

HIPPOPOTOMUS (*Hippopotamus amphibius*) ADAPTATIONS TALKING POINTS

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.

HIPPO CART INVENTORY

- Hippopotamus skull and mandible
- 1 lucite box containing hippo food
- Hippopotamus Resource Notebook

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

Note: Please be Careful – Hippo skull and mandible are heavy.

DO NOT use teeth as handles to move skull; people can come up and touch the skull if they like but don't allow them to pick it up, or to pull on the teeth.

GENERAL HIPPOPOTOMUS INFORMATION: The hippopotamus is a large amphibious creature found in sub-Saharan Africa. The name “hippopotamus” comes from a Greek word meaning “water horse” or “river horse;” in Afrikaans the word for hippo is “seekoei”, meaning “sea cow”. Hippos spend the day in water and emerge at night to mainly graze on vegetation. The hippopotamus uses the water only as a retreat and it does not eat aquatic vegetation to any extent.

There are two species of hippopotamus: the river, common or Nile hippo and the much smaller pygmy hippo (*Choeropsis liberiensis*). The common hippo is the third largest land animal, after elephants and white rhinos. The closest living relatives of the hippo are cetaceans (whales, porpoises, and dolphins.) from which they diverged about 55 million years ago. Hippos are in the Order Artiodactyla (even toed ungulates).

HIPPO RANGE/HABITAT (see map)

- Currently found in sub-Saharan Africa, in scattered populations in lakes or slow-moving water of rivers.
- Habitat includes deep water rivers with adjacent reed beds and grasslands, salt water deltas and landlocked springs and lakes
- Water habitat must be deep enough for submersion with nearby grassland for foraging.
- Most frequently found in estuaries and lower sections of rivers
- Frequently wander from water in rainy season and during dry seasons, hippos will move to find new water holes.

HIPPO PHYSICAL ADAPTATIONS

1. Size /Weight/Lifespan

- 13 feet long and 5 feet tall
- Sexually dimorphic, average adult males = 6,500 - lbs, females 3,000 lbs; canines are also twice as long in males than in females.
- Head is around a third of its total body weight, with its vast mouth being able to open up to 150 degrees.
- Lifespan: wild 40 – 50 years, captivity up to 60 years

2. Skull/Dentation

- Eyes, nose and ears are all on top of head; hippos can hear, see, and breathe while most of their body is underwater, an adaptation for a highly aquatic animal.
- Large forward thrusting canine and incisor teeth grow continuously, with canines reaching 20 inches in length.
- Canines and Incisors are tusk-like; the enlarged incisors are sometimes referred to as “fighting tusks” because of their size and they inflict the most wounds during fights. (Note: definition of “tusk” - a long, pointed tooth, especially one specially developed so as to protrude from the closed mouth) (see photo)
- Canine and incisors are made of ivory and are the second largest source of ivory behind elephants. Hippo ivory is even more highly prized because it does not turn yellow with age. Hippo ivory is denser than elephant ivory, harder to carve, and has a finer grain and a thick enamel coating. (Note: Teeth and tusks both consist mainly of dentine. “Ivory” is used to describe any mammalian tooth or tusks of commercial interest, which is large enough to be carved or scrimshawed.)
- Nostrils and ears can automatically close while underwater and hippos can hold their breath for on average five minutes when submerged.
- Hippo lips have a tough edge which is used to rip off vegetation
- Molars are consistent with herbivorous diet.

3. General Physical Characteristics

- Barrel-shaped torsos with short, columnar-like legs and hoof-like nails, designed to support a great weight (**graviportal**). Hippos are capable of running 30 mph over short distances.
- A Hippo’s skin is thin and needs to be kept wet or it can lead to dehydration; due to the way that the skin of the Hippopotamus is made up, the animal cannot sweat so when it comes into contact with air the skin easily dries up and will crack. The water serves to keep the hippo’s body cool and also gives them buoyancy to ease their weight burden on their limbs. (Note: the hippo loses water at several times the rate of other mammals. Rapid dehydration and overheating are major risks to the hippo. Hippos need to consume about 53 gallons of water in 24 hour period).
- The hippo has neither sweat nor sebaceous glands but relies on water or mud to keep cool. Hippos secrete a thick, red, oily substance from their pores known as “**blood sweat**”. This blood sweat protects their skin from sunburn and keeps it moist and may have anti-bacterial properties and prevent infections. (Note: Their thin skin makes them vulnerable to wounds from fighting; the antibacterial properties of the blood sweat are important to the hippos health.
- Hippos have a three-chambered stomach, which is non-ruminating; hippo stomachs are designed to efficiently derive nutrition from the lower-energy foods off which they exist. A hippo’s stomach contains microbes that have the enzymes the hippo lacks for breaking down the cellulose in the vegetation.

- Hippos have four webbed toes on each foot that help with bottom walking in the water and walking on slippery banks.
- Hippos don't have much hair on their bodies but they do have stiff facial whiskers and some fuzziness around their ears and tail.
- Hippos have a muscular, paddle like tail. Hippo feces are deposited in the water and dissipated by their tail. The individual is advertising their status and condition and are marking their territory. Dung middens are also found along hippo paths leading into and out of territories. (see photo)

4. Senses

- Hippos have excellent hearing; they can move each ear independently to differentiate where a sound is coming from.
- Hippos have good vision; they also have a clear membrane covering their eyes for protection while still allowing them to see when underwater.
- Hippos have an excellent sense of smell. In addition, the Vomernasal organ (Jacobson's organ – an auxiliary olfactory sense organ) enhances olfaction and functions in water and land allowing the hippo to sense friend and foe at all times.
- Hippos may be hearing underwater sounds when lower jaw is below water. (like cetaceans)

HIPPO BEHAVIORAL ADAPTATIONS

1. Life Style

- Semiaquatic lifestyle; they spend up to 18 hours during the day in the water or mud, trying to remain cool; they emerge at dusk to graze on grasses. Hippos venture out onto land and follow well-trodden paths to their feeding grounds, before returning to the water in the morning. Being mainly aquatic reduces the weight burden of the hippo's body.
- Nocturnal grazing is a solitary activity (except for mothers with calves); grazing not done with herd.
- Males are territorial only in water, not at night on land; when threatened, the hippo will head to the water for safety. Adult males are usually tolerant but can be highly aggressive toward other individuals.
- Hippos live in herds, containing 10 – 30 individuals, comprised of females with their young. Each group has one dominant male, which is the only one that mates with the females.
- Male is fiercely territorial; if another male tries to approach one of the females, the dominant male will threaten the intruder by opening its jaws wide, making a loud bellowing noise, and charging. If the intruder does not back down, a vicious fight often follows, with the winner gaining the right to mate with the females of the group.
- Hippos can't swim— their bodies are far too dense to float, so they move around by pushing off from the bottom of the river or simply walking along the riverbed in a slow-motion gallop, lightly touching the bottom with their toes, which are slightly webbed.
- Hippos can sleep underwater, using a reflex that allows them to bob up, take a breath, and sink back down without waking up.
- To mark territory, hippos spin their tails while defecating to distribute their excrement over the greatest possible area.
- Dominant males are usually very intolerant of juveniles attempting to challenge them. Larger males have a tendency to harm or kill the young males during these displays.

2. Communication:

- Hippos are one of the noisiest animals in Africa: some hippo vocalizations have been measured at 115 decibels, about the same volume as being 15 feet away from the speakers at a rock concert! They also use snorts, grumbles, “wheeze-honking,” and other ground-shaking—and sometimes subsonic—vocalizations to communicate to other hippos. As one starts calling, the rest of the family “sounds off” down the line.
- Bulls have a loud roar that can be heard over great distances.
- Hippos establish trails on the land to ease movement and marking their territory with feces. Common dung middens on land may assist in communication and orientation at night.
- The dominant male reminds other hippos of his territory by flinging his dung as far as possible with his fan-shaped tail. (see photo)

3. Diet/Eating Habits/Digestion

- Primarily grazers; diet consists of soft short grasses and other plants (rarely aquatic), fallen fruits, some cultivated crops
- When they come onto land at night, hippos may travel up to 6 miles during the night to get to their feeding grounds.
- Zoo diet of alfalfa, horse chow, fresh vegetables

4. Breeding/Reproduction/Growth/Parental Care

- Reproduction and births occur most frequently underwater. Gestation is around 8 months.
- The female will leave the herd for a short time to go and give birth in seclusion. Mother and calf will return after 10 – 14 days, when the calf has imprinted on her. Mothers are good caregivers.
- The breeding season for hippos is linked to the dry season, so that most births happen during the wettest time of the year.
- Single calf is nursed underwater and rides mother’s back. The newborn needs to be pushed to the surface to breathe. Newborns are able to stay underwater for about 2 minutes before surfacing for a breathe. (see photo)
- Adult females generally have offspring every two years.
- Hippo calves weigh nearly 100 pounds and 50 inches at birth and can suckle on land or underwater by closing their ears and nostrils.
- Small calves are also often left in ‘creches’, which are guarded by one to several cows while the mothers forage. Adult females can be very aggressive when protecting young calves.
- Mothers and dominant male will protect calves from other bulls.
- Calves are weaned at 6 - 8 months old but tend to remain with their mother until they are fully grown. Females reach reproductive age at about 7 to 9 years, males 9 to 11 years.
- Young males are more independent and find their own patch of bank to patrol, whereas females will join a herd of other females and young. They may be driven from group when they reach maturity by the territorial bull.

HIPPO INTERESTING/FUN FACTS:

- It is commonly believed that George Washington's false teeth were made of wood; however, they were actually carved from hippo ivory.
- Hippo poop in the water and their feces nurture abundant growth of tiny plankton that feed the fish that in turn feed humans, otters and crocodiles.
- Young hippos are vulnerable to some predators, including crocodiles, lions, and hyenas, when they are unprotected.
- The hippo is ranked among the most dangerous animals in Africa as it is a highly aggressive and unpredictable. It has been estimated that they have killed more humans than any other animal both on land and in the water.

HIPPO CONSERVATION:

- The hippopotamus is classified as Vulnerable on the IUCN Red List, and listed on Appendix II of CITES
- Historically, the hippo once ranged from the Nile Delta to the Cape, but now is mostly confined to protected areas. (see map)
- The hippo is threatened by habitat loss and poaching for their meat, fat and ivory teeth (canines and incisors).
- Hippos are killed because of destructiveness to crops and attacks on fishermen
- Although the Common Hippopotamus remains abundant and widespread throughout its current range, numbers are reportedly declining. Hundreds of hippos are shot each year to minimize human-wildlife conflict, despite the fact that ditches or low fences easily deter hippos.

Hippopotamus Information Sources:

Walker's Mammals of the World, 6th edition, Ronald M. Nowak, © 1999 Johns Hopkins University Press

The Hippos S.K. Eltringham © 1999 Academic Press, London, UK.

<http://animals.nationalgeographic.com/animals/mammals/hippopotamus/>

<http://www.awf.org/wildlife-conservation/hippopotamus>

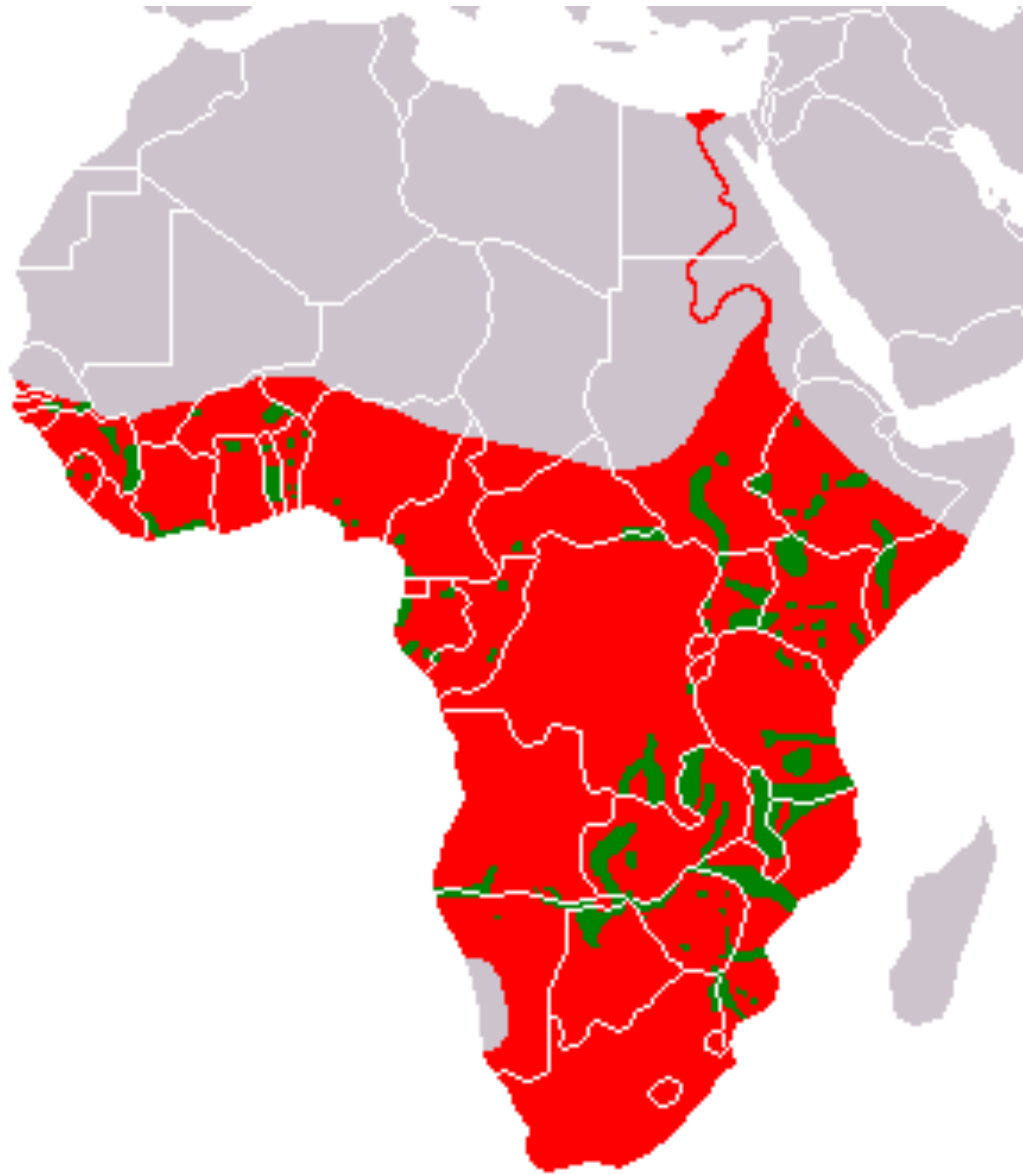
<http://www.arkive.org/hippopotamus/hippopotamus-amphibius/>

<http://animals.sandiegozoo.org/animals/hippo>

<http://www.ultimateungulate.com/Cetartiodactyla/Hippopotamidae.html>

<http://library.sandiegozoo.org/factsheets/hippo/hippo.htm>

http://animaldiversity.org/accounts/Hippopotamus_amphibius/



RANGE of HIPPOPOTAMUS (red = former range, green = present range)









did you know?

George Washington's troublesome teeth were made of bone, hippopotamus ivory, human teeth, lead, brass screws, and gold metal wire- but not wood. This is the only remaining full set of the many dentures he wore throughout his life.



PHOTO: MOUNTVERNON.ORG

 DIDYOUKNOWBLOG.COM