

BIG ZOO LESSON: RHINO ENCOUNTER

Students meet our rhino and learn about life in the wild and in the zoo: adaptations, the renovation of the exhibit, and conservation. This lesson includes a special visit behind-the-scenes.

OBJECTIVES

- Identify adaptations (senses; short, stout limbs; prehensile lip; horn; teeth; wallowing)
- Identify features (indoor and outdoor) of the black rhino exhibit at Potter Park
- Identify conservation concerns and actions taken to improve the situation

KEYWORDS

Adaptation, herbivore, keratin, prehensile, wallow, endangered, poaching

THE ENCOUNTER

This lesson is scheduled for about one hour beginning at 1 p.m. (Docents should arrive at 12:30 p.m. to prepare with the other docents.) One or two classes participate. Each docent leads half of a class, or up to 15 students. The lesson, rhino barn visit, and three 30-minute stations at a separate locations sharing rhino biofacts, travel time within the zoo included.

Caution: The rhino barn visit includes an up-close visit with a rhino, typically including opportunities for the students to touch a rhino (if the rhino is in the mood).

It is critical for docents 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 when there is a 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 everyone likely to be hit with a shower of urine.

A handful of students and adults will visit a rhino at a time. The BZL site coordinator (or an assigned docent) 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 docent supervises the rest of his/her group—those that have already visited and those that have not yet visited. Students will be offered hand sanitizer when leaving the rhino barn.

The order and specifics of the above elements are further explained below.

CLASS 1 (Groups A & B)

Logistics are important. Follow times as closely as you can, but expect delays and be flexible.

TIME	GROUPS	LOCATION	WHAT IS GOING ON?
1 p.m.	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. No photographs in the rhino barn. 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.
1:05 p.m.	A & B together	Rhino barn	Keeper gives brief introduction to whole class.
1:10 p.m.	A & B separate areas	Rhino barn	One group visits rhino while the other group visits kitchen area. BZL site coordinator or assigned docent will move groups of about 4–5 people to the rhino and back in a timely fashion. The keeper is in charge of the rhino interaction. The docent in charge of the rhino group keeps the rest of their group busy at the squeeze cage and refrigerator while a small group is visiting the rhino.
	A & B switch areas	Rhino barn	The groups switch: With their docent, the kitchen group moves to the rhino and the rhino group moves to the kitchen area. Before leaving the building, both groups enter the squeeze cage to get a group weight.
1:30 p.m.	A & B together	Groups leave and travel to biofact site (Safari Room or VEZU, as assigned)	Travel time
1:40 p.m.	A & B together	Biofact site	Both groups gather together in front of their two docents as the docents present the biofacts.
2 p.m.	A & B travel to next location	Groups travel within zoo	Lesson is done. Both groups travel to next BZL activity (as assigned).

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CLASS 2 (Groups C & D)

Keep to your schedule but expect delays, especially when you arrive at the rhino barn. Try some of the debriefs suggested below if you need to keep students occupied while you wait.

1 p.m.	C & D together	Safari Room or VEZU, as assigned	Both groups gather together in front of their two docents as the docents present the biofacts.
1:20 p.m.	C & D together	Groups travel within zoo	Both groups travel to the Rhino Barn.
1:30 p.m.	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. No photographs in the Rhino Barn. 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.
1:35 p.m.	C & D together	Rhino barn	Keeper gives brief introduction to whole class.
1:40 p.m.	C & D separate areas	Rhino barn	One group visits rhino while the other group visits kitchen area. BZL Site Coordinator or assigned docent will move groups of about 4–5 people to the rhino and back in a timely fashion. The keeper is in charge of the rhino interaction. The docent in charge of the rhino group keeps the rest of their group busy at the squeeze cage and refrigerator while a small group is visiting the rhino.
	C & D switch areas	Rhino barn	The groups switch: With their docent, the kitchen group moves to the rhino and the rhino group moves to the kitchen area. Before leaving the building, both groups enter the squeeze cage to get a group weight.
2:00	C & D travel to next location	Groups travel within zoo	Lesson is done. Both groups travel to next activity (as assigned).

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. Also, consult the rhino data sheet recently provided to you in your docent training or in subsequent handouts for additional rhino information. If you do not have it in your docent manual, check the files in the docent lounge for a copy.

Timing and logistics are important to the success of this program. Please be prepared to deliver your information in chunks so that you may break away when necessary to move on.

GETTING STARTED

Foster a discussion with your audience. Ask your audience questions.

RHINO BARN LESSON

- Recent renovation and expansion completed in 2011.
- Keepers had input in design of building renovation.
- Building was originally an elephant barn, converted to rhinos in early 1990s.
- New rhinos arrived in June 2011. Doppsee, the female, was born in July 2007. Jello, the male, was born in January 2004. Jello had seizures and took a lot of medications daily to control them. He died in October 2015.
- More space: The 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 Doppsee more movement and the keepers the ability to shift rhinos inside in winter.
- The squeeze cage has a built-in scale (Weight records are kept nearby.) The sides of the squeeze cage can pull in together enough to gently prevent Doppsee from moving around much while keepers and medical staff can get a better look at her and conduct target training to better care for her.
- Target training: Keepers target train the Doppsee. Among the behaviors she has mastered are “target,” “poke,” “foot,” and “open.” These behaviors allow keepers and medical personnel to give shots, draw blood, check feet, give oral medications, etc.
- Large, thick, vertical bars allow keepers improved access to the animals.
- Showers: Look for a showerhead in the ceiling of the stalls. Doppsee gets 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. Also, in the winter keepers bring in a bucket of mud to put on Doppsee to create mini mud baths.
- 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 Doppsee is in the stall facing the window.
- Getting outdoors in winter: Rhinos can tolerate some cold weather. In Africa, it can get below freezing at night. Doppsee is allowed outside in temperatures of 25°F (-4°C) and above if it’s not too slippery. She does enjoy the snow. The third

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outdoor yard, which is off exhibit, is flat and safer for her when slippery.

- **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 nearby.
 - **Doppsee's daily diet**
 - **Grain:** 8.8 pounds (contains salt requirement)
 - **Produce:** Usually 2 apples, 2 carrots, 1 sweet potato; may vary, perhaps using turnips or bananas
 - **Grass hay:** About ½ bale of hay
 - **Flaxseed oil**
 - **Vitamin E supplement**
 - **Browse**
 - **Approved enrichment:** Boomer balls, Amazing Graze, large plastic spool-shaped toy, plastic barrels (must turn so do not get heads stuck), grain bags or paper bags, scratching with brush, wood chips, hang branches on lines, paper bags allowed on a weekly basis but **no** cardboard boxes. Food items: Greens, ice treats, bananas, unsweetened juice/Kool-Aid, spices, pasta, bread, applesauce, pumpkins, cantaloupe, grapes, blueberries, strawberries, watermelon, pears, cherries (no pits), peaches (no pits), plums (no pits), green beans, corn on the cob, turnips, asparagus, tomatoes, cauliflower, grapefruit, pineapple, raspberries, lemons, limes, cucumbers, scratch grain, cereal, sunflower seeds, peanuts, peanut butter, molasses
 - The refrigerator contains produce that Doppsee eats. You may find a bucket prepared for Doppsee's daily feed. Hay is kept in bales nearby.
 - Storage for large enrichment devices, such as Boomer balls and green Amazing Graze devices.

BIOFACTS LESSON

One or two tables are set up with biofacts and photographs addressing (1) feeding adaptations, (2) other adaptations, and (3) conservation. Docents should keep the conservation discussion "light" for grades 3 and below. Two docents work together like an encounter to discuss the biofacts and photographs available on the table(s). Ask questions and encourage discussion. At the end of the presentation, students can file by the biofacts and touch the items except the lower jaw and the hair on the tail. Students must be gentle and orderly. Hand sanitize after.

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

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.
- **Horn:** Black rhinos have two horns that rest on a bony plate on the rostrum of their skull. 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, which is the same material that hair and fingernails are made from. Rhino horn, however, is not simply compressed hair, even though you may see fibers at the base of the horns that resemble coarse hair. The evolution of the horn was most likely for impressing the opposite sex. The horn is 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:** The thickness of rhino skin varies across the body with it being thickest around the middle. It can be 1 to 3 inches thick and is rough to the touch. It protects rhinos from thorns and sharp grasses in the African savannah. 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.
- **Femur:** The femur is the large bone in the thigh. (Compare it to humans. Rhino femurs are in the haunch area of the body.) It connects from the hip socket to the knee area, where it joins the tibia (shinbone) and the fibula in the lower leg. It is designed to provide support to the leg. Various muscles are attached to the femurs so that the legs are able to move.
- **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** (There are not many hairs left on this tail; students **do not touch** this item.): Most of the body hair is found on the ear fringes and tail bristles.
- **Rhino medicine box** (for use with 4th graders and up): Note the listing of "rhino horn" as an ingredient on the box

Illustrations

- **Black rhino prehensile lip:** The black rhinoceros 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.

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- **Black rhino vs. white rhino mouth:** The white rhinoceros 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.

- **Black rhino habitat:** Black rhinos are mainly found in transitional zones between grassland and forest, in thick thorn bush or acacia scrub.

- **Black rhino habitat with birds:** Birds (oxpeckers and egrets) eat ticks and other parasites they find on the rhino and noisily warn the rhino of danger. Although the birds also eat blood from sores on the rhino's skin and thus obstruct healing, they are still tolerated.

- **Geographic distribution of black rhinos:** Map of Africa illustrating historic and current ranges

- **Wallow:** Rhinos often wallow in mud holes, covering themselves with mud to cool off and to protect themselves from flies. They often sleep in mud holes too. Doppsee likes to create her own wallows when it rains and there are good puddles in the yard.

- **For use with 4th graders and up:** 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.

Many conservation organizations are (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.

- **Species Survival Plan (SSP) sign:** Zoos are helping black rhinos with scientific captive breeding. (BZL students have probably already learned about SSP during their week before their rhino lesson.)

- **Black rhino mother and baby:** Offspring of former PPZ male, Jemma, who reproduced at the Cleveland Zoo. Baby rhinos range from 75–100 pounds (34–45 kgs) at birth.

DEBRIEFS

Debriefs are techniques used to review and reinforce learning that has just occurred. They are great ideas for keeping your group engaged if you must wait at some point in your lesson.

- Ask review questions about things your group has already seen.

- Have kids pair up. Each student states a rhino fact and compares that to their observation animal.

CONCLUSION

Once all of the students have seen the artifacts and been in the rhino barn, the lesson is over and will often move on to other activities in the zoo.