

# Illuminate

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Illuminate is a firefly sanctuary created as my final project for the arts workshop “Design with Climate Change” taught by Mitchel Joachim and Pedar Anker. The project was an extension of a previous assignment to create an eco-friendly environment for animals.

Fireflies are going extinct, and no one quite knows why. Scientists believe one of the main culprits to be the increasing light pollution from nearby cities. Since fireflies communicate through bioluminescent light flashes, interference from even the smallest amount of artificial light can confuse these bugs and prevent them from finding each other. Some species of fireflies even synchronize these light flashes, creating a delicate practice that can easily crumble under the presence of a mere flashlight let alone the light emitted by an entire city. If fireflies are unable to meet, that means they're unable to mate and hence why they threaten extinction.

Another contributing factor is the increasing presence of pesticides in fireflies' natural habitats. Pesticides are wiping out these bugs in large quantities as they continue to fill the air from agriculture close by.

It's no secret that these bugs are disappearing quickly. The few places that fireflies can still be found in the wild are in turn being damaged by intrusive ecotourism. Tourists who seek out wild fireflies are destroying their habitats and often kill them by trying to capture them.

Fireflies need all of the following: Low light pollution, water, log and leaf litter, a humid climate, and small insects to eat. I decided to create an environment with all of these elements in order to stimulate mating and increase population size over time.

Illuminate is the world's first firefly sanctuary that doubles an art exhibit. Its simple yet striking architecture provides a perfect home for these bugs to grow, live, and thrive without the dangers of light pollution or destructive ecotourism. Illuminate has everything a firefly could need from marsh and plant life at the bottom to open ventilation at the top. Don't worry, these bugs don't bite or sting! Each visitor is free to safely roam through these archways and witness the live, natural art being made by nature's brightest critters.

Illuminate is a round glass structure with three archways at its base. The spaces between the archways contain all the natural materials necessary for a firefly's survival such as damp soil, grass, ponds, and tree logs. The fireflies can freely occupy these spaces as well as those above it in the ceiling, which is equipped with three vents should the fireflies want to leave the structure. Visitors can walk through any of these three archways to see fireflies flashing their lights above and around them, creating a live natural art show produced solely by fireflies.

I chose Big Bend National Park in Texas for the location of illuminate because it has some of the lowest light pollution in the world. This makes it is not only an ideal environment for fireflies and their bioluminescence, but also provides a stunning backdrop for stargazing.

Partnering with a National Park also means increased revenue for the National Park Service, a crucial organization that makes visiting these parks possible.

Illuminate's unique, multi-functional design allows it to serve as all of the below:

- Scientific research: By day, illuminate functions like a lab where experts can easily and non-intrusively observe the fireflies to better understand why these creatures are going extinct, and even conduct cancer research. Luciferin, a compound found in fireflies that causes bioluminescence, has proven effective in treatment of cancerous tumors<sup>1</sup>. Though this technique is still in early development, the possibilities of luciferin in the medical world are vast and highly worth exploring - and there is no better place to do so than illuminate.
- Environmental conservation: Illuminate started as an attempt to combat firefly extinction, so every detail of its design has been geared toward creating an environment in which these bugs can safely and comfortably live. The base of each tunnel is packed with every form of nature necessary for a firefly's survival, from large varieties of vegetation to ample wet soil where females can lay their eggs. Illuminate also has six vents on its ceiling should the fireflies choose to venture off.
- Art installation: By night, illuminate functions like a traditional art exhibit: visitors can purchase tickets to walkthrough the "gallery" space in timed increments to see the art on display. In this case, the art is constantly changing and produced by the fireflies themselves! As they flash and synchronize their light emissions, viewers can harmlessly witness the beauty of the creatures first hand as they dance across the night sky.

Sources:

Pfeiffer, Ben. "[Disappearing Fireflies](#)." *Firefly Conservation and Research* (2009).

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