

TOUR: EXHIBIT DESIGN

OBJECTIVES

1. List five needs of animals in captivity
2. List five basic considerations of exhibit design based on the needs of the animals, the caretakers, and the visitors
3. Describe three different barrier designs to prevent animals from escaping
4. Design an exhibit that incorporates the needs of the animals, the caretakers, and the visitors

INTRODUCTION

Welcome your group and go over expected behaviors while at the zoo. Begin your program by asking your audience why they would consider putting wild animals in captivity. In other words, why zoos? The answer: Potter Park Zoo exists for conservation, education, recreation, and scientific studies. Zoos work together to save endangered species through work in zoos and around the world. Resident animals serve as ambassadors for their wild relatives to help zoo visitors build connections that will foster stewards for the world's wildlife.

Lots of questions need to be answered before creating an exhibit. Among them are:

- **Which animal or animals do you want to exhibit? Why?**

- **What are the basic needs of the animals in zoos?**

Access to food, water, and shelter...

- What kind of foods do they eat?
- What provisions are made for their comfort?
- Is there access to heating/cooling, depending on the time of year?

Space to exercise and move about

- How much space do they need?
- Do they need privacy from visitors?
- How will they exercise?

- How fast do they run?
- How high can they jump?
- Do they tunnel underground?
- Do they climb?
- Do they leap?
- Do they swim?

- Behavioral enrichment that challenges them, occupies their day, and provides opportunities to be active mentally and physically and exhibit natural behaviors
- Access to companions, if they are group dwelling in nature
- Access to privacy for breeding and birth. May need a place to be separated from mother and babies. Is space available for more animals?

- **What are the needs of the zookeepers?**

- How do the keepers access the exhibits? Can they go in with the animals or do they need extra pens to shift them in order to clean and maintain the exhibit?

- **What are the needs of the medical staff?**

- How do the veterinarian and other health care professionals access the animals?

- **What are the needs of zoo visitors?**

- Can they see the animals easily?
- Is there a place to sit to watch animal activity?
- Is there a cover for shade or rain?
- Visitors need restroom facilities and a place for refreshments.
- Many zoos are providing spaces near exhibits for fund raising functions.

FEATURES OF EXHIBITS

Otters and Arctic foxes: These exhibits were opened in 2006. A lot of research went into the design. Staff visited several zoos to see what other people were doing, and what they would have done differently. The new exhibits are vast improvements over the previous enclosures for the animals, which were in the small moats. One of our otters at the time was more interested in the grass of the new exhibit rather than the pool because he had never experienced it before.

In both of the exhibits the perimeter fence goes down and over a few feet so if they dig in the exhibit, the animals will encounter mesh and will not be able to dig out. There is also hot wire to remind the animals not to get too close to the fence. Otters in particular can be little escape artists. Their heads are flattened, so the shape as well as the size of the mesh had to be considered. One of our previous otters found a way to get out within minutes of being put into the exhibit for the first time.

Otters: The water is not heated or cooled in the otter exhibit. In the winter, bubblers next to the glass in the pool help prevent the pool from freezing over. The sand patch was added for the otters to roll in to clean their fur. The exhibit also lends itself to small private events and has been rented out in the past, an example of an exhibit serving multiple functions.

Arctic foxes: They have a shade tarp over part of their exhibit in the hot weather.

Bald eagles: Built in 2008. Special fencing material was ordered that would give good viewing and be safe for the eagles. Move back. Can you even see the mesh? There is a top on the enclosure when because even non-flighted birds might be able to "ladder" themselves up and out. Also, we want to keep raccoons out. Notice the shelter and heat source. This is necessary since the birds are outside year round. In the warm months the small pond is filled with water and sometimes there are live fish in the pond for enrichment.

Wolf Woods: The perimeter fence is a double fence. The interior fence also is buried about three feet below the surface to prevent the wolves from tunneling out. Holding pens allow

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the keepers to shift animals off exhibit, so they can clean. The cabin provides an educational opportunity by showcasing two prey animals and a wolf. Glass viewing takes away the bars but adds wolf pawprints. Plans are in place to expand the exhibit by pushing back the perimeter fence to provide more space.

Raven flight cage: This is one of our newest exhibits. It was made big enough that our male raven could have a female companion. The ravens are fully flighted. Our male can be aggressive so a holding area for shifting was added. Exhibit completion was held up for almost a year because the type of screening was not squirrel proof. The designers had consulted the other zoos that had assured them that their squirrels did not damage the screening. Exhibits like this one—that do not need special climate controls or even running water—can be built relatively quickly and inexpensively by zoo staff—are a good economic choice.

Farmyard: Completely redone from the ground up in 1995. Initially, the gauge of the fence used around the contact area was too small and the goats had it all bent and bulging at the end of the first year just by standing on it. Because of the summer heat, the umbrella was added. The wooden climbing structure—with stair steps and a platform—in the goat exhibit is behavioral enrichment. Windows to the vet clinic allow visitors to observe medical procedures.

New red panda exhibit: Originally designed and built by women architects as a spider monkey exhibit, it has been newly redesigned in 2016 for the red pandas. The red panda used to be housed across from the snow leopard. In the past we have tried unsuccessfully to breed red pandas. It is thought that they might not have bred due to the proximity of the snow leopard, which looks a lot like the clouded leopard, a predator of the red panda. The new exhibit is more spacious, with more climbing opportunities, and two indoor stalls to cool off in the summer, one a protected maternity den with multiple nest boxes for babies. We have been rewarded for our efforts with the birth of two panda cubs in 2016.

Feline & Primate Building and exterior: Renovated 1988–89, the old concrete and barred cages were replaced with more naturalistic outdoor exhibits and larger, indoor exhibits. Concrete is easily disinfected. Giving animals naturalistic exhibits compromises the keepers' abilities to sanitize the area. Diseases are spread and parasites are passed onto other group members. The more naturalistic the setting, the harder it is to keep it clean.

Look at the primate enclosures. What equipment has been provided for their behavioral enrichment?

As you pass the cat side, ask your audience to compare and contrast the top of the fences. The lions have just a high fence with no top features; the tigers have in-rigger fencing (a

“kick” at the top to keep them from climbing out); and the snow leopard cage is completely covered. Which cat is the best climber? Next best? Worst? Did your audience know that tigers are excellent swimmers? The big rock in the outdoor exhibit of the lions can be heated when it is cold outside—not to be hot but warm enough to melt the snow and ice.

Even when animals have been successfully exhibited for many years, new animals can surprise the staff with new behaviors. Many times docents and volunteers are asked to do “behavior watches” when new animals are introduced to the exhibit or the exhibit is changed for our existing animals. The great almost-escapes of young lions:

- Young male lion started to climb the trees at the side of exhibit. He might have been able to climb up and over. The area now has electric fencing around the trees.
- The female lion was on the big rock when a peacock flew up on the edge of the glass front of the exhibit. Despite the moat in front of her, she jumped over to a small ledge and managed to hang on and try to pull herself to reach the bird. The ledge now has a sloping surface. The height of the front wall had been increased and the top has an angle. No more leaping lions allowed.

Rhino exhibit: Originally built for elephants, this exhibit has undergone some major renovations, most recently in 2011. The indoor space was greatly increased, allowing zookeepers to better manage the area and to shift the animals inside in winter. A squeeze cage with a built-in scale also allows keepers and medical staff to get a better look at the animals and conduct target training to give shots, draw blood, etc.

The outdoor area has also been expanded and includes an off-exhibit outdoor area that is flat and safer for the rhinos when it is slippery outside. The umbrellas and log posts in the yard are buried six feet down to prevent the rhinos from knocking them down if they charge them. Rhinos in the wild wallow in shallow pools of water. Our rhino likes to create her own wallows from puddles when it rains.

Small moats: Built during the WPA (Works Project Administration) of the Depression, these exhibits were “state-of-the-art.” These were the first exhibits without bars. The concrete keeps diggers from escaping and can be disinfected; the deep moats can be filled with water to make a barrier or can be left dry and the height used to keep non-climbers and non-leapers in. The problem is size. These can only be used for smaller animals, hence the name of this area. Point out the different barriers used to keep animals in: electric wire; steep and smooth walls; and rocks that hang into the exhibit from above creating the optical illusion of having a “roof” over your head when you approach the wall to jump out.

Note the small doors for the animals entering the outdoor exhibits. Zookeepers need a ladder to get down into the exhibits, and the animals must be non-aggressive.

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Bird & Reptile House: Built during the same era as the small moats, this building was designed for “jewel case” exhibits (small glass front exhibits that showcase a bird but do not have much space). Reptiles were added. Problems with managing reptiles in these cages: heat source is five feet overhead, so controlling heat is a problem (this is why the building is kept so warm, even in the summer); air circulation is poor; and all lighting is artificial. The species picked for this building are the hardiest (they can survive variations in their environment). An exception is the emerald tree boa: there is a special box behind the scenes to accommodate this snake’s humidity requirements. End-cages feature multi-species exhibits and give plenty of spaces for exercise and breeding to those exhibited. In the last few years, nocturnal exhibits have been added with special lighting for animals such as the bats and screech owls. Many of the exhibits were made larger by knocking down walls between adjacent exhibits to allow animals to have more space.

Penguin exhibit: The pool is six feet deep, and the water is chilled to 55°F (13°C) in the in summer. Note the fan in the rock used to simulate ocean breezes. Misters overhead in the rocks are used to cool the exhibit. The nest boxes extend into a room behind the exhibit where there is heating and air conditioning. The bubbler keeps the water moving to prevent algae build up on the surface, keep mosquitoes from laying eggs and to prevent ice from forming. A mistake made by architects at the time of construction: They did not listen to the keepers when they were told that these penguins jump six feet out of the water! Rocks close to the edge of the pool had to be extended farther out over the water because the penguins, on opening day, jumped out of the exhibit and proceeded to waddle down to the employee parking lot. Problems: Water exhibits are high maintenance areas; pool has to be stripped of algae every two weeks in the summer and every three-to-four weeks in the winter; pool must be resealed every few years to combat leakage; the chiller and filtering system need constant care; and the door leading into the exhibit was built for a penguin not a person, so keepers must crouch and crawl through a three-foot door to access the exhibit.

Moose exhibit: It was completed in 2016 in a move away from the old hoofstock model of barn-and fence construction to a naturalistic look – mimicking a natural moose habitat with unobstructed viewing. It includes lots of room to roam; a large, deep pond for swimming and cooling off; a waterfall system; and vegetation similar to what would be found in their natural environment. Water aeration keeps open water near the boardwalk during cold weather. The barn provides larger holding stalls and training walls that allow keepers more access to the animals for voluntary husbandry and medical procedures, and a cool spot in the summer, with shade and fans blowing over ice.

It is very important that native white-tailed deer be kept from the moose, because deer can spread disease (brain worm disease and possibly chronic wasting disease in the future). Note the double perimeter fence at the back of the exhibit.

Measures implemented to protect the public include a “kid-catcher” barrier for the boardwalk, placed at an angle so that if a child did fall into it, the child would bounce back into the catcher and not into the pond. Also, vertical fence posts have pointed tops to discourage setting children on and peek-through areas in the fencing provide opportunities for children to view the pond area without being put into potentially dangerous positions.

CONCLUSION

Use your objectives to review your program. By doing so, you will be able to evaluate whether or not the objectives were achieved. Wish them a good day.