

# FEEDING ADAPTATIONS CART

The following items should be on the cart, if they are not let someone in education know. If you discover a new problem with any biofact (broken pieces, loose teeth, etc.), it is your responsibility to let the staff know **and** make a notation with the date, time and your name on the sign out clipboard.

**Note:** Please return all items to their appropriate place on the cart, and make sure lids and bungee cords are secured. Things should be left exactly as you found them.

**Note:** Do not try to open the Lucite containers with the food. We are trying to prevent animals from getting into the bone room.

## FEEDING ADAPTATIONS CART INVENTORY

- Grizzly Bear skull (female)
- Grizzly Bear claws – 2
- Lion skull (female)
- Lion claws - 2
- Siamang skull (female)
- Flamingo skull (unknown)
- Raccoon skull (male)
- North American Porcupine skull (female)
- African Porcupine quills - 3
- N. A. Porcupine quills
- Reeves Muntjac skull (male)
- African Elephant tooth pieces - 2 (female)
- Human tooth impression (female)
- Lucite box containing 30 different dried foods for zoo animals
- Feeding Adaptations Resource Notebook

## FEEDING ADAPTATIONS CART TALKING POINTS

### LION

Like all mammals, the skull of the lion consists of a lower jaw or mandible connected to the skull by muscles. The movement of the mandible and shape of the teeth are related to the way the animal eats. The lion is an obligatory carnivore, which means it must eat meat or it will go blind. It has certain kinds of teeth that help it to catch and eat prey. Along with the aid of the claws, the lion is an effective hunting machine. The claws are retractable, so they remain sharp. Compare the lion claws to the grizzly bear, which are used for digging. The canines are long and pointed for grabbing and holding prey during capture. The incisors are small and used for snipping, but not for nipping off pieces of meat and are also used for grooming. The premolar and molars come together like scissors and form a shearing surface to tear flesh off into bite size pieces.

### GRIZZLY BEAR VS RACCOON:

The Grizzly bear is an omnivore, which means it eats both meat and plants. It has similar dentition, or arrangement of teeth, to a carnivore but the molars are more rounded because the Grizzly bear needs to chew plant material. The massive cheek teeth function as grinders. The North American Raccoon has sharp teeth and is classified as a carnivore, but has an omnivorous diet. They are opportunistic feeders, and adapt well to urban environments. Sometimes people want to feed raccoons because they look 'cute', but these teeth are one of the reasons wild animals do not make good pets.

### ELEPHANT:

The elephant tooth fragment demonstrates how large a whole Elephant tooth would be. The species (African or Asian) is unknown. Elephant teeth erupt sequentially during their life. There is one and maybe a fraction of a tooth in each quadrant of the jaw. The elephant has six sets of teeth during their lifetime. The coarse food the elephant's eats wear down the teeth, one set after another. The last set is usually worn down by the age of 60 years old, leaving the animal unable to chew its food and it dies of starvation. As the last set wears down the older elephant will go to a marshy area where the food is softer. Elephants also have upper incisors on each side of their jaw, which grow continuously to form the tusks.

### FLAMINGO:

Bird skulls do not have teeth. Instead, they have beaks that are adapted to the food they eat. The skull is thin and lightweight, like all bird skulls, which is an adaptation for flight. This thin bone would not support teeth and teeth would add too much weight. Notice that the lower jaw is made up of several bony components, unlike a mammal skull, which has a lower jaw made of one bone. The hinge is composed of one bone from the lower jaw and one from the upper jaw.

The flamingo holds its bill upside-down in the water and uses its tongue as a piston to push water and mud in and out, three or four times per second. The water is pushed past filtering comb-like structures, called lamellae, which remove food, such as shrimp, from the water and mud. Flamingos are pink because of the food they eat. The zoo's flamingo chow contains Carotenoids to maintain their color. Carotenoids are the pigments, which make carrots orange and shrimp pink.

#### PORCUPINE:

The North American Porcupine is the second largest rodent in North America, after the beaver. Rodents have large ever-growing and rootless incisors. Because the teeth grow continually, rodents must gnaw continually to keep them at the proper length. The incisor orange enamel is harder than the rest of the tooth so it wears to a chisel-like shape that allows rodents to cut and chop food, which is then passed back to the molars for grinding. There are no canines and all or most of the premolars are absent. This leaves a gap between incisors and molars, which allow incisors to grow continuously.

#### MUNTJAC:

The Reeves Muntjac; is a herbivore, which means it only eats plants, and a ruminant, which means it must chew up food, partially digest, regurgitate, and fully digest to get the full nutritional value. Ruminants grind their food with a side-to-side motion. Similar to other herbivores, like the porcupine, the premolars are ever growing and are worn down by grinding food. This grinding wears away the enamel, exposing darker dentine valleys. The premolars have the shape of molars, and you can see the ridges formed on these teeth running in a back-to-front direction. The canines on the mandible have the shape of incisors, and along with the true incisors, form a cutting edge of eight teeth. The cutting edge for tearing grass and other plants is formed between the eight lower teeth and a hardened, toothless upper gum (found in all ruminants).

Notice that the antler stump on one side of the skull is abnormal. The other side is a normal abscission zone and is how the skull should look after the antlers are shed each year. Due to the small size of the Muntjac's antlers, it has developed fangs that curve out from the upper lip, for additional protection. Note that this particular animal has broken his fangs short.

#### SIAMANG VS HUMAN

The Siamang is an omnivore, like humans. Notice how similar the dentition of the human and Siamang is. However, the Siamang has much larger canines; called fangs, used for threat display. The male Siamang has much larger canines than the female.

#### CONCLUSION:

The skull and mandible of an animal can vary greatly depending on what the animal eats. For instance, the Lion has sharp canines to catch and pull down prey to eat, but the Reeves Muntjac is missing its front upper teeth to allow the animal to grind plant material for digestion.