

## **BZL Rhino Encounter 2022-2023 School Year**

### **Description:**

Catch up with the rhinos in the zoo as well as those in the wild, focusing on adaptations, conservation, and the zoo habitat. This lesson includes a PowerPoint and close-up look at artifacts indoors as well as a special visit in the Rhino Barn to see a rhino. Hand sanitizing and masks are required in the barn. If COVID protocols change, the indoor portion may be canceled. In that case the visit will focus on the outdoor rhino habitats (with no guarantee that the animals will be visible).

### **Objectives:**

- Identify adaptations (senses, short-stout limbs, teeth, prehensile lip, horn, wallowing)
- Identify features of the indoor and outdoor areas of the black rhino habitat
- Identify examples of the quality animal care that the rhinos receive
- Identify conservation concerns and actions taken to improve the situation
- Respect the roles that zoo animals and staff have in contributing to wildlife conservation

**Keywords:** Adaptations, herbivore, keratin, prehensile, endangered, poaching, confiscated, conservation, conservation organization, gestation, courting, training

**The Lesson:** This lesson is scheduled for one hour. Two volunteers will work together with one class. There should be four volunteers total if there are two classes. All should arrive half an hour before the scheduled start to prepare with each other.

- One half hour  
Volunteers present an encounter/discussion with students, using a prepared PowerPoint, focusing on adaptations and conservation, and including a close-up look at artifacts.
- The other half hour  
Volunteers lead students to the Rhino Barn for a visit with a rhino and a look around the work area of the building.

Two classes: While one class begins in the Rhino Barn and finishes in the Safari Room, the other class starts in the Safari Room and finishes in the Rhino Barn. Timing and coordination are important. Please see the time schedules at the end of this document for details to make this lesson work.

### **Safety Rules:**

**COVID Precautions:** For the animals' safety, students and adults must use hand sanitizer as they enter the Rhino Barn, and everyone should have a face mask that covers their nose and mouth. Students will also be offered hand sanitizer as they leave the building.

**Rhino Precautions:** The Rhino Barn visit includes an up-close visit with a rhino, typically including opportunities for the students to touch a rhino, but this is not guaranteed. It occurs **only if the rhino is in the mood**. It is critical for volunteers to keep their groups together and noise down.

Rhinos are big, dangerous animals, no matter how gentle they seem. The keepers are in charge of the up-close rhino visit. They know the animal's moods and behaviors. No one should place their hands between the rhino and the bars or place their head above the rhino's. They should not move inside the bars at any time, even when there is no rhino in the stall. A careless or startled move by the rhino can do great damage to us mere humans. And if you see a rhino back up to you or your group and raise its tail, MOVE QUICKLY so you and your students are not directly behind the animal, or you and your group are likely to be hit with a shower of urine.

A handful of students and adults will visit a rhino at a time. The BZL Coordinator, or a designated substitute, keeps track of the time and monitors the comings and goings of the small groups to the rhino. The keeper supervises the rhino experience. The volunteers supervise the rest of their groups – those that have already visited and those that have not yet visited.

**Content:** The objectives above are provided to help you structure your presentation. The information below is provided as background. You are NOT EXPECTED TO NOR SHOULD YOU – try to use all of this information in a presentation. **Volunteers focus on adaptations, conservation, and the outdoor habitat. The keeper will be focusing on our individual rhinos, behind-the-scenes in the barn, and how we care for the rhinos,** especially if Doppsee becomes pregnant.

Other sources of information are the black rhino data sheet at <https://ppzvolunteer.com/>, black rhino station template, Rhino Pregnancy and Calf FAQs, Jaali departure information, and any subsequent handouts.

**Timing and logistics are important to the success of this program: Please be prepared to deliver your information in chunks, presenting the most important first, so that you may break away when necessary to move on. See the schedules for delivering the program at the end of this document.**

**Getting Started:** Foster a discussion with your audience. Ask your audience questions.

### The Rhinos

- Doppsee, our female rhino, was born on July 6, 2007. She came from Sedgwick County Zoo in Kansas in 2011. Phineus, our male rhino, was born on September 27, 2007. He came from the Caldwell Zoo in Texas in 2017.
- Doppsee loves attention and likes to be pet by her keepers and special visitors inside the barn. Phineus is not as patient. His personality is more that of a typical rhino.
- You can tell them apart by their horns. Doppsee's are long, while his are shorter during because he rubs his down. Note that Doppsee's larger horn has been squared off a few years back. (It has continued to grow since.) When they were put together, her longer, pointed horn proved an added hazard for injury of Phineus.
- Phineus weighs just over 2700 lbs while Doppsee is just under. Keepers collect feces 3x/week on Doppsee and try to collect urine daily to monitor her hormone levels. NOTE: For comparison weights used for classes being weighed in training chutes: Adult rhino about 2800 lbs, Jaali when he left PPZ about 1400 lbs, and when Jaali was born about 70 lb. (note the theme of 7s for easier calculations)

- Our rhinos have been involved in various research studies focusing on reproduction, milk content, and more recently, a physical fitness study on body conditioning and activity tracking.

### **Rhino Barn**

- Most recent renovation and expansion completed in 2011.
  - ✓ Building was originally an elephant barn, converted to rhinos in early 1990s.
- More space - Recent renovation involved gutting the old exhibit and adding indoor space (from the squeeze cage west).
- Outdoor features – More space, shade “trees,” mud
- More movement - Inside there are more stalls, allowing the rhinos more movement from one stall to another when they are inside in winter.
- The squeeze cage has a built-in scale. (Weight records are kept by the food preparation table.) The sides of the squeeze cage can pull in together enough to gently prevent animals from moving around much. This allows keepers and medical staff to get a better look at the animals and conduct target training to give shots, draw blood, check the bottoms of feet, perform ultrasounds, etc.
- Training - Keepers train the rhinos to facilitate better husbandry and medical care. Keepers can more easily move them from one stall to another, draw blood, give shots, examine the bottoms of their feet, etc.
- Large, thick bars allow keepers improved access to the animals.
- Showers - Look for a showerhead in the ceiling of the stalls. The animals get cold-water showers to help with dry skin, especially in winter. Keepers also have the capability to hook up hoses to give warm showers, if needed.
- Enrichment placement - There is an I-beam along the ceiling in the building that allows keepers to attach enrichment items along a line in the stalls.
- Viewing - There is a large window in the east end of the building for viewing when rhinos are indoors.
- Getting outdoors in winter - Rhinos can tolerate some cold weather well. In Africa it can reach below freezing at night. Here the rhinos are allowed outside in temperatures of 25 degrees and above – if it is not too slippery. They do enjoy the snow. The third outdoor yard, which is off exhibit, is flat and safer for the rhinos with less ice.
- Cleaning - It takes a long time for keepers to clean in the morning. Rhinos produce a LOT of feces, easily 100 pounds an animal per day.
- Kitchen area
  - ✓ Counter area – There is a scale for weighing food. Note the diet form on the wall. These forms document what each animal is supposed to eat daily. These forms are used for other animals in keeper areas throughout the zoo. There is also a sheet posted with approved enrichments, an easy reminder to keepers about enrichment options for the rhinos. As mentioned above, the weight cards (that is, the weight histories for the individual animals) are kept in this area too.
  - ✓ The refrigerator contains produce that the rhinos eat, typically sweet potato, carrots, and apples. You will find buckets prepared for each animal’s daily feed. Hay is kept in bales nearby.
  - ✓ Storage for some enrichment devices. Additional storage for large items is in the shed outside the building.

- Daily diet
  - ✓ Each rhino eats (daily)
    - 6 kg (13.2 pounds) low iron rhino pellet
    - 15-20 kg (33–44 pounds) grass hay
  - ✓ Produce - Usually 2 apples, 2 carrots, 2 sweet potatoes; may vary, perhaps using turnips, beets, or bananas. Greens up to one pound/day.
  - ✓ Browse
  - ✓ Mineral salt – 1/4 cup
  - ✓ Vitamin E supplement 3 days per week
- Approved enrichment - Boomer balls, Amazing Graze, large plastic spool-shaped toy, plastic barrels (must be closed on each end), grain bags or paper bags, wood chips, scratching with brush, hanging branches on lines
  - ✓ Food items - Ice treats, peppermints, bananas, unsweetened juice/Kool-Aid, spices, pasta, bread, applesauce, Christmas trees, pumpkins, cantaloupe, grapes, blueberries, strawberries, watermelon, pears, cherries (no pits), peaches (no pits), green beans, corn on the cob, plums (no pits), turnips, asparagus, tomatoes, cauliflower, grapefruit, pineapple, raspberries, lemons, limes, cucumbers, scratch grain, cereal, sunflower seeds, peanuts, peanut butter, molasses

### Outdoor Habitat

- The outdoor area has also been expanded and includes two yards into which the public can view.
- An additional space is an off-exhibit area is flat and safer for the rhinos in cold weather – with less ice.
- 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 rhinos like to create their own wallows from puddles when it rains.
- The large “rocks” in the middle of the yards are actually man-made and serve as feeding platforms.
- Look carefully for the white PVC tubes affixed to the sides of the spaces. They are placed so that visitors can see the rhinos use their prehensile lips to browse for branches and leaves in the device.

### Artifacts

All of the biofacts came from our previous male, Spike, who died in 2008.

(1) Feeding Adaptations – Discuss **adaptations** for feeding and predator/prey

#### Biofacts:

- Lower jaw (Students do NOT touch this item.) - Black rhinos are **herbivores**. They do not have incisors or canines. They only have large premolars and molars on the sides of their jaws. These are for grinding up vegetation.

The black rhinoceros lives in Africa, and is a browser and has a prehensile upper lip to find and cut off the browse on shrubs and trees. It has a far smaller head than the white rhino, because it does not need all the muscles for lowering the head to the ground to eat. (The white rhinoceros, also found in Africa, is the species with the wide upper lip. It is the rhinoceros that spends much of its time grazing for which reason it has developed this wide lip to help in cutting off the sharp grass. Therefore, it has far more muscles in the neck area, which are necessary to lift the heavy head because it has to lower the head for the grazing. The hind-head of the skull is much larger than in other rhinos to give an attachment for the muscles.)

#### Illustrations:

- **Prehensile lip** - Used to grasp browse materials, that is, leaves and branches
- **Mouths of white and black rhinos** – See discussion above.

(2) Other Adaptations – Discuss additional **adaptations**, including the senses (good sense of smell and hearing and poor sense of sight) and body structure

#### Biofacts:

- **Horn** - Black rhinos have two horns, which rest on a bony plate on the rostrum of their skull. Rhino horns are not attached to the skull as they are in antelope and will continue to grow to their maximum length, even if broken off. The horn is made of **keratin**, not modified hair-like fibers, even though you may see fibers that resemble coarse hair if you look at the base of the horns. The evolution of the horn was most likely for impressing the opposite sex. It is used for sparring during the courting process. The horn can also be used as a weapon to stab at predators, though most often it is used to fend off other rhinos. They also use the horn as a tool to push and turn over mud in a wallow, excavate soil at salt licks, and remove branches and bark from trees. The second horn does not appear to serve any functional purpose today.
- **Skin** - Rhino skin is about  $\frac{3}{4}$  of an inch thick and rough to the touch. It protects rhinos from thorns and sharp grasses in the African savanna. The skin has sparse hairs that cannot be seen from a distance. The skin inside the folds is smooth, which reduces friction between skin surfaces as the animal moves.
- **Foot** - Rhinos have three toes on each foot, each with a sturdy hoof-like nail. The middle toe bears most of the rhino's weight. The sole is like a smooth, tough, rubbery pad that cushions the rhino's weight. A rhino can run up to 35 mph at a full charge.
- **Tail** - Most of the body hair is found on the ear fringes and tail bristles. The hair on this tail has been rubbed off from use in education lessons.

#### Illustration:

- **Wallow** – Rhinos often wallow in mud holes, covering themselves with mud to cool off, protect their skin from sunburn, and to protect themselves from flies. They often sleep in mud holes.

- Birds (oxpeckers and egrets) eat ticks and other parasites it finds on the rhino and noisily warns of danger. Although the birds also eat blood from sores on the rhino's skin and thus obstruct healing, they are still tolerated.

### (3) Conservation – Discuss threats and efforts to help rhinos

#### Artifacts:

- Box for rhino-horn medicine

#### Illustrations:

- Geographic distribution of black rhinos - Map of Africa illustrating historic and current ranges
- How black rhinos become endangered:  
**Endangered** due to **poaching** for (1) traditional Asian medicine (horn ground into powder and dissolved in boiling water) and (2) dagger handles in the Middle East. Habitat change has also contributed as a secondary cause. Note: While poaching is the #1 cause of black rhinos becoming endangered, the #1 reason that most endangered animals become endangered is **habitat change**, or loss, or destruction (e.g., chopping down trees, pollution, human encroachment, climate change, invasive species).
- Conservation organizations helping black rhinos in the wild – what they are doing (e.g., World Wildlife Fund, Lewa Wildlife Conservancy, and David Sheldrick Wildlife Trust) (1) working to expand existing protected areas and improving their management, (2) establishing new protected areas, (3) improving security monitoring to protect rhinos from poaching, (4) improving local and international law enforcement to stop the flow of rhino horn and other illegal wildlife trade items from Africa to other regions of the world, and (5) promoting well-managed wildlife-based tourism experiences that will also provide additional funding for conservation efforts.

Photos of some specific actions to help conservation – moving rhinos to safer places, training dogs to detect poachers, education people who live where rhinos live.

- Species Survival Plan (SSP) sign – Zoos are helping black rhinos with scientific captive breeding. (Students have already learned about SSP earlier in the week.)
- Black rhino mother and baby (Doppsee and her son Jaali, born in 2019 and moved to the Living Desert Zoo in California in 2021).  
Note: Problems for rhinos making a comeback in the wild include the fact that rhinos have a long pregnancy (**gestation** of 15-16 months) and have a long interval between pregnancies (averaging between 2.5 to 3.5 years).

**SCHEDULE CLASS 1: Groups A & B begin in the Rhino Barn and end in the Safari Room with PowerPoint and biofacts.** Logistics are important. Follow times as closely as you can but expect delays and be flexible.

TIME	GROUPS	LOCATION	WHAT IS GOING ON?
12:45	A & B together	Groups enter Rhino Area through the gate by the penguins.	Each group has a bin outside the Rhino Barn door in which to place journals and pencils before they enter. <b>No photographs in the Rhino Barn.</b> Gloves off and in pockets or bin. Inform students of footbath as they enter and the need to be quiet and calm while in the building so as not to startle animals.
	A & B together	In Rhino Barn	<b>Keeper gives brief introduction to whole class.</b>
12:50	A & B separate areas	In Rhino Barn (visiting rhino or the kitchen area)	<b>Half the class visits the rhino while the other half visits kitchen area to talk about what they see.</b> BZL Coordinator, or designated substitute, will move small groups of about 4-5 students/adults to the rhino and back in a timely fashion. The keeper is in charge of the rhino interaction. The volunteer in charge of the rhino group keeps the rest of his or her students busy at the squeeze cage and refrigerator while the other students are visiting the rhino.
1:00	A & B switch areas	In Rhino Barn to the other area – kitchen or rhino area, as appropriate	<b>The groups switch:</b> With their volunteer, the kitchen group moves to the rhino & the rhino group moves to the kitchen area.
1:10	A & B together	In squeeze cage (or training chute)	<b>Together the whole class</b> will quietly enter the squeeze cage to be weighed and compared to that of a rhino adult (2800 pounds), Jaali when he left (1400 pounds), Jaali when he was born (about 70 pounds). They will quietly step out, enter the footbath, and receive hand sanitizer as they leave the barn, and pick up items left in outdoor bins.
1:15	A & B together	Groups to the Safari Room	Travel time
1:20	A & B together	Safari Room	<b>Both groups gather</b> for a PowerPoint with the two volunteers addressing adaptations and conservation.
1:35	A at one biofact table, B at the other	Separate biofact tables	<b>Each group follows their volunteer</b> to one of the biofact tables for an up-close look at the items.
1:40	Each group switches to other artifact table	Separate biofact tables	<b>Groups switch with their volunteer</b> to the other biofact table.
1:45	A & B to next location	Groups travel within zoo	Lesson is done. Both groups travel to next BZL activity (as assigned).

**SCHEDULE CLASS 2: Groups C & D begin in the Safari Room with PowerPoint and biofacts and end in the Rhino Barn.** Keep to your schedule but expect delays, especially when you arrive at the Rhino Barn. Try some of the debriefs to keep students occupied while waiting.

TIME	GROUPS	LOCATION	WHAT'S GOING ON?
12:45	C & D together	Safari Room	<b>Both groups gather</b> for a PowerPoint with the two volunteers addressing adaptations and conservation.
1:00	C at one biofact table, D at the other	Separate biofacts tables	<b>Each group follows their volunteer</b> to one of the biofact tables for an up-close look at the items.
1:05	Each group switches to other table	Separate biofacts tables	<b>Groups switch with their volunteer</b> to the other biofact table.
1:10	C & D together	Groups to the Rhino Barn	Travel time
1:15	C & D together	Groups enter Rhino Area through the gate by the penguins.	Each group has a bin outside the Rhino Barn door in which to place journals and pencils before they enter. <b>No photographs in the Rhino Barn.</b> Gloves off and in pockets or bin. Inform students of footbath as they enter and the need to be quiet and calm while in the building so as not to startle animals.
	C & D together	In Rhino Barn	<b>Keeper gives brief introduction to whole class.</b>
1:20	C & D separate areas	In Rhino Barn (visiting rhino or the kitchen area)	<b>One half class visits rhino while the other half visits kitchen area to talk about what they see.</b> BZL Coordinator, or designated substitute, will move groups of about 4-5 students/adults to the rhino and back in a timely fashion. The keeper is in charge of the rhino interaction. The volunteer in charge of the rhino group keeps the rest of his/her group busy at the squeeze cage and refrigerator while the other students are visit rhino.
1:30	C & D switch areas	In Rhino Barn (to the other area – kitchen or rhino area, as appropriate)	<b>The groups switch:</b> With their volunteer, the kitchen group moves to the rhino & the rhino group moves to the kitchen area.
1:40		In squeeze cage (or training chute)	<b>Together the whole class</b> will quietly enter the squeeze cage to be weighed and compared to that of a rhino adult (2800 pounds), Jaali when he left (1400 pounds), Jaali when he was born (about 70 pounds). They will quietly step out, enter the footbath, receive hand sanitizer, leave the barn, and pick up items left in outdoor bins.
1:45	C & D to next location	Groups travel within zoo	Lesson is done. Both groups travel to next activity (as assigned).

**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