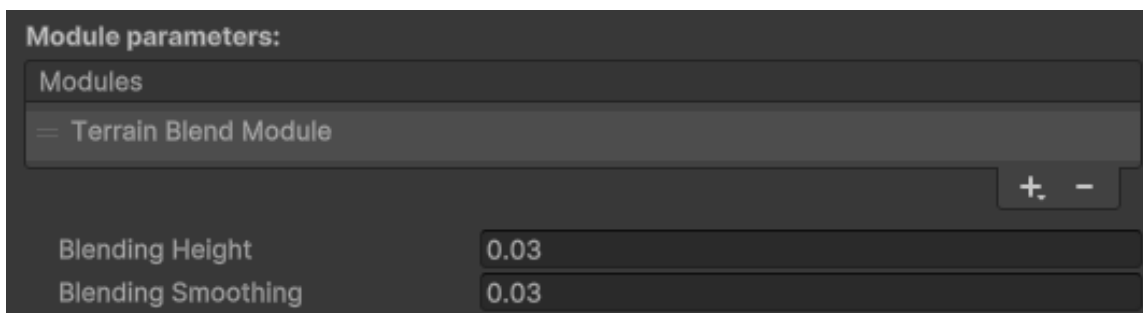
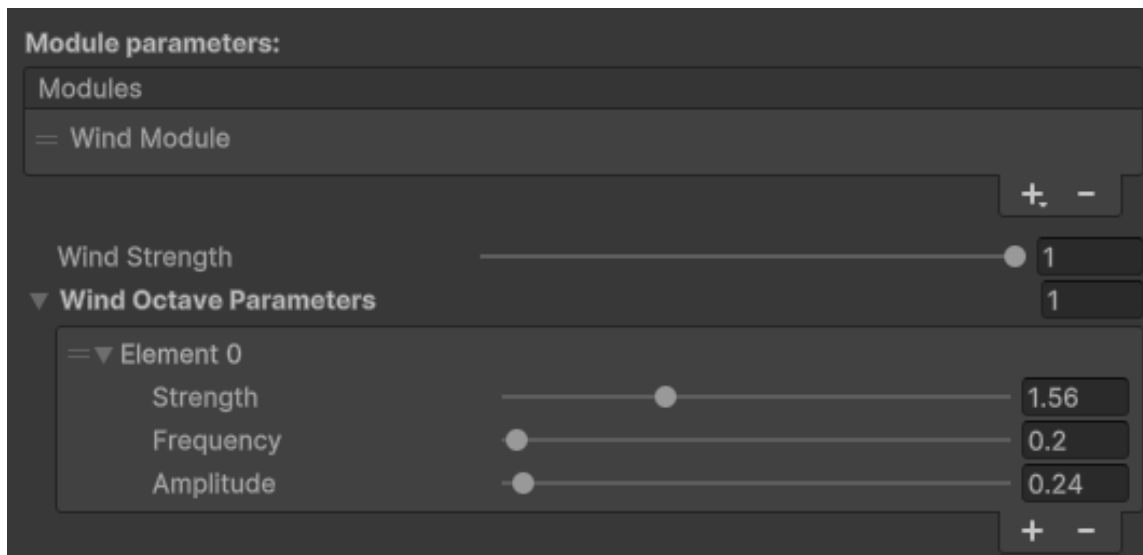
1. **Terrain Align Factor** – Determines whether objects align with the terrain geometry or remain level on the Y-axis.
2. **Center Shift** – Adjusts the object's pivot position along the X, Y, and Z axes.
3. **Flip Chance** – randomly rotates an asset by 180°. Useful for asymmetric details like leaves or sheets of paper, adding more variation.
4. **Planar Rotation Range** – Controls random rotation along the X and Z axes.
5. **Normal Rotation Range** – Controls random rotation along the Y-axis.
6. **Normal Shift** – Offsets the object perpendicular to the terrain surface.
7. **Normal Spherization** – Modifies normals to create more dynamic lighting effects on the object.



Module Parameters

Two built-in modules are available:

1. **Wind Module** – Adds wind animation to microdetails.
2. **Terrain Blending Module** – Smoothly blends objects with the terrain (e.g., creating a natural transition between rocks and the ground).

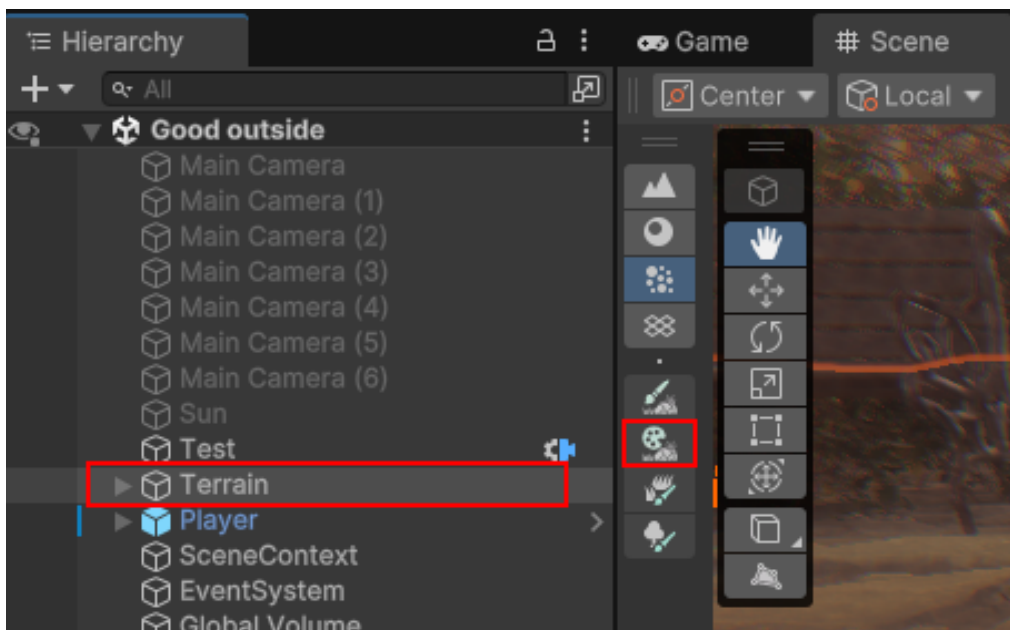
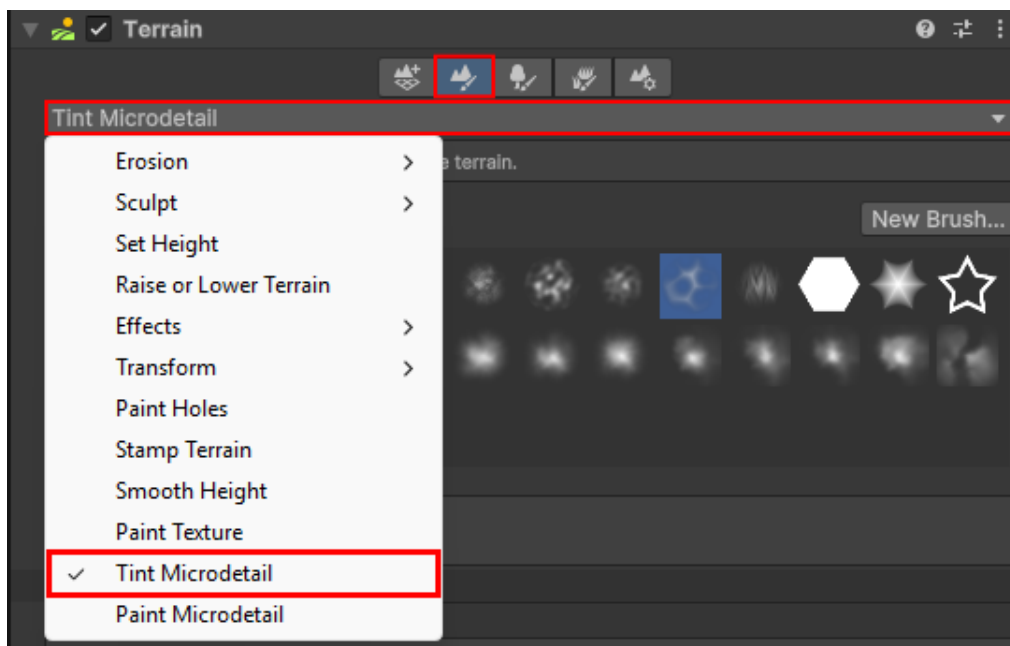


Tinting Microdetails

You can manually adjust the color of microdetails using the **Tint Microdetail** tool. Follow these steps:

1. Activate the Tint Tool

- In the **Inspector**, click on **Paint Terrain**.
- From the dropdown menu, select **Tint Microdetail**.
- (Alternatively, you can quickly enable this mode by clicking the **Tint Microdetail** button in the Scene View under Terrain Tools.)



2. Apply Tint to Assets

- Once the **Tint Microdetail** mode is active, a new **Tint Color** field will appear in the **Inspector**.
- Choose a color in the **Tint Color** field.
- Select the desired layer to apply the tint.
- Manually paint over assets in the scene to color them based on the selected layer.



This allows for precise color customization of microdetails, enhancing the natural variation of your terrain.

Frequently Asked Questions (FAQs)

Q. Why are converted models called assets?

A. In Microdetail Terrain System, all models that are converted to SDF are called assets because, after processing, they become ready for use in the system rather than just being 3D objects. This simplifies workflow organization and highlights their role in the tool.

Q. What is the difference between an Asset, a Layer, and a Palette?

A. Assets are converted models that are ready to be placed in the scene. A layer is a set of these assets that can be painted onto the terrain, with the flexibility to include one or multiple assets within a single layer. A palette serves as a collection of all available assets, allowing you to choose which ones to use when creating layers.

Q. Do I need to keep the original files (mesh, textures, materials) in the project after converting and saving them as an asset?

A. No, it is not necessary. If you are sure that your model does not require any further modifications, you do not need to keep the original files. If you think you might need to make changes later, consider keeping a backup outside of the Unity project.

Q. How does this system impact performance?

A. Microdetail Terrain System is optimized for performance by using Signed Distance Fields (SDF) and efficient rendering techniques. However, performance can be affected by high density settings, excessive layers, or large SDF resolutions. It is recommended to tweak Drawing Distance, Culling Settings, and Density to balance visual quality and performance.

Q. How do I prevent the same asset from changing in multiple layers?

A. If an asset is used in multiple layers, any changes made to its settings will affect all instances. To create independent variations, duplicate the asset and rename it before making adjustments.

Q. What are the benefits of using procedural grass instead of manually placed grass assets?

A. The procedural grass included in the system is highly optimized and designed to look great at medium and long distances. It allows for easy placement, tinting, and performance-friendly rendering. However, for close-up shots, manually placed high-detail grass models may be preferable.

Q. If I reconvert a model to SDF, will the asset settings be preserved?

A. Yes, when you reconvert a model to SDF, all asset settings remain unchanged. This allows you to update models easily without having to reconfigure placement and painting parameters.

Q. Does the asset support transparent or metallic materials?

A. Currently, the asset does not support the conversion of objects with transparency. However, metallic properties can be converted into the SDF format.

Contact Information

1. [Asset Store Page](#)
2. Support Email: pirate.parrot.software@gmail.com
3. [Discord](#) Community

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Links to tutorials and promotional materials:

- [Microdetail Terrain System – Overview & Setup](#)

For any questions, feature suggestions, or feedback, feel free to contact us through email or join our Discord community! You can also stay updated by following us on social media.

★ Support Us with a Review! ★

If you found this documentation helpful, please take a moment to leave a review! Your feedback is invaluable in helping us improve [Microdetail Terrain System](#) and add new features.

Every review makes a difference — thank you for your support!

Credits

This section is dedicated to expressing our gratitude to the 3D artists who generously provided their models for use in **Microdetail Terrain System**. Their contributions have helped create demonstration scenes and showcase the asset's capabilities.

If you like the featured models, consider supporting the artists by visiting their pages and exploring more of their work.

Model	Author and Link
Apples	Lucas Vasseur
Cherry	heromodel
Acorn	imprenta3d
Pinecone	Jix-3D
Broken tree branch	scanforge
Black Cherry Firewood	Baldinoboy3DArt
Tree Stump And Branch	DaionaisisGR
Twigs Collection	Guy-In-a-Poncho
Stick twig	Per Bellersen
Rock Packs	Kless Gyzen
Seaweed plant	grinvel
Tropical Coral Pack	7thGeneticStudios
Clams	TmHill
Sea Shell	Shahid Abdullah
Scallop Seashell	FOUR4Dimension
Skull human	GetDeadEntertainment
Bull Skull	Asad Aziz
Cigarettes	sunboxgames
Soda Can	Sascha Uncia
Paper Cup	Nguyen Thi Phuong Thuy
Silver currency set	Carlo Schneider
AA Battery	leonunderwood
AA Battery	cyback