Silver Springs Native Wildlife Park:
promoting animal welfare through design

Theresa Wymer
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A Senior Capstone Project
By
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Spring 2014
I would like to thank my advisor, Robert Grist, for his guidance and support throughout my capstone project. Lewis Scruggs was enormously helpful in getting me necessary information on Silver Springs as well as Jim Couillard in also giving me guidance. I would like to thank Sally Coyle for being extremely helpful in giving me insight with my project and necessary critiques. I would also like to thank my family for their endless support through my educational career. Lastly, I would like to thank my studio class for always being there.
Personal Intent

I have a strong interest in animal based design and wanted to pursue this for my capstone project. I have always loved animals and have been interested in promoting animal welfare. I feel that landscape architecture provides for the perfect union between people, animals, and the environment. Because we always look at projects holistically, we can take so many different factors into account.

I have had mixed feelings on zoo design in the past, seeing some animal cruelty in zoos I have visited when I was younger. Zoo design has been changing greatly recently, emphasizing enclosure design that promotes natural behavior and naturalistic living environments for the animals. Through this project, I wanted to develop knowledge in how to create a humane and effective zoo that promotes education and focuses on species native to the area. I believe that zoos can be very important in promoting wildlife education, while still being humane for animals.
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Silver Springs is currently in a state of flux. Formerly an amusement park, it has now been taken over by the State of Florida, which hopes to restore it to a more natural condition. This presents the opportunity to redesign the site sustainably. The chosen site was a zoo containing exotic animal species which polluted the springs. Education, animal welfare, and environmental restoration can be promoted through the design of a native wildlife park.

The springs are the headwaters of the Silver River, located in Marion County, Florida, and are one of the largest artesian spring formations in the world. Silver Springs is steeped in rich history and was one of the main tourist attractions in the state. The site has had many previous owners and has now been given over to the State of Florida. The site was formerly an amusement park containing a zoo which housed many exotic animal species. These exotic species degraded the site and polluted the springs. The state hopes to return it to a more natural condition through restoration and through the removal of existing buildings on the site of the zoo. The option proposed through this project is to sustainably repurpose existing infrastructure and create a zoo design that can provide wildlife education and highlight Florida history and culture through native animal exhibits. These enclosures will promote the natural behavior of animals, showcase the animals in their native environment, and will be sustainably created in order to minimize negative impacts on the springs.

The site has great potential to be developed into a wildlife park. The soils and existing infrastructure lend it to be redeveloped in a sustainable manner. There is opportunity to create barrier free animal enclosures in the developable land because it is already disturbed and the soils allow for more aggressive land grading. The site will also contain a restoration area where invasive exotics are removed and replaced with natives that enhance wildlife habitat and attract bird species. The animal enclosures that are proposed fit in with the existing habitat areas on the site which will promote wildlife education and provide for animal well-being.

The western portion of Silver Springs, which is not a part of the project site, contains restaurants, shops, parking, and an amphitheater. To buffer the more developed areas from the more natural, a butterfly garden and Florida Cracker exhibit will be proposed at the entrance of the wildlife park. These features will allow the users to experience Florida history and be moved into the more naturalistic areas. The character of the springs will be highlighted through the different habitat areas designed throughout the project. The site will have the potential to become a strong tourist attraction again through promoting Florida history and celebrating the existing ecosystems and the springs.
Project Introduction
Context
  Site History
    Site Background
    Site Selection
  Goals and Objectives
The site is located in central Florida within Marion County. Silver Springs borders the city of Ocala. It was a key point for tourism in Florida because of the beautiful springs and the tourist attractions located there. Before the advent of the major amusement parks in Florida today, it was a world famous tourist attraction.
Silver Springs is located in Marion County outside of the city of Ocala. The springs are the headwaters of the Silver River and are one of the largest artesian spring formations in the world.
The site has been joined recently with the Silver River State Park. The area highlighted on the map is the former amusement park site, which is 242 acres.
Adjacent Conservation Lands

Silver Springs is part of a large greenway network. It is adjacent to several conservation lands and is an important piece in connecting wildlife corridors. Its central location in the greenway network proves its importance to conserve the land in that area and promote and enhance wildlife areas. It borders the Ocala National Forest, which is a very important piece of conservation land. It also is connected to the Ocklawaha Prairie and Indian Lake State Forest. Silver Springs connects these areas to the Marjorie Harris Carr Cross Florida Greenway.
Site History

1800s
1st tourist attraction in Florida

1860s
Samuel O. Howse bought site

1870s
Glass-bottom boat tours began

1909
C. Carmichael bought site

1924
W. Carl Ray and W.M. “Shorty” Davidson bought springs

1929
Famous herpetologist Ross Allen opened “Ross Allen Reptile Institute” at springs

1930s
Rhesus monkeys introduced to site for “jungle cruise” boat ride

1932
“Tarzan the Ape Man” filmed at springs followed by a series of other films and television shows

1950s
Number of guests at springs was over 800,000 a year

1962
Springs sold to ABC-Paramount
1971 Declared National Natural Landmark

1974-1978 Paramount expanded site tremendously

1978 Wild Waters opened

1984 Site sold to Florida Leisure Attractions

1993 Florida Leisure Attractions sold land to state of Florida but managed park under long-term lease

1996 Ogden Entertainment of Florida acquired lease

1997 Multi-million dollar expansion including animal exhibits, “Kids Ahoy,” and Twin Oaks Mansion

2000 SmartParks acquired lease

2002 SmartParks failed to pay lease to Florida Department of Environmental Quality and sold to Palace Entertainment

2013 Park’s profit margin was dropping and was taken over by state of Florida
Silver Springs has a rich history that has shaped what it is today. The site has had a variety of different owners. Most recently, the park has been taken over by the state and been united with the adjacent Silver River State Park to form the Silver Springs State Park. Previously, the site was an amusement park. The current amenities of the park include the famous glass-bottom boats, concessions and shops, outdoor concert venue, parking, boat launch area, and walking trails. Previous amenities the park offered before being taken over by the state were exotic and endemic animal exhibits, a jeep safari trail, and the Wild Waters Amusement Park.

Many of the animals being contained on the park were exotic species that were damaging the adjacent springs. The park is currently plagued by contamination and over-pumping causing algal growth and a depletion in the fish population. The state is looking to return the site to a more natural condition, improve the springs, and promote wildlife and environmental education.
Former zoo and safari ride. Potential for adaptive reuse of existing buildings. Area can be redone to sustainably house native wildlife.
The site boundary was decided because its presents an opportunity to adaptively reuse existing infrastructure for animal enclosures and reinvent the site in a way that is sustainable and responsible. It is approximately sixty acres.
Goals and Objectives

The goal of this project is to create a wildlife park that fosters animal well-being and promotes visitor experience and education while protecting the springs.

Promote animal welfare

Design enclosures to accommodate captive animals’ natural ranges and encourage natural behaviors
Provide wildlife enhancement that attracts migratory and endemic birds, small mammals, and amphibians
Provide for animal psychological well-being through habitat design and enrichment opportunities
Enhance visitor experience

- Promote the health, safety, and welfare of the users
- Provide spaces that are accessible, educational, and safe
- Promote wildlife education

Protect the springs

- Provide appropriate treatment of animal waste
- Promote education on springs ecosystems
- Place buildings and animal enclosures an appropriate distance away from springs
Case Studies
Relevant case studies were chosen to find sites comparable to Silver Springs and to determine suitable animal species to house on site with appropriately sized enclosures and different amenities to offer on site.
Arizona-Sonora Desert Museum

The park is a total of 98 acres with 21 acres accessible to the public and it is a combination of a zoo, museum, and botanical garden. It is one of the most visited attractions in Tucson. It focuses on having animals and plants native to the area and has naturalistic enclosures. The site contains a zoo, botanical garden, natural history museum, art gallery, and aquarium. The park focuses on information exclusively about the Sonoran Desert. The exhibits are referred to as “living exhibits.” The 21 acres accessible to the public can be traversed through a 2 mile walking trail.

Important Numbers:

Total Park Size: 98 acres
Accessible Area of Park: 21 acres
Wild Cat Enclosure: .2 acres
Wolf, Mountain Lion, Bear Enclosures: 1 acre
Hummingbird Aviary: .15 acres
Desert Garden, Javelina, and Coyote Enclosures: 3.4 acres
The site is 52 acres and contains several different exhibit areas including Big Bend Farm, Florida and Beyond, Old Florida, Natural Florida, and Wildlife Florida. The Wildlife Florida exhibit has a boardwalk leading through different animal enclosures. The animals that the museum contains are waterfowl, white-tailed deer, wild turkey, red wolf, river otter, Florida panther, black bear, fox, skunk, bobcat, American alligator, an aviary hosting birds of prey, and a pond hosting turtles. The waterfowl exhibit allows the birds to come and go as they please. It contains a pond which is a natural sink hole. The deer and turkey exhibits are viewed from atop a boardwalk.

Important Numbers:

- Total Park: 52 acres
- Bobcat Enclosure: ~0.2 acres
Homosassa Wildlife State Park

The park is located in Homosassa Springs, Florida on approximately 210 acres. The park hosts a wide variety of native Florida wildlife and has nature trails going through the entire site. It hosts a rehabilitation center for injured West Indian manatees. Most of the other animals being hosted at the park are unable to survive in the wild because of injury or being orphaned. The park hosts several natural Florida ecosystems including wetlands, hydric hammock, spring-run streams, and a second-magnitude spring. There is a floating underwater observatory where tourists are able to view fish close-up. Animals hosted at the park include red wolves, foxes, birds of prey, shore birds, whooping cranes, black bears, Florida panthers, bobcats, river otters, alligators, key deer, and manatees. Amenities for the park include free kennels for pets, tourist center, concessions, boat tours, wildlife encounters, and a children's education center.
Chehaw Park

Chehaw Park is located in Albany, Georgia. The park first opened in 1937 encompassing around 800 acres. Within the park there is a Wild Animal Park which was designed by Jim Fowler and opened in 1997. This aspect of the park includes boardwalks taking the user through naturalistic animal exhibits and is located on 100 acres. There are a total of 84 species of animals located in the park totaling approximately 212 animals with both native and exotic species. Amenities other than the wild animal park are a petting zoo, nature trails, a children’s train ride, a children’s play park, bike racing, and campgrounds.

Important Numbers:

- Total Park Size: ~800 acres
- Total Animal Enclosure Area (Wild Animal Park): ~100 acres
- Red Wolf Exhibit: .6 acres containing 4-5 wolves
- Bison Range: 2.09 acres
- Children’s Farm: .81 acres
- Bald Eagle Aviary: .5 acres
- Bobcat Exhibit: .5 acres
- Black Bear Exhibit: 1.32 acres
Zoo Atlanta

This park is located in Atlanta, Georgia and houses over 1,500 animals. It has the nation’s largest collection of orangutans and gorillas. The zoo was considered one of the worst zoos in the country in 1984. Zoo Atlanta then went through enormous changes to improve the conditions the animals were housed in and expand the enclosures. The zoo houses exotic animals including giant pandas, African Plains animals, gorillas, orangutans, bears, tigers, and clouded leopards.

Important Numbers:
Lion and Elephant Enclosures: 1.1 acres
Zebra, Warthog, Giraffe, Rhino, Meerkat Enclosures: 2 acres
Petting Zoo: .8 acres
Gorilla Enclosures: 1.75
Bear, Clouded Leopard, Tiger Enclosures: .67 acres
Philadelphia Zoo

The zoo is located in Philadelphia, PA on 42 acres. It contains a variety of exotic animal exhibits and has innovative designs leading it to be featured in the January 2014 issue of Landscape Architecture Magazine. There are several different themed exhibits including African Plains, Kangaroos, Bear Country, Bird Valley, Carnivore Kingdom, First Niagara Big Cat Falls, Avian Center, Monkey Junction, Primate Reserve, and Tortoise Trail. The zoo is unique with its addition of animal trails that go through the site. These trails allow animals to move from different areas in overhead enclosed trails that promote animal well-being through enrichment.

Important Numbers:
Total Park: 42 acres
Carnivore Kingdom Exhibit: 1.5 acres
Analysis and Synthesis
Existing Conditions
Analysis and Inventory Maps
User Analysis
Synthesis
Program
Existing Conditions
Silver Springs is approximately 242 acres. The site in its current state has many dilapidated buildings and features that need to be fixed or updated. At the main entry of the site, the visitor passes by Wild Waters, the water based amusement park, and is then moved into the parking lot. The parking lot is in good condition and can accommodate a large number of cars. After parking your car, the visitor enters the site through a boardwalk and passes through several restaurants and shops. This portion of the site is in good condition, but several of the shops are empty and could use renovation. The glass bottom boat tours start at the portion of the site as well.

Continuing along the walkways, the visitor passes views into the river as well as entering the Twin Oaks Amphitheater area. The visitor would then enter the location of the former zoo. The former zoo is in need of large amount of renovation. The majority of buildings need to be removed. There was a jeep trail that led through the northeast portion of the site. The animals which were housed in the zoo were mostly exotic, but also housed a few native species. There was a variety of reptiles located at Ross Allen Island, named after the famous herpetologist who worked on the site. One of the more well-known recent animals on the site were the two giraffes, both of whom passed away.

The southern portion of the site is not accessible to the public. There is a maintenance area and the “back 40,” which is highly vegetated and borders a longleaf pine sandhill with an active fox squirrel community.

The following images were taken on the site to help show the character. They highlight all of the important areas on Silver Springs. There is great beauty in the site, as well as many issues.

1 Main Entry
2 Parking Lot
3 Wild Waters: water amusement park, run down
4 Restaurants/Shops: buildings are in good condition, nice views into river
5 Maintenance Compound: on-site housing for park rangers; vegetated; poor views
6 ‘The Back 40’: run down jeep trail; large amount of existing vegetation, borders longleaf pine sandhill with active community of fox squirrels
7 Twin Oaks Amphitheater: Hosts various outdoor concerts and events
8 Former Zoo: many existing structures such as animal enclosures and concessions; buildings are dilapidated
9 Former Safari Ride: trails, fences, and animal enclosures are run down; large amount of existing vegetation
Analysis of the site was needed to decide what restrictive factors existed and what opportunities are available. The first diagram highlights existing floodplains and the topography of the site. The topographic changes are minimal and mostly exist on the western portion of the site. The floodplains exist largely on the southeast portion of the site. Because the topographic changes are minimal, they do not present many constraints, while the floodplains limit developmental opportunities.

Canopy analysis was important in order to find opportunities of animal habitat. The majority of the site is a floodplain swamp ecosystem. Most of the site is covered with tree canopy, with small pieces open.

The suitability analysis was conducted to find areas that are more and less suitable for development and wildlife habitat. The criteria for suitability was based on existing soils, natural communities, species richness, and proximity to water.
Floodplains and Topography Analysis
Canopy Analysis
Suitability Analysis

This map highlights areas on the site that are more or less suitable for development and wildlife habitat. The criteria for suitability was based on existing soils, natural communities, species richness, and proximity to water.
Soil Analysis

Soils were a very important consideration while designing the site. It was imperative to find the depth to water table to insure that any design or grading proposed would not cause the site to flood. The western portion of the site consists of soil that allows for greater grading opportunities. The eastern portion of the site is closer to the water table and does not allow for many grade changes.

- **Bluff Sandy Clay**
  - Slope: 0-2%
  - Drainage: Very Poorly Drained
  - Depth to Water Table: 0-6 Inches

- **Udalfic Arents**
  - Slope: 0-5%
  - Drainage: Well Drained
  - Depth to Water Table: More Than 80 Inches

- **Electra Sand**
  - Slope: 0-5%
  - Drainage: Somewhat Poorly Drained
  - Depth to Water Table: 24-42 Inches

- **Candler Sand**
  - Slope: 0-5%
  - Drainage: Excessively Drained
  - Depth to Water Table: More Than 80 Inches

- **Apopka Sand**
  - Slope: 0-5%
  - Drainage: Well Drained
  - Depth to Water Table: More Than 80 Inches

- **Adamsville Sand**
  - Slope: 0-5%
  - Drainage: Somewhat Poorly Drained
  - Depth to Water Table: 18-42 Inches

- **Holopaw Sand**
  - Slope: 0-2%
  - Drainage: Poorly Drained
  - Depth to Water Table: 0-6 Inches
Building Analysis

These are all of the existing buildings on the site. Many of the buildings are in poor condition, while others can be repurposed.
Marion County demographics were used to determine likely users of the site. The local community would be the most frequent users of the site. There are many families with children in Marion County, which is the ideal user group for a zoo. Many school groups would use the site, as well as families and the elderly.

The visitor circulation diagram shows how pedestrians and vehicles enter and move through the site. The following diagram shows where the visitors will be coming from around the site and the main routes they will take.
Marion County Demographics

**Sex**
- Total Population: 331,298
- Female: 48%
- Male: 52%

**Age**
- Median Age: 47.4
- 0-19 years: 21.5%
- 20-44 years: 25.6%
- 45-74 years: 41.4%
- 75 and older years: 11.5%

**Household**
- Total Households: 137,726
- With own children under 18 years: 21.4%
- Family Households: 67.2%
Visitor Circulation
Contextual Visitor Analysis
Anticipated Users

Based off of the user analysis and case study comparables, anticipated user groups were created. Zoos are popular among children, so families and school groups will use the site. People attending concerts at the Twin Oaks Amphitheater would also come to the site. People interested in being in nature, such as hikers and bird watchers, would also come in to the site.
Comparable zoos in the region were researched and features were compared to the Silver Springs Wildlife Park project. This shows how features of the Silver Springs project will be competitive to the other similar parks.
Through the case study research, animals native to the region that were successfully housed in enclosures in similar project types were selected for a user analysis. After selecting these animals, physical descriptions and living requirements were found. The analysis of these animals was used to select a final grouping of animals that would be appropriate to house at Silver Springs.

The animals were divided by different habitat types. The images prior to the animal descriptions in the habitat types are photos of the site that match the animals' habitat needs.
<table>
<thead>
<tr>
<th>Animal</th>
<th>Size</th>
<th>Habitat</th>
<th>Diet</th>
<th>Pack Size</th>
<th>Territory Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gopher Tortoise</td>
<td>9”-11” in length</td>
<td>Sandy ridge areas, longleaf pine forest, burrows 15-40' long</td>
<td>Grasses and low herbs</td>
<td>Very social, unknown pack size</td>
<td>Approximately one square mile</td>
</tr>
<tr>
<td>Gray Fox</td>
<td>12” in height at shoulder</td>
<td>Wooded and bushy areas, need hollow trees for dens</td>
<td>Small mammals, birds, insects, fruit, acorns, eggs</td>
<td>Mostly Solitary</td>
<td></td>
</tr>
</tbody>
</table>
Florida Panther

Size: Approximately 25” high at shoulder
6’-7’ in length
66lbs-125lbs

Habitat: Mixed swamp forests and hammock forests, generally heavily vegetated areas

Diet: White-tailed deer, rabbits, raccoons, hogs, armadillo, birds

Pack Size: Mostly Solitary, except when breeding

Territory Size: Females: Approximately 8 mile range
Males: Approximately 42 mile range

Case Study Enclosure Sizing: Arizona-Sonora Museum Cat
Enclosure: .2 acres

Black Bear

Size: Approximately 500lbs

Habitat: Thick Understory, flatwoods, bays, swampy hardwood

Diet: Grasses, fruits, insects, beetles

Pack Size: Mostly Solitary

Territory Size: Females: 1-15 square miles
Males: 8-60 square miles

Case Study Enclosure Sizing: Chehaw Bear Exhibit: 1.32 acres
Zoo Atlanta Bear Exhibit: <.67 acres
Bobcat

Size: 17"-22" in height
      25"-41" in length
      8-33lbs

Habitat: Forests, semi-arid deserts, mountains, brushland; sleep in hidden dens in hollow trees, thickets, rocky crevices

Diet: Rodents, rabbits, ground birds, deer

Pack Size: Mostly Solitary

Territory Size: .6-4 square miles

Case Study Enclosure Sizing:

Chehaw Enclosure: .5 acres
Sonora-Desert Cat Enclosure: .2 acres
Tallahassee Museum Enclosure: .2 acres
Open Woodlands Species
## White-Tailed Deer

**Size:**
- 31”-40” in height
- 60”-80” in length
- 90-115lbs

**Habitat:**
- Can survive in a variety of habitats; saw grass, hammock swamps
- Ideal habitat: dense thickets and edges

**Diet:**
- Buds and twigs of maple, sassafras, poplar, aspen, birch among many others as well as many shrubs

**Pack Size:**
- Considered solitary but can be observed grazing together with up to 100 other individuals

**Territory Size:**
- .62 square miles

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## Turkey

**Size:**
- 36”-48” in length
- Approximately 8lbs

**Habitat:**
- Hardwood, mixed conifer hardwood forests with scattered openings such as pastures, fields, orchards, seasonal marshes; open woodlands and forests

**Diet:**
- Seeds, nuts, acorns, insects

**Pack Size:**
- Are very social, unable to find pack size

**Case Study Enclosure Sizing:**
- Chehaw Enclosure: .5 acres
Swamp/Marsh Species
**Alligator**

**Size:** 9'-14' in length  
Record weight 1,000lbs

**Habitat:** Freshwater environments such as ponds, marshes, wetlands, rivers, swamps

**Diet:** Fish, turtles, birds, reptiles, small mammals

**Pack Size:** Young live in groups, adults tend to be more solitary unless they are smaller they tolerate groups for protection

**Territory Size:** Females: Stay in smaller areas  
Males: > 2 square miles

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**Red Wolf**

**Size:** 26"-31" in height at shoulder  
44"-65" in length  
35lbs-90lbs (average 54lbs)

**Habitat:** Coastal prairie marshes, swamps, forests, wetlands

**Diet:** Prior to species restoration: rabbits, rodents  
Post species restoration: white-tailed deer, raccoons, rabbits

**Pack Size:** 4-8; breeding pair plus offspring

**Territory Size:** 25-100 miles  
10-100 square miles to hunt and live

**Case Study**  
**Enclosure Sizing:** Chehaw: .6 acre exhibit for 4 animals
In order to guide concept development and a logical flow for the animal enclosures, the animals researched were grouped into different habitat types.
After considering all of the analysis, the synthesis diagram was created. Areas on the site were determined to have greater opportunity to create more development. These areas would have potential for greater grading change in order to create barrier-free enclosures and add more buildings. The areas that are constraining for creating development, are opportunities to restore the environment and enhance the area for wildlife. Many birds live in and travel through Silver Springs, so creating a restoration area would also allow for greater birding opportunities. Portions of the site nearer to the river are less suitable for development and would be minimally disturbed.
Program

- Animal/Staff Maintenance
- Animal Enclosures
- Cracker Exhibit
- Pavilion/Shelter
- Concessions
- Bathrooms
- Butterfly Garden

(Connectors indicating relationships between the elements.)
The program elements were developed after reviewing comparable case studies and determining elements necessary to create a successful wildlife park. After selecting the program, a matrix was created in order to see the relationships between the different program elements. The elements had either a strong, moderate, or weak connection. In the program to program diagram, elements that are strongly related to each other are signified with a heavier arrow, while ones with weaker connections have lighter arrows. The animal enclosures are the most important program elements, with the other exhibits being of less importance but still vital to the project. The pavilion could be used for wildlife shows and education for school groups. The Florida Cracker exhibit will be an interactive exhibit that houses animals important to Cracker history and shows elements of the Cracker lifestyle in history. Visitors can learn about Florida history and also interact with the Cracker animals.
Concept Development
This concept was created by grouping animal enclosures by habitat type and repurposing some of the existing buildings and pathways. The restoration area in all concepts will have invasive exotic plants removed and replaced with native plants that will increase biodiversity and improve bird habitat. The paths in this area will be boardwalks with walkways leading to the river.
This concept was designed to minimize impact on the land by restricting the animal enclosures to the west side which has already been developed.
Final Composite Concept

The final concept was created by trying to maximize user experience and animal welfare through larger enclosure sizing and several trail loops. The animals are grouped by habitat type. The entry for all the concepts is through the butterfly garden and it is bordered by an interactive cracker exhibit.
## Concept Evaluation

### Animal Enclosure Sizes

<table>
<thead>
<tr>
<th></th>
<th>Concept 1</th>
<th>Concept 2</th>
<th>Concept 3</th>
<th>Case Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cracker Farm Exhibit</td>
<td>.83</td>
<td>.85</td>
<td>.73</td>
<td>.10</td>
</tr>
<tr>
<td>Panther Enclosure</td>
<td>1.3</td>
<td>.62</td>
<td>.99</td>
<td>.20</td>
</tr>
<tr>
<td>Butterfly Garden</td>
<td>.46</td>
<td>.33</td>
<td>.50</td>
<td>.01</td>
</tr>
<tr>
<td>Gopher Tortoise Enclosure</td>
<td>.63</td>
<td>.43</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Bobcat Enclosure</td>
<td>.79</td>
<td>.51</td>
<td>.52</td>
<td>.50</td>
</tr>
<tr>
<td>Gator Enclosure</td>
<td>1.2</td>
<td>n/a</td>
<td>1.52</td>
<td>n/a</td>
</tr>
<tr>
<td>Red Wolf Enclosure</td>
<td>.80</td>
<td>n/a</td>
<td>.88</td>
<td>.60</td>
</tr>
<tr>
<td>Bear Enclosure</td>
<td>1.5</td>
<td>.90</td>
<td>1.65</td>
<td>1.3</td>
</tr>
<tr>
<td>Deer/ Turkey Enclosure</td>
<td>2.8</td>
<td>.64</td>
<td>2.54</td>
<td>n/a</td>
</tr>
<tr>
<td>Gray Fox Enclosure</td>
<td>1.6</td>
<td>.59</td>
<td>1.16</td>
<td>n/a</td>
</tr>
</tbody>
</table>
The final plan was developed based on the concept evaluation. The goals and objectives for the project were satisfied through the design. The visitor experience is enhanced through a variety of paths leading through the various animal enclosures and natural areas. Animal welfare is promoted through the selection of species appropriate to the site, and enclosures that are sized to suit animals' needs and promote well-being. The springs are protected through having an appropriate number of animals on the site to suit carrying capacity as well as placing structures and enclosures away from the springs to limit polluting the water.

Master Plan

1. Butterfly Garden/Entry
2. Cracker Exhibit
   - Housing Cracker animals such as Cracker Horses and Cows
3. Cracker Farm House Exhibit
4. Visitor and Staff Building
5. Visitor and Staff Building
6. Forest Animal Exhibits
   - Bobcat Enclosure
   - Florida Panther Enclosure
   - Black Bear Enclosure
7. Bathroom Facilities
8. Concessions/Learning Pavilion
9. Swamp Animal Exhibits
   - Red Wolf Enclosure
   - Alligator Enclosure
10. Visitor and Staff Building
11. Open Woodland Animal Exhibits
   - Deer and Turkey Enclosure
   - Gray Fox Enclosure
12. Visitor and Staff Building
13. Restoration Area
14. Rain Shelters
15. Viewing Point into River
The entry into the site is the butterfly garden which borders the Florida Cracker exhibit. These two exhibits border the site from the Twin Oaks Amphitheater, which will produce a large amount of noise from events and concerts. For this reason, it was important to buffer wildlife from the amphitheater. Because the Cracker exhibit houses domesticated animals, it seemed the most appropriate to use this exhibit to buffer the more naturalistic areas of the site.

The butterfly exhibit is the entry into the site. The planting will be bright and be a good introduction into the wildlife park. It is an opportunity to view some wildlife such as a few bird species and butterflies.

On the opposing page, the Florida Cracker exhibit is pictured. This exhibit will allow users to experience traditional Cracker culture through events such as weaving and quilting. The visitors will also be able to enter the enclosures which will house animals vital to Cracker history, including Cracker horses, cows, and chickens.
This portion of the site contains the forest habitat enclosures with predatory animals. The learning pavilion and concessions are located here as well. This building is existing and will be repurposed for this reason. The animals located here are the bobcat, Florida panther, and black bear. The enclosures are divided into three pens according to standards found through the American Zoological Association. The panther exhibit contains an animal trail to connect two of the areas of the enclosure to improve animal well-being as well as being an interesting and dynamic feature for visitors to view.
This portion of the site contains the swamp and marsh habitat enclosures with predatory animals. The animals housed here are the alligator and red wolf. The American Zoological Association has standards for enclosure fencing. Through research, it was found that for the red wolf, the horizontal jumping distance is eighteen feet and vertical distance is ten feet. This means that containment for the wolves, whether it appears to be barrier free or is a fence, must meet these limits. The overhanging climb barrier for the wolf enclosure must be at a thirty-five to forty-five degree angle and must be thirty-nine inches long. These limits are demonstrated in the section on the far right.
This area of the site contains the open woodlands animal enclosures. The gray fox exhibit is located here as well as the mixed species exhibit of deer and turkey. The deer and turkey exhibit is also a barrier free enclosure where the boardwalk is elevated above the animal area. Surrounding the enclosures is the restoration area. This area is to have the invasive exotics removed and add native plants that are bird attractors in order to enhance wildlife habitat and increase animal diversity. This will allow for the restoration boardwalk to be a bird watching trail.
Interpretive Educational Signage

The blue points on the map indicate signage points.
This is an example of how the signage on the site will work. It is important for there to be wayfinding on the site to lead visitors through the park. The signage will also be important to educate the visitor on the wildlife exhibited.
Animal Waste Treatment Options

Reuse and Reduction

The best management approach is to reduce waste and reuse it on site. The site will have a large reduction in animal waste than it had in the past due to a fewer concentration of animals in enclosures and the fact that all animals will be native to the area.

Recycling and Composting

Composting and recycling waste on site is a sustainable and feasible treatment option. The recycled waste can be used as fertilizer.

Treatment and Disposal

This is the least desirable waste treatment option according to the EPA. This involves treating waste and moving it off-site.
Biogas

The process involves waste being collected and delivered to anaerobic digester to stabilize and optimize methane production. This results in biogas which can be used to fuel natural gas vehicles. This process is highly sustainable, yet is also expensive and it likely not appropriate to use on the site at this point in time.
References

Image References


Base Aerial Compiled through:

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