

FELINE TALKING POINTS

FELINE CART INVENTORY

- African Lion skull (male)
- Domestic Cat skull (female)
- Freeze dried Lion leg (female)
- Snow Leopard pelt
- Mountain Lion pelt
- African Lion pelt
- African Lion mane
- African Lion claw
- Kodiak Bear claw
- Polar Bear claw
- Identification chip in magnifying box (**DO NOT OPEN BOX**)
- One piece sandpaper to demonstrate roughness of cat's tongue
- Feline Resource Notebook

Note: Please return all items to their appropriate container on the cart, and make sure lids are secured. The notebook, paw, ID chip, claws and leg should **ALL** be stored in the drawer. **DO NOT OPEN ID CHIP BOX.**

FELINE GENERAL CHARACTERISTICS

- Cats are in the Order Carnivora and are distributed worldwide.
- Carnivores are high on the food chain, requiring a large habitat in order to find sufficient prey and for the maintenance of viable populations. For this reason, habitat destruction and fragmentation are particularly devastating to Felines.
- Their evolutionary success is partially attributed to their enlarged brains, the great potential for learning, and their stealth and success in hunting.
- Cats are divided into large and small cats; the differentiation is the hyoid bone, which connects the tongue to the roof of the mouth. In big cats this has an elastic segment (Genus *Panthera*), while that of small cats is hard all over. The hyoid bone allows big cats to produce a roar and prevents them from purring in the same manner as small cats. (Note: some "small cats" are actually larger than some "big cats". The mountain lion, puma or cougar is an example of a big "small cat")

The San Francisco zoo has 6 feline species/subspecies: four large cats - **African Lion** (*Panthera leo*), **Sumatran Tiger** (*Panthera tigris sumatrae*), **Amur or Siberian Tiger** (*Panthera tigris altaica*), **Snow Leopard** (*Panthera uncia*), and the two small cats - **Fishing Cat** (*Prionailurus viverrinus*), and **Bobcat** (*Lynx rufus*).

FELINE PHYSICAL ADAPTATIONS

1. Skull/Head/Dentition

- Felines have well developed **carnassial teeth** and enlarged canines with a short muzzle and powerful jaws to help bring down prey. Incisors are used for snipping off meat and grooming; canines are used for grabbing and holding prey; carnassial dentition is used for shearing or cutting meat.
- Mandibular fossa (where jaw articulates to skull) is C-shaped and restricts lateral motion of lower jaw and provides strong, powerful vertical action needed for killing and eating prey.
- Binocular vision - Large forward facing eyes for excellent vision and depth perception. Eyes are set wide on their head allowing a wider field of vision than that of humans.
- Papillae on tongues- tiny hooks on the upper tongue's surface, which point backwards and aid in grooming and holding and lacerating food. (show sandpaper)

2. Body/Extremities

- Strong muscular limbs for running and pursuing prey
- Felines are digitigrades with large paws and soft pads that distribute weight and keep movements quiet, this enabling the cat to sneak up on and stalk prey more successfully.
- Felines have sharp claws for bringing down prey; their claws are retractable (exception cheetah) to maintain sharpness for killing prey. (compare the cat claw to non-retractable bear claw)
- Fur thicker in those species living in cold environments and color highly variable with most species having distinctive markings (compare fur coloring and thickness to environments they live in)
- Felines have more lumbar and thoracic vertebrae compared to humans, which account for the cat's enhanced spinal mobility and flexibility.
- Felines usually have a long tail used as a counterbalance during quick movements. (exceptions: bobcat)

FELINE BEHAVIORAL ADAPTATIONS

1. Lifestyle

- Felines are usually solitary (exception the lion, who lives in prides).
- Prey is located by sight and sound.
- Cats are mainly nocturnal; their eyes have a developed **tapetum lucidum**, a reflective layer behind the retina, which enhances vision in low light conditions and gives cats their distinctive eye shine.
- Felines spend a large amount of time sleeping; hunting prey takes an amazing amount of energy; when active, their energy is used for hunting, courting or protecting their territory.
- Cats are obligatory carnivores; they must consume meat to survive. They have a simple stomach with an undeveloped cecum, as meat is easier to digest than plant material; their stomach acid is strong enough to dissolve bones.
- Prey is the main factor in territory size. Cats attempt to secure resources for survival and reproduction. Territories are usually large for males and smaller for females.

2. Communication/Senses

- Whiskers are highly sensitive and provide sensory information about the slightest air movement around it. They are very helpful to nocturnal hunters.

- Felines have a good sense of hearing with external ears that act as sound collectors, allowing cats to locate prey; their ears, which can move independently of each other, can rotate 180 degrees, helping to locate prey.
- Felines have an excellent sense of smell.
- Cats mark their territories by spraying their urine, scratching trees and rubbing their bodies against objects.
- Cats have a Jacobson's organ and exhibit the flehmen response to test the receptivity of the female. This response is adopted when examining scents left by other animals either of the same species or of prey. (The flehman response can be explained as tasting scents)

3. Reproduction

- Repeated copulation is thought to induce ovulation in females.
- Felid cubs are born altricial and females are sole caretakers. (exceptions: lions)
- Females advertise estrus through vocalizations, scent marking, and restlessness.
- Cubs remain with their mother until they can hunt on their own.

AFRICAN LION TALKING POINTS (*Panthera leo*)

AFRICAN LION RANGE/HABITAT (see map)

- Found in most countries south of the Sahara Desert, majority in East and southern Africa
- Habitat of grassy plains, savannahs, open woodland and scrub country with scattered Acacia trees for shade

AFRICAN LION PHYSICAL ADAPTATIONS (see earlier Feline physical adaptations)

1. Size/Weight/Lifespan

- **Sexual dimorphism:** Male lions are 20 – 35% larger and have a mane; males weigh between 330 and 550 lbs., while females weigh from 265 to 395 lbs.
- **Lifespan:** wild 10 - 14 years, captivity 25 – 30 years

2. Head/Body

- Male's large mane provides protection for his head and neck during fights. It increases apparent size making him more imposing and may protect against potential fights with other males. The male's primary role is to breed and protect the pride's territory.
- Female is smaller and more agile. The majority of the hunting is done by the females.
- Pelage blends in with their environment, helping camouflage the lions while they sneak up on their prey. Light colors help keep them cooler in the arid habitat. (compare pelts)
- Long tufted tails are used for balance when making sharp turns in pursuit of prey. Tuft may help cubs follow mom in tall grass. The tuft covers a horny spur at the tail's tip. The function of the tuft and spur are unknown.
- A lion's whisker pattern is unique to individuals and is used to ID an individual.

AFRICAN LION BEHAVIORAL ADAPTATIONS (see earlier Feline behavioral adaptations)

1. Lifestyle

- Lions live in prides which provide close social groupings that last for years; the lion is the only truly social cat and lives in a group (2-3 males in average size pride of 15). A group of males are able to defend the territory and gain females better than one male.
- About every 3 years, males of the pride are challenged and driven off by other males.
- Pride members nuzzle and rub against each other to reinforce bonds.
- Cooperative hunting groups help in killing success- two lions will approach their prey from opposite directions. When a kill is made the males of the pride eat first, followed by the females and finally the cubs. Hunting cooperatively allows the pride to tackle larger prey, make easier kills and have less chance of injury. The pride also helps to protect the kill from scavengers such as a pack of hyenas.
- Lions are capable of sustaining speeds of 35 mph for short time spans.
- Lions also scavenge and even chase other predators off their kills.
- Lions are only active 3-4 hours of any given day
- Lions hunt in open spaces; lions will get low to the ground, while hiding in grass, in stalking their prey.
- Males are tolerant and affectionate fathers and are crucial to cub's survival.
- Adult males patrol their territory against intruding males, which kill unrelated cubs.

2. Communication/Senses

- Lions have 9 distinct vocalizations; the roar can be heard at a distance of 5 miles and is usually heard at sundown, after a kill and after eating. The remaining sounds have not been interpreted, but appear to having meaning within the pride.
- Males mark boundaries with urine and other scent markings and protect their pride from other males. Lions are territorial.

3. Diet

- Carnivorous diet consists of wildebeests, zebras, buffalo, gazelles, warthogs and other ungulates. If game is scarce, they will eat small mammals
- At zoo, they are fed a diet of fortified horsemeat, chicken and rabbits.

4. Reproduction

- Litters: 1 – 4 cubs
- Gestation: average 110 days
- Sexual maturity: 4 - 5 yrs.
- Weaning: after 6 – 7 mos.
- The mother and cubs will stay secluded from the rest of the pride for six to eight weeks. She will move her cubs to a new den several times a month to avoid the attention of predators.
- Pride lionesses often synchronize their reproductive cycles in order to cooperate in the raising and suckling of the young.
- Cubs have rosette markings that fade as they mature.
- Males begin to get their manes at 6 – 8 months.
- Cubs can hunt independently at around 18 months. Male cubs are excluded from their maternal pride around 2 – 3 years of age. Males may then live as nomads or join other males before they are able to take over another pride and begin breeding.

AFRICAN LION INTERESTING/FUN FACTS

- At a kill, male lions eat first, then females, with the cubs eating last.
- Cubs have a high mortality rate and less than half survive their first year. All in all, as many as 80% of the cubs will die before the age of two.
- Hunting takes place mostly at night, and digesting large amounts of meat protein involves effort, so lions often spend as many as 20 hours a day resting.
- African lions are the largest African carnivore and the second largest felid next to the tiger.
- Males often kill any existing young cubs in a pride (infanticide), when taking over the pride as females do not become fertile and receptive until their cubs mature or die.
- The Nile crocodile is the only predator (besides humans) that can singly threaten the lion.

AFRICAN LION CONSERVATION TALKING POINTS

- The IUCN lists African lions as Vulnerable and they are regionally listed as Endangered in west and central Africa.
- Trade in African lions is regulated by CITES under Appendix II regulations; lions are legally hunted in some range countries in East and southern Africa.
- Lion populations are rapidly declining due to loss of habitat, hunting and poisoning by agriculture and livestock interests. By the end of this century, lions will probably exist only in parks and preserves.
- Lion depredation on livestock can be a serious problem and leads to persecution by farmers. Lions' scavenging behavior makes them particularly vulnerable to poisoned carcasses put out to eliminate predators. A record is being made of the characteristics of lions that become 'problem animals' and the conditions under which lions are most likely to prey on livestock.
- The Zoo supports a lion guardian program through the Laikipia Predator Project, which is transforming young Maasai men of Kenya from lion killers into lion protectors.
- Groups are working closely with local communities to change their farming practices to reduce the conflict and end retaliatory killings of lions.

TIGER TALKING POINTS (*Panthera tigris*)

TIGER GENERAL CHARACTERISTICS Tigers are perhaps the most recognizable of the large feline predators in the world, but also one of the rarest. These beautiful creatures are endangered but there are people around the world working to save them.

Not long ago tigers roamed much of Asia. There were once nine subspecies of tigers: Bengal, Siberian, Indochinese, South Chinese, Sumatran, Malayan, Caspian, Javan and Bali. Of these, the last three are now extinct, one is extinct in the wild, and the rest are endangered. At present there may be fewer than 4,000 tigers left in the wild!

TIGER RANGE/HABITAT (see map and photos)

The nine recognized tiger subspecies are extremely varied in their habitat and distribution.

- The Bengal tiger (*Panthera tigris tigris*) is native to the Indian subcontinent and is the national animal of India
- The Amur (Siberian) tiger (*Panthera tigris altaica*) is mainly found in Manchuria by the Amur River. The SF Zoo has this subspecies.
- The south Chinese tiger (*Panthera tigris amoyensis*) is native to south central China, slightly northward from the Indo-Chinese tiger (*Panthera tigris corbetti*)
- The Indo-Chinese tiger (*Panthera tigris corbetti*) has a southeastern distribution in China.
- Indonesia is where the Sumatran tiger (*Panthera tigris sumatrae*) is found. The SF Zoo has this subspecies.
- The Javan (*Panthera tigris sondaica*) and Balinese (*Panthera tigris balica*) tigers are now extinct but were native to Bali and Java in Indonesia respectively.
- The Caspian tiger, now extinct, (*Panthera tigris virgata*) was historically found in Turkey through central and west Asia.
- Prime tiger habitat is forests and grasslands.

TIGER PHYSICAL ADAPTATIONS (see earlier feline physical adaptations)

1. **Size/Weight/Lifespan**

- **Sexual dimorphism:** Females of all tiger subspecies are smaller than males.
- The Siberian tiger is the largest subspecies with males weighing from around 400-675 lbs (181-306 kg)
- The Sumatran tiger is the smallest living subspecies, weighs around 220-310 lbs (100-136 kg).
- **Lifespan:** 10 - 15 years in wild, 20 - 26 years in captivity.

2. **Head/Body**

- Their powerful hind legs are longer than the forelegs enabling them to leap forward distances up to 10 meters (32.5 ft), facilitating an explosive charge and pouncing capture when attacking prey.
- Tiger's feet are padded and have retractable claws, aiding them to silently sneak up on the prey they hunt. The bones of a tiger's foot are tightly connected by ligaments, which buffer the impact of landing, while running, pouncing and leaping (a built in shock absorber).
- The claws of the tiger are up to 10 centimeters (4 in) in length and are used to grasp and hold onto prey. Each paw has four of these claws and one specialized claw called a dewclaw. A dewclaw is located farther back on the foot and thereby does not touch the ground when walking. Dewclaws function similarly to thumbs in that they are used for grasping prey and aid in climbing.

- Tiger claws are retractable in that ligaments hold them in a protective skin sheath when they are not being used. The ligaments are in a relaxed position when the claws are retracted thereby expending no musculature effort.
- Tigers retract their claws to ensure that they remain sharp for times when they are needed and to tread silently up to unsuspecting prey. Other ligaments will deploy the claws when attacking prey or defending themselves, requiring musculature effort.
- Tiger claws are curved which enables them to superiorly grasp and hold large prey and climb trees head-first. However, the claws' curvature, the tiger's size and weight is a great hindrance in climbing down from trees. Tigers must either crawl backwards or jump down from trees, making them the most inferior climbers of the big cat family. (Note: All cats can climb; how good a climber depends on the shape of the claw; leopards are the best climbers among big cats whereas the cheetahs are not as equipped as leopards to climb trees.)

3. Dentition

- Tigers have fewer teeth than other carnivores with only 30 teeth.
- Tigers have the largest canines of all big cat species ranging in size from 6.4 to 7.6 centimeters (2.5 to 3.0 in) in length. The canines have abundant pressure-sensing nerves that enable the tiger to identify the location needed to sever the neck of its prey. The skull is foreshortened, thus increasing the shearing leverage of the powerful jaws.
- Tigers large canines are capable of penetrating deeply into their prey because of the large gap between canines and carnassials (back teeth) and thus to also hold the prey tightly.
- The rear teeth of the tiger with sharp ridges, are called carnassials and enable the tiger to shear meat from their prey like knife blades. Tigers will swallow large-sheared pieces of meat whole.
- The small incisors located in the front of the mouth (between the two top and bottom canines) enable the tiger to pick off meat and feathers from their prey.
- The tiger's tongue is covered with numerous small, sharp, rear-facing projections called papillae. Papillae give the tongue its rough, rasping texture and are designed to help strip feathers, fur and meat from prey.

4. Fur

- The primary function of the tiger's coloring is for camouflage/concealment. Many tigers possess stripes on their face, sides, legs and stomach. The striping is varied in width, length and whether they are single or double-looped. Coloration ranges from a light brown to dark black stripes on a light to dark orange background and are not symmetrical from one side of the tiger to the other.
- Tigers are the only large cat species to have distinctive striping **located on both the hair and the underlying skin.**
- The primary function of the tiger's hair is for warmth. The under-fur traps air insulating the tiger's body, thereby keeping it warm. Hair is thicker in cooler climates.
- Tigers possess two types of hair, guard hair and under-fur. The guard hairs are longer and more durable than the under-fur and mainly function for protection purposes.
- Tigers' long tails are used for balance when making sharp turns in pursuit of prey. Also motions of tail used in communication to convey varying moods.
- Tiger's have white circular spots on the backside of their ears. (see under Tiger Interesting/Fun Facts)

5. Adaptations for hunting and capturing prey:

- Tigers have more rods (to discern shapes in dim light) in their eyes than cones (responsible for color vision). The increased number of rods allows them to detect

movement of prey in darkness where color vision would not be useful.

- They have large eyes with a developed **tapetum lucidum**, which enhances vision in low light conditions by reflecting light back through the retina a second time to better see and stalk their prey. The tapetum lucidum causes their eyes to glow at night when a light is shone on them.
- In addition to the upper and lower eyelids, cats and other animals such as birds and crocodilians (alligators, crocodiles, etc.) have a translucent, **nictitating membrane** that sweeps across the cornea keeping it moist and dust free.
- Ears of tigers have well developed earflaps that are keen sound collectors. In addition to acute hearing, they are capable of detecting infrasound, sound waves below the range of normally audible sound. Tigers use infrasound when roaring, to communicate over long distances through dense forest vegetation. Hearing is the most acute of the tiger's senses. (Note: The larger cats can produce deeper sounds that are too low for human ears (infrasound) and there is an infrasound component to their roar; these sounds can be transmitted over long distances)

TIGER BEHAVIORAL ADAPTATIONS (see earlier feline behavioral adaptations)

5. Lifestyle

- Tigers essentially live solitary lives, except during mating season and when females bear young.
- Tigers are mostly crepuscular / nocturnal ambush predators that rely on the camouflage their stripes provide to allow a surprise attack to capture prey.
- Tigers are stalk and ambush predators. That means they use a surprise attack to catch their prey.
- Tigers use their broad front paws with their sharp, retractable claws to grab prey, employ their significant body weight to knock prey to the ground and their powerful jaws and canine teeth to kill prey with a bite to the neck.
- Tigers are **very good swimmers** and have been known to kill prey while swimming.
- Wild tigers may kill around 50 animals a year (on average).
- Tigers are apex predators, primarily preying on ungulates such as deer and bovids (i.e. antelope, sheep, goats).

6. Communication/Senses (see under adaptations for hunting and capturing prey above)

- They are usually fiercely territorial and mark their large home ranges with urine sprays and scrapes.
- Sense of hearing is the most acute of a tiger's senses and is mainly used for hunting.
- **Touch:**
 - Tigers have **five different types of whiskers** that detect sensory information and are differentiated by their location on the body.
 - ✓ The tiger's **mystacial whiskers** thus help it feel its way through the dark.
 - The mystacial whiskers are located on the tiger's muzzle (snout) and are used when attacking prey and navigating in the dark
 - Mystacial whiskers can be about 15 centimeters (six inches) in length.
 - The tiger uses these whiskers to sense where they should inflict a bite.
 - ✓ **Superciliary whiskers** are located above the eyes.
 - ✓ **Cheek whiskers** are located just behind the mystacial whiskers on the cheeks.
 - ✓ **Carpal whiskers** are located on the back of the tiger's front legs.
 - ✓ **Tylotrich whiskers** are located randomly throughout the body.
 - Whiskers differ from guard hairs in that they are thicker, more deeply rooted in the skin and surrounded by a small capsule of blood.

- The root of the whisker displaces the blood when the whisker comes into contact with something thereby amplifying the movement.
- Sensory nerves detect this movement and send signals to the brain for interpretation.
- When navigating through darkness the tiger's pupils dilate to let more light enter the eye to increase their vision.
- The dilated pupils of their eyes assist their night vision but makes focusing on objects up-close difficult.
- In addition to whiskers, the facial area of the tiger has numerous sensory neurons that can detect even the slightest change in air **pressure** when passing by an object.
- **Smell**
 - The tiger's **sense of smell is not as acute** as some of its other senses and is generally not used for hunting. They have small amounts of odor-detecting cells in their nose and a reduced olfactory region in the brain that identifies various scents.
 - The **Jacobson organ** is a pouch-like structure located in the roof of their mouth, directly behind the front incisors. It has two small openings that direct scent particles from the air as the tiger inhales to nerves located within the structure. The nerves then transmit the message to the olfactory region in the brain that identifies the scent.
 - **Flehmen response** is a behavior whereby an animal curls back its upper lips, exposing its front teeth, inhales with the nostrils usually closed and then often holds this position for several seconds, while directing inhaled air flow to the Jacobson organ.

7. Reproduction

- In tropical climates, mating occurs mostly from around November to April but will occur during the winter months in more temperate regions.
- Females reach sexual maturity around 3 to 4 years of age and males mature at about 4 to 5 years of age.
- A female tiger may enter estrus (the time when a female is receptive and capable of conceiving young) every three to nine weeks, and her receptivity lasts three to six days.
- In tropical climates, females may come into estrus throughout the year, though mating seems to be more frequent during the coolest months (November to April).
- In temperate regions, females enter estrus and mate only during the winter months.
- Females advertise their readiness to mate.
- A few days before she enters estrus, the female will scent-mark her range more frequently with distinctive smelling urine.
- During estrus, the female may frequently vocalize throughout the day to attract a male. Tigers usually begin their courtship by circling each other and vocalizing.
- Copulation is brief and repeated frequently for five or six days.
- Female tigers are **induced ovulators**, which means the act of mating causes the female to release an egg for fertilization.
- Several days of mating interactions may be required to stimulate ovulation and guarantee fertilization of the egg.
- Both male and female tigers may have several mates over their lifetime.
- The gestation period is about three and half months.
- It is difficult to identify a pregnant tigress because they do not begin to show a bulge until the last 10 to 12 days of pregnancy.

- The tigress spends the last few days of her pregnancy searching for a safe birthing place that provides enough cover to conceal the newborn cubs and has adequate prey.
- Each litter may have up to seven cubs, but the average is three.
- Tigresses usually wait between 18 to 24 months between births.
- Tiger cubs are born blind and are completely dependent on their mother.
- Newborn tiger cubs weigh between 785 and 1,610 grams (1.75 to 3.5 lb).
- The tiger cubs' eyes will open sometime between six to twelve days. They develop full vision over about two weeks.

TIGER INTERESTING/FUN FACTS

- There are two theories about the white circular spots on the backside of tiger ears.
 - They function as "false eyes"; making the tiger seem bigger and watchful to a potential predator attacking from the rear.
 - They play a role in aggressive communication because when threatened tigers may twist their ears around so that the backs face forward, prominently displaying the distinctive white markings.
 - The function of the white markings is probably a combination of both ideas.
- Tigers with white background coloration are not considered albinos. An albino would be pure white in color (no striping) and would have pink or red eyes.
- **White tigers are leucistic** meaning that they have a recessive gene that causes them to lack dark colors. Therefore they usually have a white color with light to medium brown striping and blue eyes. For unknown reasons, white tigers seem to grow bigger and at a faster rate than their orange counterparts.

TIGER CONSERVATION TALKING POINTS

- Humans kill tigers for two main reasons: threat or perceived threat to domestic animals and/or people and for monetary gain.
- Prime tiger habitats, such as forests and grasslands, are being converted for agricultural needs.
- Habitat Loss and fragmentation occurs when land is modified for agricultural purposes, logging, and land conversion for grazing domestic animals.
- The rapidly growing human population has reduced the number of viable tiger habitats. The human population in India alone has increased by nearly 50% since 1973 with a total population in 1995 estimated to be about 931 million.
- Traditional Chinese medicines have utilized tiger bones for thousands of years because it is thought to calm fright and cure ulcers, bites, rheumatism, convulsions and burns.
- In 1985, there were 110 pharmaceutical factories in China producing medicines with tiger components.
- The Zoo participates in the Tiger SSP; the Tiger Species Survival Plan Is a Tiger Conservation Campaign to encourage zoos to support wild tiger conservation efforts and raise awareness about wild tigers.

SNOW LEOPARD TALKING POINTS (*Panthera uncia*)

SNOW LEOPARD RANGE/HABITAT (see map)

- Found in the Himalayas, Nepal, and Central Asia
- Habitat: high altitude cliffs above tree line from 2,000 - 20,000 ft, with arid and semi-arid shrubland, grassland or steppe vegetation

SNOW LEOPARD PHYSICAL ADAPTATIONS (see earlier Feline physical adaptations)

1. Size/Weight/Lifespan

- **Sexual dimorphism:** Males are 30% larger; males weigh 100 -155 lbs., females weigh 60 to 120 lbs.
- **Lifespan:** wild 10 - 13 years, captivity 21 years

2. Body

- Pelage (fur) is long and thick, with wooly underfur for extra warmth in the severe mountain winters. Each coat pattern is unique - used to ID individuals (compare pelts)
- Coloring provides excellent camouflage in mountainous environment. (compare pelts)
- Very long, bushy tail for balance when climbing and for warming face and help in retaining water when curling up to sleep.
- Small head with short muzzle and small ears to conserve heat
- The rounded paws have large hairy pads that act as snowshoes when walking on snow and also protect the paws from rocks during the summer heat.
- Large chest capacity and lungs adapted to living where oxygen levels are low
- Enlarged nasal cavity helps them warm the cold air they breathe and assist breathing at high altitudes.
- Snow Leopards do not have specially adapted blood cells to cope with thin air at higher elevations, they just breathe more deeply.

SNOW LEOPARD BEHAVIORAL ADAPTATIONS (see earlier Feline behavioral adaptations)

1. Lifestyle

- Generally crepuscular
- Snow leopards are usually solitary, but not unsociable. During breeding season, they hunt in pairs.
- Snow leopard are superb jumpers. When stalking prey, they can easily leap distances of 20 to 50 feet.

2. Communication/Senses

- Snow Leopards do not roar, but they do purr and make grunting sounds. They are still considered a large cat as they have a semi-ossified hyoid bone. Silent nature is possibly an adaptation for preventing avalanches.
- Loud moans are used to attract mates
- Territories are marked with feces and urine sprays as well as scrapes

3. Diet

- Carnivorous diet of ibex, Marco Polo sheep, musk ox, marmot, ptarmigan, pheasant as well as mice, birds and hares.
- At zoo, they are fed a diet of fortified horse meat.
- Snow leopards can bring down prey more than three times its size.
- They eat crouched over their food like domestic cats.
- Snow Leopards grab their prey with a sudden spring.
- Apex predator, they are top of the food chain

4. Reproduction

- Litters: 2 – 3 cubs
- Gestation: 95 – 105 days
- Sexual maturity
- Weaned: 2 mos
- Females give birth in a well-concealed den, which is lined with the mother's fur.
- Spots on the cubs are black.

SNOW LEOPARD INTERESTING/FUN FACTS

- The Zoo has had a very successful breeding history of snow leopards, producing 42 snow leopards since 1958.
- The snow leopard (also known as a rock leopard) is the only exclusively alpine cat in the world. This rare and shy animal is seldom seen, and was photographed in the wild for the first time in 1971.
- The indigenous peoples of the highlands of central and southern Asia are haunted by the Snow Leopard and consider it a "ghost animal" and believing it to have mystical powers.

SNOW LEOPARD CONSERVATION TALKING POINTS

- Listed as Endangered on the IUCN Red List
- Appendix I of CITES
- Snow leopards are killed for their fur and for bones, which are used in Asian medicines.
- Snow leopards are often killed by ranchers because they are seen as a threat to their livestock. The depletion of the snow leopards' natural prey by hunting or overgrazing forces them to increase their feeding on domestic animals.
- Species numbers are affected by habitat loss and defragmentation, as the land is being converted for agricultural uses
- Impacted by effects of global warming - when the snow line moves upward there is less vegetation available for prey animals at the higher elevations and therefore less food for the leopards.
- Locals are being educated about how to protect their livestock from Snow Leopard predation and the harm of poaching while getting them involved in their protection.
- The Zoo is active in a SSP for the Snow Leopard species
- The Zoo supports The Snow Leopard Conservancy's work of empowering communities to help maintain a balanced ecosystem for the snow leopard and co-exist with them while providing economic incentives to do so.
- You too can support organizations that are working to save the Snow Leopard.

FISHING CAT TALKING POINTS (*Prionailurus viverrinus*)

FISHING CAT RANGE/HABITAT (see map)

- Found in Southern Asia including India, Nepal, Burma, Thailand, Malaysia, Indonesia and Taiwan
- Habitat: associated with wetlands - reed beds and long grasses of riverbanks, marshes and swamps up to 4,900'

FISHING CAT PHYSICAL ADAPTATIONS (see earlier Feline physical adaptations)

1. Size/Weight/Lifespan

- **Sexual Dimorphism:** females are smaller than males, females 11 - 20 lbs, males – 18 - 31 lbs. (size varies depending on location), female length 22.4 – 29.3”, male 26.0 – 45.3”
- Considered among the small cats, they have fully ossified hyoid bone and purr.
- Larger than domestic cat
- **Lifespan:** captivity 12 years, wild unknown

2. Body

- Fishing cats have two layers of fur for insulation; the lower layer is very short and dense, which keeps the cat's skin dry when in the water; the outer layer is composed of long guard hairs; these guard hairs give the cat its color pattern, which provides camouflage in their environment.
- Their stocky build with relatively short legs, and a short, muscular tail are good adaptations for their habitat of marshy thickets, mangrove swamps and dense cover along streams.
- Small ears and flattened head with the eyes set closer together than other cats are adaptations for fishing.
- Eyes look forward for good depth perception.
- The fishing cat's diet is dominated by aquatic prey, although their dentition is typical of a more generalized feline diet.
- Partially webbed feet with large claws which aid in swimming in habitat
- Semi-retractable claws to keep them sharp. The sheaths are too small to allow for full retraction. Claws help catch slippery prey especially fish.

FISHING CAT BEHAVIORAL ADAPTATIONS (see earlier Feline behavioral adaptations)

1. Lifestyle

- The fishing cat is thought to be primarily nocturnal but there is limited information on their behavior in the wild.
- Solitary except during breeding and mother with kittens
- The fishing cat is an eager and skilled swimmer.
- The forepaws have digits joined by traces of swimming membranes.
- The fishing cats lie in wait on the bank or wade into shallow water to catch slippery prey with paws or teeth. They use their paw as a scoop.

2. Communication/Senses

- Good sense of smell, which is used more for detecting and communicating with other animals than for hunting
- Hyoid bone is ossified. Like many smaller felines, fishing cats communicate with hisses, guttural growls, and even a low, demanding meow.
- A male and female make a sound called chattering as part of their courtship, with the female signaling her willingness to breed and the male communicating submissiveness.

- Fishing cats mark their territory and breeding status with their strong-smelling urine.

3. Diet

- Carnivorous diet of fish, frogs, snakes, mollusks, mammals and birds
- Diet dominated by aquatic prey

4. Reproduction

- Litters: 2 – 3 kittens
- Gestation: 63 days
- Sexual maturity; 10 – 15 mos
- Weaned: 4 – 6 mos
- Female fishing cats initiate mating by calling out to attract males.

FISHING CAT INTERESTING/FUN FACTS

- A fishing cat will imitate a bug on the water by tapping their paw so fish will come up to the surface.
- Will dive into the water to catch fish
- When swimming, the fishing cat may use its short, flattened tail like a rudder, helping control its direction in the water.
- Little is known about fishing cats in the wild, but it is thought that they have no natural predators, other than humans.
- At one time, missionaries and local people mistakenly reported this feline as a 'kidnapper', snatching infants from their cradles while they were sleeping.

FISHING CAT CONSERVATION TALKING POINTS

- Listed as Endangered on the IUCN Red List and on CITES Appendix II
- The major threat to fishing cats is the destruction of their wetlands habitat.
- Destructive fishing practices by humans greatly reduce the fish stock these cats require.
- Poached for food, medicine, or various body parts
- Groups work with locals to enhance their public awareness and help build local community support for protection of fishing cats and their habitat.
- Researchers are working with government officials, to have the Fishing Cat made part of the provincial natural resources protection policy, and an extensive public awareness conservation campaign is underway.

BOBCAT TALKING POINTS (*Lynx rufus*)

BOBCAT RANGE/HABITAT (see map)

- Found in Southern Canada to northern Mexico including most of continental United States
- Habitat: prefers wooded areas, but also found in semi-desert, urban edge, forest edges, and swamp environments
- Bobcats have an extremely wide habitat tolerance; they can be seen in a variety of very different habitats.

BOBCAT PHYSICAL ADAPTATIONS (see earlier Feline physical adaptations)

1. Size/Weight/Lifespan

- **Sexual Dimorphism:** females are much smaller than males, females 8 – 34.6 lbs and 20 - 37.5", males 9.9 – 40.3 lbs. and 37.5 - 41.3" (size varies depending on location), males weigh 25-80% more than females in the same population
- Considered among the small cats - hyoid bone is ossified.
- **Lifespan:** wild 10 - 12 years, captivity oldest known 32 years

2. Body

- Named after its short "bobbed" tail. Why the bobcat has a short tail is not known; it is possible that a longer tail was a hindrance in a habitat of dense vegetation; also, when hunting, they do not pursue prey at high speeds but stalk stealthily and leap.
- Pelage (fur) provides camouflage among rocks, brush and dense vegetation of their environment
- Bobcats in the desert regions of the southwest have the lightest colored coats, while those in the northern, forested regions are darkest.

BOBCAT BEHAVIORAL ADAPTATIONS (see earlier Feline behavioral adaptations)

1. Lifestyle

- Crepuscular. Bobcats become more diurnal during fall and winter.
- Largely solitary and territorial
- Excellent climbers, and will swim when it needs to, but will normally avoid water

2. Communication/Senses

- Territorial, uses several methods to mark its territorial boundaries, including claw marks and deposits of urine or feces.
- Keen hearing and vision, and a good sense of smell
- Bobcats communicate through scent, visual signals, and vocalizations; they are usually silent, although they often yowl and hiss during the mating season; they communicate in many ways that are comparable to a domesticated cat, however their growl has been compared to that of their only predator, the cougar.

3. Diet

- Bobcats are an adaptable predator; they prefer rabbits and hares (90% of diet), but it will hunt anything from insects and small rodents, birds, bats and deer.
- Prey selection depends on location and habitat, season, and abundance.
- Bobcats eat carrion. Road-kill and winter-kill deer may be important food source in winters
- Stalk prey with stealth and patience and then capture with one large leap

4. Reproduction

- Litters: ave 3 kittens
- Gestation: 60 – 70 days
- Sexual maturity: 2 years

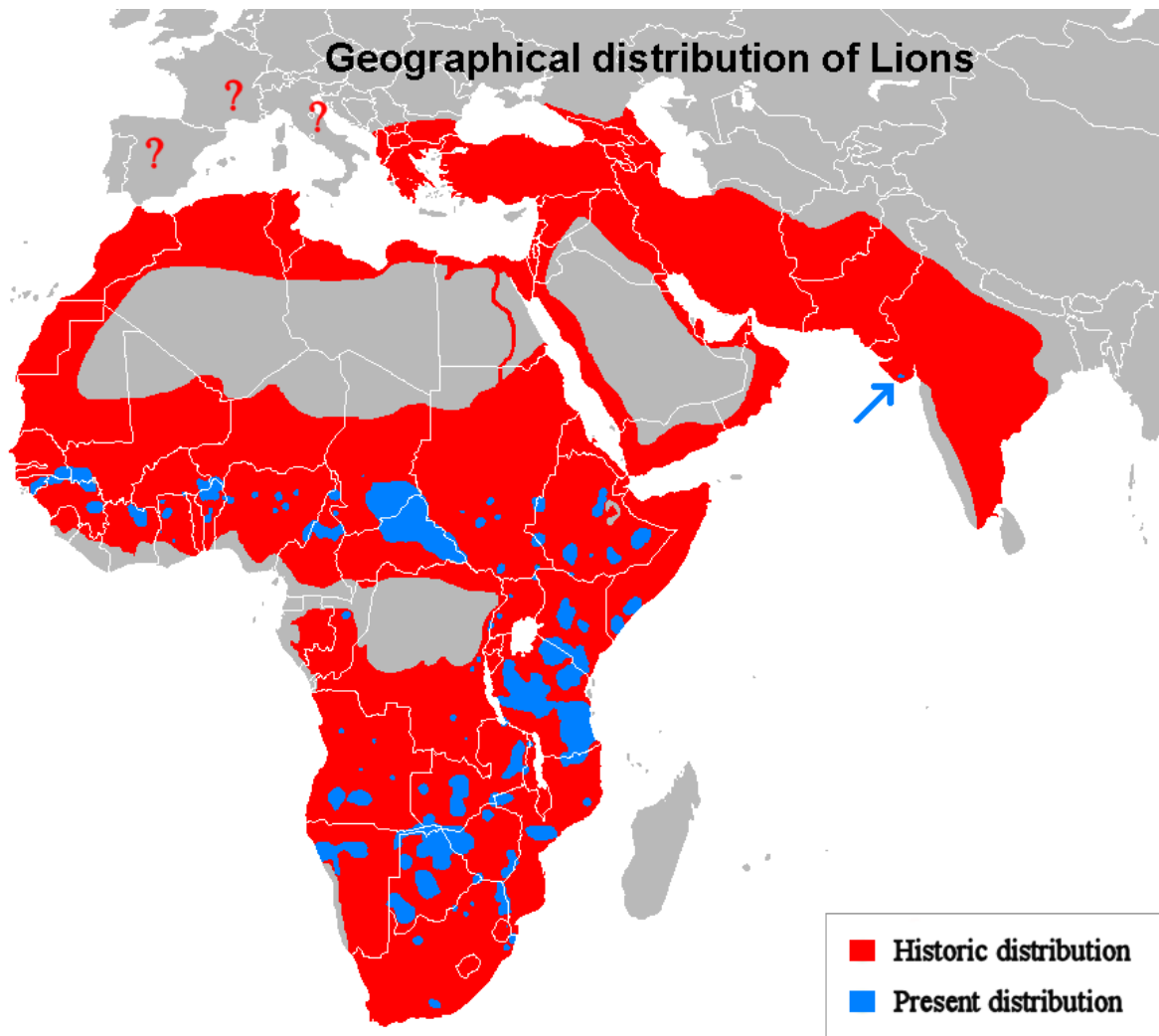
- Weaned: 12 weeks
- The bobcat breeds from winter into spring and has a gestation period of about two months
- Both males and females may have multiple partners
- Each bobcat may have several dens, one main den and several auxiliary dens, in its territory
- Between 8 and 11 months the kittens are evicted from their mother's territory

BOBCAT INTERESTING/FUN FACTS

- Bobcats are good swimmers and tree climbers, although they usually don't spend much time in trees.

BOBCAT CONSERVATION TALKING POINTS

- Listed as Least Concern on IUCN Red List and Appendix II of CITES
- Most common wildcat in North America
- Bobcats persist in much of their original range and populations are healthy.
- Bobcats have been hunted extensively for sport and their fur, but their population has proven resilient.
- The Bobcat is now the leading wildcat species in the skin trade, with most exports coming from the US.
- The Bobcat is protected in ten USA states; in Canada hunting and trade are regulated; and in Mexico hunting is regulated in five states and shooting of suspected livestock predators is permitted.
- In 2015, it became illegal to use traps to capture bobcats in California for sport or for their pelts.





Tiger Comparison Chart

Face Profile Body

Bengal



Siberian



Sumatran



Malayan



Indo-Chinese



South China



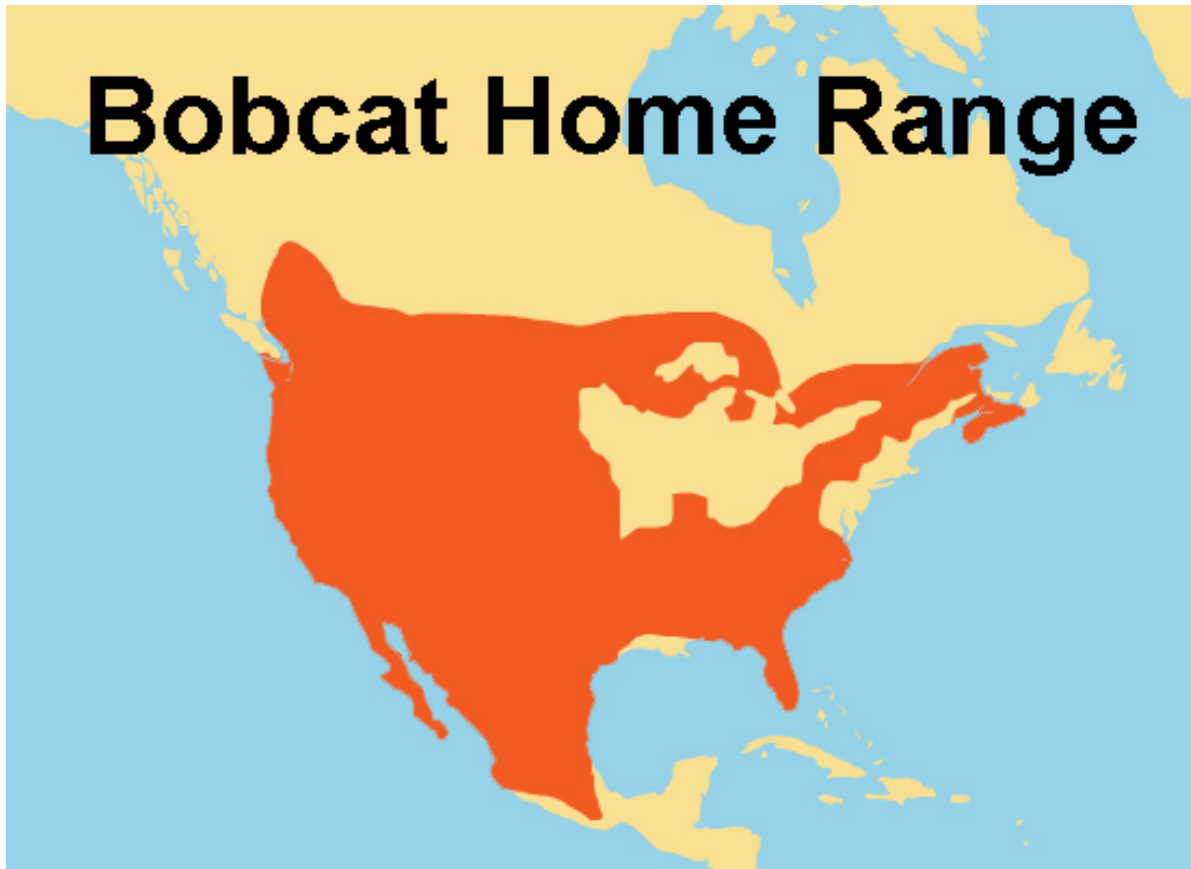




Humans are the greatest threat to all wild tiger populations, ...and ironically their best hope for their continued survival.









Sources:

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

Wild Cats of the World, Luke Hunter, © 2015, Bloomsbury Publishing.

<http://www.sfzoo.org/>

<http://www.lionconservation.org/>

<https://seaworld.org/en/animal-info/animal-infobooks/tiger>

<http://snowleopardconservancy.org/>

<http://www.defenders.org/>

<http://www.wcs.org/>

<http://www.wildcatconservation.org/>

<http://www.iucnredlist.org/>

Lion house FAQs

(From Asst. Curator Ashleigh Lutz-Nelson 12/27/16)

Q. When is the best time to ask a Big Cat keeper a question?

At the 2:30 PM Big Cat Keeper Talk in the Lion house demonstration area (near restrooms).

After the

New Year 2017, we will offer two Big Cat Keeper Talks daily, at 11:00 AM and 2:30 PM.

Q: What kind of big cats do we have at the San Francisco Zoo?

We have four different species of big cats: African lions, Sumatran tigers, Siberian (Amur) tigers and

Snow Leopards.

Q: Where are the cats?

There are five big cat habitats that wrap around the backside of the Lion House. As part of their

enrichment program, the big cats are rotated into the different habitats variably. If the cats are not

visible inside the glass room, they can be seen outside in Grotto D.

Q: When is the feeding/when are they fed?

There is no scheduled public feeding, but there is a daily keeper talk at 2:30 PM inside the Lion House. The cats are fed at varied times throughout the day.

Q: What do the cats eat?

Our cats are fed a variety of foods, including horse meat, pork, beef, rabbit and chicken.

Q: Why are the lions/tigers roaring?

Lions roar for territorial and social reasons, including letting other cats know that a certain space is their territory or to bring members of the pride together. Tigers roar to let other cats know where their territory is, and also to communicate with and locate potential mates.

Q: How big are they/ how much do they weigh?

Our cats range in size from 200-550 lbs. with our largest cat being our adult male African lion and our smallest being our female Sumatran tigers.

Q: Do the keepers go in with the cats/touch them?

No, keepers work with the cats through protected contact, meaning that the keepers and the cats always have a barrier between them. We do not hand feed the cats.