

Biome Design Document: Copán Valley (Mesoamerica)

Document Status: Advanced Base Design Proposal (V3 - Expanded Fauna & Botany)

Recipient: Wildfire Games / 0 A.D. Content Development

Reference Timeline: 500 BC - 500 AD (Aligned with the 0 A.D. classic timeframe)

1. Executive Summary and Objectives

The objective of this document is to define the technical, artistic, and historical specifications for the implementation of the "**Copán Valley**" biome in the Pyrogenesis engine of 0 A.D. This environment introduces a humid subtropical ecosystem inspired by the Mesoamerican lowlands, characterized by dense riverine forests, broadleaf vegetation, and soils rich in alluvial and clay deposits. Strategically, it will alter the pacing of gameplay due to jungle density and a custom fauna balancing table meticulously mapped to traditional Old World competitive metrics.

2. Visual Components and Terrain Textures

The terrain of the Copán Valley consists primarily of layers of damp earth, jungle humus, and limestone bedrock exposed by river erosion.

Texture ID (Engine)	Visual Description	Editor Use (Atlas)
copan_dirt_dark	Dense, near-black soil, heavily saturated with decomposing organic matter.	Base ground beneath trees and areas of deep, closed jungle.
copan_grass_moss	Short grass intermingled with bright moss and shallow, visible root networks.	Primary transition texture for open clearings and pathways.
copan_river_sand	Fine grayish-yellow sand mixed with sedimentary rock fragments.	Riverbanks, shallows, fords, and inland shores.
copan_cliff_limestone	Vertically striated limestone rock with patches of climbing tropical vegetation.	Cliff faces, ridges, and steep terrain elevations.

3. Flora and Gathering Resources (Wood / Food)

Vegetation must accurately reflect the rich biodiversity of the Copán River basin, utilizing detailed alpha transparencies in 3D foliage meshes.

3.1. Wood Resources (Groves and Trees)

- **Ceiba Pentandra (Sacred Tree - Yaaxché):** Massive, towering tree models with prominent buttress roots. Functions as a large wood container (similar mechanic to the centennial oak). Base wood: 500 units.
- **Central American Mahogany (Swietenia macrophylla - Chujté):** High-canopy trees with straight, thick trunks. Medium spawning density across the map. Base wood: 300 units.
- **Cohune Palm Grove (Attalea cohune):** Dense clusters of medium-height palms. They yield a lower amount of wood but naturally pathblock large military formations. Base wood: 150 units.

3.2. Food Resources (Flora and Wild Agriculture)

- **Cacao Orchards (Theobroma cacao):** Low shrubs displaying elongated seed pods growing directly from the trunk. These replace the traditional berry bushes of the Old World. Base food: 200 units per shrub.
- **Wild Maize Patch (Zea mays):** Small patches of native wild corn that can be harvested rapidly by infantry during early gameplay phases. Base food: 120 units.

4. Key Botanical Species of the Maya World (Ethnobotany & Context)

To enrich historical accuracy and provide structural variety for Random Map Scripts (RMS), the following sacred and utilitarian trees are defined for 3D modeling templates and prop-actors:

Scientific Name	Maya / Common Name	Cultural Significance & Historical Use	Proposed Engine Role (0 A.D.)
<i>Ceiba pentandra</i>	Yaaxché (Kapok / Ceiba)	Cosmic sacred tree. Roots connect to the underworld (Xibalbá), the trunk represents the earthly plane, and branches hold the heavens. Its resin was burned as ritual incense.	Large standalone landmark tree. High resource container (500 Wood). Restricted from spawning near initial Civic Centers.
<i>Manilkara zapota</i>	Ya' (Sapodilla / Chicozapote)	Extremely dense, pest-resistant timber. Used by the Maya to carve structural lintels for major dynastic temples (e.g., Tikal). Its latex (chicle) was chewed.	High-durability tree. Slows down gathering speed slightly but applies a carry-capacity multiplier for gatherers. Wood: 400 units.
<i>Brosimum alicastrum</i>	Och / Ox (Breadnut / Ramón)	A critical subsistence tree. Its highly	Mixed resource tree (Wood/Food). Units

Scientific Name	Maya / Common Name	Cultural Significance & Historical Use	Proposed Engine Role (0 A.D.)
		nutritious seeds (breadnuts) served as a vital famine food reservoir when corn milpas failed during extended droughts.	can forage seeds first for a small food supply (100 Food) before cutting it down for timber (200 Wood).
<i>Bursera simaruba</i>	Chakah (Gumbo-limbo / Palo Mulato)	Famously called the "tourist tree" due to its peeling reddish bark. Possesses highly valued medicinal properties. Deeply tied to the mythological tragedy of rival warriors Tizic and Kinich.	Medium/low decorative actor with a contrasting red palette. Spawns in high density across rocky ridges and limestone slopes. Wood: 100 units.
<i>Cedrela odorata</i>	K'ujché (Spanish Cedar)	Highly prized, aromatic, and water-resistant timber. Due to its ease of carving and durability against humidity, it was the preferred choice for constructing long-distance trading canoes.	Slender tree template constrained to riverbanks. Highly optimized for fast gathering speeds. Wood: 250 units.
<i>Crescentia cujete</i>	Luch (Calabash Tree / Jícara)	Gnarled, small tree yielding hard, spherical, woody fruits. The shells were dried and utilized directly as household utensils, cups for drinking sacred cacao, and ritual vessels.	Small or shrub-like tree template. Ideal as an environmental prop surrounding residential zones or domestic oases. Wood: 80 units.

5. Fauna Equivalence Table (Mesoamerica vs. Standard Biomes)

To preserve rigorous competitive parity with standard European, Temperate, or Desert biomes,

the following unit template mapping rules are established for the Copán Valley fauna:

Role Category (0 A.D.)	Traditional Equivalent (Old World)	Mesoamerican Substitute (Copán Valley)	Food Yield / Engine Behavior
Starting Domestic Animal	Sheep / Chicken	Ocellated Turkey (<i>Meleagris ocellata</i>)	50 Food. Spawns natively at the starting Civic Center for safe Phase 1 gathering. Can be herded.
Early Small Game	Rabbit	Central American Agouti (<i>Dasyprocta punctata</i>)	25 Food. High movement speed, easily startled, small hitbox. Promotes micro-targeting for ranged infantry.
Herd Big Game (Passive)	Deer / Gazelle	White-tailed Deer (<i>Odocoileus virginianus</i>)	150 Food. Flees rapidly in groups of 4 to 6 when units enter its vision radius.
Massive Big Game (Neutral)	Wild Camel / Elephant	Baird's Tapir (<i>Tapirus bairdii</i>)	300 Food. Heavy, solitary animal. Entirely passive unless attacked, backed by a massive health pool (HP).
Minor Solitary Predator	Jackal / Wolf	Central American Coyote (<i>Canis latrans</i>)	0 Food. Medium-range aggression radius. Targets isolated citizens working on peripheral woodlines or construction.
Apex Solitary Predator	Lion / Bear	Jaguar (<i>Panthera onca</i>)	0 Food. Extreme DPS and detection range. Prefers dense forest tiles to ambush scouts through the Fog of War.
Aggressive Defensive Herd	Boar	White-lipped Peccary (<i>Tayassu pecari</i>)	100 Food per carcass. Strict pack defense AI: attacking one peccary instantly triggers a regional

Role Category (0 A.D.)	Traditional Equivalent (Old World)	Mesoamerican Substitute (Copán Valley)	Food Yield / Engine Behavior
			distress radius, causing the entire herd to turn hostile and counter-attack in unison.

6. Engine Configuration Files (XML Spec)

Environmental lighting values should be set within the XML file to properly convey the misty, humid atmosphere of the river valley during dawn and zenith.

```
<?xml version="1.0" encoding="utf-8"?>
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  <SkySet>mesoamerica_cloudy</SkySet>
  <Lighting>
    <Ambient r="120" g="135" b="110"/>
    <Sun r="240" g="235" b="210"/>
    <SunElevation angle="45"/>
  </Lighting>
  <Water>
    <WaterColor r="35" g="70" b="60"/>
    <WaterMurkiness value="0.75"/>
  </Water>
  <TerrainProperties>
    <GarrisonDebris>leaves_tropical</GarrisonDebris>
  </TerrainProperties>
</Environment>
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