PBR Plant Pack Documentation

Overview

1. **Physics layers**
2. **Adjusting rigidbody and configurable joint properties**
3. **Use of custom wind-zone script.**

1. When my character moves through the plants he seems to get caught on them, or they push him around, or lift him off the ground, what can I do to solve this?

The best way to solve this is through the use of the physics layer system within unity. These can be found through Edit → Project Settings → Physics (Figure 1).

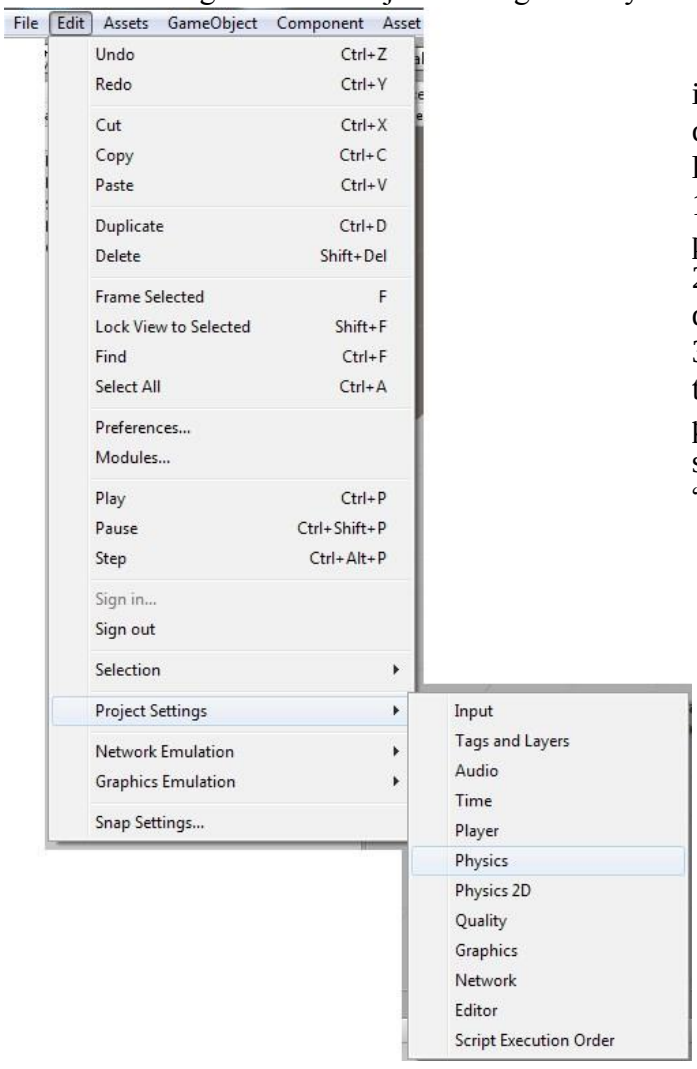

Figure 1: How to Locate Physics Layers in Unity3D

The suggested method to add the physics interactions without having an effect on the player characters movement is to set up the physics layers such that

1. The plants are on a separate layer from the player's primary collider used for movement.
2. Another collider follows the player object on a different layer.
3. Modifying the physics layers as in Figure 2. In this case the character is on the "Player" layer, the plants are on the "PlantLayer" layer, and the separate collider that follows the player is on the "PlayerCol" layer.

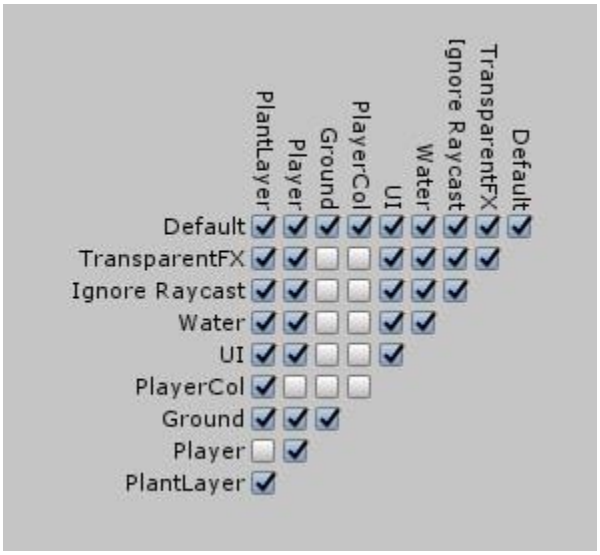

Figure 2: Example Physics Layers for Plant Interactions.

Another benefit is that use of physics layers to limit physics interactions between certain layers also helps to improve performance.

2. The plants are reacting too quickly, or incorrectly, after physics interactions. How can I change this?

An editor script has been added to allow easy adjustment of physics settings of the rigidbodies and configurable joints used to make the plants move (Figure 3). To use this editor tool ensure that the script is moved from the scripts folder where the plant pack was imported, to Assets/Editor folder of the main project. If this folder does not exist, create one. This tool can then be found under Window → PBRPlantPhysicsEditor at the top of the Unity Editor.

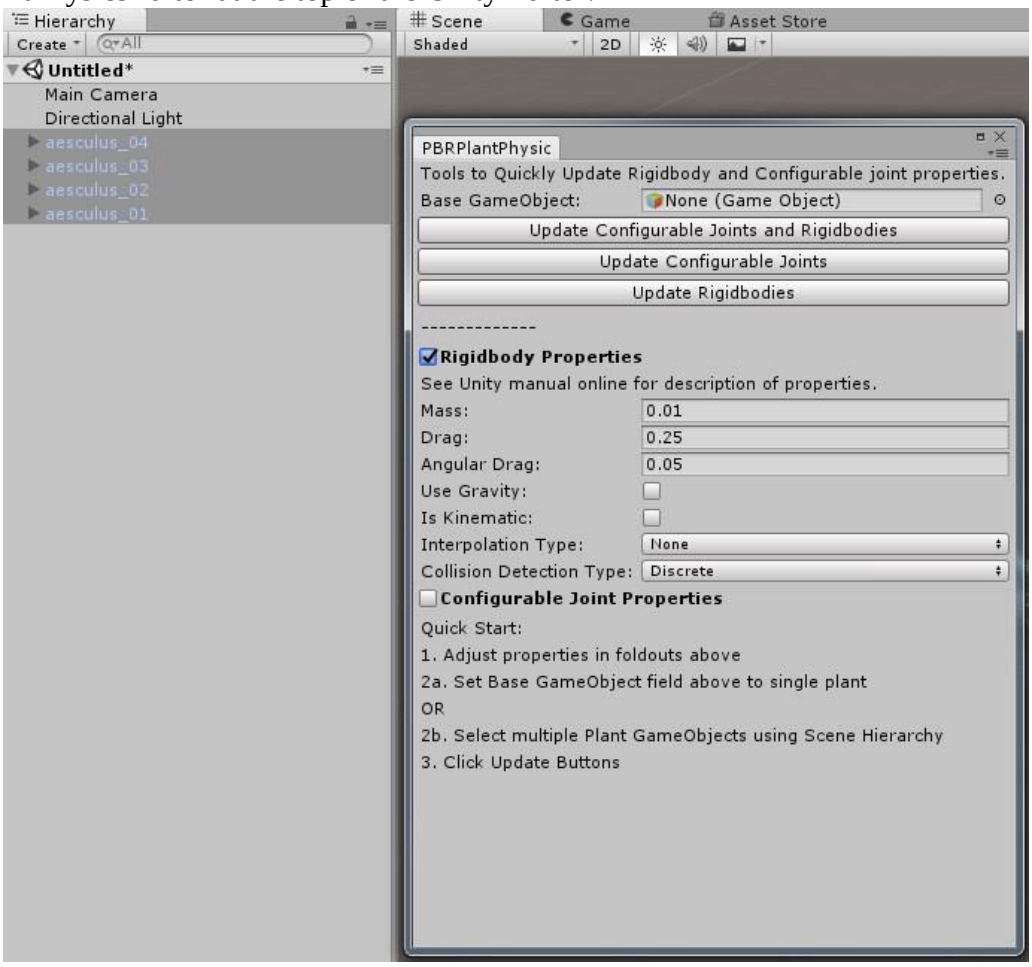

Figure 3: Overview of Editor tool for Rigidbody and Configurable joint property editing.

To use the tool, check off the rigidbody properties or configurable joint properties boxes to bring up a list of editable properties. Adjust the properties as desired. Additional information on properties can be found in the official unity manual.

Properties can be changed on the plants either individually per plant, or all at once. To individually change a plant's properties, select 1 plant in scene hierarchy, or select the plant using the Base GameObject field in the editor window. To select multiple plants, select all of the plant gameobjects you wish to edit in the scene hierarchy. Following selection of the plants use the update buttons to either update the configurable joints, rigidbodies, or both.

There are several different options available that can drastically change the way the plants react in the physics simulation. The quickest, and suggested method, is to modify all of the rigidbodies. Lowering the drag and angular drag settings will cause the plant to react more quickly. Increasing the drag and angular drag will have the opposite effect and make the plants slower to bounce back to their original position. Similar results can be seen by lowering, or raising, the mass of the rigidbodies.

Additional changes can be made by modifying the configurable joint properties. If one wishes to modify the configurable joint properties, large changes can be seen as a result of changing the Slerp Drive's settings: Position Spring, Position Damper, and Maximum Force.

For more info on configurable joints: https://docs.unity3d.com/Manual/class-ConfigurableJoint.html
For more information on rigidbodies: https://docs.unity3d.com/ScriptReference/Rigidbody.html

3. How do I get wind-zones to affect the plants?

A custom wind script has been created for this purpose. It can be found in Assets/PBRFlowerPack/Scripts/PlantWindZone.cs. Once this script is added, when entering play mode, several warnings will be logged to the console to help guide the setup and alert you as to why it may not be working as expected. If you follow the rest of the setup written here, and can't get it working, be sure to check the console warnings to see what you may have missed.

Add PlantWindZone.cs to a new gameobject in the scene. It is suggested to mark this gameobject as static, because if it moves away from the plants, it will no longer be adding wind to them, however this is not required.

Add a collider (box, or sphere is suggested) to the same gameobject that PlantWindZone.cs is on. Mark this added collider as a trigger. For the wind to be applied, the plants you wish it to effect should be contained completely in the added collider. Increase the size of the added collider so that it contains the plants that you wish to have wind applied to.

Be sure to set the plant layer property on the script to the layer that the plants are on. It is suggested to create a specific layer for this purpose. For example, create a custom layer called "CustomAddedPlantLayer" and set the layer on all the physics plants to the PlantLayer. Then set the Plant Layer property on PlantWindZone.cs to CustomAddedPlantLayer.

The Game Wind Zone field allows you to use a unity wind zone. Settings this value to a unity wind zone will cause the script to get the properties for wind direction, main, turbulence, magnitude, and frequency from the unity wind zone instead of the values set on the PlantWindZone.cs script itself. If the game wind zone field is not set to a unity wind zone, the wind direction, main, turbulence, magnitude, and frequency from the PlantWindZone script will be used.

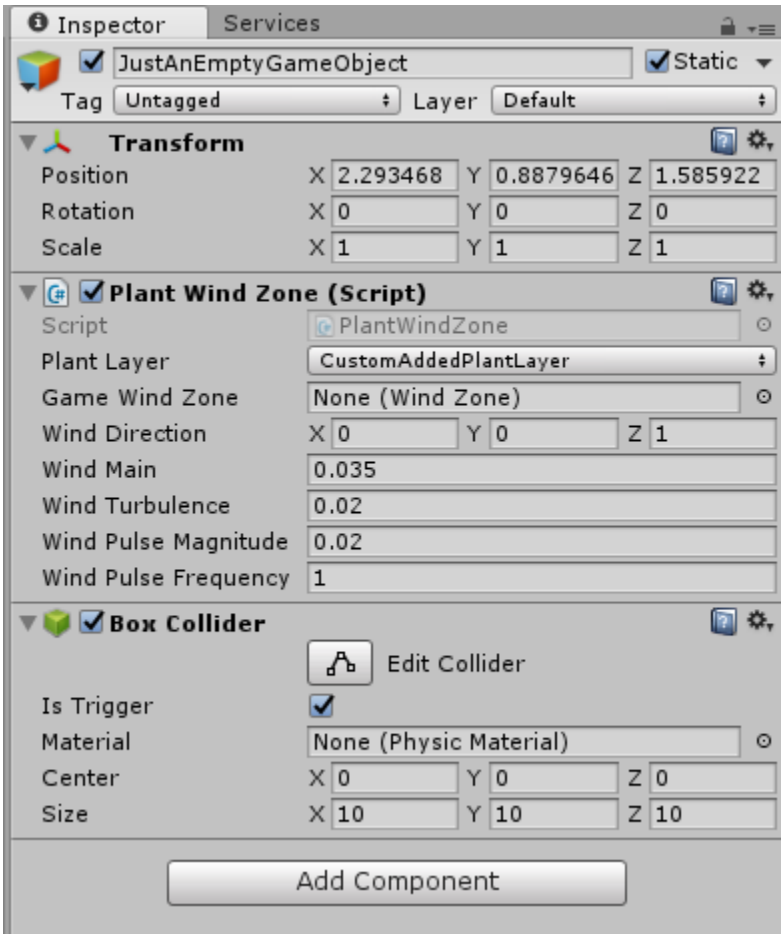

Figure 4: Example Setup of a correctly configured PlantWindZone.cs script.

For any other questions, comments, or suggestions,
please contact me, I will do my best to help in any way I can.

E-mail address: pmurph.software@gmail.com