

TROPICAL AMERICAN RAIN FOREST (TARF)

TARF was designed to represent South and Central American rain forests. While there are rain forests in other parts of the world, such as Africa, the animals and plants in TARF are strictly from the Americas. Moreover, the main focus of TARF is Amazonia—the region of South America that includes the Amazon River, its tributaries, and the areas surrounding them. The cultures represented in TARF also are from South and Central America.

Glossary

Flooded Forest: During a period lasting approximately six months each year, the Amazon River Basin floods and the waters extend well into the forest. This is an interesting time for the animals that otherwise live within the banks of the river. Many animals have special adaptations that allow them to exploit resources that are only available during the flooded forest season. The flooded forest may cover more than 100,000 square kilometers of forest in Amazonia!

Epiphytes: Epiphytes are special plants that do not have a root system in soil, and generally live on another plant such as a tree. They absorb the water and nutrients they need from the moist air around them. Some have specialized leaf arrangements that catch rainwater. These pools of water in the plant become perfect habitat for everything from insects to frogs. Some frogs even go through their entire life cycle (from egg, through tadpole to adult) inside the confines of a single bromeliad “pool.” One special group of epiphytes found in TARF is bromeliads. Most orchids are another example of epiphytes.

Liana is a word used to describe the large, woody vines found in rain forests.

"New World" refers to the Americas (North and South). The "Old World" generally refers to Africa, Asia, and Europe. The Tulsa Zoo Tropical American Rain Forest therefore contains only "New World" animals and plants.

Buttressing is a special structural adaptation many tropical rain forest trees have. Because soils in these regions are actually quite shallow, these trees are not able to establish deep root systems like they do here in Oklahoma (and most of the United States). Buttresses are the ridges that form along the trunk of the tree and get larger towards the base of the tree. They increase the strength and stability of the tree by increasing its width at the base.

Animals and plants in the Tropical American Rain Forest at the Tulsa Zoo

Flooded Forest:

White Tufted-Ear Marmoset *Callithrix jacchus*

Marmosets are found in South and Central America, and nowhere else on earth. These are small primates measuring only 12-15cm (5-6 inches) plus their tail. Their distinguishing marks are white tufts on their ears and a white blaze on their forehead. The marmosets in TARF are free ranging. Keep your eyes open to see them!

Marmosets are interesting because in the wild they are generally found in mating groups of two males with only one female. The female mates with both males, and usually gives birth to two large offspring (the offspring combined may weigh 40% of the mother's weight at birth)! The males are active participants in child rearing, often carrying the young.

These marmosets are extremely endangered, mostly because of nearly complete destruction of their habitat in northeastern Brazil.

Green Oripendula *Psarocolius viridis*

As visitors first enter TARF, if they look up at the first large tree (the Kapok tree), they may see a very large nest suspended like an oriole nest, but much larger. This is the nest of an oripendula. Oripendulas fly freely in TARF, and eat fruit, nectar, and insects. This nest is not currently active.

Lungfish *Lepidosiren paradoxa*

These fish have elongated bodies which somewhat resemble eels. They have very reduced gills and lungs that allow them to breathe air. They cannot breathe underwater, but they are still fish! They have bony toothplates that they use to chew their prey before swallowing.

During the dry season, these fish survive by burrowing into moist resting chambers, lining the chamber with mucous and remaining dormant. Their breeding season is the beginning of the rainy season, at which time the male excavates a burrow and then guards the eggs that the female lays.

Lungfish primary habitat is the freshwater swamps and floodplain lakes in the Amazon and Parana River systems in South America.

Pirhana *Serrasalmus nattereri*

This most feared of all fish has certainly earned its reputation! Their fierce, razor sharp teeth are often used by indigenous people as part of their poison blow darts. A school of pirhanas can easily strip a large mammal carcass in a matter

of minutes, but they rarely attack anything large (like a human) unless blood is already present. In the wild, the primary diet of piranhas is other fish.

Dwarf Caiman *Paleosuchus trigonatus*

This "baby crocodile" is actually full-grown! Adult male caimans can be as long as 2.3 meters, roughly seven feet. Caimans walk with a distinct head-raised posture. Caimans are not prized for their hides because each scale has a bony projection into it.

Caimans eat a variety of things, but despite their riverine lifestyle, fish is not their most common meal. Young caimans eat a lot of terrestrial invertebrates (insects, crabs, etc...) while adults feast more on snakes, large rodents, and other small to mid-sized mammals. Both young and adults will eat some fish, but because the majority of their diet is terrestrial organisms, and because they eliminate in the water, they add a great deal of organic material to the water. Their waste left in the water is an important source of nourishment for plants, which are, in turn eaten by fish, so the caimans actually contribute to the abundance of fish in the river.

Caimans are found along freshwater rivers and streams throughout much of South America. They are more active at night than during the day. They establish feeding territories along the rivers, and spend the majority of their days in burrows resting. Caimans lay 10-20 eggs in a nest along the river. Young hatch as the water level rises, and are on their own from the time they hatch. Many young caimans die, but adult caimans have few enemies and tend to live long lives.

Freshwater Stingray *Potomotrygon motoro*

The slender tail on this circular relative to the shark is armed with a serrated, stinging spine. This spine produces and emits venom. This spine and its venom are defensive in nature. These stingrays do not sting their prey. In the wild, they eat mostly worms, crustaceans, and mollusks.

Stingrays are bottom dwellers and are camouflaged well in shallow water. They develop and incubate eggs internally, and produce up to 12 young per litter.

Anaconda *Eunectes murinus*

Anacondas inhabit mostly marshes and swamps in northern South America. Anacondas have a powerful jaw and many sharp teeth, but are not generally poisonous and therefore do not subdue their prey with venom. Instead, they use their jaws and teeth to help grip their prey, and then they wrap themselves tightly around their prey in order to suffocate it.

This species of anaconda can be as thick as a telephone pole, up to 30 feet long, and weigh up to 300 pounds. The more typical adult is 15-27 feet long ranging from 200-300 pounds, but there has been one report of an anaconda that was 500 pounds. Anacondas can live from 25-50 years in the wild.

Mothers give live birth to 14-18 babies, all of which are between two and three feet long at birth.

Pacu *Collosoma bidens*

The pacu is a large fish with a very unusual mouth! Pacu have extremely strong jaws and well-developed teeth they can use to crush and chew nuts. The pacu thrives during the flooded forest season when there is an abundance of fruits and nuts falling in the water from the trees above.

When the dry season comes and the floodplain forest dries, the pacu migrates and breeds upstream. The rich store of oils in the fish from a season of eating nuts and seeds serves the pacu well as energy to fuel its long journey. For the remainder of the year and until the rain returns, fish such as the pacu have very little food available to them. Pacu may go as long as six months without eating.

Sandstone Cliffs:

Twistneck Turtle *Platemys platycephala*

Twist-necked turtles are found along river basins throughout most of the northern half of South America. This turtle is flat headed and has a rather flat shell. Along the back of the shell are a groove and two ridges running on either side of the groove. This is a small turtle with a maximum adult size of only about 6 inches. Males have longer and thicker tails than females.

Twist-neck turtles are generally aquatic but may be found on land, especially after rains or when the female comes out of the water to lay eggs.

Mahogany Tree *Swietenia mahogany*

This tree is known for its beautiful dark hardwood. It is planted conspicuously in TARF in the center of the walkway. On one side at about shoulder to head level, you may notice a large scar on the tree where the bark has been removed. This is done by our marmosets, which are particularly fond of the sweet sap in this tree.

Eyelash Viper *Bothriednis schlegelii*

Eyelash vipers hunt at night. They use special organs know as LOREAL PITS. These are holes in front of their eyes, and can sense infrared radiation to help locate small mammals in the dark of night.

Peach Palm *Bactris Aspaes*

This palm tree has distinctive bands of bristles projecting out all along the length of its trunk. These bristles are actually both very sharp and very strong, and can puncture even two layers of leather gloves! These bristles deter any animal from climbing the tree. Perhaps there are some insects that could do it, but that is about it.

Short-tailed Fruit Bat *Carollia perspicillata*

This bat is primarily found in humid tropical rain forests. They are 2-3 inches from head to the tip of their tail, and weigh only 0.35-0.7 ounces. It is a very small bat with a short tail and a leafed nose. It roosts in colonies of several hundred to a thousand with both males and females. They generally roost in caves, mines, rocks, hollow trees, and buildings. Adults form colonies with harems consisting of one adult male, several females, and their offspring. Mating can occur all year. Females give birth to a single baby. Individuals live two to six years in the wild, but are known to live up to 12 years in captivity.

These bats fly an average of three miles each night. Some people consider them as pests because they will eat crops such as mango, coffee, guava, and other cash crops of the tropics.

The Jamaican Leaf-nosed Bat *Artibeus jamaicensis*

This bat is perfectly at home roosting in more open areas, such as curled palm fronds. They are particularly fond of figs, mangos, avocados, bananas, and the pulpy layer of some palm fruits. Because they eat fruit and fly far from the tree in which they found that fruit, they are considered to be important seed dispersers in the tropics. These bats also form colonies with multiple females, a single male, and all their offspring. The young bats stay nestled under their mother's wing until they already to fly. Young stop nursing at about nine weeks and begin eating fruit at this time.

Cloud Forest:

Acacia Plant

Just to your right as you enter the cloud forest area there is a plant with extremely large and conspicuous thorns. These are no ordinary thorns! Instead they are hollow and filled with nesting ants. This is a fascinating relationship between a plant and ants. The plant takes care of the ants, and the ants take care of the plant! The plant offers the ants a place to live and treats to eat. (The acacia produces special nectaries full of sugary nectar and protein rich leaf tips for the ants to eat.) In return, the ants defend the plant from any attacking insects or fungi.

Black Howler Monkey *Jatropha curcas*

The Black Howler Monkey has a prehensile tail, which means that it can use its tail for grasping during locomotion and feeding. It moves slowly and deliberately through the forest, and suspends itself from branches using its tail while feeding.

It is found in the countries of Argentina, Brazil and Paraguay in swampy and semiarid forests. Its main diet is young leaves and fruit, though it also eats some flowers and insects.

Howler monkeys live in groups of between 2 and 19 individuals. There are two kinds of howler monkey social groups. One consists of all bachelor males. The other is a group of a male, a few females, and all their offspring. Females assist

each other in the care of the groups' young. Males who are not a part of this mixed group will attempt to fight with the males who are in hopes of ousting him from his group and taking over.

Agricultural Terrace:

Acouchi *Myoprocta pratti*

One of the acouchi in TARF runs freely through the exhibit. While guests are welcome to stop and observe the acouchi, they should not attempt to get close or touch it! He will bite!

Acouchi feed on fruit, vegetables, and succulent plants. When in danger they generally freeze in place, becoming motionless. They live in colonies in the wild, and will hide in burrows or holes in riverbanks. They often bury their food to save it for later.

Acouchi can be as much as 15 inches in length and weigh up to three pounds. They reach sexual maturity in 8 to 12 months, and breed primarily in the summer. Gestation is approximately 99 days, and there are generally two in each litter. Acouchi fathers are generally friendly with the young, until the young reach the age of sexual maturity. Acouchi can live up to ten years in captivity. Their life span in the wild is shorter due to pressures such as predation, disease, and competition for resources.

Two Toed Sloth *Choloepus didactylus*

Sloths are fairly common in the tropical forests of Central and South America, although their habit of living high in the trees, being active only at night, and moving rarely and slowly makes them difficult to find. A sloth on the ground is a comical sight! They are simply are not designed to support themselves on the ground. Instead they are masters of the treetops. Their claws allow them to hold fast to branches, and their feet can rotate as much as 180 degrees while holding on to a branch! They are best adapted to hold onto relatively thin branches and thick vines (lianas). This allows them to move easily from tree to tree through the forest, and they are not isolated to a single tree, which is a common misconception.

The sloth has a low body temperature and a slow metabolism. Their diet consists of leaves, and their digestive systems are also quite slow.

Sloths sleep during the day, curled tightly with their feet close and head placed between the forelimbs. Some species of sloths (this one included) have algae growing on the fur. This position and coloration allows them to remain pretty inconspicuous to their main predators: jaguars and eagles.

Mayan Ruins:

Jaguar *Panthera Onca*

Many people confuse this big cat for a leopard, but Jaguars are found in the Americas, and leopards are only found in Africa. Although the Jaguar used to be somewhat common from the southern US down through central South America, its range is now limited primarily to the north and central parts of South America. It is a forest dweller and is most common on the lowland rain forests of the Amazon basin.

Aside from man, the jaguar has no other natural "enemies". There are no predators that can compete with the jaguar. The jaguar can and will eat almost any animal species. It can kill and eat things as large as domestic livestock or as small as rodents. It is also quite agile in the water, and can catch fish, turtles, and even caiman. Jaguars also climb trees, and will hunt monkeys in the lower branches of the rainforest.

The jaguar's jaws are so powerful that they often kill their prey by piercing the skull with one swift bite.

During the 1960's and 70's, over 18,000 jaguars were killed for their prized pelts. While the pressure on them from hunters has declined, jaguars are still hunted. Their major threat comes from habitat destruction (deforestation) that both destroys the habitat of the jaguars and decreases the availability of its prey. There are probably less than 15,000 jaguars left in the wild.