MONKEY CART TALKING POINTS

MONKEY CART INVENTORY

- Mandrill skull (male)
- Mandrill skull (female)
- Squirrel Monkey skull
- Black and White Colobus skull
- Lemur skull

Note: Cart should be stored so cover protects the plexiglass on the front and the open area in the back.

GENERAL PRIMATE TALKING POINTS

PRIMATE EVOLUTIONARY HISTORY (Note: see primate taxonomy charts)

- Transitional, arboreal primate-like creatures appeared around 65 million years ago after the dinosaur extinction and the first primates evolved around 60 million yrs. ago, squirrel-like insectivores with grasping hands and feet.
- The Eocene Epoch (beginning 55 million years ago) saw the appearance of a proliferation of prosimians in North America, Europe and Africa, ultimately reaching Madagascar, where isolated, they evolved into lemurs.
- Changes occurred in some of the Eocene prosimians, resulting in larger brains and eyes, smaller snouts; the foramen magnum (hole at base of skull where the spinal column passes through) began to move from the back of the skull towards the center, giving some prosimians a more erect body posture.
- With the beginning of the Oligocene Epoch (o/a 34 million years ago) world temperatures cooled and the first monkeys appeared.
- Many prosimian species were outcompeted by the new species and became extinct, except on Madagascar, where there was no other primate competition.
- The first monkeys had fewer teeth, smaller snouts, larger brains and more forward looking eyes than did the prosimians; they lived in trees and mainly ate fruit.
- The evolution of monkeys brought larger brain size, more vertical posture, less reliance on sense of smell and different use of fore and hind limbs.
- New World monkeys appeared o/a 30 million years ago, perhaps isolated groups of Old World monkeys drifting on clumps of soil and grass from Africa to South America or via a land bridge to North America and then to South America.
- Apes evolved during the early Miocene Epoch, 17-23 million years ago.
- 14 million years ago the ancestors of all modern primates lived in southern Europe, but with climate change, migrated to Africa and South Asia.
- Eight to nine million years ago two lines emerged in Africa, one leading to gorillas and another to humans, chimpanzees and bonobos.
- Five to six million years ago there was a divergence separating the ancestors of modern chimpanzees and bonobos from hominids (human-like primates).

GENERAL PRIMATE TRAITS

- There are 13 living primate families with more than 500 species and subspecies.
- There are three major types of non-human primates: prosimians, monkeys and apes.
- See attached taxonomic chart.
- 5 digits on each hand and foot
- Flat nails on toes/fingers (Some with modified claws), allowing for easier manipulation of objects
- Two separate bones in the forearm and lower leg, allowing better limb motion and more precise movements
- At least one opposable pair of digits (except colobines)
- Large clavicle
- Eyes:
  - Surrounded completely by bone (except lemur, partially surrounded)
  - Generally facing forward
  - Stereoscopic vision, providing depth perception
  - Color vision to some degree
- Paired mammary glands
- General increase in size and complexity of brain's cerebral hemisphere
- Most give birth to single offspring
- Trend toward longer period of parental care
- Trend toward longer gestation period and life spans

LEMUR ADAPTATIONS

- Old world prosimian ("prosimian" means "before monkeys")
- Found only on island of Madagascar
- Long, dog-like muzzle with wet nose and nose leather
- Flat nails and fleshy pads on most digits with first fingers and toes opposable
- Claw on second toes used for grooming
- More developed sense of smell than monkeys or apes
- Prominent whiskers and good vision with large, forward facing eyes (not as forward as monkeys); eye size probably a result of nocturnal ancestry
- Relatively poor color vision
- Long and generally bushy tails
- Dental grooming comb present
- Smaller brain to body size than other primates
- Diverse behaviors – some species maintain family groups and others solitary
- Female dominant in most species; breeding seasonal
- Diurnal and nocturnal species; most species arboreal
- Use scent markings and vocalizations for communication
- Predominant diet of fruit

MONKEY ADAPTATIONS

- Four families, two each Old World (Africa, Europe and Asia) and New World (Central and South America)
- Dry nosed, without nose leather
- Larger, more developed brain than lemurs
- Tails of various lengths present

- Flat nails on digits (marmosets and tamarins with claw-like nails)
- Opposition of thumbs and big toes of varied degrees, better than prosimians, but not as good as apes
- Limbs roughly the same length
- Shoulders do not rotate; do not brachiate
- Eyes face forward; binocular vision with ability to distinguish colors
- Lower molars with 4 cusps
- Heads rounded; short muzzle
- Vegetarian diets
- Virtually all live in social communities with groups stable over generations
- Head held upright
- Females more tolerant of each other than are lemurs
- Flexible, pliable bodies, important for movement in trees
  - **New World Monkey (Platyrrhini) Adaptations**
    - 64 species found only in Central and South America
    - Most species smaller than Old World monkeys
    - Exclusively arboreal
    - Most move quadrupedally on branches of trees or leap from branch to branch
    - Some species with prehensile tails
    - Marked by broad, flat noses with widely placed nostrils opening to the side
    - 3 premolars and relatively large molars
    - Thumb oriented in line with other digits, opposing next digit in scissor like grip (spider monkeys do not have thumbs)
    - Male involvement common in infant care
    - Social groupings range from monogamous to polyandrous to polygynous
    - Rely largely on a diet of fruit
  - **Old World Monkey (Catarrhini) Adaptations**
    - At least 78 species found in Africa and southeast Asia
    - Relatively large, ranging in size from small to medium sized dog
    - Down facing nose with nostrils close together, opening downward or forward
    - Two premolars and molars with sharply connected cusps (raised points on top of molars), facilitating chewing of fibrous plant material
    - Large, sharp canines with gap between canines and incisors
    - All have tails, but no prehensility
    - Ischial calliosities (sitting pads) on rumps to support sitting
    - Thumbs rotated and more opposable (exception – reduced or absent in colobine monkeys)
    - Most have color vision
    - Fingernails and toenails on all digits
    - Some species exhibit digitigrade walking (example: patas monkeys)
    - Male involvement in infant care rare or absent
    - Prominent sexual skin around anus and vagina in females that swells with estrous
    - Social groupings rarely monogamous; size of group varies among species and may vary with availability of food
    - Rely more on foliage in diet
    - Some species have special digestive tracts for processing low value, fibrous diet and some have cheek pouches for temporary food storage.
    - Have wider range of habitats

- Species either spend some or most of the day on the ground; may seek shelter of trees at night or for defense – semi-terrestrial

APE ADAPTATIONS

- Two families, the lesser apes and the greater apes
  - Lesser apes: gibbons
  - Great apes: gorillas, chimpanzees, bonobos, orangutans and humans (humans excluded from discussion below)
- No external tail present
- Of apes, only gibbons have ischial callosities
- Flat nails on digits
- Thumbs and toes fully opposable
- Forelimbs longer than rear limbs
- Shorter, less mobile and less flexible spine than monkeys
- Noses flat; no muzzle; protruding jaws
- Shoulders rotate for full brachiation (brachiation varies with species)
- Live either in social groups of dominant male with several adult females and young or in case of orangutans, solitary life; some species form monogamous bonds
- Have larger brain size and are more intelligent and more dependent on learning behavior patterns than are monkeys; may exhibit tool using behaviors
- Sexual dimorphism varies with species
- Lower molars with five cusps; large canine teeth
- Forward facing eyes; vision in color and binocular
- Shoulders with rotating cup joint – gives ability to brachiate
- Gibbons most arboreal with excellent ability to brachiate
- Quadrupedal gait; chimpanzees and great apes walk on knuckles
- Predominantly vegetarians, though chimpanzees eat some meat

PRIMATES AT THE SAN FRANCISCO ZOO:

- **Lemurs:** blue-eyed black lemur, crowned lemur, red-bellied lemur, red-fronted brown lemur, black and white ruffed lemur, red ruffed lemur, ring-tailed lemur
- **New World Monkeys:** pied tamarin, squirrel monkey, black howler monkey
- **Old World Monkeys:** Francois' langur monkey, black and white colobus monkey, patas monkey, mandrill
- **Lesser Apes:** siamang
- **Great Apes:** western lowland gorilla, chimpanzee

PIED TAMARIN (*Saguinus bicolor*) TALKING POINTS

PIED TAMARIN GENERAL INFORMATION:

The Brazilian bare-faced tamarin or pied tamarin is one of the smallest of the New World monkeys (marmosets are smaller). They are named for their two-tone (pied) coat of white and reddish-brown fur. Tamarins (and marmosets) are considered to be the most primitive monkeys because of their anatomical and reproductive characteristics.

PIED TAMARIN RANGE/HABITAT (see map)

- Native to northwestern Brazil, found just north of the town of Manaus, a small area north of the Amazon river
- Habitat of lowland rain forest, primarily secondary or edge forests
- Mostly found beetween 10 to 12 meters (32.8 39.4 feet) up in the canopy
- Pied tamarins occupy the smallest home range of any Amazon primate; their territories are centered on the trees that they regularly exploit for food.

PIED TAMARIN PHYSICAL ADAPTATIONS

1. **Size/Weight/Lifespan**
   - **Length:** body 8.2 – 11.1 in., tail 13.2 – 16.5 in.
   - **Weight:** 15.17 oz.
   - **Sexual dimorphism**: none
   - **Lifespan**: wild- 10 years, captivity- up to 18 years
2. **Skull/Head**
   - Eyes are facing forward for good depth perception. This is important in their arboreal habitat.
   - Relatively large lower canines that are longer than incisors, which is an adaptation to their varied diet
   - Tamarins lack the ability to change their facial expressions as they lack the highly developed facial musculature of the higher evolved primates; facial expressions are indicated mainly by lip movements and some movement of the eyelids and ears.
3. **Body/Extremities**
   - Forelimbs are shorter than hindlimbs, giving them a good leaping ability.
   - Tamarins lack the opposable thumb that is typical of other monkeys, but they do have an opposable big toe which helps them in climbing
   - Pointed, curved claws rather than nails on all digits except big toe; claws help in climbing.
   - Despite the long length of the tamarin's tail, it is not prehensile.

PIED TAMARIN BEHAVIORAL ADAPTATIONS

1. **Lifestyle**
   - Pied tamarins are diurnal; they spend most of their time in the mid canopy but they sometimes are seen on the ground or in the upper canopy.
   - Pied tamarins live in extended family groups of 2 to 15 members (ave. 4.8) with little intra-group competition.
   - Pied tamarin troops are led by the eldest female and have predominantly male members.
   - Tamarins are strongly territorial, the families especially being very aggressive toward other families (inter-group competition). They use their sharp canines in defense of their food supply.

- Grooming is an important part of a tamarin's daily behavior.
- Tamarins generally groom each other with their teeth, tongues and claws; grooming helps maintain family bonds.
- They spend the night in tree holes.

2. Diet/Eating Habits/Digestion

- Omnivorous diet- favorite foods are fruits and tree sap, will also eat flowers, nectar, invertebrates like insects and spiders, snails, frogs, lizards, small rodents and bird eggs
- Tamarins and marmosets tap carbohydrate rich tree sap by gnawing holes in trunks.

3. Communication/Senses

- Pied tamarins make high pitched trilling and staccato calls, some of which are inaudible to the human ear; vocal communication consists of whistles and chirps.
- Tamarins communicate among themselves with body postures, eyelids, ears, and hair erection as they are unable to change their facial expressions; communication is important in defense against predators and maintaining close family bonds.
- Tamarins scent mark; markings are produced by rubbing the sternal gland in the anogenital region against branches
- Tamarins, like the lemurs, have a VMP organ (vomeronasal or Jacobsen's organ) on the roof or their mouth that enhances their sense of smell.
- In addition to vocal and chemical communication, all primates have complex tactile communication, including tamarins.
- Pied tamarins employ complex tactile communication, primarily via social grooming.
- Excellent eyesight with differing color vision among the sexes
  - Males are dichromatic, while 1/3 females are dichromatic and 2/3 are trichromatic. Color vision allows them to identify ripe fruits amongst the dense vegetation.
  - Dichromats are more effective than trichromats in selecting green food in a green environment and distinguishing from non-food by shape.
  - Trichromats have the ability to select ripe food when foraging

4. Reproduction

- Within each group, only the alpha female will give birth each year; reproduction in other females of the group is behaviorally suppressed.
- The vast majority of births are twins (80% twins).
- Gestation: 140-150 days
- Sexual maturity: Females 18 mos, Males 24 mos
- Young tamarins are cared for primarily by the father and turned over to the mother only to nurse; however, the entire group helps with the care of the young.
- Young are born with fur, but helpless for a few weeks.
- Babies cannot thermoregulate for the first 2 months.
- Males provide much of the care for offspring, carrying the youngsters and feeding them once they are weaned.
- The female usually only carries the infant to nurse it after the first 10 days.
- Young normally ride across the parent's neck and shoulders.
- Baby tamarin need to cling tightly to their fathers within hours of their births otherwise they would fall from the trees. The parents need both hands to swing through the trees and to gather food, so young tamarin need to hold on for themselves.

5. Predators

- Predators include small cats, birds of prey, and snakes.
- Because of their light weight, tamarins are able to go up in the smaller branches to escape predators.

- Pied tamarins spend most of their time in the mid canopy, avoiding the upper canopy where they may be prey for various birds of prey and the ground where small cats and snakes may dwell.

PIED TAMARIN INTERESTING FACTS

- Pied tamarins may help disperse plant ife by eating fruits and dropping their seeds.
- In the Zoo, we feed the tamarins a variety of fresh fruits, insects like mealworms and crickets, and monkey chow.
- All of the pied tamarins are registered as the property of the Brazilian government.

PIED TAMARIN CONSERVATION TALKING POINTS

- Endangered on the IUCN Red List
- Listed on CITES Appendix I
- The pied tamarin has one of the smallest ranges of any primate and is now thought to be one of the most endangered monkeys in the forests of the Amazon.
- The main threat is habitat loss through urban growth and agriculture and cattle ranching in the vicinity of the capital of the state of Amazonas, Manaus, Brazil.
- The species is disappearing rapidly in areas of contact on the northern and eastern periphery of its range. The pied tamarin is gradually being replaced from areas of its historical distribution, by the golden-handed or red-handed tamarin (*Saguinus midas*).
- The pied tamarin population has declined by at least 50% over the past 18 years (three generations) due primarily to habitat loss and range replacement by *Saguinus midas*.
- Due to their size, pied tamarins are probably not hunted for food, but some may be hunted for the pet trade.
- Pied tamarins occur in several protected areas.
- Since the early 1980s, there have been a number of environmental education campaigns in Manaus on behalf of the pied tamarin.
- Pied tamarins are part of a captive breeding program.

Pied Tamarin Information Sources:

Walker's Mammals of the World, 6th edition, Ronald M. Nowak, © 1999 Johns Hopkins University Press
The Natural History of the Primates, Napier, J.R. © 1985 The MIT Press, Cambridge, Mass.
http://www.iucnredlist.org/details/40644/0
http://www.sfzoo.org/explore/animals/mammals/piedtamarin.htm
http://animaldiversity.org/accounts/Saguinus_bicolor/
http://anthro.palomar.edu/primate/

SQUIRREL MONKEY (*Saimiri sciureus*) TALKING POINTS

SQUIRREL MONKEY GENERAL INFORMATION:

Squirrel Monkeys are a New World monkey of the tropical rainforests of Central and South America. Squirrel monkeys are thought to be one of the more intelligent species of primate and are known to have the largest brain per body size among primates. This makes them very inquisitive and good at solving complex problems and learning from experience, but they do not quite reach the cognitive levels of great apes.

There are five species of Squirrel Monkey: South American or Common Squirrel Monkey (*S. sciureus*), the Black-Capped Squirrel Monkey (*S. oerstedii*), the Bolivian Squirrel Monkey (*S. boliviensis*), the Golden-Backed Squirrel Monkey (*S. ustus*) and the Black-Headed Squirrel Monkey (*S. vanzolinii*).

SQUIRREL MONKEY RANGE/HABITAT (see map)

- Native to Brazil, Colombia, French Guiana, Guyana, Suriname, and Venezuela primarily in the Amazon basin
- Habitat primarily in tropical lowland rainforest with a source of water nearby
- Inhabit mainly the intermediate forest level but can occasionally be found in the upper canopy and on the ground

SQUIRREL MONKEY PHYSICAL ADAPTATIONS

1. **Size/Weight/Lifespan**
   - **Length:** Body length ranges from 9 in. -14 in., average 12.5 in., tail length ~ 16 in.
   - **Weight:** 1.7 – 2.4 lbs
   - **Sexual dimorphism**: male slightly larger than females with more pronounced and more dagger-like upper canines
   - **Lifespan**: wild- 21 years, captivity- 27 years
2. **Skull/Head**
   - Squirrel monkeys have distinctively colored short fur that is usually light brown with a green tinge on body and tail and distinct bright yellow legs and white face.
   - Largest brain mass per body mass ratio among primates
   - Males have pronounced canines for competing for females during the breeding season; males of higher dominance will interact with females.
3. **Body/Extremities**
   - Slender body for moving quickly through the trees
   - The non-prehensile tail is proportionately one of the longest in New World monkeys is tipped with black. They use their tail for balance and leap between branches to cover vast areas of the jungle. The tail is longer than their bodies
   - Squirrel monkeys have long fingers to help them to hold onto branches, prey and food.
   - The thumb is opposable, well developed but small; the thumb is well adapted for picking up insects and fruits.
   - Squirrel monkey fur is short and close, colored black at the shoulders and yellowish orange on its back and extremities.
   - Thighs are shorter relative to lower legs which allows for more jumping force, allowing leaps up to 8 ft. Excellent climbers and leapers and can travel long distances through the forest.

SQUIRREL MONKEY BEHAVIORAL ADAPTATIONS

1. **Lifestyle**
   - Squirrel monkeys lead a quadrupedal, arboreal lifestyle, living among the middle canopy; they spend 90% of their lives in the trees.
   - Squirrel monkeys live in groups with up to 500 members, but these groups can break into troops of about 50 during non-breeding season. These are the largest groups formed among New World monkeys.
   - Females are dominant and form the central core of the troop.
   - Males have a dominance hierarchy among themsleves; males fight with each other to gain opportunity to mate.
   - Squirrel monkey groups do not exhibit territorial disputes but mutually avoid one another.
   - Squirrel monkeys are diurnal; daily activities center around a source of water.
   - Squirrel monkeys are often seen with Capuchin monkeys (genus - *Cebus*) and benefit from the extensive alarm calls of the capuchins and their knowledge of fruit sources.
   - Sexual segregation on a seasonal basis is a unique feature of squirrel monkeys social organization. Males remain near the periphery of the group in non-breeding season. This is a defense strategy for protection of the females and young.
2. **Diet/Eating Habits/Digestion**
   - Omnivorous diet of insects and fruit with occasional leaves and seeds
   - Squirrel monkeys prefer to capture stationary insects on plant surfaces.
   - Squirrel monkeys spend more than half of their day traveling and foraging for insects, while about 11% of their day is spent feeding on fruit and nectar, another 10% of their day is spent resting.
3. **Communication/Senses**
   - Squirrel monkeys spread urine on their hands and feet to mark their path when they are moving through the treetops. By following the scent, other members of the group can locate each other. They also use scent glands on their chest and anogenital (around genitals and anus) area to mark their territory.
   - Males use olfactory cues to determine the reproductive status of a female by physically restraining her and inspecting her genitals
   - Squirrel monkeys produce distinct vocalizations and postural displays; they have 25 to 30 different calls. Squirrel monkeys produce different sounds when they are searching for food, during the mating season and when they are threatened.
   - Excellent eyesight with differing color vision among the sexes; males are dichromatic, while 1/3 females are dichromatic and 2/3 are trichromatic. Color vision allows them to identify ripe fruits amongst the dense vegetation.
4. **Reproduction**
   - Squirrel monkeys are seasonal breeders. They mate beween Sept - Nov with births between Feb – Apr.
   - Males take on physical and behavioral changes during the breeding season; males gain about 20% body weight and take on a “fatted” appearance in order to be more attractive to females; their testicles produce viable sperm only during this breeding period.
   - Births are timed during greatest rainfall and the abundance of food and water.
   - Gestation: ~ 5 months
   - Infants are carried on the mother’s back from day one; they cling to their mothers for the first two weeks of life, then attract attention of “aunts” in their group.

- Fathers do not take part in raising young; females care for infants until they are independent at about 10 months.
- Infants have a prehensile tail but lose this ability as they grow older.
- Infants are weaned by 4 months
- Sexual maturity: Females 2.5 yrs, Males 4 yrs

5. **Predators**
   - Birds of Prey, including eagles and falcons in the trees
   - Snakes while on the ground

SQUIRREL MONKEY INTERESTING FACTS

- Known to have the largest brain to body mass ratio of all monkey species and thought to be one of the most intelligent species of primate.
- Their favorite food at the Zoo is large mealworms.
- Our group of 15 squirrel monkeys is all male. When they arrived, they came in pairs and had to be introduced to create one big group. It took four years for the large squirrel monkey group to coalesce.
- Their black-and-white face gives them the name "death's head monkey"

SQUIRREL MONKEY CONSERVATION TALKING POINTS

- Least concern on the IUCN Red List due to its relatively wide range, adaptability to some degree of disturbed forest.
- Listed on Appendix II of CITES
- Under threat due to habitat loss caused by deforestation for agriculture and human settlements. Given its small size, it is not generally hunted.
- The species has also been captured extensively for the pet trade and for medical research.
- Two squirrel monkey species are threatened: the Central American squirrel monkey (*S. oerstedii*) and the black squirrel monkey (*S. vanzolinii*) are listed as Vulnerable by the IUCN and a third Golden-Backed Squirrel Monkey (*S. ustus*) is near threatened.
- The Common Squirrel Monkey's population is decreasing but it exists in a number of protected areas.

Squirrel Monkey Information Sources:

Walker's Mammals of the World, 6th edition, Ronald M. Nowak, © 1999 Johns Hopkins University Press
The Natural History of the Primates, Napier, J.R. © 1985 The MIT Press, Cambridge, Mass.
Primate Adaptation and Evolution 3rd edition, Fleagle, John G. © 2013 Elsevier Inc.
http://www.iucnredlist.org/details/ 41537/0
http://animaldiversity.org/accounts/Saimiri_sciureus/
http://www.sfzoo.org/explore/animals/mammals/squirrelmonkey
http://pin.primate.wisc.edu/factsheets/entry/squirrel_monkey

BLACK HOWLER MONKEY (*Alouatta caraya*) TALKING POINTS

BLACK HOWLER MONKEY GENERAL INFORMATION:

The black howler monkey is one of ten species of howler monkeys found in Central and South America. They are the largest of the New World monkeys and are named for their very loud, guttural howls, which can be heard from a distance of up to three miles. The howlers of the genus *Alouatta* are the most widespread of the New World monkeys.

BLACK HOWLER MONKEY RANGE/HABITAT

- Found in eastern Bolivia, southern Brazil and Paraguay and northern Argentina
- Habitat of tall rainforest or deciduous trees located near streams
- A troop requires several acres of forest with diverse plant life in order to find sufficient food to survive.

BLACK HOWLER MONKEY PHYSICAL ADAPTATIONS

1. **Size/Weight/Lifespan**
   - Males average 11-18 pounds; females 8-12 pounds.
   - Males average body length 1.7 to 2.2 feet; females up to 1.6 feet.
   - Tails are either same or slightly longer length than body.
   - Life span is 16-20 years in the wild and 23-28 years in captivity.
2. **Skull/head**
   - Short snout, prominent muzzle, wide-set, round nostrils and forward facing eyes
   - Mostly hairless face
   - Large neck and lower jaw, covered by a beard
   - The angle of the lower jaw and a greatly enlarged throat area, hyoid bone and larynx make the loud vocal calls possible.
   - Their molars are adapted to chewing leaves using a shearing motion.
3. **Body/Extremities**
   - Sturdy, compact, stout build
   - Males covered in black fur
   - Females and infants of both sexes with gold-brown fur and dark faces (provides camouflage in the forest canopies)
   - Long, prehensile tails provide a strong grip and also have tactile pads on the bare undersides which provide sensitivity to touch and allow them to identify objects (much like a fifth hand); they are able to hang from their tails.
   - Relatively long, equal length arms and legs, which, along with the long tail, enable them to move easily through trees.
   - Thumb is poorly developed and is not opposable, but large toe is opposable. They usually hold objects between their second and third digits.
4. **Senses**
   - Well-developed sense of smell aids in finding food.
   - Unlike other New World monkeys, black howlers have trichromatic vision, which allows them to see blue, green and red colors and helps them locate choice leaves and fruit in the tree canopies.

BLACK HOWLER MONKEY BEHAVIORAL ADAPTATIONS

1. **Life Style**
   - They live in social groups (troops) of 3-19 individuals; troops commonly comprised of 1-3 adult males and 2-7 females and their young.
   - The largest male is usually dominant.
   - Black howlers are diurnal, spending almost all of their time in the tree canopies and 70% - 80% of it resting and the remainder in moving through the trees, eating and grooming; they are relatively inactive.
   - They move quadrupedally on tree branches, grasping with their hands or with their prehensile tails.
2. **Communication**
   - Males use deep, growling howls to communicate the troop's location and territory, to protect their food and to keep intruders away - usually at the beginning and the end of the day. Females may also participate in group howling.
   - Scent marking with feces and urine is also used for communication.
3. **Diet/Eating Habits**
   - Black howlers are the most folivorous of the New World monkeys and are the only New World monkey that regularly eats mature leaves, though they prefer young, tender leaves.
   - Their diet may be supplemented with fruit, flowers and seeds.
   - They do not have the specialized stomachs that may be found in other leaf-eating monkeys; digestion is accomplished by a fermentation process in their enlarged cecum and requires a prolonged period of time, which accounts for their high percentage of inactivity.
   - They obtain all needed water from their diet, both from the leaves themselves and from moisture that accumulates on the leaves. In periods of drought they will seek water sources on the ground.
   - In the Zoo they eat leaf eater chow, yam, bananas, leafy greens and browse.
   - Howler monkeys do not have specialized stomachs to break down the leafy diet; they use bacteria from their enlarged caecums.
4. **Breeding/Reproduction/Parental Care**
   - Females mature at 3-4 years and males at about 5 years.
   - They breed throughout the year with multiple mates.
   - Gestation is 180 – 194 days.
   - They give birth to a single offspring (twins rare) weighing about 3-1/2 lbs.
   - Babies are born with gold colored fur; fur of males changes to black at 2-1/2 yrs.
   - Babies cling to mothers' bellies for the first month and then switch to their backs.
   - Females in the group may carry, groom and protect infants other than their own.
   - Offspring are weaned at about one year of age and then stay with the natal group until they reach adulthood, when members of both sexes may leave.

BLACK HOWLER MONKEY INTERESTING FACTS

- The Mayans of the Classic Period considered howlers to be "divine patrons of the artisans, especially scribes and sculptors"
- Howlers are called "congos" in Nicaragua and Costa Rica and called "baboons" in Belize.
- The hyoid bone is believed by some to have therapeutic properties and skulls are sold for necklaces.
- Black howlers are considered to be the loudest land animal.

BLACK HOWLER MONKEY CONSERVATION TALKING POINTS

- IUCN Red List: Least concern (NOTE: The other 9 howler species have varied Red List criteria)
- Natural predators include jaguars, pumas and harpy eagles
- The biggest threat to black howlers is loss of habitat due to clear-cutting and selective logging of their forest habitat and clearing for ranching and agriculture.
- They are also hunted for the pet trade and to a lesser extent for human food.
- Infanticide may occur when an extra-group male successfully challenges and replaces the dominant male in a troop.
- They are also susceptible to yellow fever; outbreaks in Argentina have resulted in significant mortality among the black howler population in some areas.
- Incentives for protecting howlers include their appeal to tourists; the tourist industry is very important to the economy of the countries where they are found.

Black Howler Information Sources:

www.oregonzoo.org/discover/animals/black-howler-monkey
www.animaldiversity.org
www.animals.nationalgeographic.com
www.sfzoo.org
www.iucnredlist.org

FRANÇOIS' LANGUR (*Trachypithecus françoisi*) TALKING POINTS

FRANÇOIS' LANGUR GENERAL INFORMATION:

François' langur or leaf monkeys are an Old World monkey with special adaptations to handle their primarily folivorous diet. The langurs are known for the coloring of newborns, which is strikingly different from that of their parents.

FRANÇOIS' LANGUR RANGE/HABITAT

- Found in undisturbed areas of southeastern China, northeastern Viet Nam and west-central Laos (see map)
- Habitat of semi-tropical monsoon and moist tropical and subtropical rainforests in limestone areas; the animals utilize the cave formations and overhangs in these limestone areas as shelter from weather, and for refuge. (see photo of limestone cliffs)
- Mainly arboreal, occupying the mid and upper canopies, but will come to the ground for varying periods
- By living and sleeping in limestone caves and cliffs, far from flat land, the langur has greatly reduced its rate of predation.

FRANÇOIS' LANGUR PHYSICAL ADAPTATIONS

1. **Size/Weight/Lifespan**
   - **HBL (Head Rump Length):** 16 – 13 in
   - **Weight:** Male- 20 lbs, Female- 13 lbs
   - **Tail length:** 32 – 35 in
   - **Sexual dimorphism**: M is longer and heavier with longer tails
   - **Lifespan**: wild- 20 years, captivity- up to 26 - 30 years
2. **Skull/Head** (see photo)
   - Molars have grinding ridges, which is important for herbivores in processing their food.
   - Males generally have larger canines than do females; canines are used for defending their territories and reproductive access to the females in the troop.
   - François' langur monkeys have prominent brow ridges, which resemble raised eyebrows.
   - François' langurs have distinctive heads with their punk-style tuft of black hair and white sideburns.
3. **Body/Extremities**
   - Slim body, with a small head, slender extremities and long tail allows them to be extremely agile and adept at jumping from tree to tree; their tails assist in helping with the langur's balance.
   - Forelegs are much shorter than hind legs with hairless hands and feet that allow easy grasping of branches.
   - Thumbs are well-developed, opposable but particularly shortened, allowing them to grasp leaves for eating and the branches for locomotion in the trees. (see photo)
   - Ischial callosities (thickened sitting pads) are united in males and separate in females.
   - Fur is black, long and thin, with white lines from the corners of the mouth to the ears.

FRANÇOIS' LANGUR BEHAVIORAL ADAPTATIONS

6. **Lifestyle**
   - François' langurs typically live in small family groups or troops consisting of one adult male, a "harem" of adult females, and offspring; group sizes consist of 3 - 12

individuals, including 4 - 6 females and several young. It is a matriarchal society where the females lead the group.

- Diurnal species, family groups sleep outside in mild weather and in caves during cold winters.
- Langurs move through the forest quadrupedally.
- Langurs spend most of their time in the middle and upper canopies of the trees, although they will travel on the ground between food trees, despite the increased risk of predation.
- Leaf monkeys are noisy animals; bouncing on branches to increase the speed of take-off and landing heavily on solid masses of foliage involve much noise and crashing branches.
- As leaf eating monkeys, long periods of rest are required for the long digestive process.
- If threatened with danger, the dominant male will confront the danger while the rest of the troop escape.
- The adult male in the troop will rarely participate in social grooming but will expect to be groomed by the others.

7. Diet/Eating Habits/Digestion

- Mostly folivorous, with the remainder of its diet consisting of shoots, fruits, flowers, and bark. Over 50% of François' langur's diet is made up of leaves; they have a preference for young leaves.
- Langurs drink little water but get their moisture by drinking dew from leaves.
- At the Zoo, they are fed a diet of leaves, fruit and monkey chow.
- Langurs lack cheek pouches but have enlarged salivary glands, which help them digest fibrous leaves. Their stomachs are large and multi-chambered (sacculated), and the fore-stomach supports bacteria with cellulose-digesting abilities. This allows them to digest the fibrous leaves of their diet.
- They feed primarily in seated postures using their ischial callosities.

8. Communication

- Langur troops make loud calls to let other troops know where they are and declare its territorial spacing.
- Vocalization and visual displays have been observed in other members of the genus *Trachypithecus*; however, little is know about the communication of the François' langur (*Trachypithecus françoisi*).

9. Reproduction

- Gestation: 196 days
- Sexual maturity: Females- 3 - 4 years , Males- 4 - 5 years
- Litter size is usually one and birth intervals are about 20 mos
- There are no sexual swellings on females during estrous.
- Females initiate sexual behavior.
- Langurs exhibit allomothering; the female and her new infant are the center of attention and all females take an active interest in the care of the infant. The infant niece or nephew is released to an “aunt” for babysitting intervals around the third week of life.
- Young langurs display bright orange coloring, an adaptation that scientists believe may encourage females in the group to offer care (allomothering). Young will gain their black coloring from 6 mos to a year. (see photo)
- Young langurs are nursed for up to two years before being weaned.
- Young males will leave the group before reaching sexual maturity.

FRANÇOIS' LANGUR INTERESTING FACTS

- François' langurs are also known as François' leaf monkeys, brow-ridged langur and white-sideburned black leaf monkey.
- The word 'langur' means 'long tail' in Hindi.
- This species was first brought to notice by M. François of the French Consul at Lungchow, China, who observed groups of these animals on rocky shores between Nanning and Kuohua. The Zoo's François group originally came to San Francisco as a gift from the People's Republic of China.
- Langurs play an important role in helping the forests in which they live regenerate because they eat seeds and then disperse them in their feces far away from the trees the seeds came from.
- Some biologists think the bright color of the young mimics a native poisonous flower, helping to protect the baby from predators. It also draws attention to the baby from other group members, so they may help protect it.

FRANÇOIS' LANGUR CONSERVATION TALKING POINTS

- Langurs are listed as Endangered on the IUCN Red list and CITES Appendix II
- This species is widespread, but populations are highly fragmented and isolated.
- The species has declined by at least 50% over the past 36 years due primarily to habitat loss and hunting.
- In Guangxi province, China, the threat of hunting is extremely severe, due to the illegal production of "black ape wine," which is made specifically from this species; black ape wine is believed to cure fatigue and other ailments. The animals are even imported illegally from Vietnam for this purpose.
- In Viet Nam, the major threat to this species is hunting, although some populations face pressures from mining and other resource extraction in the karst hills (limestone areas).
- These monkeys were hunted for use in traditional medicines, but not for food because their meat has an unpleasant smell.
- It is found in several protected areas of Viet Nam and China.
- The subspecies *T. f. delacouri* of central Viet Nam may be the most endangered monkey in Asia with fewer than 250 individuals alive. These populations were decimated during the Vietnam War.
- François' langurs are part of the Species Survival Plan (SSP)
- A plan to protect the forest and ban hunting, called the Conservation Action Plan, was drafted in 1996 but needs to be brought to the local people and implemented.

François' Langur Information Sources:
Walker's Mammals of the World, 6th edition, Ronald M. Nowak, © 1999 Johns Hopkins University Press
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EASTERN BLACK AND WHITE COLOBUS (*Colobus guereza*) TALKING POINTS

BLACK AND WHITE COLOBUS GENERAL INFORMATION:

The Eastern Black and White Colobus or Mantled Guereza is an Old World monkey of equatorial Africa. Colobus are mainly arboreal, bounding through the canopy, leaping between trees. They are primarily folivorous (specializes in eating leaves) and have special adaptations, allowing them to digest plant material to a greater degree.

BLACK AND WHITE COLOBUS RANGE/HABITAT

- Native to equatorial Africa from Nigeria, east and west of the Niger river and Cameroon, Ethiopia, Kenya, Uganda, Tanzania, N Congo, E Gabon, Central African Republic, NE Zaire, W Kenya, NW Rwanda, and S Sudan (see map)
- Habitat of lowland tropical rainforest to the upper reaches of the montane forests up to 10,824 ft.

BLACK AND WHITE COLOBUS PHYSICAL ADAPTATIONS

1. **Size/Weight/Lifespan**
   - **Length:** Head and body length ~ 22 – 24 in
   - **Sexual dimorphism**: male is heavier, weighing about 1.2x more than female; male weighs between 19.8 – 31.9 lbs, while females weigh from 14.3 – 22 lbs
   - **Lifespan**: wild- 20 years, captivity- 24 years
2. **Skull/Head**
   - Molars have high, pointed cusps for grinding their leafy vegetation diet.
   - Upper canines are elongated and tusk-like and make the colubus appear threatening and help ward off predators or other troops.
   - Colobus lack cheek pouches that characterizes some of the other Old World monkeys.
3. **Body/Extremities**
   - Slender body with light weight bone structure and elongated limbs make it easier to leap quickly from branch to branch
   - Unlike other monkeys, colobus monkeys lack full sized thumbs; they have a nodule, a vestigial thumb, which is an adaptation for quick movements through the trees.
   - A long white fringe of hair (a mantle) that runs along each side and a long fluffy tail with large white tuft at the end is used to steer and brake in midair; tail is longer than the head and body combined. These two adaptations help them slow down when jumping from tree to tree; mantle hair and tails are believed to act as a parachute during long leaps. (see photos)
   - Complex, multi-chambered stomach and large salivary glands aid the colobus in digesting leaves more efficiently than other monkey species; these features give them the characteristic pot-belly.
   - Colobus have prominent ischial callosities (sitting pads) that are separate in females and contiguous in males.

BLACK AND WHITE COLOBUS BEHAVIORAL ADAPTATIONS

1. **Lifestyle**
   - Colubus are mainly diurnal and spend most of their time in the mid and upper canopies.
   - Colubus are extremely arboreal and the tail with fringe is an adaption to their life in the trees; the colobus is the most arboreal of all African monkeys and rarely descends to the ground.
   - The colobus uses branches as trampolines, jumping up and down on them to get liftoff

for leaps of up to 50 feet.
- They spend most of their time sitting in the tops of trees resting as they do not get a lot of energy from the leaves they eat.
- Colobus take turns sleeping at night so that at least one individual is awake at all times to watch for predators.
- They maintain strong group bonds by mutual grooming and "infant transfer", where an infant is handled by the closely related females of their group.
- Colobus live in small family groups (3 - 15 individuals, ave. 9) with a single adult male; females remain in their birth group for life.
- They are highly territorial; the male defends the territory with his enlarged canines.

2. **Diet/Eating Habits/Digestion**
   - Predominantly folivorous (eats leaves) and some fruit are the main parts of their diet; they also eat unripe fruit, seeds, flowers, and bark.
   - Colobus are important for seed dispersal through their sloppy eating habits as well as through their digestive system.
   - Colobus get water from dew and the moisture content of their diet, or rainwater held in the tree trunk hollows.
   - Multi-chambered stomachs that allow them to digest leaves and unripe fruit other monkeys can't; colobus use a bacterial fermentation to break down their food.
3. **Communication**
   - Well-defined territories are vigorously defended by males with leaps and cries, hand gestures roars, and occasional chasing and fighting.
   - Displays of the white fringe fur flapping up and down serve as warning to others
   - The male head of a colobus group announces its presence and location each morning with a series of loud, long roars.
4. **Reproduction**
   - The female and the male take part in the parenting of the single infant.
   - Colobus breed once every two years (20 months) though breeding is not strictly seasonal. Births are timed so that weaning occurs at the time of greatest food availability.
   - Sexual behavior is usually initiated by the female by tongue smacking.
   - Young have white fur for about the first month of their life; The fur on newborns is kinky-wavy and short. Fur gradually changes to adult coloration at about 3 months. (see photo)
   - Gestation: 6 mos
   - Sexual maturity: Females 3-4 yrs, Males 6 yrs

BLACK AND WHITE COLOBUS INTERESTING FACTS

- "Colobus" is derived from Greek and means "mutilated". The name was given to these monkeys because they have vestigial thumbs.
- Burping is a friendly social gesture among leaf-eating colobus monkeys; their chambered stomachs digest leaves by bacterial fermentation, which produces lots of gas.
- Predators include: Leopards, large eagles (i.e. crowned hawk eagles) and sometimes chimpanzees
- The plural of colobus is: clobuses or colobi.

BLACK AND WHITE COLOBUS CONSERVATION TALKING POINTS

- Least concern on the IUCN Red List, although locally threatened in parts of its range
- Listed on Appendix II of CITES
- This species is threatened in parts of its range by habitat loss through deforestation for timber and agricultural land; they are often able to thrive in small pockets of habitat in between human settlements but are sometimes killed when they try to move between forest fragments.
- Hunting may also be severely impacting populations in the western part of the species range; black and white colobus monkeys are occasionally hunted for their striking fur, which has been used for everything from costumes and coat trim to rugs.
- Work is being done to engage local communities in the colubus' conservation by developing sustainable solutions for agricultural and settlement growth. In the Congo increased seed varieties, along with new planting techniques, allowed for increased productivity and less wasted land. This lead to increased food and economic security for people and more space for the colobus.

Colubus Information Sources:

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PATAS MONKEY (*Erythrocebus patas*) TALKING POINTS

PATAS MONKEY GENERAL INFORMATION:

The patas monkey is an Old World, ground-dwelling monkey that is distributed over semi-arid areas of West Africa and into East Africa. Unlike most primates, patas monkeys generally avoid dense woodland, preferring the more open areas. They are considered the fastest primate on Earth, reaching top speeds of 34 mph. [compare to other fast running animals: humans 12-15 mph (Usain Bolt 26 mph for 100m), Ostrich 40 mph, racehorse 55 mph and the fasted mammal, the Cheetah 60 - 70 mph]

PATAS MONKEY RANGE/HABITAT

- Found in Central Africa from Senegal to Ethiopia and south to Tanzania (see map)
- Range of habitat types: open grassland, wooded savannas, and dry woodlands; patas monkeys avoid areas with dense cover.
- Patas monkeys are able to exist in semi-arid conditions and are often found miles from water

PATAS MONKEY PHYSICAL ADAPTATIONS

4. **Size/Weight/Lifespan**
   - **HBL (Head Rear Length):** Male- 2 - 3 ft, Female- 1.6 -1.7 ft
   - **Tail length:** 1.6 - 2.9 ft
   - **Sexual dimorphism**: Male is 2x size of Female; Male- 15 - 29 lbs**,** Female- 9 - 15 lbs
   - **Lifespan**: wild- 12 - 20 years, captivity- 20+ years
5. **Skull/Head**
   - Adult males may have long, mane-like hairs on their nape and shoulders with a white moustache and whiskers. (see photo)
   - Patas monkeys have cheek pouches that allow for the rapid collection of food, but also serve as temporary storage and transport. Cheek pouches also allow for more predigested food. Since patas monkeys don't need to use their hands to carry their food, they can flee dangerous situations very easily and readily.
   - Male patas monkeys have very long canine teeth that are used among males for competition over females and breeding rights. (see photo)
6. **Body/Extremities**
   - Patas monkeys have slender bodies and long limbs with short digits that allow them to outrun and out maneuver predators (body shape similar to a greyhound); a patas relies on speed on the ground to escape danger. A long tail provides balance when fleeing and changing directions.
   - Males have a bright blue scrotum with a red penis.
   - Opposable thumbs and big toes

PATAS MONKEY BEHAVIORAL ADAPTATIONS

10. **Lifestyle**
    - Patas monkeys are diurnal and largely terrestrial, and although it can climb trees when alarmed, it usually relies on its speed on the ground to escape from danger.
    - Patas monkeys live in harem groups (troops) of up to 15 individuals, with one adult male, several females and their young.
    - Females lead the troops and protect their home ranges from intrusion by other troops. Dominant adult male lingers on the outskirts of the troop and acts as a lookout for the

rest of the group. If he sees a predator, he will conspicuously draw attention to himself while the females and young quietly escape in the opposite direction.
- Unlike most primates, patas monkeys go up separate acacia trees to sleep alone at night (exception: females with infants); this habit may help them elude predators.
- Patas monkeys are quadrupedal, but will often stand upright to scan their surroundings or when alarmed. They are able to walk bipedally when carrying something in their hands.
- During the 2 - 3 hottest hours of the day, these monkeys will rest in a large shade tree.

11. Diet/Eating Habits/Digestion
- Omnivorous diet of grasses, gum, seeds, flowers of Acacia trees, fruit, grubs, insects, and small reptiles
- Patas monkeys can go several days without drinking water, though during the dry season activities become centered around watering holes and they need daily drinks.
- At the Zoo, the patas monkeys are fed a diet of fruits, yams, carrots, greens, monkey chow and sunflower seeds.

12. Communication
- Patas monkeys are relatively quiet; they rely mainly on visual contact, such as body postures and facial expressions to transfer information.
- Males will make a burring alarm note or bark; alarm calls vary depending on the source of danger.

13. Reproduction
- Gestation: 167 days
- Sexual maturity: Females- 2.5 - 3 years, Males- 5 years
- Single young are light brown all over and have pink colored faces, which darken by the time they are about two months old. (see photo)
- Females are very protective of their young, which are able to climb about on their mother's body when only two days old.
- All patas females participate in allomothering (an individual other than the biological mother of an offspring performs the functions of a mother).
- Since only one adult male patas monkey stays with a group of females and their young, there is intense competition among males for that role; the males will usually stay alone or in all male groups until they reach the age of 5 years.

14. Predators include lions, leopards, cheetahs, jackals, hyenas, snakes and raptors.

PATAS MONKEY INTERESTING FACTS

- At a distance, a running patas can sometimes be mistaken for a cheetah.
- With their reddish coat, grayish chin whiskers, white moustache, and hind-leg posture, many thought that they resembled a military commander, giving them the alternate names of "military monkey," "Sergeant-Major monkey" and "Hussar monkey." They are also known as red guenon, red monkey, and dancing monkey.

PATAS MONKEY CONSERVATION TALKING POINTS

- Patas monkeys are listed as Least Concern on the IUCN Red list and CITES Appendix II.
- This is a widespread species, still relatively abundant, although there has been a marked decrease in the area of occupancy and number of individuals in the southeastern parts of its range.
- This species is occasionally hunted for food, used as a research animal and is also persecuted as a crop pest in several range countries.
- Since patas monkeys are found in more open areas, they have not been as affected by deforestation in the same way as many other primates.

Patas Information Sources:

Walker's Mammals of the World, 6th edition, Ronald M. Nowak, © 1999 Johns Hopkins University Press
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MANDRILL (*Mandrillus sphinx*) TALKING POINTS

"*No other member in the whole class of mammals is coloured in so extraordinary a manner as the adult male mandrills*". - Charles Darwin

MANDRILL RANGE/HABITAT: (see map)

- Mandrills are found in tropical rainforests and sometimes grasslands of Southern Cameroon, Nigeria, Gabon, Equatorial Guinea and Congo.
- While mostly terrestrial they feed in trees, often high in the canopy.

MANDRILL PHYSICAL ADAPTATIONS:

1. **Size/Weight/Lifespan**
   - Mandrill are the world's largest monkey, males weighing 42 -80 pounds, females half as much **(sexual dimorphism)**
   - **Lifespan**: in captivity is about 25 to 30 years, less in the wild.
2. **Head/Body**
   - Compared to the largest baboons the mandrill is more ape-like in structure, with muscular and compact build, thicker limbs in the front and almost no tail.
   - The mandrill is one of the most sexually dimorphic mammals. Male mandrills are far more colorful and their female counterparts, with bright colors on their faces, noses and rumps. This is especially true of the males of breeding age who have achieved dominant alpha status in the troop. (see photos)

MANDRILL BEHAVIORAL ADAPTATIONS:

1. **Lifestyle**
   - In trees mandrills move by lateral leaps. On the ground the mandrill walks on all fours (digitigrade quadrupedalism)
   - Sleeps in trees at a different site each night.
   - Males tend to live a solitary lifestyle and only enter the hordes when females are receptive to mating, which only lasts about three months each year.
2. **Diet / Eating Habits / Digestion:**
   - The mandrill is an omnivore. The usual diet is plants, with over 100 species observed, preferring fruits, leaves, lianas, bark, stems and mushrooms. Invertebrates such as ants, beetles, and termites along with eggs are also consumed. Larger prey such small antelopes and duikers can be killed by a bite to the neck using the mandrill's long canines, thereby supplementing the usual diet
3. **Communication:**
   - Roars, crowing, grunts, screams, grinding teeth, slapping the ground, bobbing head. One communication technique is called the "silent bared-teeth face" where the head is held erect, the teeth barred and the headshakes.
   - Mandrills show submission by presenting its rump to more dominate animals.
   - Males mandrills also have a sent gland on their chest that they rub on objects as markings to others in their group
4. **Reproduction:**
   - "The pretty boys get the girls". The mandrill is one of the most sexually dimorphic mammals. Male mandrills are far more colorful and their female counterparts, with bright colors on their faces, noses and rumps. This is especially true of the males of breeding age who have achieved dominant alpha status in the troop. Males reach sexual maturity at about 9 years of age when their facial colors become more

pronounced. The more testosterone the brighter the colors! Females have much duller parts and reach sexual maturity in about 3.5 years. It's the females who choose which males to mate with. (see photos)

- Breeding season is from June to October with a gestation lasting about 175 days.
- Babies of mandrills are usually a single birth, born with black fur and eyes open. Will cling to their mother's stomach as she moves through the trees or on the ground.
- Like in humans, all female members of the family like mothers, aunts and sisters take care of the offspring and play and protect the baby while the mother is off searching for food

5. **Predators:**
   - Leopards, snakes (African Rock Pythons) and large birds of prey such as the crowned eagles. Usually it's the juvenile mandrills that are singled out by predators.
   - Dominant male mandrills can take on the role of defending the troop against attack, even by leopards.
   - Humans also hunt mandrills for bush meat.

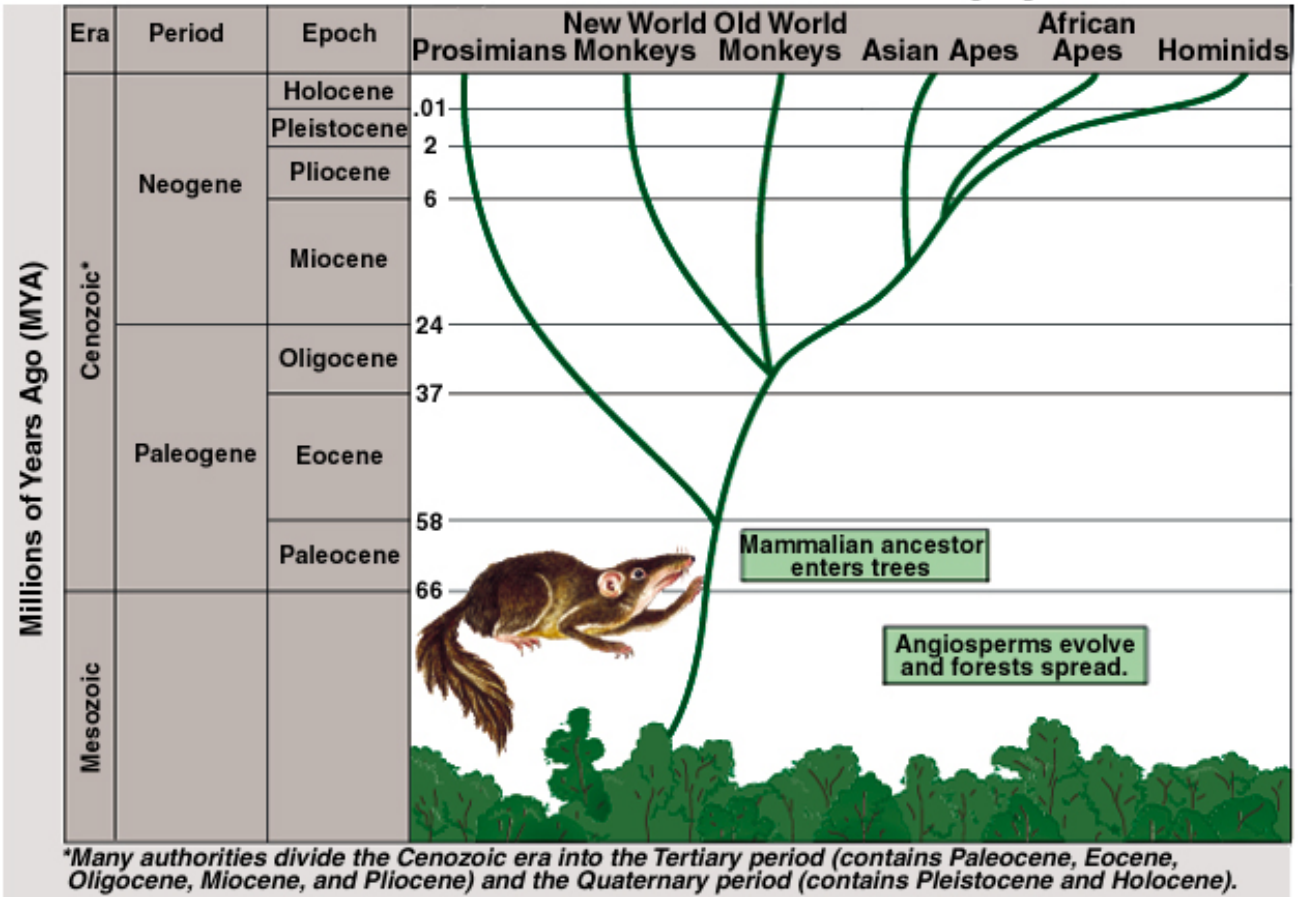
MANDRILL INTERESTING FACTS:

- A large group of mandrills (600-900 animals) is called a "horde" and usually consists of females and their young.
- They do not make pets.
- The canine teeth of the adult males can reach 6.5 cm (2.5 inches)

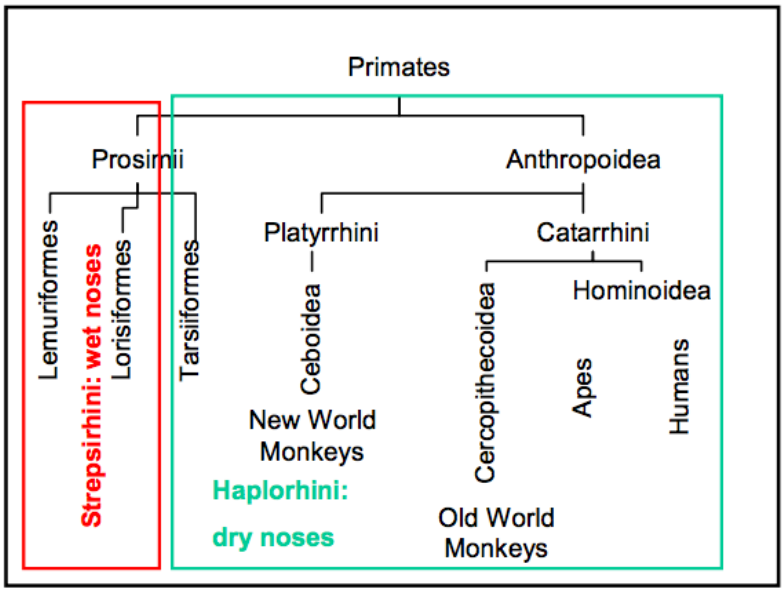
MANDRILL CONSERVATION TALKING POINTS:

- Mandrills are classified as Vulnerable on the IUCN Red List.
- Affected by deforestation and human settlements
- Hunting for bush meat is also a direct threat, especially in the Republic of the Congo.
- Some captive bred mandrills have been successfully reintroduced.

Primate evolution (1)



*Many authorities divide the Cenozoic era into the Tertiary period (contains Paleocene, Eocene, Oligocene, Miocene, and Pliocene) and the Quaternary period (contains Pleistocene and Holocene).




Pied Tamarin Range


ARKive
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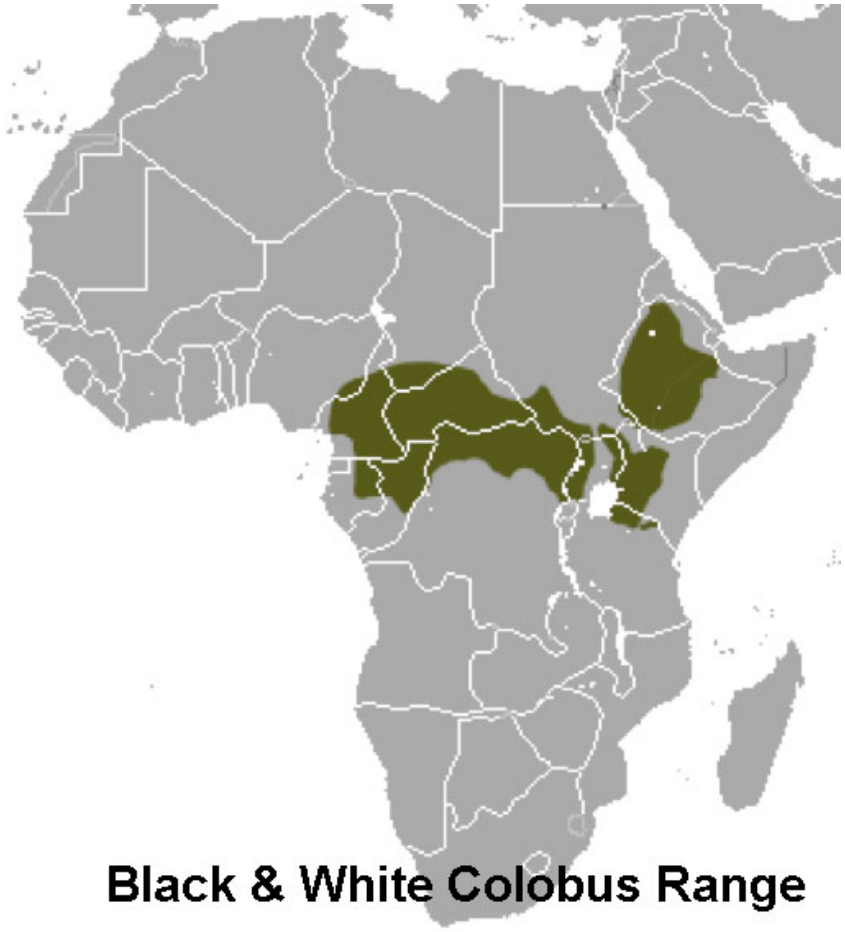
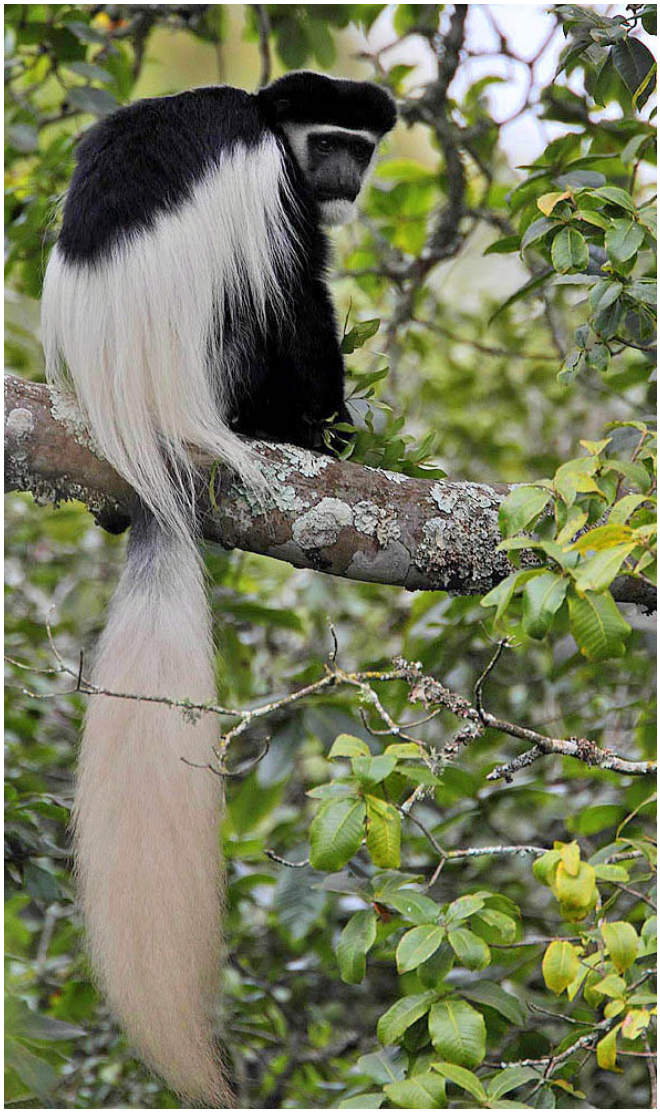
Squirrel Monkey Range


Black Howler Monkey Range


François' Langur Range



Black & White Colobus Range




Patas Monkey Range


Male Patas


Mandrill Range