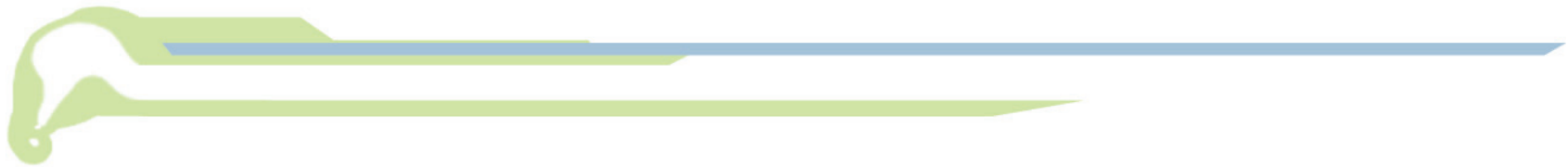


Re-Viewing the  
Sac Zoo



A Conceptual Redesign of the Zoo

Iain Pryor - Spring 2011



# Re-Viewing the Sac Zoo

by Iain Pryor

A Senior Project Presented June 11, 2011  
to the Faculty of the Landscape Architecture Program  
University of California, Davis  
in Partial Fulfillment of the Requirement  
for the Degree of Bachelor of Science of Landscape Architecture

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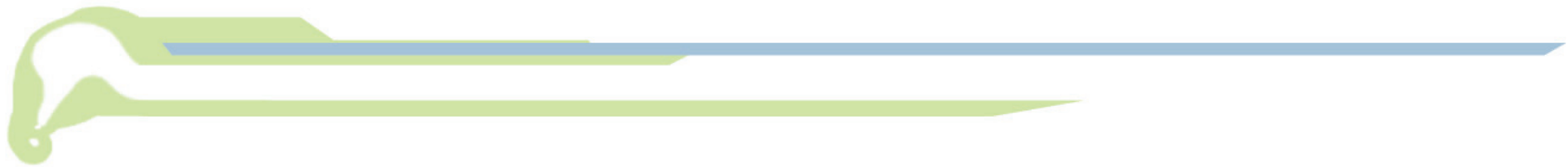
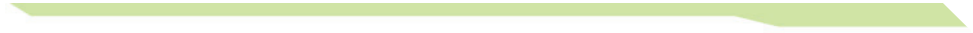
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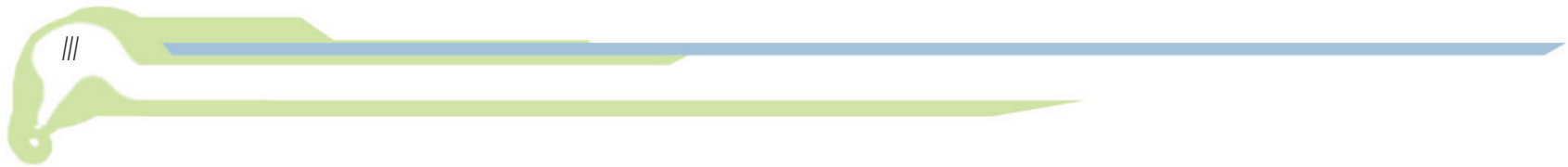
## Abstract

The Sacramento Zoo, like most institutions, has various issues and opportunities, but they have yet to determine a plan to address the situation. Therefore, for this project, the Designer took an initial view of the Zoo, recording data through interviews with the Zoo's administration, by conducting a small study of college students, and personal on site observations. Then, this data was reviewed to discover trends and potential unforeseen opportunities. Finally, the Designer integrated several design concepts and strategies to produce a new long-term conceptual view of the Zoo that is intended to inspire conversation between the Zoo, the Sacramento City Council and the local community.

To compensate for a lack of time and resources, economic and structural feasibility was not taken into consideration. Also, an implementation period of approximately fifty years was used to provide the Designer with the freedom to propose significant but highly beneficial changes.

While portions of the design is ambitious, it is hoped that at least part of the proposal will be adopted and implemented. The next step will be to review and discuss the design and concepts with all parties and to produce schematic designs and a phasing plan.





## Acknowledgements

Thank you to...

My advisory committee:

Tim McNeil - for your collaboration and inclusiveness.

Harrison Edell - for your participation and enthusiasm.

Byron McCulley - for your practicality and sound advice.

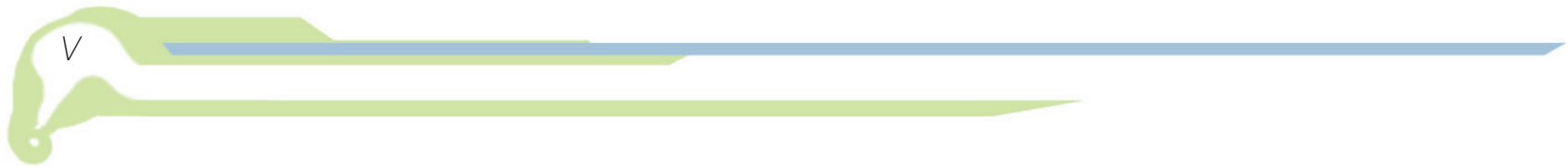
The senior project advisor:

Claire Napawan - for your encouragement.

To Mary Healy - for your cooperation and openness.

To my parents - for your constant support.

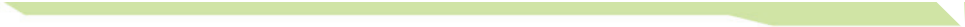
To Katy - for your constant patience.





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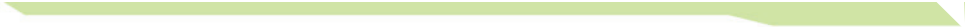
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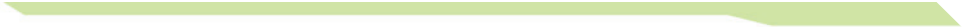
## Preface

### Statement of Purpose

The Sacramento Zoological Society, like so many other contemporary urban zoos, faces a multitude of dilemmas. It must contend with spatial restraints, demanding accreditation requirements, flat revenue and rising costs while forwarding its message to an audience that is becoming increasingly distant from and indifferent to nature. To further complicate the situation, the Zoo recently learned that it would not be allowed to move or expand on site to address these issues.

This project proposes the implementation of several design concepts and strategies based on existing practices and personal brainstorming to help the Zoo address some of the more pressing issues. It is hoped that the Zoo will, at least in part, adopt the new conceptual master plan. The project also aims to rejuvenate conversation between the Zoo, the Sacramento City Council and the community to generate new ideas and support for the Zoo.

The larger goal of the project is to encourage conservation



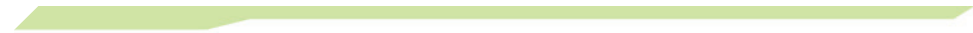
involvement through design and to provide the global zoo community with additional ideas when other institutions face similar situations. Finally, the project strives to underline the importance of landscape architecture in the world of exhibit and zoo design. After all, a zoo is merely a series of animal-filled designed landscapes.

To complete the project within the given time frame and to the desired degree of quality, numerous limitations had to be imposed. Thankfully, the limitations implemented would not prevent the project from achieving its goals.

### Delimitations and Limitations

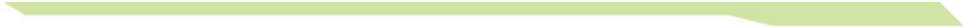
The main obstacles for this project stemmed from limited resources, a restrictive timetable and the complexity of the subject. The minimal amount of available site data greatly reduced the obtainable accuracy. Fortunately, the conceptual nature of the project compensated for this shortcoming. When possible, required data was recorded on site, but limited economic and time resources prevented the use of long-term in-depth studies. This could prevent any study conclusions from concurring with the findings of year round studies. However, this





potential discrepancy did not inhibit the project's capacity to instigate conversation, which was a primary objective. Likewise, overlooking the structural and economic feasibility of the proposed strategies and concepts did not prevent the project from fulfilling its purpose. The main challenge was therefore to address the physical issues of the site.

Due to a 1988 Sacramento City Council resolution, the Zoo is geographically confined to its current boundaries. Therefore, this project was also limited to the Zoo's current boundaries except to create a connection between the Zoo and the California State Railroad Museum's excursion train route. Without these restrictions, the products of this project would have little benefit to the Zoo.



## A Brief History of Zoos

Since time immemorial, people have been capturing and keeping wild animals. Some animals became sources of food and materials. Others became pets, companions and fellow hunters. The last type of captives was used for the display of wealth and power. Animals like lions, tigers and bears, which were too wild and powerful to tame were used to reflect the power of their captors. In ancient Rome, criminals, prisoners of war and potential political threats were pitted against such animals by those in power for the entertainment of the masses and as a warning to those who disobeyed (Fig. 1.1). Over time, the collections themselves became the symbol of power.

Often, the size, variety and charisma of the collection reflected the owner's wealth and influence. These menageries began in the hands of private owners, but over the past few hundred years, they slowly entered the public domain. In many cases, the private collections were given to local cities to reflect the greatness of the region. The San Francisco Zoo, originally called the Fleishhacker Zoo, was one such institution. A side effect of these transfers of ownership was an increase in the accessibility of exotic animals to the general public.



Fig. 1.1: A mosaic of a gladiator fighting a leopard in Ancient Rome.



Fig. 1.2 & 1.3: This concrete and steel Modernist polar bear exhibit is artistic, but provides little for the animals.

While providing public access is a social advancement, the animals' conditions and the purpose of the zoos remained basically the same. For example, some people would argue that the Zoological Gardens of Imperial Berlin, which was constructed in the 1870's and 1880's, was the most impressive and elaborate zoo architecture up to that time. However, as Hancock points out, the zoo's crown jewel, the Elephant House, only had two simple goals: to impress the visitor and to contain the animal (1996). Once again, the animals were primarily a display of power and eminence. More contemporary zoo designs have also suffer from this power-driven design.

The Modernist style movement of the last century produced enclosures that resembled sculptures instead of habitats (Fig. 1.2 and 1.3). They might have been new and more popular than past designs, but the enclosures bespoke the greatness of the designer. Even the California Academy of Science's beautiful and innovative rainforest exhibit was designed as an architectural statement, which is evident by the very bold, prominent and overpowering building features. Both of these examples follow the philosophy of the Zoological Gardens of Imperial Berlin: impress and contain. Thankfully, this is not the only philosophy around.

Since the environmental movement of the 20th century, numerous exhibit design approaches have emerged. Some are relatively straightforward like the naturalistic method, which simply attempts to represent an idealized view of nature. This usually results in one of two types of exhibit. The first is aesthetically driven, producing a visitor-pleasing diorama that is usually a poor or false representation of the habitat. The second is economically driven and designed to minimize the costs of installation and maintenance. This typically results in sparsely planted enclosures filled with harsh manmade elements to provide animal enrichment (Fig.1.4).

Another strategy attempts to replicate the wild environment. This method is normally much more expensive since it requires a high level of control over various aspects of the environment, but if properly executed, it can have a strong impact on the visitors. Like the naturalistic approach, habitat replication can be very aesthetic and provide interactive structures for the inhabitants, but the difference is in the visitor's experience. At a minimum, the vegetation is the same as the wild habitat, which at least does not present the visitor with false information. More advanced exhibits control more of the environment. Elements such as the temperature, humidity, lighting and sound can



Fig. 1.4: Economic and maintenance driven design for orangutan exhibits typically results in a Mesoamerican rainforest being represented by a few fall snags, cargo netting and some rope.



Fig. 1.5: The Monterey Bay Aquarium's surge zone tunnel is a very popular exhibit that place visitors in the surf without getting them wet.

all be combined to leave a powerful and lasting impression. Not surprisingly, the best examples of this immersive strategy are found in aquariums where many environmental factors must be controlled simply to keep the animals alive (Fig. 1.5). One advantage zoos have over aquariums is that they can allow the public to directly experience the habitat. For example, the high temperature and humidity of the California Academy of Science's new rainforest exhibit greatly surprises many visitors that are used to San Francisco's cool climate and they are unlikely to forget the experience. Therefore, experiencing the habitat actually educates the visitor more than the fantastic architecture.

A third design approach takes the replication method a step further. The BioPark concept essentially aims to take an animal's entire wild ecosystem, to encapsulate it and place it in a zoo. The primary argument is that leaving out the various elements in an animal's ecosystem provides a warped perception of that animal and its relationship with its native environment (Robinson 1996). Once again, this is a noble concept, but difficult to realize, if not impossible. The amount of control and funding required for such a project makes this type of approach very ambitious.

Regardless of their failings, the naturalistic, replication and BioPark approaches are preferable to the simple display of power and prestige. Zoos of the past have come under fire for displaying captive animals to show man's dominance over nature. Sadly, as Thomas French points out, zoos are an unfortunate necessity since the boundless wildernesses no longer exist (2010). Today, most zoos exist to help conserve the species, natural habitats and ecosystems that remain (The World Zoo Conservation Strategy 1993). As ambassadors for the natural world, the design of zoos and animal enclosures should present that message as effectively as possible. An estimated 600 million people worldwide are believed to visit zoos each year and over 100 million of those are from the U.S. and Canada alone (IUDZG/CBSG 1993, AAZPA 1992). With such a large audience, design is a major tool that zoos have to educate and elicit the participation of their visitors.

In order to transform a passive visitor into a participant, the visitor must first care about the subject. The old phrase, "out of sight, out of mind" means that a subject is forgotten or dismissed unless it stays in the public eye. However, indifference can be overcome by creating a personal connection with the subject. Jon C. Coe and others at the firm Jones and Jones pioneered a method of exhibit design called immersion

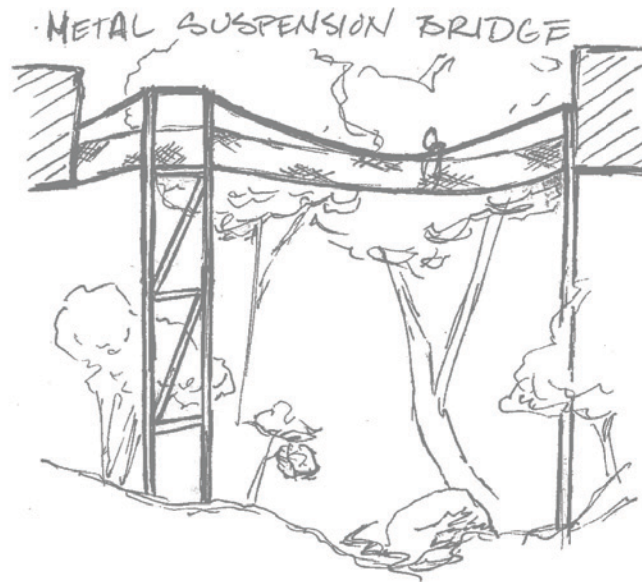


**Fig. 1.6:** The Princess of Wales Conservatory is a fine example of a modern botanical garden that arranges the collection according to habitat type.

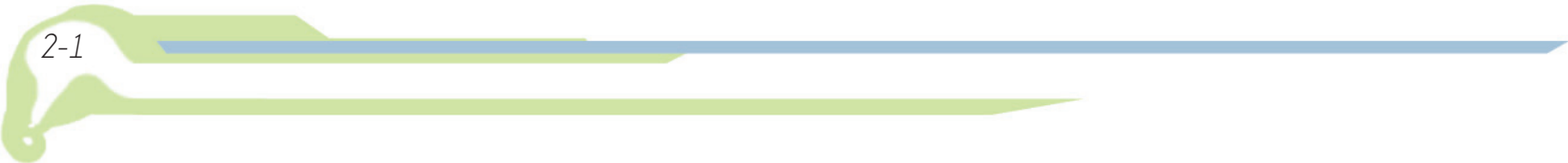
decades ago. Basically, Coe extended the exhibit's habitat into the visitor space to create a feeling of being in the exhibit. Unfortunately, most zoos limit the immersion technique to only a few exhibits, at most. To create a stronger impact, zoos should follow the example of botanical gardens. Many modern botanical gardens locate their plants based on their native habitat type (Fig. 1.6). Similarly, zoos should cluster their exhibits according to habitat type and use the immersion technique throughout the entire area, thus placing the animals and visitors in the appropriate setting. Being enclosed in the animal's environment perceptively brings the visitor closer to the animal itself, which can foster a powerful connection between the two. As William Conway put it, "the best exhibits are not only cognitive tools, but also powerful esthetic experiences almost magically connecting their municipal visitors with the beauty of distant nature" (2007). Once a connection is made, then the visitor will likely be more open to conservation efforts. This phenomenon is commonly referred to as the "not-in-my-backyard" or "nimby" effect. If zoos can capitalize on such a strong phenomenon, then they have the potential to greatly increase the impact of their conservation message. Therefore, zoo leaders and designers must focus their efforts on creating innovative and intimate



designs that foster personal connections between the visitors and the ecosystems exhibited.



- INSECTS ARE EVERYWHERE NO MATTER WHAT YOU DO.
- RAIN: STARTS SUDDENLY, GETS HARD WITHIN A MINUTE, LASTS ~5 MINUTES AND SUDDENLY JUST STOPS.



## Orientation

### The Zoo's History

In 1927, the City of Sacramento built the William Land Park Zoo in William Land Park. The “little zoo in the park” began as a 4.2-acre collection of 40 small animals with zero admission (Fig. 2.1). In 1956, the Sacramento Zoological Society formed to help the zoo. The early 1960s saw the Zoo expand to its present 14.3 acres and the first admission charges. The City Council changed the Zoo's name to the Sacramento Zoo in 1970 and the iron and concrete cages began to be replaced with naturalistic bar-less exhibits that employed moats to separate the animals and visitors. In the 1990s, the Sacramento Zoological Society took over operations while membership topped the 10,000 mark. The Dr. Murray E. Fowler Veterinary Hospital was completed in 2006, whose large windows allowed visitors a peak into the veterinary world (Fig. 2.2). After 80 years in operation, the Zoo observed the milestone by hosting a temporary penguin exhibit whose popularity helped boost the year's admission to over 500,000 visitors. Today, the Zoo continues to be accredited by the Association of Zoos



Fig. 2.1: An early arrival to the young William Land Park Zoo.



Fig. 2.2: Thanks to the large windows, lucky visitors were able to watch a pregnant tiger receive an ultrasound.

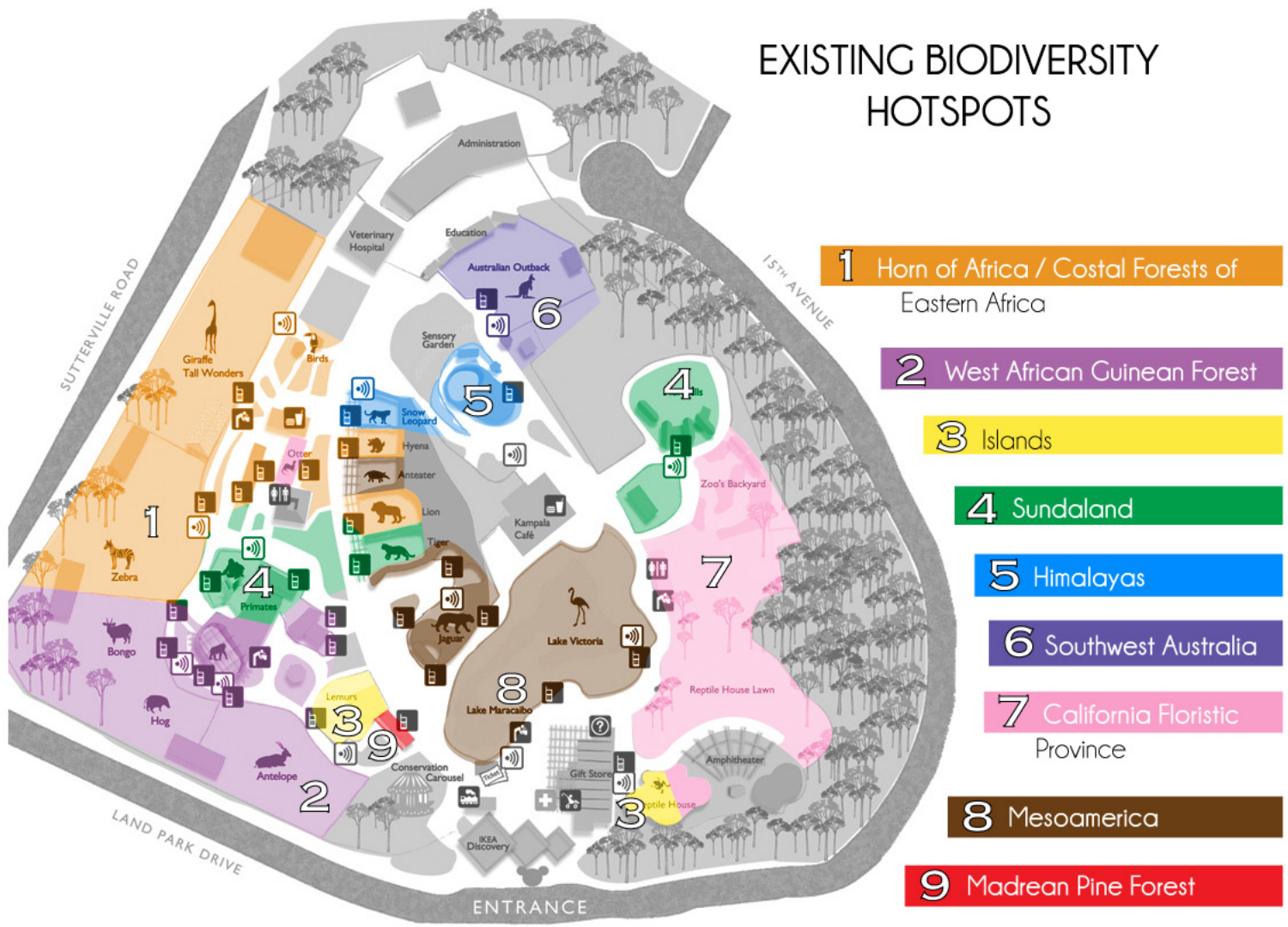


Fig. 2.3: The current layout of the Zoo's biodiversity hotspots.

and Aquariums (AZA), to operate several successful breeding programs and draw large crowds for the Zoo's small size.

### The Zoo's Purpose

The Sacramento Zoo has come a long way since 1927, both physically and ideologically. The Zoo has evolved from identifying itself as “the little zoo in the park” to “Wildly Inspiring!” This simple motto says that the Zoo is a place to go to experience the awe and wonder of nature. That at every turn, there is something new and exciting and that every bend holds a surprise. The Zoo's message, not surprisingly, is a bit more complicated.

Biodiversity hotspots are defined as a severely threatened biogeographic region with abnormally high amounts of endemic species (biodiversityhotspots.org). In short, they are special places that contain many species found nowhere else in the world. Currently, the Zoo's collection represents nine distinct hotspots from five continents (Fig. 2.3). The Zoo aims to show the relationship between the wildlife and the local people to demonstrate the importance and uniqueness of each

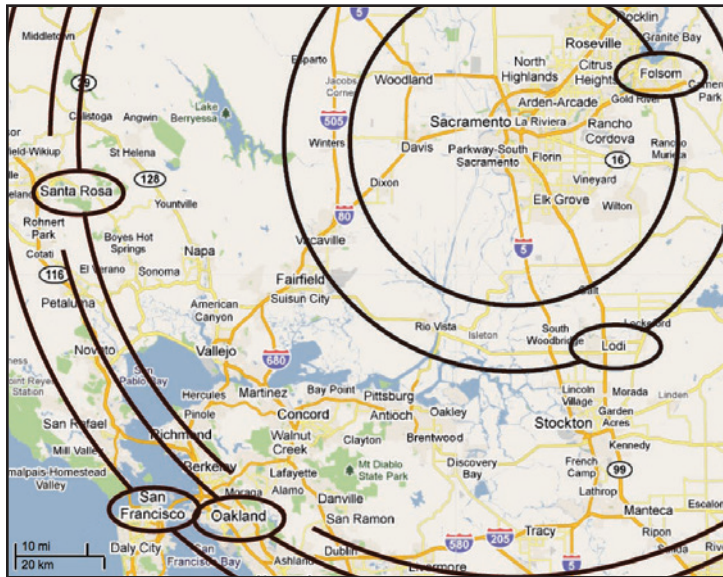


Fig. 2.4: Northern California boasts five zoological parks accessible to the Sacramento Region



Fig. 2.5: Map of William Land Park. The Zoo is located in the bottom left corner.

biodiversity hotspot.

Finally, the overarching goal of the Zoo, like other modern zoos, is to forward the efforts of conservation. The Zoo already participates in numerous programs that range from the local to the global level and has had particular success in breeding certain critically endangered species.

When combined, the identity, message and mission are intended “to inspire appreciation, respect and a connection with wildlife and nature through education, recreation and conservation” (saczoo.org).

### The Zoo’s Surroundings

The Sacramento Zoo is located halfway between San Francisco and Lake Tahoe in Northern California. The closest alternatives are the Folsom Zoo, Micke Grove Zoo, Oakland Zoo, Safari West Animal Park and the San Francisco Zoo (Fig. 2.4). The Zoo sits in the southwestern corner of William Land Park, which is only a few miles south of Downtown Sacramento and just east of the Sacramento River (Fig. 2.5).

The Park features a golf course for adults and family amenities like picnic areas, sports fields and two children’s theme parks, Fairytale

Town and Funderland. The theme parks are located just to the east of the Zoo while an elementary school faces the Zoo's northwestern façade. A railroad-topped levee forms the Zoo's southwestern border and Sutterville Road, a major freeway access route, defines the southern boundary. Except for along the levee, the Zoo is ringed by roads that range from heavily to sparsely trafficked (Fig. 2.6). There are only two significant triangular pieces of parkland that share the Zoo's island.

The first contains a small civil war memorial at the corner of Sutterville Road and Land Park Drive. The second sits on the northern side of the Zoo and also contains a memorial. The latter is significantly larger with open lawns, unused fountains and zigzagging walkways that terminate at the Zoo's fenced property line. The heavy vegetation that normally is found at the Zoo's perimeter is missing here affording the casual passerby a peak inside.

### The Zoo's Experience

To get inside, visitors pass through an interesting complex of structures that form the Zoo's entrance, exit and discovery room (Fig. 2.7). Once past the gate, the visitors have numerous options. Over one

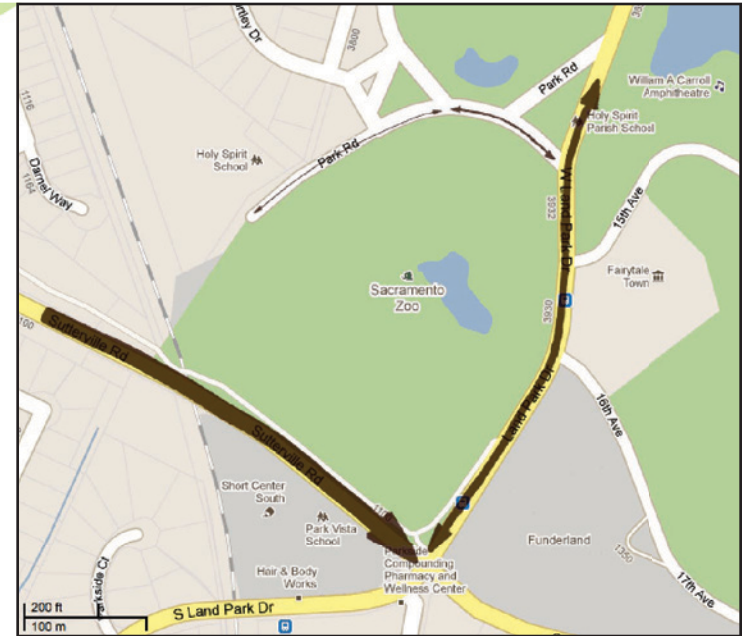


Fig. 2.6: Traffic volumes around the Zoo.



Fig. 2.7: The sweeping hyperbolic paraboloid roof lines of the Zoo's main entrance.

# sacramentoZOO

## MAP LEGEND

<b>Member &amp; Visitor Services</b> Information/Memberhip	<b>Restrooms</b> Wheelchair accessible
<b>First Aid</b>	<b>Drinking Fountain</b>
<b>Concessions</b> Lunch, ice cream, snacks	<b>Talk Box</b> Zoo Keys available at Visitor Services.
<b>Rentals</b> Film, stroller rental, wheelchairs	<b>Cell Phone Safari</b> Call (916) 403-0016 Sponsored by
<b>Train Rides</b>	<b>Conservation Carousel</b>
<b>Information Station</b> Purchase train and carousel tickets.	

## ANIMAL DIRECTORY

<p><b>Primates</b></p> <ul style="list-style-type: none"> <li>Black and white ruffed lemur</li> <li>Chimpanzee</li> <li>Coquerel's sifaka</li> <li>Golden-bellied mangabey</li> <li>Mongoose lemur</li> <li>Ring-tailed lemur</li> <li>Sumatran orangutan</li> <li>White-faced saki</li> <li>White-handed gibbon</li> </ul> <p><b>Felines</b></p> <ul style="list-style-type: none"> <li>African lion</li> <li>Jaguar</li> <li>Margay</li> <li>Snow leopard</li> <li>Sumatran tiger</li> </ul> <p><b>Ungulates</b></p> <ul style="list-style-type: none"> <li>Antelope</li> <li>Bongo</li> <li>Grevy's zebra</li> <li>Red river hog</li> <li>Reticulated giraffe</li> </ul> <p><b>Mammals</b></p> <ul style="list-style-type: none"> <li>African crested porcupine</li> <li>Bennett's wallaby</li> <li>Giant anteater</li> <li>North American river otter</li> <li>Red kangaroo</li> <li>Red panda</li> <li>Spotted hyena</li> <li>Tamandua</li> <li>Two-toed sloth</li> </ul>	<p><b>Reptile House</b></p> <ul style="list-style-type: none"> <li>Snakes</li> <li>Lizards</li> <li>Amphibians</li> <li>Turtles/tortoises</li> </ul> <p><b>Birds</b></p> <ul style="list-style-type: none"> <li>Abyssinian ground hornbill</li> <li>African gray parrot</li> <li>American flamingo</li> <li>Azure-winged magpie</li> <li>Bateleur eagle</li> <li>Black-necked swan</li> <li>Burrowing owl</li> <li>Buton hornbill</li> <li>Common shoveler</li> <li>Emu</li> <li>Fulvous whistling duck</li> <li>Great hornbill</li> <li>Hooded merganser</li> <li>Keel-billed toucan</li> <li>Kookaburra</li> <li>Lady Ross' turaco</li> <li>Northern pintail</li> <li>Ostrich</li> <li>Plain-colored amazon</li> <li>Red-breasted goose</li> <li>Southern crested screamer</li> <li>Tawny frogmouth</li> <li>Thick-billed parrot</li> <li>White-faced whistling duck</li> <li>Wood duck</li> <li>Yellow-billed magpie</li> </ul>
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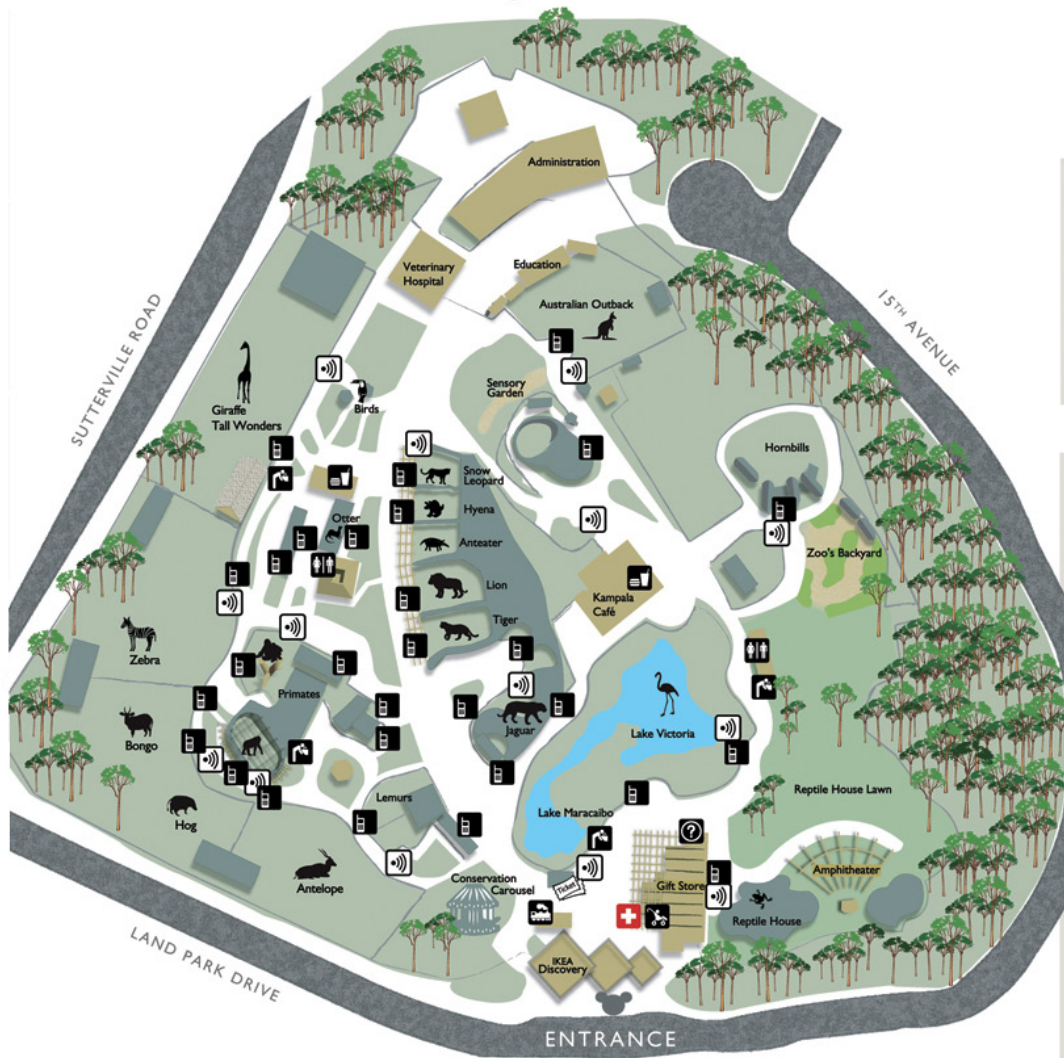


Fig. 2.8: The Sacramento Zoo's visitor map.



hundred animal species are disbursed throughout more than 40 different enclosures (Fig. 2.8). For entertainment, the Zoo offers train rides, carousel rides and educational shows at their amphitheater in addition to the temporary biofacts stations operated by volunteers (Fig. 2.9 and 2.10). Two small cafés and a gift store round out the list of major amenities. The reptile house and veterinary building are the only two specialty buildings accessible to guests. Behind the veterinary building lies the administration complex and staff parking. Although the area is technically accessible, visitors generally stay away since it is fenced off. Instead, visitors tend to stick to the leisurely pathways that wind through the Zoo. A relatively flat terrain and wide walkways provide easy strolling, even for those with small children in tow allowing the typical visitor to cover the entire site in only one to two hours (sac zoo 2008).

The average visitors are either parents with kids under 5 years old or school children on field trips. According to a June 2008 study the Zoo conducted, most of these families are Caucasians with college degrees that made between \$50,000 and \$200,000 per year. It is very likely that they drove themselves to the Zoo instead of taking public transportation, walking, or bicycling.



Fig. 2.9: The zoological carousel is a popular amenity.



Fig. 2.10: A cheerful volunteer manning an education center.

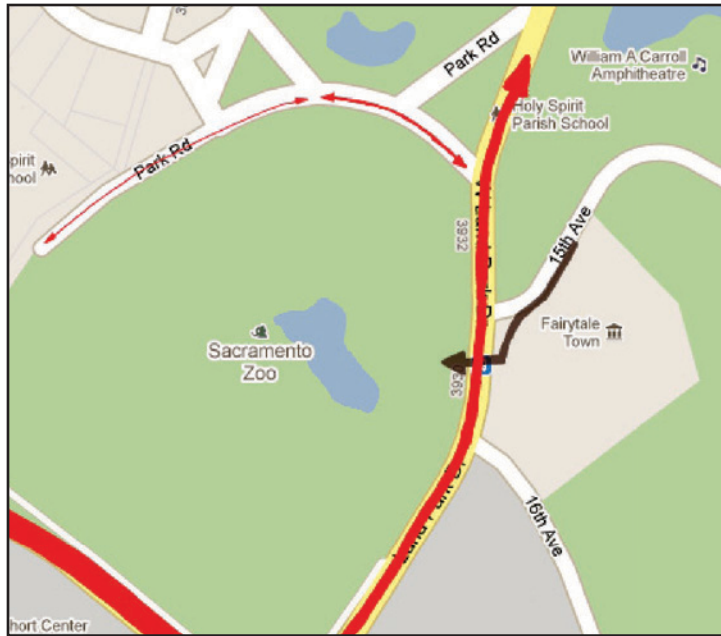


Fig. 2.11: The typical route students take to the Zoo after the school bus drops off.



Fig. 2.12: High demand on major event days can produce very long lines to cross Land Park Drive.

Visitors typically try to park in a small serpentine parking lot directly across Land Park Drive from the Zoo, but two larger traditional lots located to the east of Fairytale Town accommodate those who are unable to find spots. In either case, the visitors must use a signaled pedestrian crosswalk to cross Land Park Drive and get to the Zoo. School children on field trips must also use the crosswalk, but their journey is a bit more involved (Fig. 2.11).

The typical school bus driver temporarily parks in the small serpentine lot to unload. Then, the children walk to the signal crossing where they are greeted by Zoo staffers. After giving an orientation, the staffers help the children cross the street safely and into the Zoo. At the end of the day, the children retrace their steps back to the awaiting bus.

Over the course of a year, at minimum of 55 school buses visit the Zoo and an average of 70,000 children stop by on educational outings (saczoo.org). When considering the Zoo is less than 15 acres, 70,000 educational and 500,000 general admissions is quite impressive and these numbers have room to grow (Fig. 2.12). The Sacramento region's population is expected to increase for decades to come, regardless of economic strife (Fig. 2.13). This will translate to an increased demand

for family friendly excursions like trips to a zoo. The question is, what will the Zoo look like when this new demand appears?

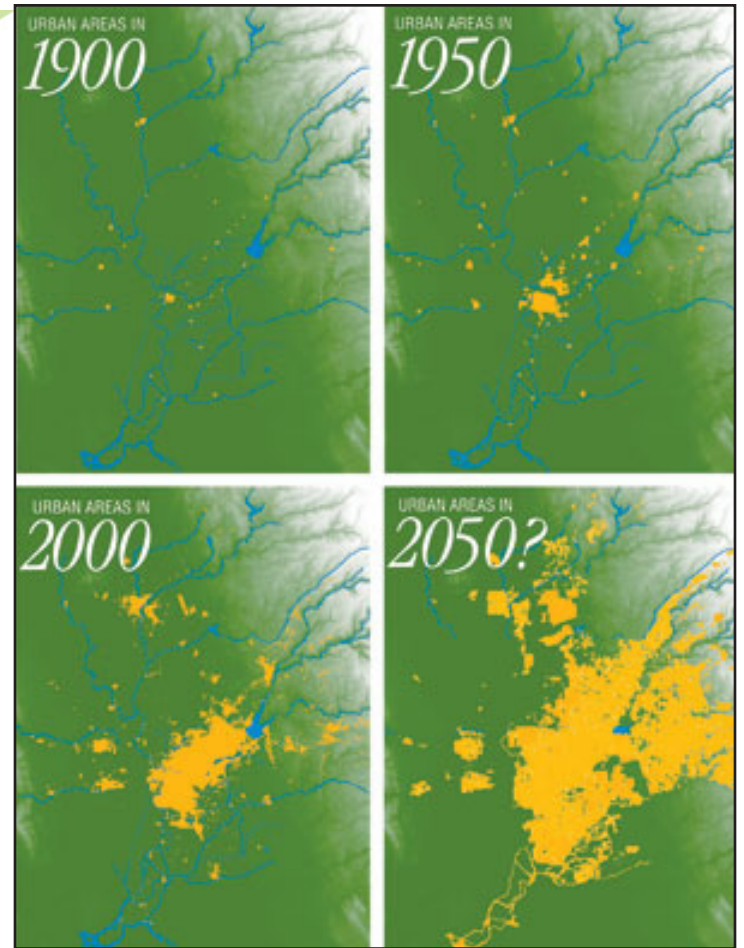


Fig. 2.13: This series of maps shows the past and estimated future growth pattern of the Sacramento region that will produce a large potential economic base for the Zoo.



3-1

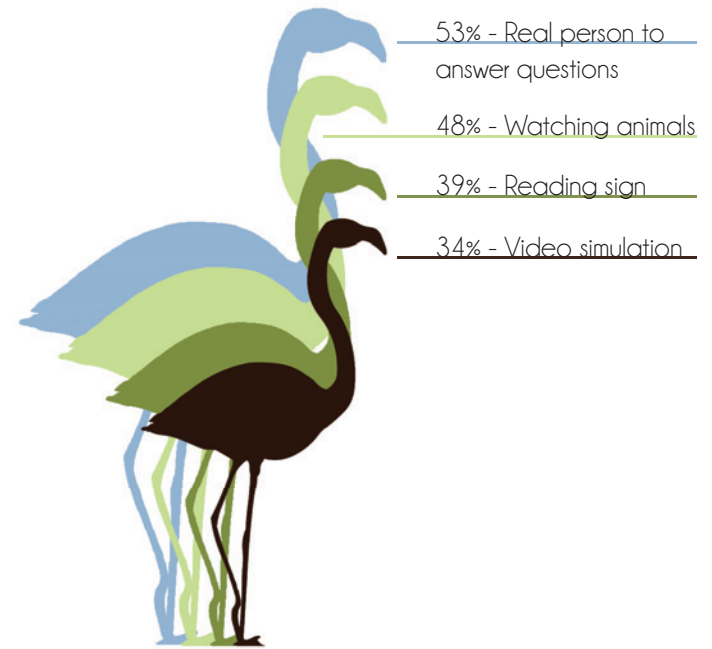
## Analysis

### The Zoo's Assets

The Sacramento Zoo has become an enduring part of the entire region. Sacramento Magazine has awarded the Zoo with the distinguished title of “the best attraction for kids” multiple times and the animals are the main reason. Nicknamed “the city of trees”, Sacramento abounds with flora, but the Zoo houses the city's only exotic fauna. Unique educational opportunities ia a major contributor to the Zoo's success.

In 2009, 17,398 people attended wildlife stage shows and over 28,000 met with Zookeepers at up-close encounters (Annual Report 2009). One reason these shows and encounters are so popular is because they are interactive. Visitors can talk with the keepers and ask them questions. Having someone to talk to is the preferred form of education and the positive Zoo staff and volunteers are happy to oblige (Fig. 3.1). People of all ages delight in moving and experiencing the environment, whether they are riding the small train, playing with simple flip up signs or simply following a path of painted paw prints.

### Preferred Learning Methods



**Fig. 3.1:** According to a 1996 survey, when people were asked to finish the sentence “I would like to learn about the rainforest by...”, they gave the following four replies. These figures correlate to the Zoo's current education methods.



Fig. 3.2: Small graphic details like this pink giraffe are simple and cheap, but they can have a large impact on a visitor's experience.



Fig. 3.3: An attractive sign explaining work at the Zoo.

Zoological art is a different way that guests can experience the Zoo environment. Graphic and sculptural art, either interactive or not, can elicit strong emotional responses. Even small details like a simple pink giraffe can help brighten the visitor's day and enhance their overall experience (Fig. 3.2). Thankfully, the Zoo seems to have noticed this since they have been incorporating bold aesthetic elements into their renovation projects.

Renovation projects are a constant part of accreditation, and the Zoo handles the transitions rather well. By meeting the AZA accreditation requirements, the Zoo helps to ensure the animals' wellbeing. However, continually changing exhibit requirements force the Zoo to continually renovate and areas closed for construction can be disappointing. To aid in the transition, the Zoo produces graphically appealing signs to explain the situation (Fig. 3.3). Even a simple investment on a moderate sign helps the visitors understand the need for the occasional noise. Sensitive and visitor oriented thinking is one of the Zoo's greatest assets.

Perhaps the most important asset of the Sacramento Zoo is its location. The Zoo sits in the heart of a large metropolitan area that

will continue to grow. Even without making alterations, this could translate to increased admissions solely due to the increased demand. The location also places the Zoo in a large vacuum (Fig. 3.4). The two nearest are the Folsom Zoo and Micke Grove Zoo. At only five acres each, both are very small and fulfill the little zoo niche. The next closest are the Oakland Zoo, the Safari West Animal Park and the San Francisco Zoo. While all three of these facilities span more than one hundred acres, the closest is 80 miles by car. This distance and the rising cost of travel combine to make these larger alternatives inaccessible or unreasonable for many Sacramento area residents. Therefore, since the little zoo niche is already filled and the big zoos are too far away, the Sacramento Zoo has the unique opportunity to be the small zoo with a big impact.

By advancing to the world-class level, the Sacramento Zoo could take advantage of a major zoo's draw with a small zoo's footprint. This formula has worked well for the California Academy of Science. Although the new facilities only span about 2 acres of parkland, the innovative design attracts high admission. The Monterrey Bay Aquarium also has a limited footprint, but it uses excellent exhibit design and intimate settings to entice visitor from around the world (Fig. 3.5). If

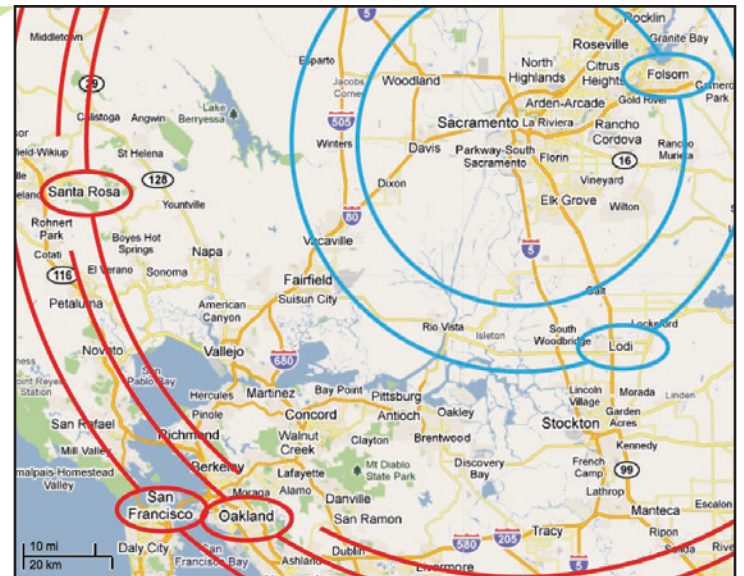



Fig. 3.4: The three major zoos (red) are too far away for the typical Sacramento local to visit while the two closer zoos (blue) are too small to draw large attendance. This could combine with the region's growth to create a large-zoo market that the Sacramento Zoo can fill.



Fig. 3.5: A unique exhibit at the Monterey Bay Aquarium.



the Sacramento Zoo can evolve into a similarly small but innovatively and intimately designed zoo, then it may attract greater crowds. Larger crowds would then translate into increased public education opportunities and more potential support for conservation efforts, which is the Zoo's ultimate goal.



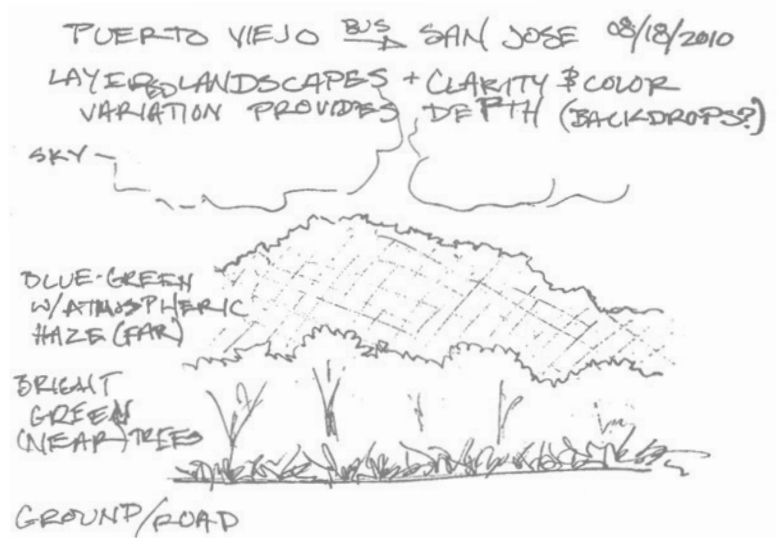
PUERTO VIEJO <sup>BUS</sup> SAN JOSE 08/18/2010  
LAYERED LANDSCAPES + CLARITY & COLOR  
VARIATION PROVIDES DEPTH (BACKDROPS?)

SKY

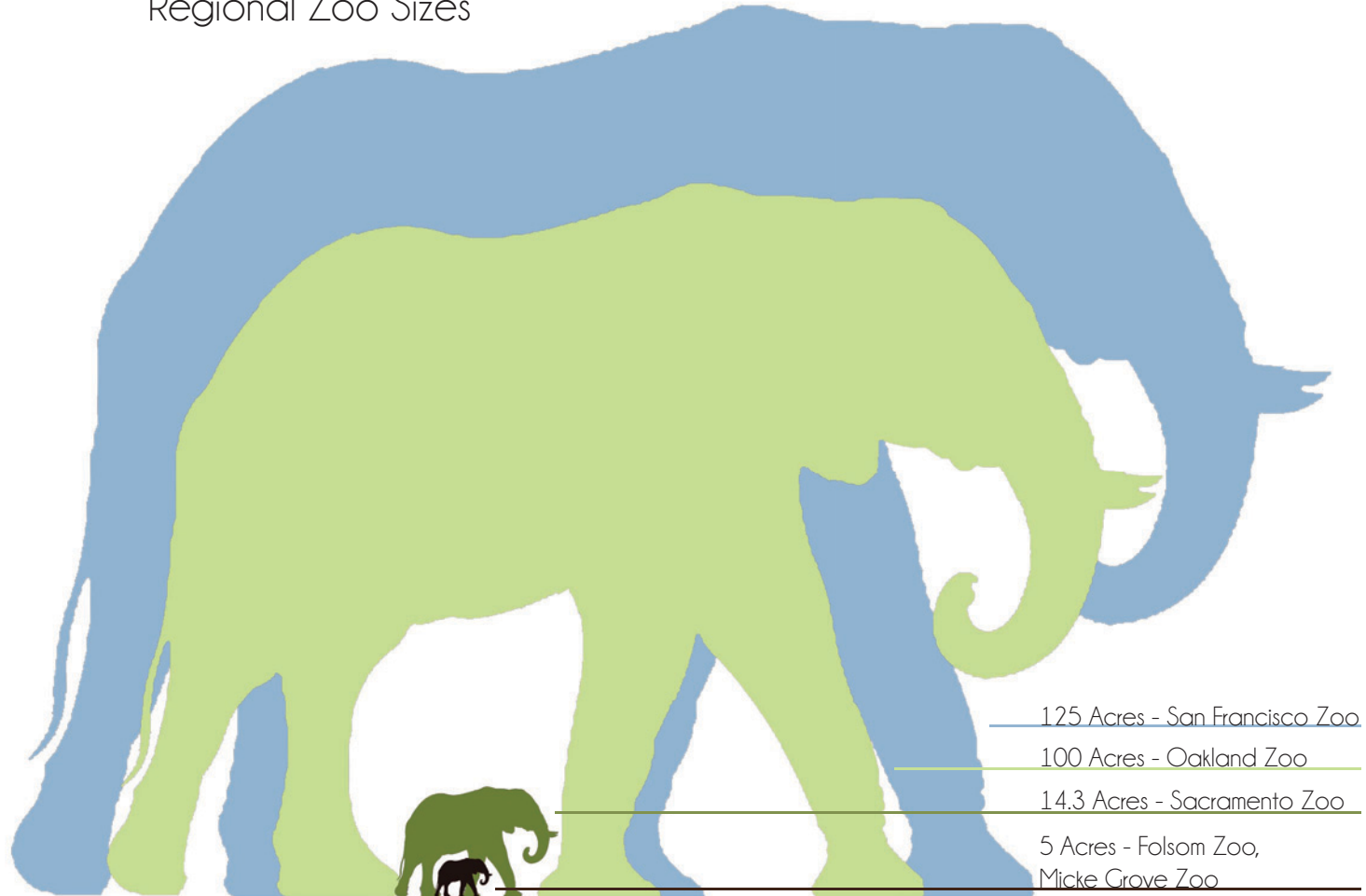
BLUE-GREEN  
w/ATMOSPHERIC  
HAZE (FAR)

BRIGHT  
GREEN  
(NEAR) TREES

GROUND/ROAD



## Regional Zoo Sizes



**Fig. 3.6:** Based on its acreage, the Sacramento Zoo is not in the same league as the San Francisco and Oakland Zoos, but they all share the same spatial issues. In 2011, the Oakland Zoo obtained approval for a controversial expansion into a nearby park in order to build a large, new California-themed zone. Unfortunately, the Sacramento Zoo is unable to follow suit and therefore must find an alternative strategy.

## The Zoo's Issues

Despite its numerous assets and great potential, the Sacramento Zoo, like any institution, has some major obstacles to overcome.

The largest and probably most difficult obstacle the Zoo currently faces is the need for space (Fig. 3.6). While the current location of the Zoo is very beneficial for many reasons, it is also very small and thanks to a 1988 Sacramento City Council ruling, the Zoo cannot expand on site. The space restriction stems from AZA regulations concerning enclosure size. For every species in a zoo, the AZA determines the minimum amount of space needed to properly house the animal. In the past, the space requirements have typically been increasing. In older zoos, these increases can result in animals being housed in exhibits that were once acceptable but are now too small. For example, the Sacramento Zoo used to house elephants, but AZA regulations required larger exhibits, which resulted in the species' relocation. The Zoo could have expanded the existing exhibit, but the amount of extra space needed would have resulted in the removal of too many other species. The exhibit expansion strategy can work in certain situations. In 2009, the Zoo's giraffe exhibit was renovated to absorb an adjacent

## Regional Zoo Prices

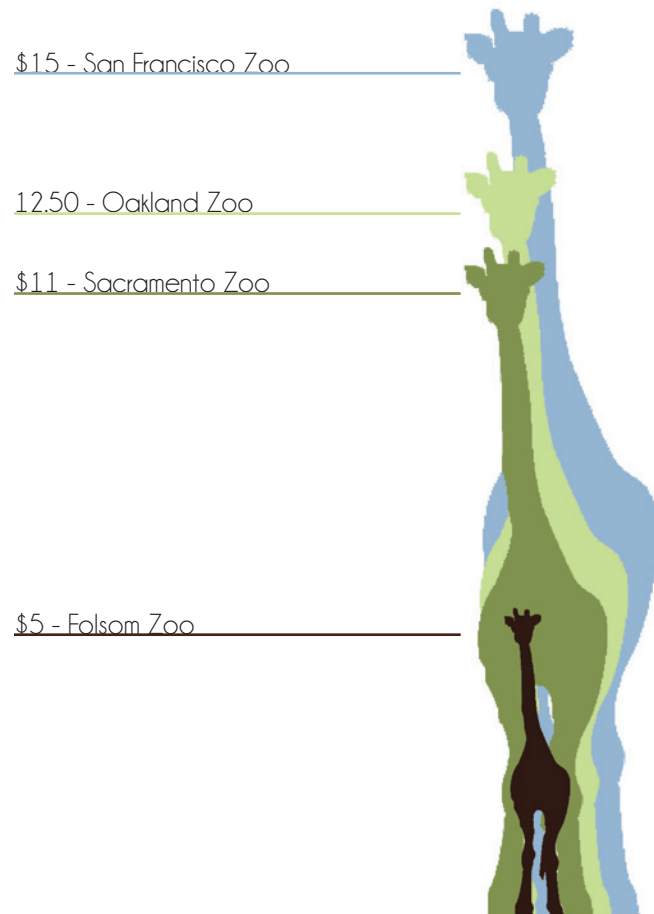


Fig. 3.7: With a high admission price but a small size, the Sacramento Zoo is not the best bargain and will have to find unconventional ways to provide the big zoo impact.

space. The larger space, bigger barn and a new viewing platform were very well received. Unfortunately, this strategy cannot be implemented everywhere since there are too many large species and too little space. The question then becomes, is there a strategy that will allow the Zoo to expand its exhibits without eliminating species?

Not surprisingly, in order to overcome the restricted size issues, the Zoo must also hurdle another obstacle. A large amount of money is required to renovate an enclosure, but the Zoo is already stretched very thin. The basic upkeep of a zoo is very high. In 2009, the Zoo reported that it made \$2,083,949 from admissions (35% of total revenue). However, the \$2,283,693 cost of animal care (33% of total expenditures) easily nullified any gains. Two of the largest contributors to the unbalance are rising costs and relatively flat admission revenue. The current cost of admission is almost equal to large institutions like the San Francisco or Oakland Zoos even though the Sacramento Zoo is only 15% of their size (Fig. 3.7). With such a high price and a low return, it should be no surprise that the average non-member only visits once a year. So, how can the Zoo achieve the impact of a large zoo in order to match its price to entice the one time visitor to come back?

One source of revenue currently unavailable to the Zoo is after hour concessions. Since the Zoo's café's and gift shop are contained within the perimeter fence, they cannot service people who don't pay for admission (Fig. 3.8). This is a major missed opportunity since William Land Park currently lacks a permanent vendor. Is there a way that the Zoo can provide evening services to gain extra income?

One of the few downsides to being located in William Land Park is the isolation from other regional attractions. Downtown Sacramento boasts a historic district, the state capitol, numerous museums and connections to bus and train systems. All of these destinations bring in tourists from across the state, but none of them are connected to the Zoo. So, how can the Zoo tap into this potential source of customers?

The Zoo is also disconnected from its primary visitor parking. This forces visitors to walk across the busy Land Park Drive. A signaled crosswalk and Zoo staffers help mitigate the danger, but even large school groups are not immune to impatient or negligent drivers. At least one red light runner was observed just before a group of young children crossed the road in broad daylight. One solution could be to have the school buses pick up and drop off the classes directly at the front of the



**Fig. 3.8:** The Zoo's perimeter fence currently fully encloses all money-making venues, even the gift shop although it sits on the edge of the property.



Fig. 3.9: The lack of gathering space in front of the Zoo's main sign has compelled this woman to step into the street to snap a group photograph.

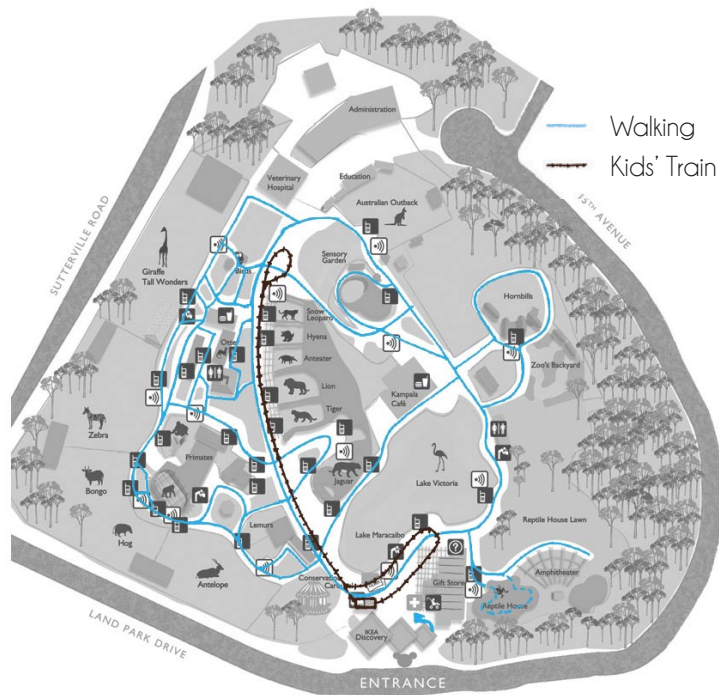


Fig. 3.10: The existing circulation is difficult to follow and can easily cause people to miss entire areas of the Zoo.

Zoo. However, the buses would block traffic along Land Park Drive and there is little room to organize and orient the children at the entrance gate (Fig. 3.9). As it is, the buses are forced to stop traffic in the nearest parking lot and the students have to traverse lines of cars. Since this is a very pressing issue, it must have a realistic solution. Therefore, what can the Zoo do immediately to remove the school children from this risk?

Once visitors enter the Zoo, they are greeted with other, far less dangerous concerns. The first is simply where should they go. From the entrance, visitors have three main paths they can follow. Two are part of a main loop and the third leads to a maze of smaller walkways (Fig. 3.10). The advantage of the maze layout is it allows the visitors to wander and explore. The downside is they are more likely to miss exhibits. Alternatively, a simple loop can be uninteresting and result in a window-shopping effect. Also, the current path system does not translate the biodiversity hotspots message to the visitor. So, is there a clear circulation system that communicates the Zoo's message, reduces the number of missed exhibits and maintains a sense of exploration?

The main reason the circulation system does not shout "biodiversity hotspots" is this was not the Zoo's focus. Prior to choosing

this message, the exhibits were either arranged by the animal's geographic origins, taxonomic grouping or wherever the Zoo had room. As a result, seven of the nine biodiversity hotspots are fractured throughout the 14.3 acres (Fig. 3.11) Fortunately, the Zoo is working on a set of signs that will help convey the message, but the exhibits locations will still confuse the visitor. If the visitors are confused, then there is little chance they will be sympathetic towards conservation efforts. Therefore, how can design help convey the concept of biodiversity hotspots to further the Zoo's conservation mission?

Like the message and mission, the Zoo's identity is not coming across as intended. The Zoo's motto is "wildly inspiring", but it maintains the original "little zoo in the park" feeling. The Zoo design is still quaint and reserved. To make an impact, it should be bold, daring and unique. At the moment, the roofs of the Zoo's entry structures are the only truly expressive elements. If the Zoo wants to be inspiring, then it must begin with innovative and unique designs. So, where and how should the Zoo integrate such design?

With all of the issues the Sacramento Zoo must grapple with, solving them will be difficult. The last master plan the Zoo had was

Disconnected Biodiversity Hotspots

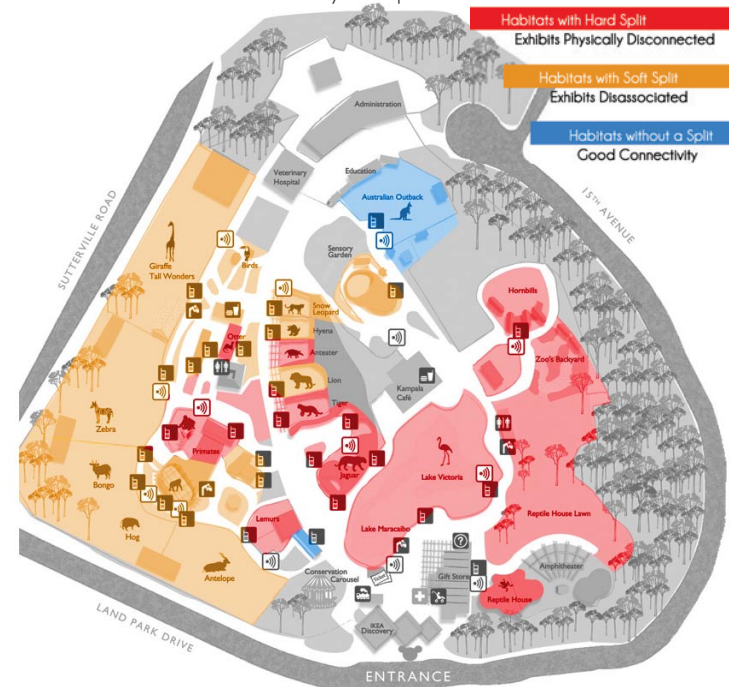


Fig. 3.11: Of the nine biodiversity hotspots showcased by the Zoo, only two are whole and congruent. The others have either a hard or soft split. Hotspots with hard splits have significant physical separations. Soft split hotspots are in the geographic location, but they are disassociated. For example, the two primary Himalayan hotspot enclosures are in the same area, but they point in opposite directions on opposite sides of a wide path, effectively turning their backs on one another. This map shows that most of the Zoo's habitats are affected by some type of split.

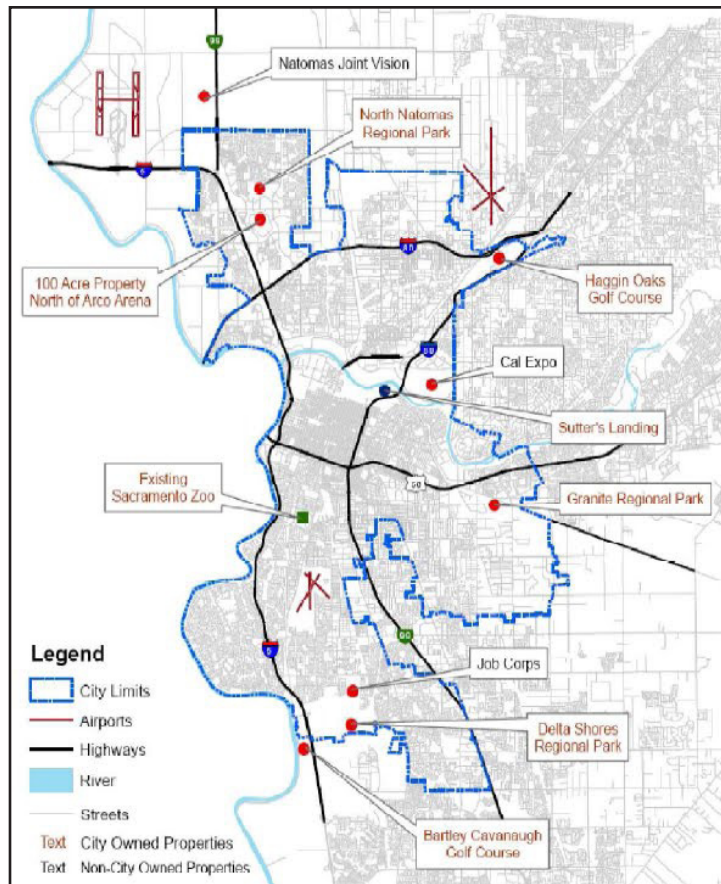



Fig. 3.12: When the search began for a new home, the Zoo found ten potential sites. The Sutter's Landing park, central blue dot, was chosen for the two-year feasibility study.

completed in 2003 but it has since been abandoned. This means the Zoo needs a new plan to help guide it into the future. Unfortunately, the Zoo did not even know if it would be staying in the same location until recently. The Zoo began looking at potential new homes to address the space issues it faces associated with its accreditation (3.12). Last fall, a two-year feasibility study was completed of one site and the results were not promising. The extremely high cost of building from scratch coupled with the opposition of the potential neighbors meant the Zoo is staying put. The primary benefits of the study were that it showed the City Council and William Land Park neighborhood how dire the situation is and reopened dialog about potential solutions. However, since the Zoo is committed to its current site for at least twenty years, it finds itself in a peculiar dilemma.

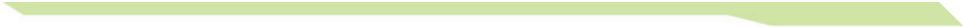
The need to make space without the finances to relocate or the ability to expand on site will require the Sacramento Zoo to make some difficult decisions. The obvious and unacceptable option is to simply close after its commitment expires. One alternative is to relocate the larger animals that require bigger enclosures. However, it is unclear how the public will react if the Zoo only houses smaller species. If the Zoo keeps the larger species, then it will be required to remove





numerous smaller ones to accommodate the bigger exhibits. Once again, it is uncertain how only having a few attractions will affect attendance. The best option would be to implement a strategy that allows the Zoo to remain on site, within its current boundaries, and not require the permanent removal of any species. Does such an option exist?

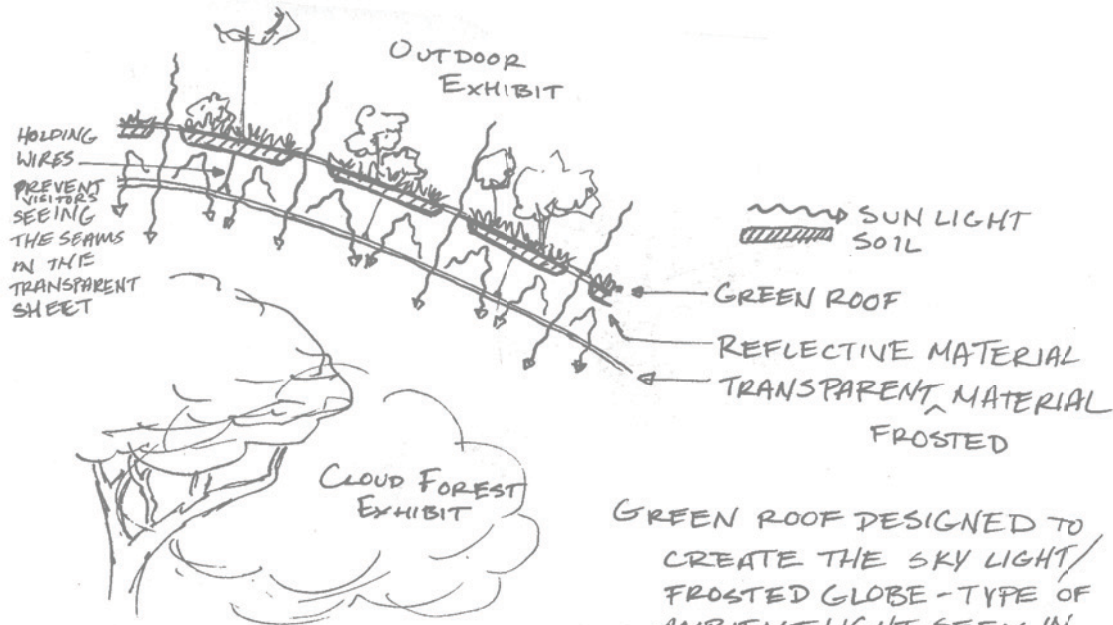
So, in short, the big question is how can a small urban zoo with economic woes, accreditation limitations, circulation issues, an uncommunicative purpose and an uncertain future transform into a unique, innovative and economically viable zoo with a well-defined and palpable message, mission and identity without the acquisition of new property?



## Design

### The Designer's Goals

Like many things in life, there are no simple answers to the problems the Zoo is facing. To address them all, a group of design strategies and concepts were developed. The strategies are guidelines and not specific to any particular location. The design concepts, on the other hand, are physical elements with specific locations. When combined, the strategies and concepts produce a long-term master plan to transform the Sacramento Zoo from the “little zoo in the park” into a world-class destination.



GREEN ROOF DESIGNED TO CREATE THE SKY LIGHT/ FROSTED GLOBE - TYPE OF AMBIENT LIGHT SEEN IN THE MONTEVERDE, COSTARICA CLOUD FOREST PARK.

## The Designer's Concepts

### New Double-Decker Exhibits

By far the most ambitious idea proposed, the double-decker exhibit concept could also have the largest impact. The concept is relatively simple and it has been successfully implemented throughout the world, but according to this project's research, it has yet to enter the zoo realm (Fig. 4.1). Essentially, the idea is to create an intensive green roof that will effectively double or more the usable space wherever it is implemented without expanding the site.

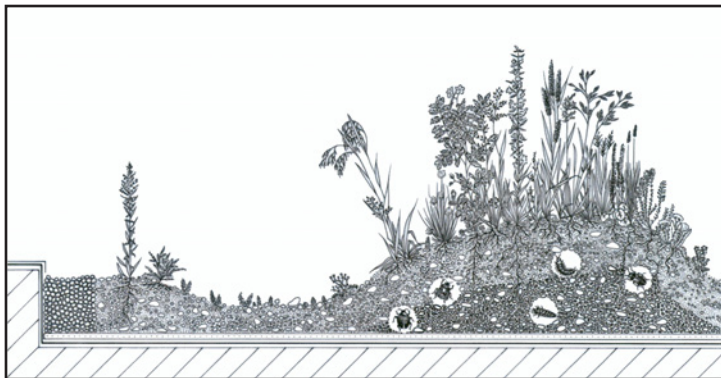
The stereotypical green roof, known as an extensive green roof, is only about 6 inches thick or less and primarily supports tough, drought-resistant and low growing plants (Snodgrass 2010). An intensive green roof, however, is thick enough to support trees and other large vegetation. In general, the thicker the roof, the larger vegetation and wider the selection. The drawback of having more soil is the weight. To compensate, intensive roofs need to be much stronger than their little brothers. On the other hand, this also means that intensive green roofs are typically strong enough to hold people (Fig. 4.2). Already, these



**Fig. 4.1:** This entire landscape, complete with trees, walls and walkways is actually an intensive green roof. The design allowed the Grove Park Inn Resort and Spa in Asheville, NC to develop the center of its U-shaped complex, increase its usable space and draw in the area's natural beauty.



**Fig. 4.2:** This entire urban plaza, complete with mature trees and institutional art, is actually a large green roof designed to carry heavy loads.



**Fig. 4.3:** Unlike traditional roofs, green roofs provide habitat for plants and invertebrates that can benefit the ecology of the region.

roofs are in use throughout the world, which is benefiting from their high sustainability.

Both types of green roofs are far more sustainable than a traditional tile, gravel, tar or painted roof. Numerous studies have documented that they can reduce energy costs and the heat island effect while others speak of the ecological benefits, from microscopic to regional (Fig. 4.3) (Snodgrass 2010). Green roofs are also well known for their rainwater collection, reuse and conservation capabilities. After a rainstorm, the vegetation will reduce the amount of runoff by soaking up some of the water. Also, just like a leaky bucket, the soil on green roofs slowly releases the absorbed water over time (Miller 2008). This can help prevent storm water systems from becoming overtaxed during heavy rains. With a thicker roof, all of these benefits are increased.

The green roof can also serve as an educational tool. The Woodland Park Zoo in Seattle recently completed the construction of a Humboldt penguin exhibit that incorporates numerous ecologically beneficial strategies (Fig. 4.4). In all, the system implements and educates about rainwater collection, infiltration, biofiltration, and geothermal temperature regulation. More and more, zoos

are incorporating such educational and sustainable features. The Sacramento Zoo should be part of this “lead by example” approach.

A perk of integrating such sustainable features into the Zoo could be the acquisition of tax benefits and grant funding. With two progressive major universities within a twenty-mile radius, the Zoo is in a prime location to partner with professors to access potential grant money. Subjects like sustainability, green technology, urban ecology, soil science, horticulture, conservation, animal behavior, engineering, psychology, and many others may be able to utilize an urban intensive green roof as a study site. Providing a significant contribution to science could increase the Zoo’s impact on the world.

The double-decker exhibit design would also have a large impact on the visitor as well. By pioneering this form of exhibit, the Sacramento Zoo could become a leader in innovative design. This design has the potential to become the Zoo’s new trademark feature similar to the California Academy of Sciences’ new roof (Fig. 4.5). As a promotional and educational tool, the roof itself may attract funding and new far-flung visitors.

The height gained by the design could elevate the animals high

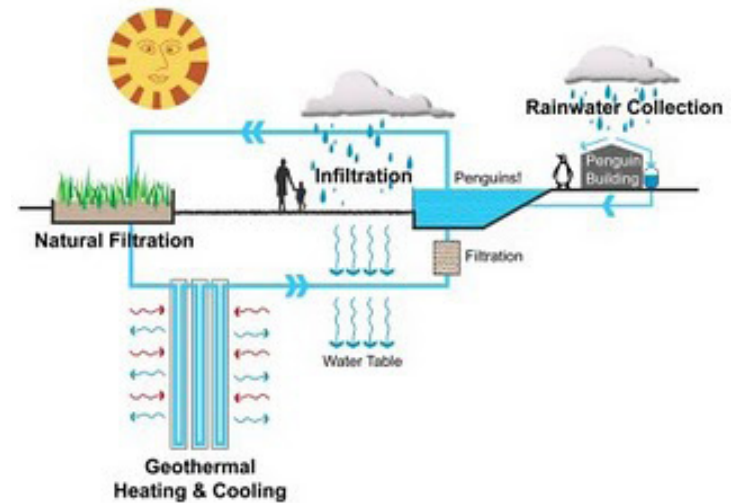


Fig. 4.4: When designing the Woodland Park Zoo’s Humboldt Penguin exhibit, the firm Studio Hanson Roberts was able to integrate numerous sustainable features in an aesthetic and educational way.



Fig. 4.5: This simple conceptual sketch of an undulating green roof was the vision behind the recreation of the California Academy of Science’s entire new complex.



**Fig. 4.6:** Giraffes are the only animals currently visible over the Zoo's fences and although brief, these sneak peeks can incite excitement. Similarly, the various sounds of the Zoo can heighten a visitor's anticipation. Fleeting sights and sounds can act as teasers that advertise the Zoo and attract potential customers.



**Fig. 4.7:** By designing unconventional exhibit layouts, new and exciting animal-visitor interactions can be produced.

enough that they would double as a promotion to outside visitors. Wild animals are a magnet to people. As Hancocks put it, people have a natural desire to get close to animals (1996). By allowing people glimpses, the Zoo will remind potential visitors of its existence, location and provide a kind of teaser of what is to come (Fig. 4.6). Merely allowing people a peek at the Zoo as they walk or drive by acts as free advertising and cultivates their curiosity.

Undulating the current flat topography is another way the double-decker design would increasing the visitor's interest. Rather than constantly looking at eye level, some exhibits could be placed on the green roof so the animals peer down on the people (Fig. 4.7). In addition to providing a new, curious way of observing the animals, but it would put some of the animals in a more appropriate context. For example, most lemurs are arboreal, but because their exhibits at the Zoo are only about twenty feet high, they are forced to stay relatively close to the ground. If their exhibit was raised only ten feet, then they could truly be in the trees. Likewise, snow leopards live in the rough, steep mountains of the Himalayas but their enclosure is mostly at eye level and it is relatively shallow. A double-decker exhibit would enable the Zoo to build a tall and steep mountainside exhibit that would greatly



increase the animal's space without increasing the footprint of the enclosure (Fig. 4.8). This is not all that could be done by dramatically sculpting the topography.

Creating berms and hills enables exhibit designers to effectively hide exhibit barriers and "borrow" landscapes. If a moat or a sunken wall called a ha-ha is placed between two exhibits and perpendicular to the visitor's view, then the two exhibits can effectively look like one (Fig. 4.9). When designed properly, lions, giraffes and zebras can all seem to peacefully coexist.

Similarly, a green roof can trick the eye into hiding a building. If the roof smoothly and naturalistically flows from the bottom of the structure to the top, then visitors may not even know the building exists. In Davis, California, a local architect will periodically find guests on his intensive roof because they did not realize that the small hill they were climbing was actually the side of a house. On a larger scale, the Zoo could hide a four-story building in a double-decker exhibit without the guests or neighbors being able to see it as long as the façade blends with the surrounding exhibits (Fig. 4.10 and 4.11).

Specialty exhibits can also benefit from the camouflaging power

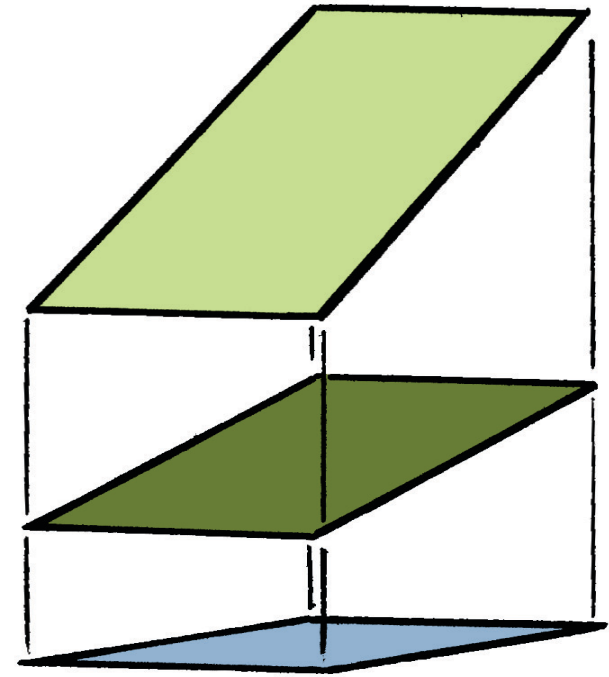


Fig. 4.8: Increasing the steepness of an exhibit can increase the usable surface without increasing the actual footprint.



Fig. 4.9: Careful design can create the illusion of a seemingly borderless exhibits.

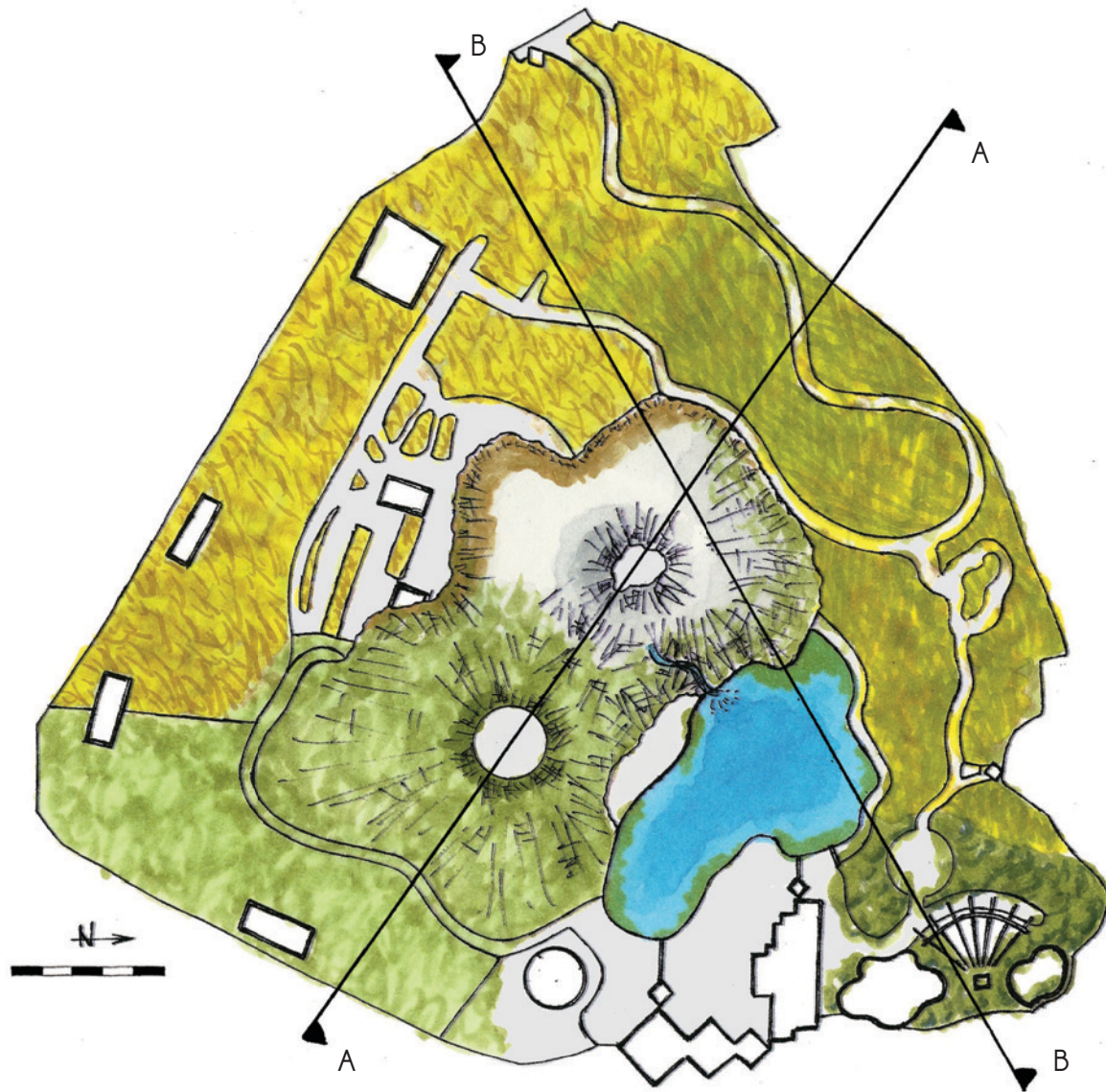
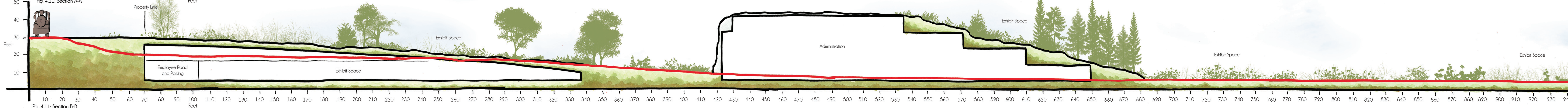
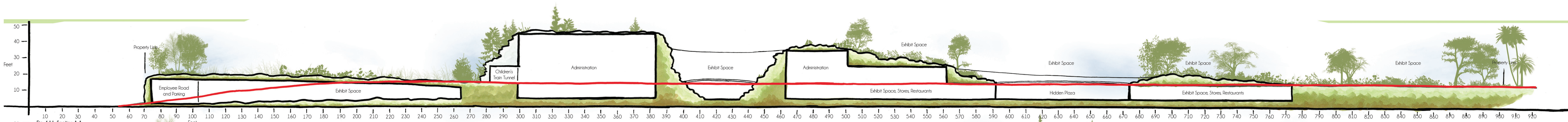


Fig. 4.10: Proposed Master Plan



As wild as it sounds, the width and topography of the site can conceivably combine with the double decker design to conceal a four-story building. By pushing the building down in places and drawing the soil up in others, the entire structure can be covered with impressive and unique exhibits and habitats.

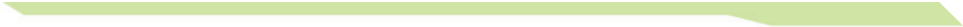
Just like a bead becomes a pearl, the building. The complex, if properly designed, can be coated with a combination of intensive green roofs, vegetated exhibits and false façades to mimic a small hill or butte.

Such a complex could effectively double the Zoo's usable space. The proposed master plan calls for implementing this strategy in about a third of the current Zoo's footprint. Considering that half of the implemented area would be two or more stories high, then the actual amount of added space is much larger than only thirty-three percent.

The Zoo has considered building multi-story structures in the past but they have met opposition from the local community. Therefore, the double decker exhibits were placed relatively deep in the site to reduce their size and visual impact when viewed from the main streets or entrance. The sloping green roofs also help to camouflage the building's size.

In addition to extra administration space, the complex could accommodate specialized exhibit spaces as well as income generating stores and restaurants in a unique setting. An attractive butte would also provide a nice change of scenery in a region known for its flat topography.

Granted, such a structure would be economically and structurally demanding, but the long-term benefits could far outweigh the costs.



of the design. Nocturnal animals are notorious for being uncooperative exhibitions. Their very nature drives them to be inactive and hide during the day. However, the double-decker concept provides a lower environment that can be heavily controlled. The Zoo could effectively reverse the sleep schedule of its nocturnal animals or reproduce the hot and muggy conditions of a tropical rainforest complete with living tropical plants. Either would provide visitors with a unique and memorable experience.

Finally, the double-decker concept would allow the Zoo to safely connect directly to the California State Railroad Museum's excursion train and therefore to the regional attractions located in Downtown Sacramento (4.12). Currently, the railroad tracks sit far too high on a levee to allow visitors to access the Zoo. The last plan involved having visitors disembark onto the tracks, follow the rails for about a hundred feet to Sutterville Road, walk along the busy road for a few more hundred feet and enter the Zoo across a bridge that would bisect the giraffe exhibit as it connects the sidewalk to the existing observation platform. A double-decker exhibit would instead raise the ground level to the height of the levee allowing the visitors to exit directly from the train onto a platform where they are welcomed by a picturesque

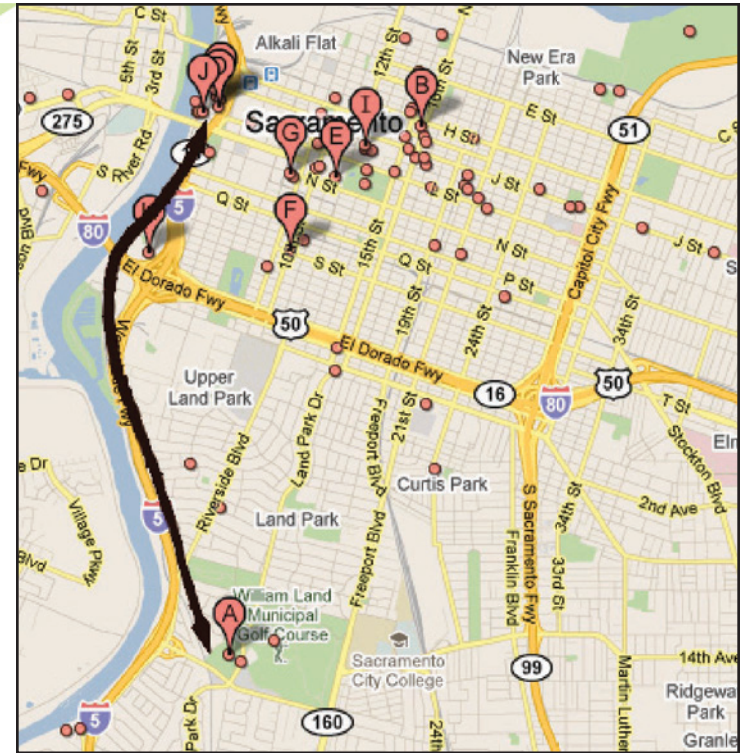


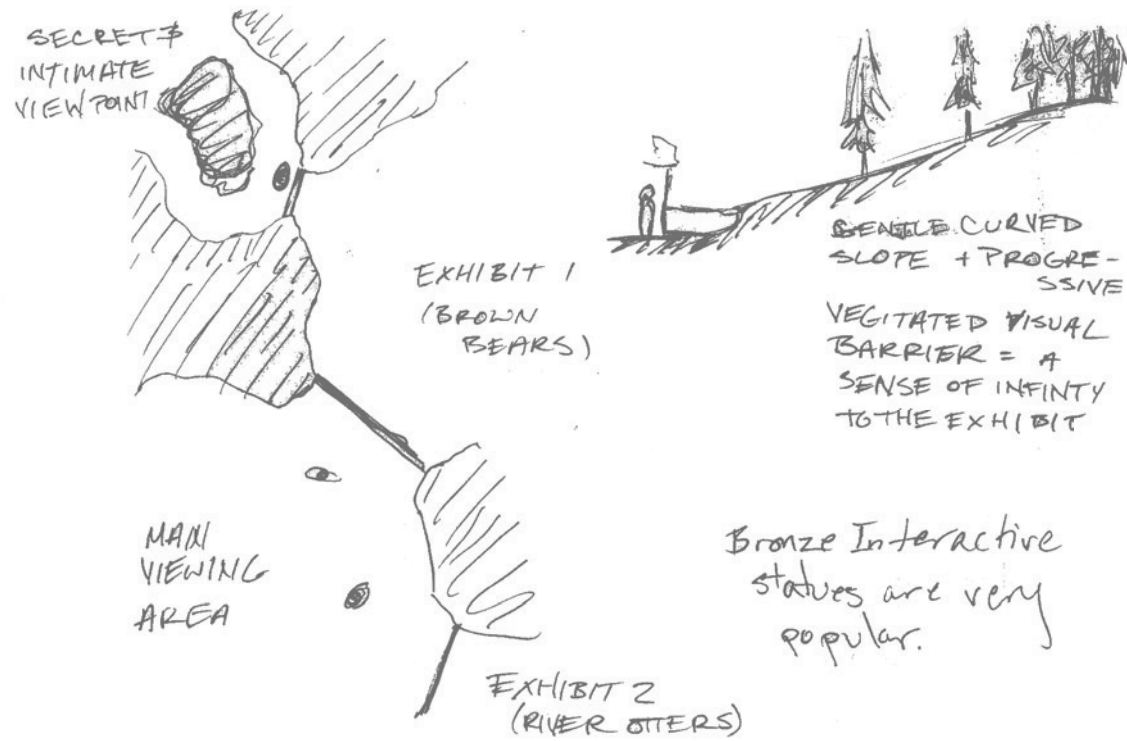
Fig. 4.12: Opening a connection to Old Town and Downtown Sacramento would make the Zoo accessible to a larger regional tourist market. In this map generated by Google, each red dot has been identified as an attraction for potential visitors.



**Fig. 4.13:** It would be much more beneficial for all parties if visitors took a short and secure entry route (blue) into the Zoo from the excursion train rather than a long side trip around a less attractive portion of the Zoo's exterior and along a busy road (red path).

lookout over the Zoo (4.13). Since families with small children tend to fill the excursion train, a short, safe and contained route is far more preferential to a long, complicated and potentially dangerous trip. Not to mention the fact that the giraffe's would have to give up part of their new exhibit. An added benefit of being able to contain the visitors as they transfer from the Museum to the Zoo and back again is this prevents the potential abuse of using the excursion train as a means of transportation between Old Town and southern Sacramento.

While the reality of the concept is likely to be complex and expensive in the short term, the long-term benefits will outweigh the costs. The double-decker exhibit concept has the potential to reduce energy costs, the heat island effect, water runoff and the visual impact of structures while providing ecological benefits, educational opportunities, tax benefits, grant funding, free advertising, visual interest, trademark features, specialty environments, an iconic vista and a connection to Downtown Sacramento without requiring the Zoo to expand an inch into the park.







## New School Children's Side Entrance

The new side entrance for school groups is as practical as the double-decker concept is fantastic. On the northern border of the Zoo lies a little used triangular space (Fig.14). Currently, the site's most frequent users are vagrants and young adults or teenagers looking for a quiet place to smoke. This is likely due to the very pleasurable surroundings and low amount of foot traffic in the area. The space is composed of diamond-shaped lawns with a runnel running down the middle and mildly sloping pathways crisscrossing their way to a monument at the apex of the triangle. Just behind the monument's open space stand the Zoo's northern fence (Fig. 15). Beautiful and fragrant ornamental vegetation surrounds the entire area. At the base of the triangle lies Park Road, a wide low-traffic street.

Safety is the primary argument for placing an entrance gate behind the statue. Currently, school buses park in the middle of a narrow serpentine parking lot to drop off their students. The large groups of children must then walk through a parking lot to awaiting staff members for an orientation in an open portion of the Park. Then, they must be herded across the busy Land Park Drive and hope there are no red light



Fig. 4.14: This beautiful but underused space is perfect for transforming into a side entrance.



Fig. 4.15: The perimeter fence is so open here that there are no visual barriers into this section of the Zoo.



- ➔ Proposed Route
- ➔ Existing Route
- ➔ Traffic

**Fig. 4.16:** The proposed side entrance would provide a direct, safe and controlled entry route. The children would stay completely separated from vehicular traffic during their entire field trip.

runners before they get to the Zoo’s front gate. With this alternative design, a bus could drop the students off less than 150 feet from the gate. The children would not have to cross any parking lots or busy roads, only two grassy areas (Fig. 4.16). The shape of the site would act as a funnel, guiding the children into the entrance, thus requiring fewer Zoo staff members to help the parents and teachers. The new gate location would also fit nicely with a development plan that the Zoo is currently hoping to find funding to complete.

In the existing plan, a new small amphitheater sits very close to the fence with its back to the monument. A simple gatehouse could be attached to the amphitheater with minimal changes to the existing plan (Fig. 4.17). This would enable Zoo staff to immediately admit the children and sit them down at the amphitheater for orientation, an educational show and a group photograph without having to worry about a child wandering off alone in the park or being abducted. After their visit, students could then sit in on the lawns just outside the Zoo eating their lunches and enjoying the beautiful view while they wait for the bus (Fig. 4.18).

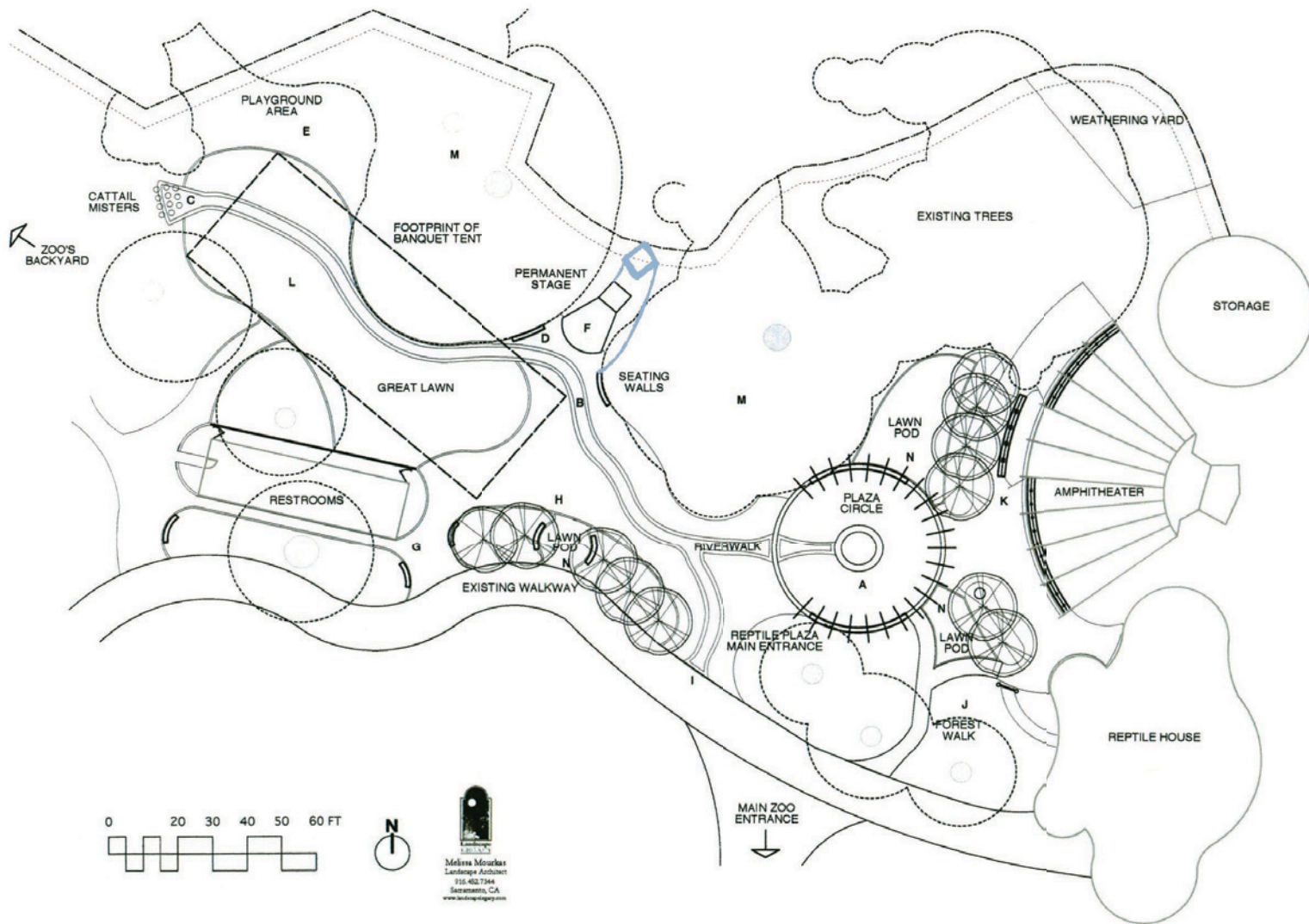


Fig. 4.17: A small side entrance (blue) can easily be integrated into this proposed development plan.



Fig. 4.18: Student's having lunch and relaxing in safety while they wait for their bus.



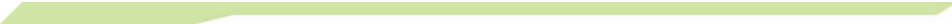


**Fig. 4.20:** By replacing only two existing steps with an ADA compliant ramp and performing some simple regrading, the entire area becomes accessible to everyone.

receive funding if they include a side entrance for the safety of young school children and to create additional access for emergency services, the plans are much more likely to receive funding. It is difficult to think that such a simple solution for such a great benefit could be denied especially since the Zoo will not need to expand at all. However, every development has a cost.

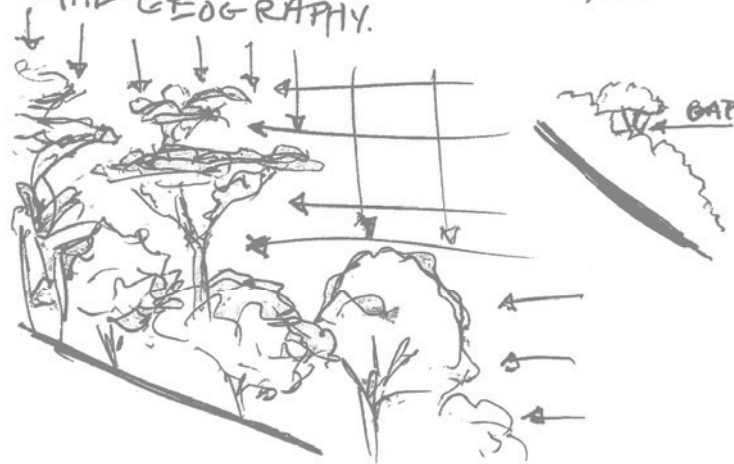
There are only two downsides to this idea. The first is that the street is used by parents to access the nearby elementary school in the early morning and afternoon. Thankfully, the traffic is usually minimal during the times that the school buses drop off and pick up their students. Also, the traffic on Land Park Road is almost always worse than that on Park Drive. The other drawback is that the existing pathways would require some mild regrading and a wheelchair ramp would have to be created (Fig. 4.20). As it is, the site is not compliant with the Americans with Disabilities Act (ADA), which means the monument, the lawns and the beautiful gardens are already inaccessible. This simple improvement would open the area to everyone.

For a relatively small investment, the concept of adding a side entrance for school children has a major return. By mildly regrading



the existing pathways and installing a wheelchair ramp, school bus drivers could safely drop off their students at the foot of the Zoo. The children would then easily file into the Zoo's new entrance where they are immediately welcomed at the new amphitheater. After their visit, the children could relax, eat lunch and enjoy the atmosphere on the grass in front of the entrance as they wait for their ride. The high number of observers in the area would also dissuade questionable behavior in the area. In case of emergency, all visitors would have an alternative exit to the main or employee entrances. Finally, the concept can be easily integrated into existing development plans and perhaps help generate funding for both projects. All of these benefits could be obtained without expanding the Zoo an inch in any direction.

THE RAINFOREST MAY BE VERTICALLY  
IMPENETRABLE TO LIGHT, BUT  
HORIZONTAL GAPS CAN FORM FROM A  
COMBO OF TREE SPECIES &/OR  
THE GEOGRAPHY.





## New Central Complex

Thanks to the ambitious double-decker design, a whole new world of possibilities opens up for the layout of the Sacramento Zoo. The Zoo currently lacks a definitive center. Visitors seem to congregate the most in the large paved space at the main entrance but the heart of the Zoo should not be at the entrance (Fig. 4.21). Visitors should be drawn into the site's interior and toward the animals rather than spend their time next to the exit as if they were perpetually ready to leave. To do this, the proposed design creates a bold new central complex in the very heart of the Zoo.

The new complex sits about equidistant from the main entrance, the side entrance and the excursion train connection, replacing some of the oldest and most poorly designed exhibits in the Zoo. Thanks to the capabilities of the double-decker design concept, the complex becomes the new core of the Zoo. Designed as a small butte, the structure houses a hidden four-story administration building, facilities spaces, unique animal enclosures, and money-generating shops, restaurants and cafés. To coincide with the new arrangement of habitat types and biodiversity hotspots, the complex is broken up into four habitat zones. The complex



**Fig. 4.21:** Currently, the main congregation area is right next to the entrance and thus away from all of the exhibits. This location is good for non-paying customers, but there should be a second further in the zoo for those enjoying their visit among the animals.



Fig. 4.22: The four façades of the butte coincide with the facing habitat.

begins as a densely vegetated tropical rainforest at the existing grade level, but the green roof smoothly rises into a hilly area reminiscent of the topography of Central and South America. As the green roof rises, the vegetation gives way to larger rocky buttes before culminating in a three-story Himalayan peak. The northern façade of the rocky butte is patterned after the Ethiopian Highlands to coincide with the Horn of African exhibits while the northern face mimics the Sierra Nevada to complement the California floristic province (Fig. 4.22).

The layout also correlates with a new circulation route to improve how the visitors experience the Zoo. A small study was organized to ascertain what parts of the Zoo people tended to miss. A group of college design students were allowed only 33 minutes to run around all 14.3-acres of the Zoo and take photos of elements they liked. Limiting the time forced the students to make quick decisions about what to photograph and where to go. After the activity, they were given maps and asked to circle the locations they missed. Out of the maps returned, over half missed the entire big cat row (Fig. 4.23). It is surprising that the exhibits along the largest path and in the geographic center of the Zoo were overlooked the most. This is a clear indicator that the visitors need more direction.

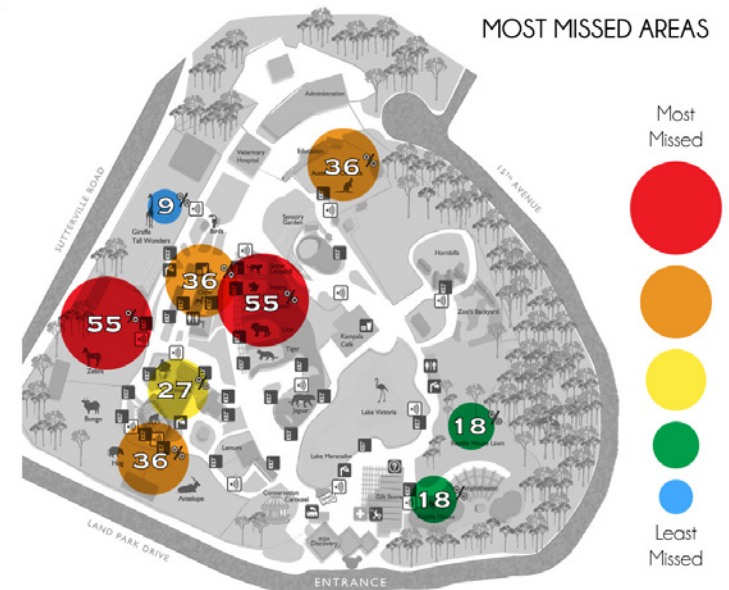
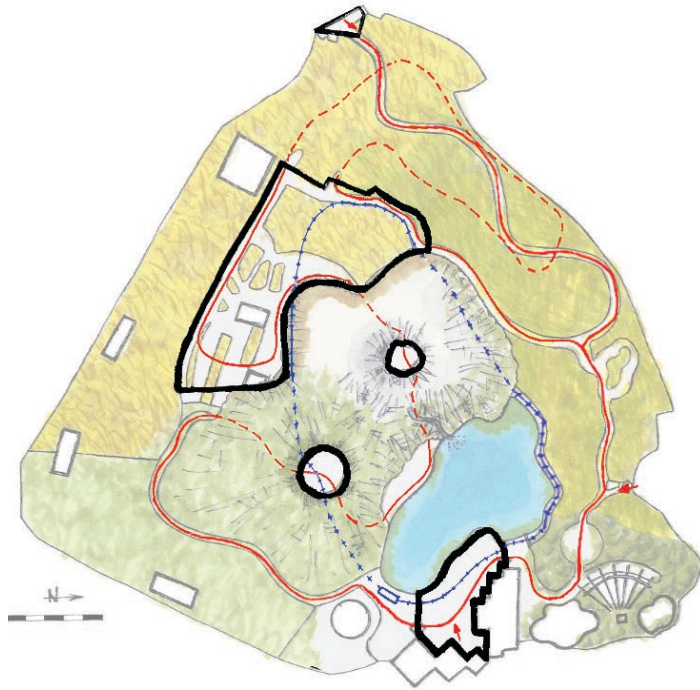


Fig. 4.23: A survey of participating college students found that the most missed areas were in the maze-like portion of the Zoo or were along the largest path but had small enclosure fronts.



**Fig. 4.24:** To reduce the number of missed exhibits, the proposed design includes a single major loop (red) that winds through the exhibits and under the structures (dashed). The design also creates a new loop for the children's train ride (blue). Finally, it preserves some maze-like free movement areas for diversity and to maintain event space (black).

One benefit of having a small area is that it can be easier to guide people. This plan proposes that the Zoo transition between a network of main and maze-like pathways to a single primary route (Fig. 4.24). By limiting visitors to a common route, the story of the Zoo's habitats and biodiversity hotspots can be translated more efficiently than if shortcuts allowed visitors to bounce around randomly. This does not mean that all the guests will be limited to a single, unchanging path. That could lead to bored visitors that feel like herded cattle. Instead, it means that the Zoo defines small and medium pathways that follow a general overarching route. To further incorporate the freedom of choosing their own way, several free movement spaces securely within the Zoo have been created or preserved. These open area also provide prime event space and host occasions unique to this central complex's design.

The tall broad and relatively flat face of the highest peak can serve as a large projection screen for evening movies in the Zoo (Fig. 4.25). The sustainable no-mow but traffic-tolerant lawn extending from the foot of the three-story peak would provide an ideal location for blankets, chairs and temporary vending booths. Special events, summer camp movies and even professional presentations could use the rock face to ensure a unique and memorable experience. Even a simple walk



Fig. 4.25: Movies in the Zoo could provide extra after hours revenue as well as catering to families that may not be able to visit in the day but would like to come in the evenings.

Porous Rock Face    Building Wall

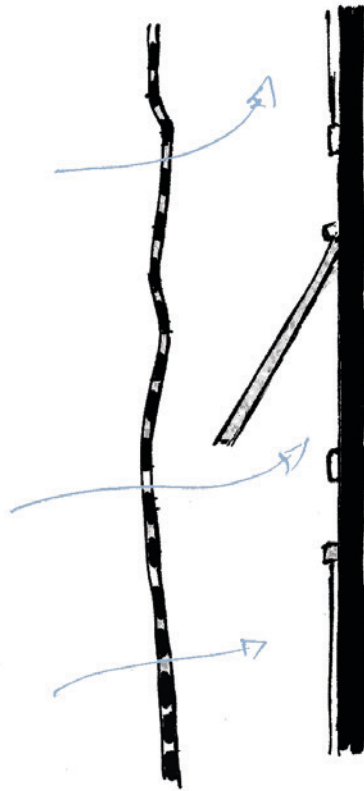
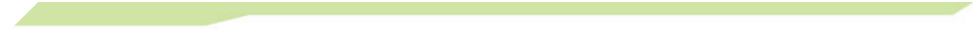


Fig. 4.26: With the proper engineering, the false rock faces can be composed of a porous material that allows air to flow to the open windows of the administration building.

through the complex would make a huge impression. Another more functional use of the large rocky section is its ability to hide a significant building.

The Sacramento Zoo's current administration facilities are in desperate need of replacement. Many of their office spaces are housed in temporary trailers. The current administration would like to consolidate all of the Zoo's facilities into one large multi-story building at the front entrance. However, this plan has met with vocal opposition from community members primarily due to the visual impact it would have. Fortunately, the proposed central complex design would provide the Zoo with enough workspace to prevent the need for a large structure at the front. The structure could also appease the community members since it would look like natural exhibits rather than an office building. A clever architect could develop various methods to disguise the structure while allowing employees to have natural ventilation and wonderful views. For example, using a combination of vinyl one-way graphics and constructing major rock faces from a permeable skin could allow the inclusion of windows and natural light (Fig. 4.26). One argument against the design is that the tallest portion would be about three-stories high. However, the location of the peak places it as far away as possible



from the main entrance, thus reducing its visual impact. Also, the entryway trees and those around the complex will reduce the impact even further. Finally, the height could enable visitors the opportunity to walk around a lookout floor and watch over the entire Zoo.

If the funding and engineering can be produced, the proposed central complex has the potential to replace an aged section of the Zoo that is often overlooked with a new and innovative trademark feature that provides modern exhibits, new revenue sources, facility space and a large administration building while removing the need for a publicly-criticized structure at the main entrance.



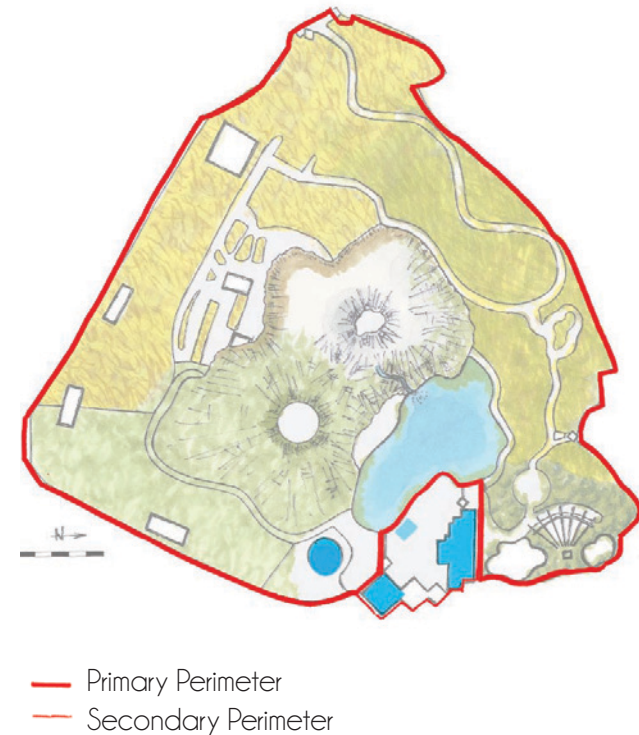


## New Main Entry Courtyard

The existing main entrance to the Sacramento Zoo is old, small and inefficient. Built in the early 1960s the design has been out of vogue for decades while the education room and gatehouse are too small to handle the number of visitors the Zoo would like to welcome. However, the structures are rather unique and therefore, they are the closest thing to a trademark that the Zoo possesses. By replacing the entry features the Zoo would be effectively amputating its figurehead. That being said, something does need to be done to meet the Zoo's future needs.

One of the main goals of the Zoo is to redesign the main entrance area to allow visitors to access the gift shop and a new restaurant when the Zoo itself is closed, thus increasing potential revenue. At the moment, the gate sits in front of the store effectively cutting potential shoppers off once the gate is closed. To resolve this issue, the existing gathering space just inside the Zoo has been redesigned as a gated courtyard (Fig. 4.27).

Numerous zoos have already adopted this type of entryway. Many of them, however, built the entrances from scratch by either relocating



**Fig. 4.27:** By creating a gated courtyard within the main entrance, the Zoo can continue to provide services after the exhibits become off limits.



Fig. 4.28 & 4.29: A few years ago, the San Francisco Zoo completed their new entrance complex (top), but they still have animals housed in rusty, bare cages.

the main entrance or simply removing the original structures. In either case, the current trend is to create large and expensive-looking plazas flanked by large and expensive-looking buildings. This can easily lead new and return visitors to wonder why the money was not invested in the animals (Fig. 4.28 and 4.29). Also, removal of well-established and possibly historical structures can turn away long time customers. To avoid this, the proposed plan preserves and in some ways restores the existing entryway.

Originally, the Zoo's two smaller structures were wide entry gates and the current Discovery Room windows were open to the public (Fig. 4.30). The double-gated design allowed more visitors to enter and exit while the windows spoke of the Zoo's openness and welcoming nature. The proposed plan calls for altering the existing entrance feature in two ways.

The first is to renovate the Discovery Room to function as a café dedicated to the Zoo's history. Although small, the building is just the right size for such a venue. The visitors could have the option of sitting inside and peering through the tall windows at Fairytale Town and the beautiful parkland or they could enjoy movable patio furniture just

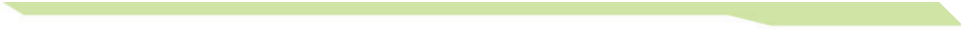
inside the entryway, watching the animals, people and admiring the new central complex. Restoring the large windows facing the park would greatly open the room and provide free advertising. Showing people enjoying a meal is one of the surest ways restaurateurs can attract new customers.

The second alteration would be to restore the smaller gate structures back into simple gated entryways. By replacing the existing gatehouse and turnstyle with wide decorative gates, the Zoo would feel much more open and inviting. The general public would be able to meander into the new courtyard where they can find a bite to eat or to buy a plush giraffe. Also, passersby could peer into the wide entrances, see the flash of a flamingo, the children's train or notice a volunteer talking about the hawk they're holding and decide on an impromptu visit.

Impromptu visits are one of the main reasons the Zoo would benefit from the new courtyard design. Just like with movie trailers, allowing visitors to get a sneak peek at what the Zoo has to offer can arouse their curiosity and draw in them inside. However, not everyone can be lured in. Therefore, the Zoo should not view the new courtyard



Fig. 4.30: Completed in the early 1960s, the Zoo's main entrance used to be much more open with wide gates and tall glass windows in what is now the Discovery Room.



as only a means to access the Zoo but as a safe destination for relaxing, learning and socializing.

As Bengt Holst puts it, zoos have always been part of the social landscape (2007). Here, the Sacramento Zoo has the opportunity to become the collective heart and center of William Land Park. No other park in the Sacramento region, if not all of Northern California, would be able to boast that the local hangout and meeting place has real monkeys, not just teenagers. If the Zoo can achieve this type of status, which is very possible, then it could further solidify itself in the hearts and minds of the community and perhaps gain more support for development projects.

To open the Zoo to the public like this, a pair of secondary gates must be constructed behind the main entrance. The plan is to place a small gate and ticket office between the new café and the pond and another small gate between the pond and the gift shop. The Zoo can still charge for admission but allow non-paying visitors to eat, shop and enjoy watching the birds. This design will also permit the main entrance to remain open but secure the Zoo in the evening with minimal changes to the site. An added benefit is that this design makes the children's train

accessible to non-paying customers.

Currently, the children's train uses the courtyard space for boarding, disembarking and to turn around. However, by combining the new entryway courtyard design with a new train route that was developed in conjunction with the new circulation pathway, the Zoo can give rides to customers that choose not to pay an entrance fee. The proposed new train route consists of a simple loop through a majority of the Zoo that provide the riders with a taste of what's to come (Fig. 4.31). Passing through exhibits, tunnels and under a rock cliff creates excitement while a painted railroad track that is mostly separated from the normal visitors will reduce the chances of an accident. The tunnel system can also be used by Zoo employees to access exhibits and facility spaces. Fun mini train-crossing signals can be installed at key locations in the loop like at entrances to tunnels and through the two inner gatehouses. At the end of the day, the train can simply be parked just inside the Zoo and the gates locked before the conductor also goes home, thus securing the ride. An added benefit is that the train can still operate its existing route with the new courtyard design until construction on the new central complex begins.

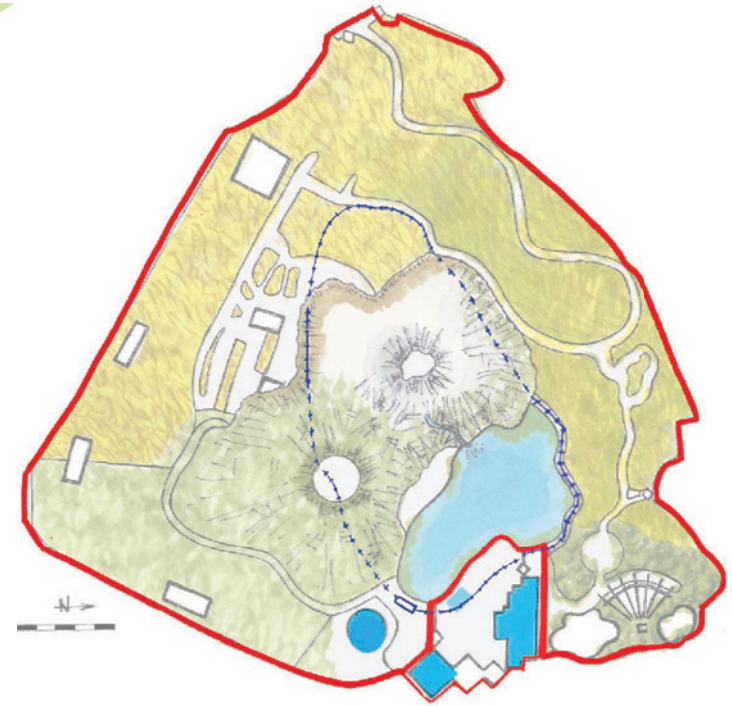
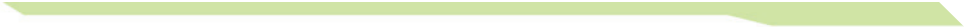
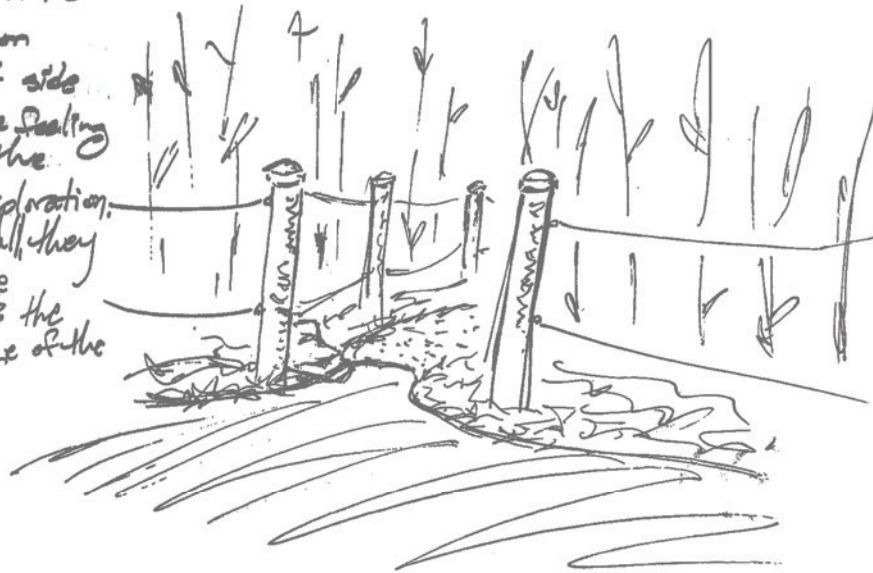


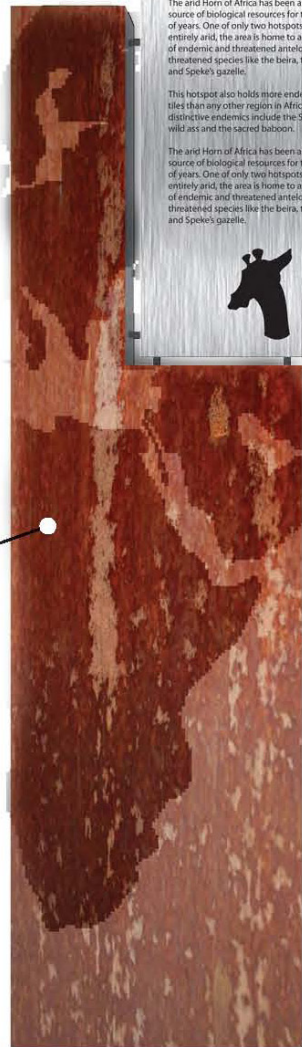
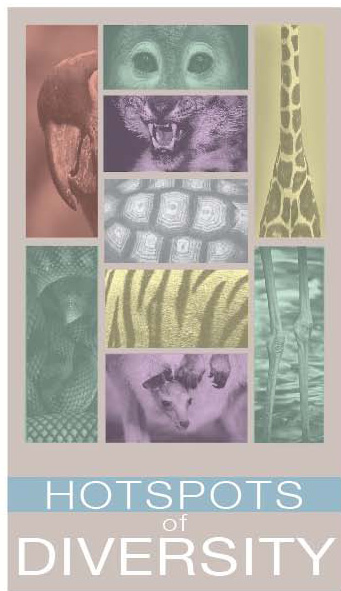
Fig. 4.31: By overlapping the children's train route and the gated courtyard, the train can provide rides to those who don't want to enter the Zoo, but still have a good time.



In either the short term or the long run, the Sacramento Zoo can economically and socially benefit from a simple new courtyard entryway design that provides non-paying customers with access to nice views, the gift shop, the children's train and a new café while preserving the Zoo's historic and iconic original entrance.

"Hidden" trails  
w/ landing on  
the exhibit side  
adds to the feeling  
of being in the  
habitat & exploration.  
Although small, they  
increase the  
complexity & the  
perceived size of the  
zoo.





Band of color at the top of sign ties in with the same color bands in the entrance sculpture and individual animal signage.

Head of Giraffe motif will continue in "Horn of Africa" biodiversity hotspot within the zoo. And would be substituted for the main animal from different hotspots.

Cortan steel with continent engraving for body of signage.

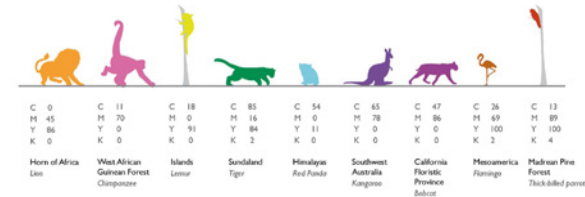


Fig. 4.32: Examples of work produced by the UC Davis design students for the Zoo to potentially adopt.



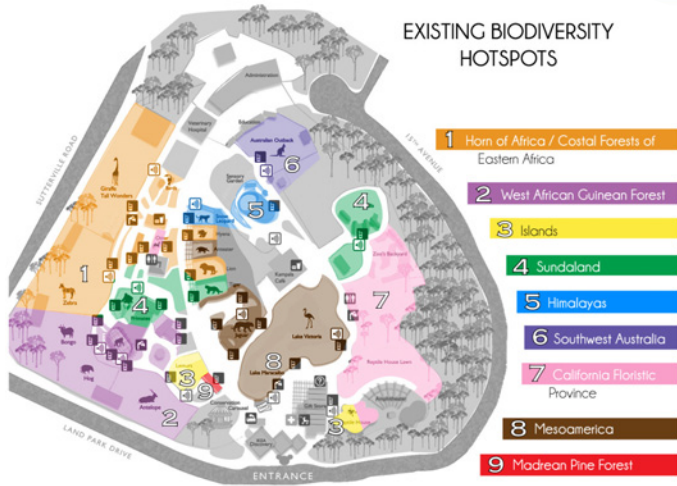
## The Designer's Strategies

### Define Biodiversity Hotspots

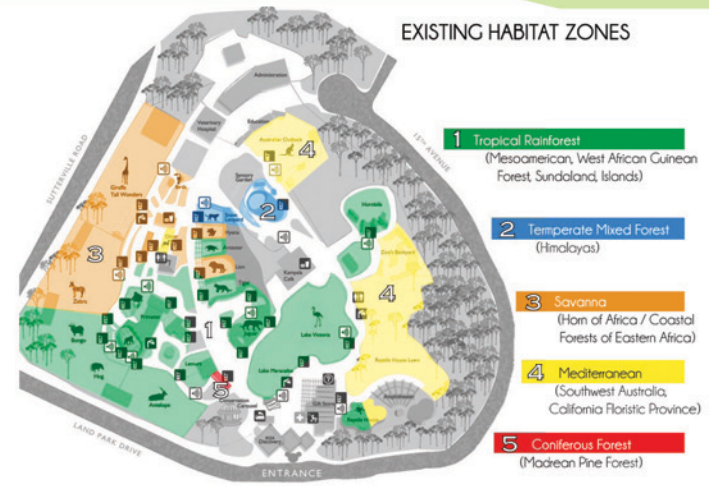
Biodiversity hotspots can be a complex concept to grasp. The Zoo will need to produce a simple definition that even the youngest of minds can grasp. They will also need to develop attractive but not overwhelming signage to discuss the concept in general and identify the different represented hotspots. The Zoo currently is collaborating with several design major students at the University of California at Davis (Fig. 4.32). It is important to ensure that whatever style of signage is adopted, it is used throughout the Zoo in a very consistent manner.

### Delineate the Biodiversity Hotspots

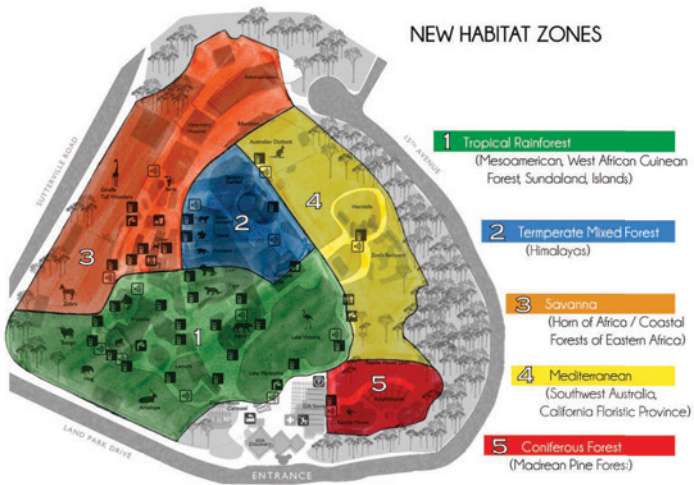
The biodiversity hotspots in the Zoo are currently fractured and disassociated. To effectively translate the message, both the hotspots and their habitats must be brought together in easily definable zones. This is achieved by first determining the habitat types of each hotspot (Fig. 4.33, Steps 1 and 2). Then, the exhibits can be coalesced into defined areas by habitat (Fig. 4.33, Step 3). Grouping the hotspots by their



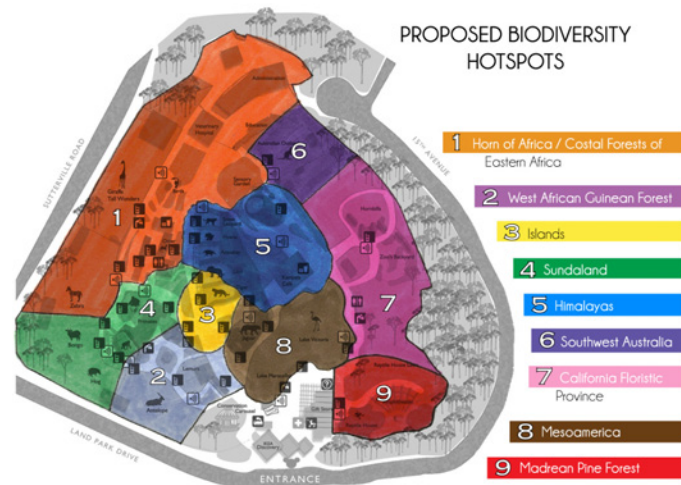
Step 1: Identify the existing biodiversity hotspots.



Step 2: Identify the habitat types of each existing hotspots.



Step 3: Regroup the habitat types into cohesive zones.



Step 4: Redistribute the biodiversity hotspots according to the new habitat zones.

Fig. 4.33: This four step process was followed to determine the new distribution of the habitat types and biodiversity hotspots.

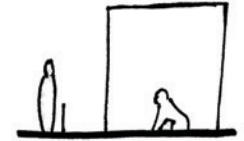
habitat allows the Zoo to arrange the hotspots so the habitats logically flow from one enclosure to the next. It is far less confusing to walk by a dry, grassy African savanna that blends into a dry, grassy Mediterranean exhibit rather than see a dry savanna between a tropical rainforest and a Himalayan mountainside. Once new habitat locations are identified, then the locations of each hotspot can be determined within the appropriate habitat (Fig. 4.33, Step 4). This process places exhibits clearly within their hotspot and delineates habitats that guests can easily identify and understand.

### Intimate Design and Habitat Immersion

Once visitors understand the Zoo's message, the goal is to elicit their support for conservation efforts. The best way to do this is to create a personal connection between the visitor and the subject. One way to do this is by immersing the visitor in an intimate setting. Enveloping the visitor in the animal's environment creates a perceived closeness to the animal and the habitat. The distance and visual barriers between the animals and the visitors should be minimized. Currently, the Zoo uses cages, moats and glass barriers to contain the animals (Fig. 4.34). The cages implement large visual barriers while moats require a very

#### Cage

Benefit: Cheap, Low maintenance, secure  
 Cost: Highly unattractive, Strong sense of Human superiority, Strong visual impairment



#### Moat

Benefit: No visual impairment  
 Cost: Requires a large amount of space, Large distance between the visitor and animal



#### Glass

Benefit: Allows safe but very close viewing, Low visual impairment  
 Cost: Increased cost, Sounds and smells are impaired



#### Inclusive

Benefit: Direct interaction, Strong immersion  
 Cost: Can only use with a limited species, Requires an attendant at all times

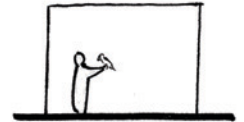
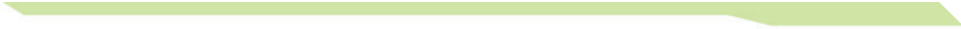


Fig. 4.34: There are four common types of animal enclosures and each has various costs and benefits.



large amount of space, both of which inhibit intimacy. The best type of enclosure would welcome the visitor inside. Aviaries and butterfly houses are perfect examples of this barrier-free technique that allows visitors to directly interact with the animals. It is recommended that where possible, the Zoo should invite the visitors inside the exhibits. The next best option is to use glass barriers. Finally, moats can be used where neither option are possible. Cages, however, should not be used. They send the message of human supremacy and often encourage negative forms of intimacy such as pity, which can lead to disdain for the perceived jailer. However, if positive intimate spaces are created, then visitor can create an emotional connection to the animal and the space. Then, when asked to support conservation efforts, they will likely be more sympathetic and help.

### Off Path Habitat Borders

Zoos typically use paths to separate habitat types, but that forces the visitors into a kind of no-man's land where they are perpetually on the outside. Instead, they should locate the transition zones either perpendicular to or at a distance from the pathways. By moving the transition away, guests become fully enveloped by the habitat.

These visitor pathways should also be much more narrow to bring the habitat closer (Fig. 4.35). Forcing people closer together also encourages socialization, which can increase the enjoyment of a visit (Weaver 2007). In a Zoo, both people and animals should always find themselves within a habitat, not outside it.

### Exhibits in Spatial Context

Zoo animals are often placed in a kind of contextual limbo. Reptiles and arboreal creatures suffer from this the most. Basically, the exhibits are not placed in locations or at levels that reflect the animal's natural vertical realm. For example, in a typical reptile house, green tree snakes, poison dart frogs, black-headed bushmasters and Mexican burrowing frogs would each be housed in dioramas about four feet off the floor. However, in the wild, the first two are arboreal, the third stays on the ground and the fourth, as the name implies, lives underground at times. The exhibit locations should therefore reflect this lifestyle. In this example, a single exhibit of a fallen uprooted tree could appropriately house all four animals in their appropriate spatial context (Fig. 4.36). Not only is this arrangement much more interesting than simple boxes, but they are more accurate and educational for the visitors.

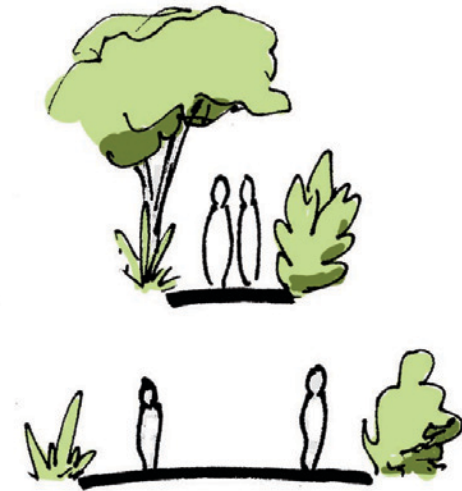


Fig. 4.35: Smaller pathways force people closer together, requiring interaction and increasing the social nature of the excursion. Therefore, the average pathway should be no larger than ten feet across.

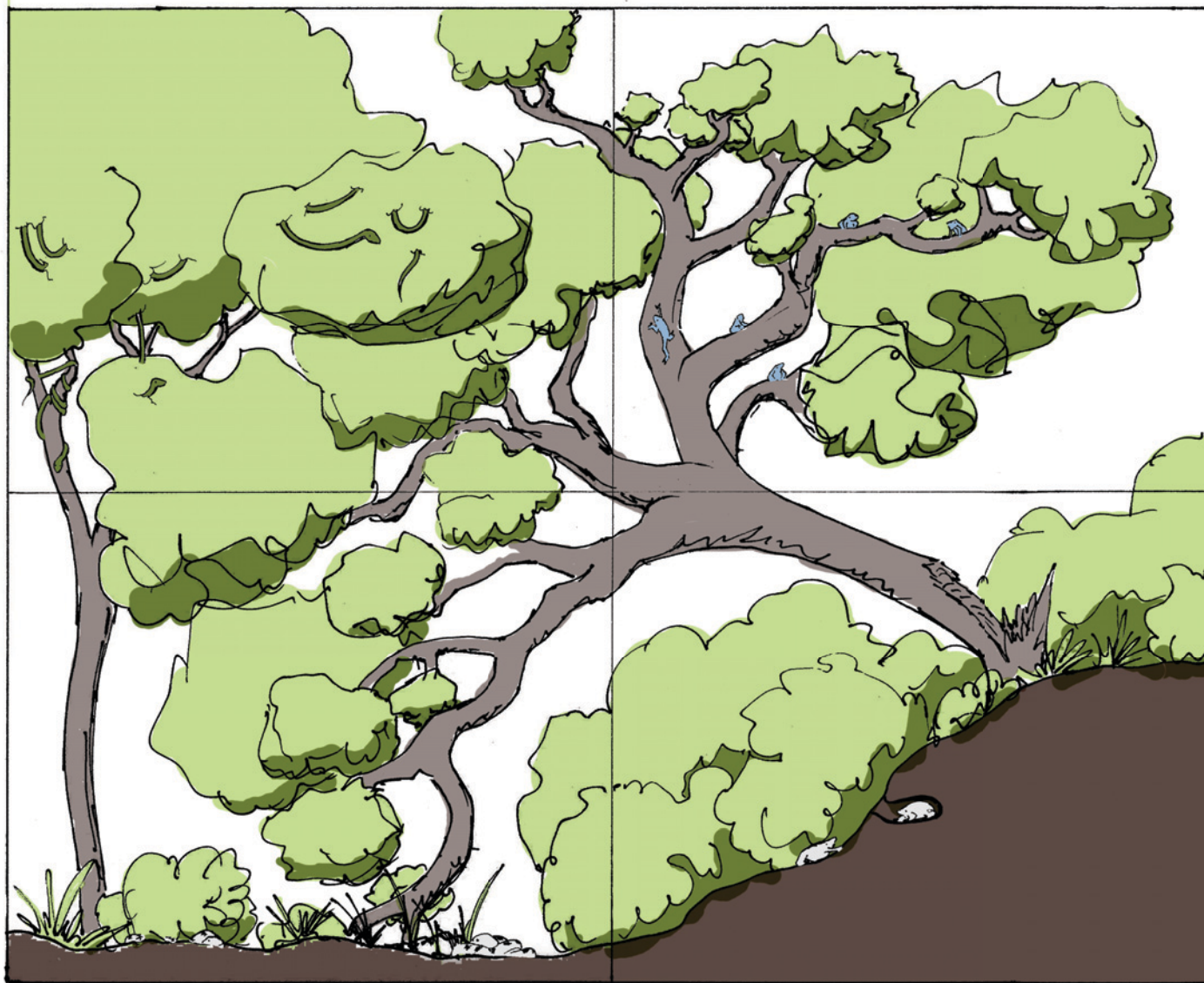


Fig. 4.36: A few simple panes of glass can bisect a fallen tree into four spatially appropriate exhibits.

## Balance Architecture and Nature

Zoos are primarily natural spaces, but all too often, they are treated as architectural statements and often to the detriment of the animals. A strong architectural presence is appropriate in certain human-centered areas. Entryways, for example, should have a strong presence. However, as the visitor moves away from such locations, the architecture should start to give way to nature so that by the time the visitor reaches the first exhibit, the habitat is dominant. This process should also work in reverse. Another recommendation is to not pretend that the alternative environment does not exist. For millennia, competent architects have accented the built form with natural elements. Similarly, natural forms can be accented by man-made elements. For example, some zoos paint metal handrails green in an attempt to hide them even though everyone already knows they are there. Instead, leave it matte silver or even a dull deep red. The contrasting color will enhance the vegetation without pretending it doesn't exist (Fig. 4.37). If the Zoo would prefer to compliment rather than contrast with the vegetation, then they should use natural materials like wood or rope. An interesting approach would be to use the architectural vernacular and materials of the native peoples in

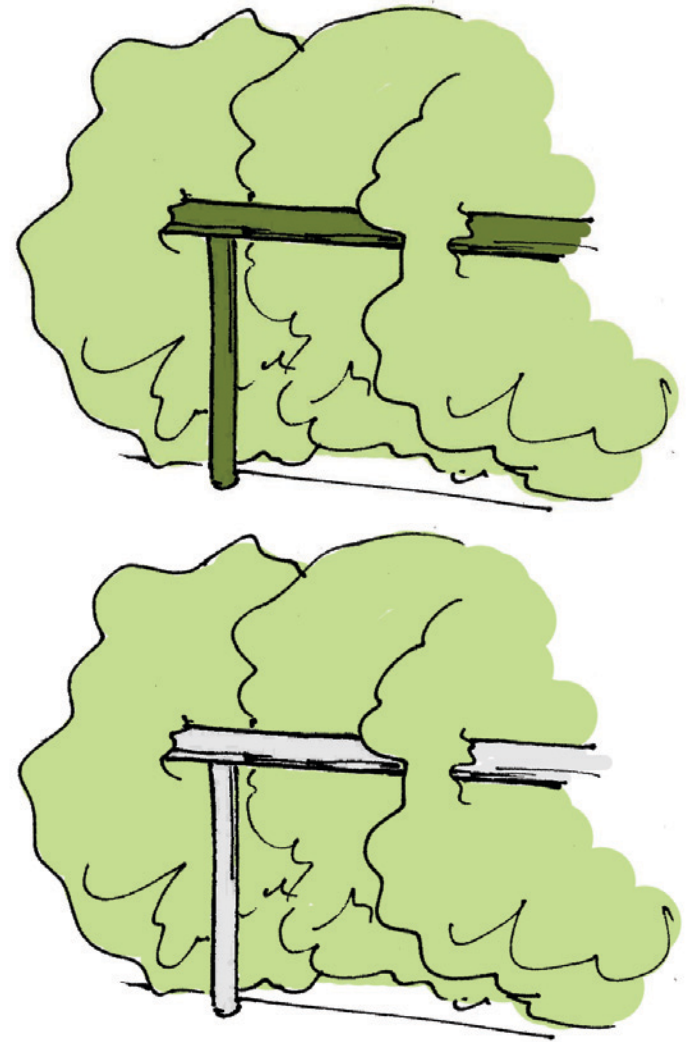


Fig. 4.37: Mandatory architectural elements like hand rails can help accentuate natural vegetation rather than pretend to disappear.



**Fig. 4.38:** Using the indigenous built vernacular for the architectural elements throughout a biodiversity hotspot can be educational and aesthetic. The authentic and appropriate design will immerse visitors far better than contemporary materials. This strategy can also demonstrate the association between the animals, the environment and the locals.

the corresponding hotspots. For example, the constructed elements in and around the Mesoamerican hotspot could be modeled after the traditional buildings of Costa Rica's Borucan people (Fig. 4.38). Alternatively, the Zoo could opt for a more modern look. In either case, the Zoo should consistently use their chosen architectural style throughout the entire site.

### Adopt New and Emerging Technologies

Technology is constantly changing, but some zoos fail to take advantage of the new opportunities. Technology savvy institutions are already using electronic touch screen exhibit displays, visitor-controlled cameras in the exhibits and live videos of off limit areas that are streaming on the Internet. The next step will be toward smartphone applications. Visitors will soon be able to walk up to an enclosure, hold up their phone and view hidden information floating next to the animals or exhibit (Fig. 4.39). Such digital features can be very cheap and easy to update when compared to traditional signs. They can also be posted online, inviting the entire world to experience the Zoo. Regardless of the technology, people love interaction. A small study of college students found that they overwhelmingly preferred the elements in the



Zoo that they could move and manipulate. Art also ranked very high. Both graphic and sculptural art was equally admired, but the accessible pieces were the most enjoyed. The downside to these displays is that they can be expensive and deteriorate very quickly. By incorporating sturdy accessible art and advancing to digital interactive elements, the Sacramento Zoo can leapfrog into the future.

### Real Transparency

A lack of transparency is one of the reasons why zoos are vilified in the public eye. Zoos everywhere usually try very hard to hide the functional facilities to perpetuate the naturalistic image of their enclosures. Unfortunately, this innocent secrecy can easily be misinterpreted as trying to hide something negative, which can cause the public to distrust zoos, hampering conservation efforts. To mitigate this, zoos should open up their back doors and show that there is nothing to hide. The Sacramento Zoo already has done this by incorporating large viewing windows and television displays into its veterinary building (Fig. 4.40). Similarly, the San Francisco Zoo has turned its new giraffe barn into an up close viewing area. Both of these examples are free, but some institutions have found ways to turn

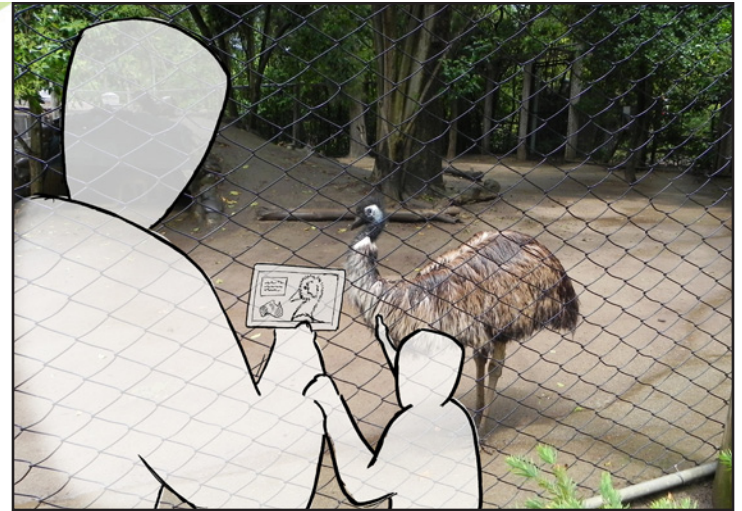


Fig. 4.39: Modern wireless technologies have begun to enable institutions to provide interactive and readily updated informational displays. Smartphone applications will be the next major access route that zoos can utilize.



Fig. 4.40: Sneaking a peak into the veterinary building.



**Fig. 4.41:** The San Francisco Zoo has designed their entry courtyard and African Savanna exhibit to excite and attract potential customers. Non-paying guests can freely enter the courtyard to view the exhibit, but they will probably also notice other visitors that are in the center of the exhibit and seemingly much closer to the animals (center right of the picture). This promise of a closer experience encourages guest to want to enter the SF Zoo to find that intimacy. In this case, the viewable visitors are highly desirable.

these experiences into income. The Monterrey Bay Aquarium provides popular behind-the-scenes tours for a price. To combat this supposed dark side of zoos, it is recommended that the Zoo incorporate viewing areas and tours of its facilities like the kitchen, quarantine pens and behind regular exhibits. The tour could also include a walk around the central complex where guests can learn about the sustainable and space-saving features pioneered by the Zoo before ending the trip with a panoramic view from the top floor of the building.

### Viewable Visitors

Conventional zoo design would say that designers should never, never allow visitors to see other visitors across an exhibit (Hancocks 1996). In most cases, this would be correct. However, there are exceptions to the rule. Spotting other visitors in interesting and unique locations can compel people to try to find their way to the new location, thus drawing them through the site. The San Francisco Zoo's new African Savanna exhibit is shaped like a doughnut with viewing from the outside and viewing from the center (Fig. 4.41). Upon spying other visitors surrounded by and much closer to the animals, many people immediately try to find the access tunnels. In a similar fashion,

the Sacramento Zoo can strategically place guests inside the Zoo enjoying a café or watching an animal up close, thus tempting potential customers that are still in the new courtyard.

### Sustainability

Like many other educational institution, the Sacramento Zoo would like to include sustainability in its lessons to visitors. The best way to do that would be to show them what they can do and how to do it. In other words, the Zoo should lead by example. Planting California natives wherever possible rather than traditional ornamental plants and using native no-mow, traffic-tolerant native lawns can help the local animals while reducing watering and maintenance costs. Water retention and reuse practices are already in use in some major zoos. Porous materials like interlocking pavers or pervious concrete can be very beneficial in an urban area where much of the land is covered. Also, the Zoo can take advantage of the numerous opportunities for tax benefits and grants connected with sustainable practices. These are just a few examples of sustainable practices the Zoo can implement. It is recommended that the Zoo try to incorporate as many sustainable features as it can in any future project (Fig. 4.42).

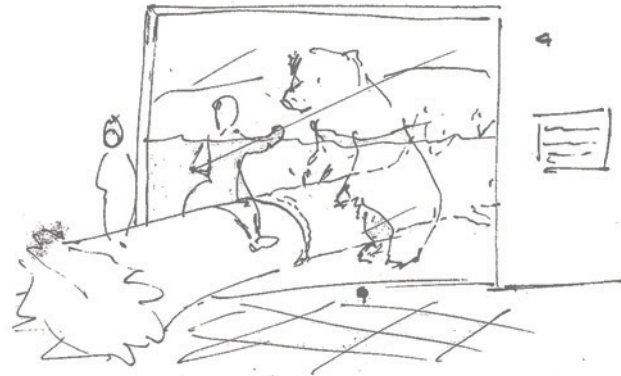


**Fig. 4.42:** This solar powered information box at the San Francisco Zoo is one simple way to incorporate more sustainable features. It also provides an opportunity for education about implementing such technology at home.



## Mild Re-Branding

The final recommended strategy is re-branding. The Zoo is currently still known as “the little zoo in the park” and this viewpoint can be very inhibitive to change and new development, even when that change is absolutely necessary. To alter this perception, the Zoo must alter how the public views the Zoo. A simple modification like adding the word “big” to the phrase can have a major impact on the meaning. “The big little zoo in the park” insinuates that the Zoo is still physically small and family friendly, but now it is a world-class destination. Institutions like the Atlanta Botanical Garden, New York’s Guggenheim Museum and London’s Tate galleries have all benefited from rebranding processes (Weaver 2007). Unfortunately, people in general do not like change and not everyone can be appeased. However, extreme measures will need to be taken to revitalize the Zoo and a little re-branding could get the ball rolling.



Objects through observation windows  
that visitors ~~to~~ animals can  
both touch = a <sup>creates</sup> ~~the~~ connection  
level of perceived intimacy.



## The Next Step

The next step will be to develop a schematic and final design along with a phasing plan in conjunction with the Sacramento Zoo administration, the City Council and with input from the community. Although this project is highly conceptual, the reality is that something must be done to address the Zoo's pressing and peculiar issues. Regardless of what path the Zoo decides to take, it will be a long and involved journey. Hopefully, the proposed design can serve as a positive and influential first step.



6-1



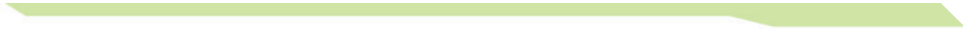
## The Visitor's Story

Perhaps the best way to convey how the Sacramento Zoo could feel is to see it through the eyes of a visitor.

### A Perfect Day at the Zoo

The visitors woke up early to avoid the traffic. It was a long drive, but the memory of their last visit fed their excitement. After rolling by the capitol building, they made their way to Old Town Sacramento. After parking under the freeway, they went looking for a nice place for coffee. Cup in hand, they explored Old Town a bit until they came to the California State Railroad Museum. They bought a ticket for the first excursion train of the day; it was a two-way ticket. After killing some time in the museum, they hurried to the platform. The train left right on time. As usual, it was full of excited and jumpy little kids with their parents. The ride didn't take very long, but the anticipation made it longer. Finally, they spotted the platform.

The train pulled right up to the Zoo's entrance and they hopped off. A quick pause at the gate for a hand stamp, a visitor's map and a biodiversity hotspots fact sheet and they were in. From up here, they could see almost everything. The lions were splayed out in the savanna grasses not twenty feet



away. Beyond them, giraffes and zebras calmly walked around even though there was no obvious boundary between them and the big cats. Just ahead was an impressive rock wall with people meandering at its foot. On the left, the savanna grasses blended into an arid Australian exhibit full of kangaroos and wallabies, also lazing about. Down that side of the hill the Australian plants gave way to more familiar Californians.

They followed the path that led them past the kangaroos and through the California backyard garden. They paused to let a train of school children by. Another group was coming in through the Zoo's side gate and taking their spots at the small amphitheater. Rather than listen to the volunteer talk about the Zoo, its history and the new design, they continued on. Besides, a wayward parent was prematurely trying to herd the kids onto the stage for a group photo, so the volunteer wouldn't be able to start for a while.

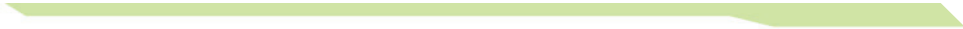
They came to the main path through the Zoo. Should they go left or right? They decided to follow the painted grizzly bear tracks and head left. The trail soon left the California grassland and entered the Madrean Pine Forest. The cool shade of the trees was welcoming after walking in the sun. They stopped for a moment at the largest exhibit in the area to watch the

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parrots fly about before heading on to the larger amphitheater. This time, a keeper was showing off a white-faced owl. It was a cute little guy.

They moved on and approached the northern entrance just as the little children's train tooted and rolled through its private gate. Through their own gate and they were in the courtyard. They had to pause to take in the peculiar sight. On one side, the back of the bluff rolled down to the pond fed by a waterfall and dotted with flamingos that flamed bright pink against the dark green vegetation. Oddly enough, the bluff didn't seem as large as it did before. At the base of the hill, just to the left of a tunnel entrance, a young couple lounged, drinking, sure enough, coffee. The couple waved at a friend and her son on this side of the pond. The little guy was tugging at his mom's arm, trying to pull her away to get to his soccer game. With persistence, he peeled her away and they hurried through the open main entrance.


That sight was definitely not new. They could remember seeing those curving roofs as children. The happy little flash back put a smile on their faces and they just had to get a lollipop from the gift shop. With their guilty pleasures in hand, they wove their way through the café's outdoor tables. Some were filled with diners enjoying brunch. Another hosted a group of



businessmen on an early lunch. Still another was occupied by an elderly gentleman dozing under his open newspaper. Passing the ticket booth, they slipped through the south entrance flashing their stamps as they passed. The employee only gave them a nod, a smile and a quick little “thank you.”

It wasn't long before the open courtyard began to disappear again. The vegetation had definitely changed. Now, the plants were larger and closer. They curved around the orangutan exhibit and headed down the ramp. The further down they went, the higher the green roof rose. They knew the hill was fake from the tour they took last time, but they had forgotten that fact until now. Just a little further and they popped out into the sunken plaza. Shops and another café sat under the green roof that came sloping into the plaza. Not ten feet overhead, lemurs gallivanted either from tree to tree or boldly on the glass roof itself. They could spend hours watching those little guys. Instead, they made their way to the tropical rainforest exhibit.

Like the California Academy of Science's rainforest, the exhibit was hot and muggy and full of birds and butterflies. The main difference, though, was that at the Academy, they had to walk around the trees whereas here, they walked among them. Halfway through, they spotted a glass window that they had missed the last time. It looked directly into the back of the Zoo's kitchen.

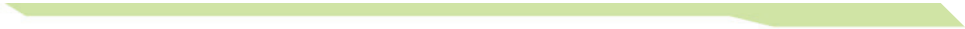


While the dead mice weren't too appetizing, the large bowls of colorful fruit actually made them hungry. So, they left the oppressive heat behind and headed for the café.

Instead of eating inside or under the lemurs, they decided to enjoy the view of the pond and watch the flamingos fidget with their mud nests. Up a short ramp and they were back in the open. They managed to get lucky. Just as they emerged, the young couple from earlier left their table and disappeared into the tunnel nearby. The weather was very nice, especially after the rainforest and they took a short siesta.

A pesky duck got them moving again. He had wanted some of their salad and thought nibbling at their shoelaces would do the trick. After tossing the leftovers into a compost bin and turning in the plates to be washed, they headed into the tunnel under the mountain. Like the first one, this tunnel sloped downward, but this time what started as a bamboo forest dotted with red pandas gave way to a dim rocky passage. There was still enough light to see, but when they turned the last corner, the bright daylight blinded them for a second.

A moment later and they were looking up into a huge narrow Himalayan gorge. It was easily four stories high and only sparsely vegetated.



This was the land of the snow leopard. It took them a while, but they managed to spot one of the big cats. Granted, they had to cheat and see where other people were pointing, but with such good camouflage, it would have been a bit difficult to find him on their own. They pulled out their smartphones to take a picture of the handsome fella and noticed the Sac Zoo Clue application logo was jumping. A simple click brought up a 3D interactive view of this exact exhibit. By moving the phone around, the display changed to show the hidden features only a few feet away. The little screen uncovered the snow leopard's den, the children's train tunnel that cut under the mountain and the giant administration building hidden in the largest part of the bluff.

After pocketing the phones, they pressed on into the final tunnel. A short incline and a quick turn later and they emerge onto an open no-mow lawn. Turning around, they looked up at the towering cliff behind them. Maybe it was as big as they remember. Though its been a while, they can still picture Disney's "The Lion King" playing on its relatively flat surface at last summer's "Movie in the Meadow" event.


The daylight shows the rock to be slightly different than the ones in the Himalayan exhibits. A nearby digital sign tells them that the rock mimics a

crag in the Ethiopian highlands to complement the African savanna habitats. Another interesting fact.

Looking out at the open space before them, they see kids running around in all directions, parents trying their best to keep up, college students gathering data from an experiment and a teenager climbing the hippo sculpture. As they move closer, they spot a head walking over some trees. It's the giraffes!

Before they could pull out their cameras, the head dips behind an acacia. They hurry over and onto the viewing platform in time to see the giraffe pull a chunk of lettuce out of a young girl's hand. Talk about jealousy. They immediately pull out their wallets and pay for a bundle of leaves, but to no avail. The giraffe decides that she has had enough and begins to float away. Fortunately, the towering bull still has an appetite and they get their up-close-and-personal experience.

As they leave the platform, they realize that their time is running short. Without stopping for ice cream, they pass the veterinary center and descend into the dark nocturnal animal exhibits. In a normal zoo, they wouldn't even pause by these animals; after all, they would only be asleep. Here, however, the animals are wide-awake and on the move. That's

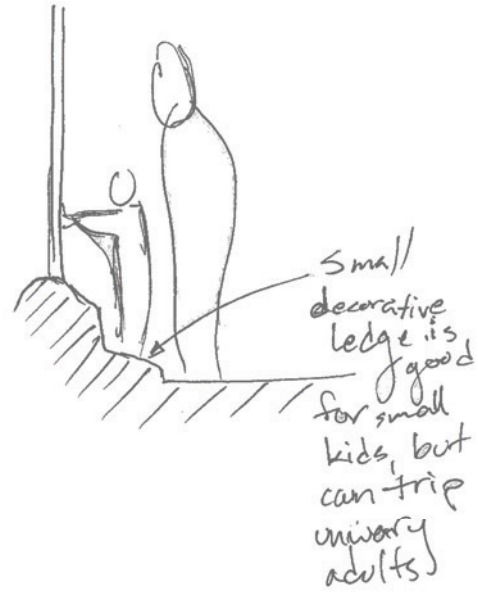


because in this controlled underground space, the Sacramento Zoo was able to effectively switch night and day. Now, the animals are worth the risk of missing the train, but just to be safe, they make their visit a quick one.

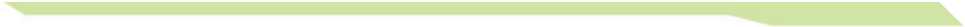
After reemerging into the sun, they realize they popped out back at the veterinary building. Today, a group is plastered to the large windows where UC Davis veterinary students are giving a new African clawless otter pup a physical. They walk past the large cliff face, turn up the overlook trail, back through the Australian exhibit and just manage to catch the train before it pulls away.

Back in Old Town, they wander through the Train Museum for an hour or so until it closes. They then enjoy a nice sit-down dinner at one of the fancier restaurants. Their final stop of the day will be on the other side of the freeway, in Downtown proper. Just a block or two away lies the new Sacramento Kings arena. They already noticed a few fans walking over and can still hear their excited voices. The drive home tonight might be a late one, but it will definitely be worth it.





Small decorative ledge is good for small kids, but can trip university adults



7-1

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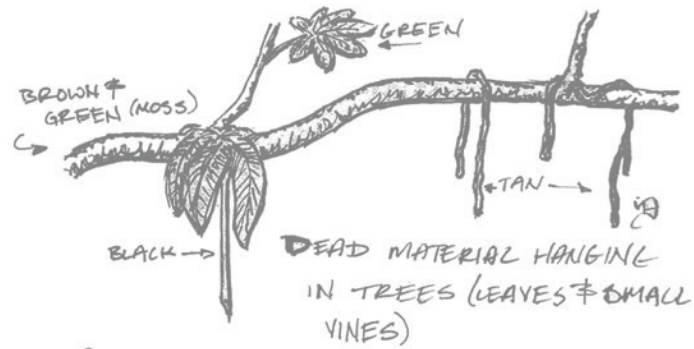
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TALL, THIN TREES  
MAKES VISITOR  
FEEL SMALL

THIN (TALL) VEGETATION GAP LEAVES  
A FEELING OF INSIGNIFICANCE



FEELING OF INTRUSION  
(AND LUSHNESS)  
FROM PLANTS  
REACHING INTO  
PATHWAY