BURNING MAN \_ FLY RANCH\_ LAGI 2020 DESIGN CONTEST

THE TREE OF WILDLIFE - A HONEY BEE SANCTUARY

Our proposal is to build a 15ft tall replica of an oak tree made of ferrocement and regionally sourced materials. The tree appears to grow out of a 20 ft diameter, 17ft tall stone lancet dome. Inside the hollow tree we will install a living honeybee colony. The experience of the tree will be enhanced by sounds of the hive, amplified by microphones inside the hive, with speakers outside the tree and inside the dome.

INTRODUCTION: The over-commercialization of bees

Bees are a cornerstone species in nature. Their role has been shaped for centuries by agriculture. In the modern era the use of hives for commercial pollination, where bees are shipped across locations, has led to predictable spread of disease among other impacts. The lack of traditional localized husbandry in favor of commercially shipped bees across regions has led to a decline in the resilience of bee populations. The reduction of ideal hive environments and pesticides have further weakened regional populations. Being aware and informed of the plight of bees, and what opportunities may be available for communities to nurture local stock is a big part of the challenge of maintaining healthy honeybee populations worldwide.

BEE PROGRESSIVE

As stewards to the land we can begin to reshape this critical relationship between bees and place. The traditional commercial box hive has its function, but is far from what bees naturally seek for a prime location. Our goal is to create a master environment suited for the success and survival of the bees, in the familiar form of a hollowed tree.

The Hive Tree is designed to spread strong stocks of honeybees to the surrounding area when the hive outgrows the tree and swarms to form a new colony. The combination of ideal environment, central location and minimal disturbance should produce splitting of the hive (swarms) each year.

The lancet dome is one of the oldest structures, over 3000 years old; it’s also the recognizable traditional shape of hives. Its interior provides interesting acoustic effects to those near its center, and bees will be visible from a transparent section of the hive’s interior.

The dome also serves as an important interpretive and ritual space where bees can be observed and honored. The structure will incorporate both sound and information-gathering technologies, as well as acoustic enhancements, in this unique environment.

GROWING SOCIAL AWARENESS THROUGH STEWARDSHIP

In addition to the experiential and engaging Mother Hive, this proposal supports the development of a practical working space nearby where bee husbandry, monitoring and other efforts can take place. Besides the practical needs of pollination both wild and commercial, programs that explore new relationships with bees are important. Fly ranch could host a small stewardship program that could both support the sustainability of regional bee stock as well as a platform for studies and education. In addition to the practical focus of pollination, this installation has an educational focus in support of onsite breeding studies.

A DESCRIPTION OF THE EXPERIENCE

The meandering path winds up to a beautiful old stone dome structure which appears to have a tree growing out of it. Its soft curves are contrasted by the weathered stone exterior. The trail is bordered by gardens of flowers that support the thriving colony. As you approach, you hear the low base drone of the hive as the sound is amplified from speakers hidden in the stones around you. It seems to change as you walk around on the surrounding paths. On the far side, massive roots extend from the earth supporting an old tree. The Mother Hive is located deep in the old faux tree. Part of the trunk has grown through the interior wall of the dome, providing an intimate window to the hive. Old tree and dead branches are alive with the flight of bees. Even in the afternoon heat, the thick walls keep the interior cool. The high ceiling inspires an interior stillness, with only the whisper of the deep humming of bees present. Portals high up dangle shafts of light onto the mosaic floor.

TECHNOLOGY USED IN OUR DESIGN

The technology component offers a multifaceted experience for broader communities at different levels. The scholar, the musician, the shaman, the scientist, the healer can participate with the Tree of Wildlife from afar or onsite through the use of technology. The experience is deepened where the rhythm of life expands through the sounds, colors and presence of the live beehive.

MULTIMEDIA

* By adding microphones and cameras to the interior of the tree we will be able to pick up sounds, movements, dance and growth of the bees live. We may stream this data online and with soft speakers and lights in the Lancet Dome Temple and in the area surrounding the Tree. We may provide an amplified auditory and visual immersive experience to visitors or the audience at home.

SENSORS  
The installation of 3 hive sensors (3Bee.it) and access to their software will give us tools to monitor the health of the hive. This technology will also connect to a network of more than 10,000 beekeepers worldwide that use the same technology. The 3Bee network is also an organized crowdsourcing marketplace that connects local beekeepers with bee supporters.

* The dataset can be used for learning and sharing with the objective to strengthen local and broader community involvement with students, beekeepers, researchers and the general public. As worldwide attention to honey bees spikes we have an opportunity to advocate for a bee-centric approach to beekeeping and to generate data to support research.

ACTIVITIES THIS DESIGN WOULD SUPPORT

* A stronger, more resilient breed of bee colonies;
* Pollination services for local food production;
* Biodiversity in the area;
* Educational opportunities onsite and online;
* Datasets for research in support of bee studies;
* Immersive sensorial experience;
* A space to tune in with the wisdom of bees and immerse in their medicine;
* Optional honey tasting
* SYSTEM INPUTS & MAINTENANCE   
  Once the Tree of Wildlife is built and populated, the structure itself is designed to withstand the test of time with nearly zero costs. The minimal equipment of the 3bee system, camera, speakers, and computer will be run by a 500W solar system.
* To thrive, the beehive will require sufficient forage and water from Spring to Fall. The purpose of this project is to have a thriving bee colony with the least amount of human intervention to support breed resiliency.

Alfalfa, Sagebrush and other local plants provide nectar and pollen for part of the year. If the environment and the other food projects at Fly Ranch in the 4 mile radius aren’t enough to sustain the colony, flowering plants may be added.

* Two crewmembers will inspect the site at least 4-6 times a year, taking less than a day with basic tools.
* The digital flow of information will help us monitor the health of the hive 24/7 from our smartphones, and the subscription to the 3Bee network is free.
* SYSTEM OUTPUTS   
  This system is designed to have ZERO WASTE, apart from the materials used to build it. At capacity, the Tree of Wildlife is anticipated to generate at least one swarming colony every spring/summer that will leave the Mother Hive in search of a new home.
* SCALABILITY   
  To accommodate the annual swarming of new colonies in search of a new ideal home, we may install different versions of the Tree of Wildlife conveniently placed within a 1-2 mile range from the Mother Hive to invite the swarm into a new comfortable home.
* Whether the swarm will choose our new tree or another location is unpredictable, but the departure of a swarm from its mother colony is in most cases predictable within days. Witnessing thousands of bees swarming out of the hive would provide a life-changing experience to those lucky to be there in time to witness it.
* PRIMARY MATERIALS AND DIMENSIONS   
  The footprint of the main dome and hive tree is under 400 sq.ft. with ideally an additional 60 foot radius of developed plants and space around it, and potential 1 acre of forage plants.
* The whole structure will be built with local materials with exception of cement and reinforcement.
* CONCEPTUAL COST ESTIMATE  
  $ 20,000 technology
* $ 10,000 power
* $ 35,000 building materials
* $ 60,000 labor
* $ 8,000 equipment and stewardship area   
  $ 8,000 workstation trailer   
  $ 9,000 yearly maintenance

STRATEGY FOR ONSITE PROTOTYPE DEVELOPMENT   
The construction team would consist of 3-4 people for approximately 5-6 weeks based on initial estimates. The structure is designed to be mostly passive with inclusion of minimal monitoring equipment and acoustical enhancements.

The construction process is localized to onsite work including a concrete/mortar mixer, piles of sand, rock and similar materials.

A secondary space in an existing structure can be set aside for data transmission, equipment and workstations.

The first spring, the team will acquire a bee colony from a local beekeeper and install it in the tree. From that moment on, the Tree of Wildlife will be live.

* ENVIRONMENTAL IMPACT
* The purpose of this installation is to give visitors an experience, create an educational forum and to create a thriving honeybee sanctuary that will over time produce a more resilient population of bees.
* The main impacts will be in the construction of the installation, using cement, reinforcing steel, and local materials. Construction will require water and will produce a small quantity of waste material (perhaps several cubic yards).
* Once the installation is built, it will require minimal inputs of power, which will be supplied by solar panels, and a consistent supply of water for the bees. If insufficient pollen and nectar forage is available through the year, maintenance of the flower gardens, (approximately one acre) will require 400,000 gallons per year.