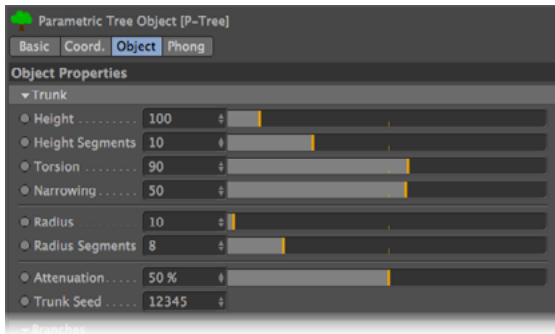# P-Tree

P-Tree stands for Parametric Tree.
It is a parametric object that creates simple trees and includes a set of parameters to adjust several aspects of trees morphology.
The parameters separated in various sections and are the following:

Trunk parameters

Height - The height of the trunk of the tree.
Height Segments - The number of segments along the height of the trunk.
Torsion - The amount (angular) of twisting of the trunk along its height.
Narrowing - The amount of reduction in thickness of the trunk along its height.
**Radius** - The radius of the base of the trunk of the tree.
Radius Segments - Number of sides of the trunk.
Attenuation - By default, the trunk is not completely straight. Increasing the Attenuation amount will smooth the trunk.
Trunk Seed - Generates new random values for the irregularities of the trunk. Since branches are generated out of the top segments of the trunk, changing the **Trunk Seed** will also affect the branch generation. Since leaves are generated based on the branches locations, changing the **Trunk Seed** will also affect the leaves location.
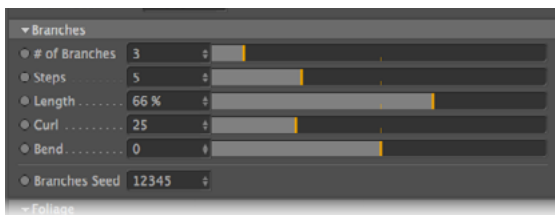
Branches parameters

**# of Branches** - The number of branches of the tree.
Steps - The number of segments along the length of the branches.
Length - The length of the branches (as an approximation of a percentage of the **Height** of the trunk).
Curl - The amount of curling of each branch.
Bend - The amount of bending of each branch.

Branches Seed - Generates new random values, creating new sets of branches coming out of different top segments of the trunk. Since leaves are generated based on the branches locations, changing the **Branches Seed** will also affect the leaves location.
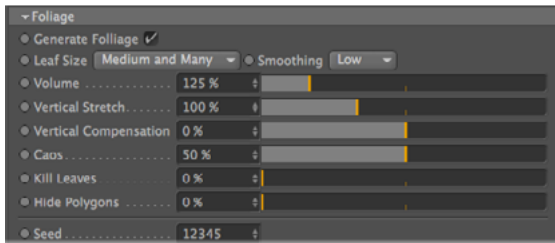
Folliage parameters

Generate Foliage - Turn on or off the generation of foliage.
Leaf Size - Define the size/amount of leaves that are generated. Larger leaves will generate less leaves. Smaller leaves will generate more leaves.
Smoothing - If set to None, each leaf is a triangle. If set to Low, each leaf will have three faces. If set to High, each leaf will have twelve faces.
Volume - Increase or decrease the global scale of the foliage volume.
Vertical Stretch - Increase or decrease the vertical scale of the foliage volume.
**Vertical Compensation** - Sometimes, adjusting the **Volume** or **Vertical Stretch**, can make foliage sink or rise too much above the top of the trunk. This parameters allows for compensation of that.
Caos - Increasing this value will expand and randomize the position/rotation of the leaves. Decreasing this value will place and orient the leaves in a more "geometric" distribution.
Kill Leaves - Define the percentage of leaves that are eliminated from the initial generation This decreases the memory requirement and geometry of the generated foliage.
Kill Polygons - Define the amount of polygons that are hidden in the editor. This will only affect editor display (making it faster and less cluttered) but will not affect final render.
Trunk Seed - Generates new random values for the generation of leaves.
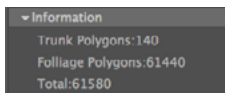
Information

This section is purely informational. It shows the number of polygons generated to build the trunk (branches included) and the number of polygons generated to create the foliage.

P-Tree automatically generates internal **Selection Sets** that allow you to assign materials to different parts of the generated tree.
The internal Selection Sets are the following:

Selection Set Name	Description
trunk	Applies the material only to the trunk.
foliage	Applies the material to the whole foliage.
foliage0	Applies the material to the global set of leaves that encompasses all branches.
foliage1	Applies the material to the leaves associated with branch #1
foliage2	Applies the material to the leaves associated with branch #2
foliage3	Applies the material to the leaves associated with branch #3
foliagen	Applies the material to the leaves associated with branch #n (n is a number, not a letter)