

= Geoffroy 's tamarin =

Geoffroy 's tamarin (*Saguinus geoffroyi*) , also known as the Panamanian , red @-@ crested or rufous @-@ naped tamarin , is a tamarin , a type of small monkey , found in Panama and Colombia . It is predominantly black and white , with a reddish nape . Diurnal , Geoffroy 's tamarin spends most of its time in trees , but does come down to the ground occasionally . It lives in groups that most often number between three and five individuals , and generally include one or more adults of each gender . It eats a variety of foods , including insects , exudates , fruits and other plant parts . Insects and fruits account for the majority of its diet , but exudates are also important . But since its teeth are not adapted for gouging trees to get to the sap , it can only eat exudates when they are easily available .

Although a variety of reproductive methods are used , the most common is for a single adult female in the group to be reproductively active and to mate with multiple adult males in the group . After a gestation period of about 145 days , she gives birth to either a single infant or twins . Males contribute significantly to care of the infants . Sexual maturity is reached at about 2 years , and it can live up to 13 years . Geoffroy 's tamarin is classified as being of " least concern " by the IUCN .

= = Taxonomy = =

Like the other tamarins and marmosets , Geoffroy 's tamarin is a New World monkey classified within the family Callitrichidae . In 2001 , Colin Groves included the Callitrichids in the family Cebidae , which also includes capuchin monkeys and squirrel monkeys , but in 2009 Anthony Rylands and Russell Mittermeier reverted to older classifications which considered Callitrichidae a separate family . It is a member the genus *Saguinus* , the genus containing most tamarins . There are no recognized subspecies . In 1977 , Philip Hershkovitz classified Geoffroy 's tamarin as a subspecies of the cotton @-@ top tamarin (*Saguinus oedipus*) , which resides exclusively in Colombia , based on fur coloration , cranial and mandibular morphology , and ear size . However , more recent research indicates that the two taxa differ sufficiently to be considered separate species .

= = Physical description = =

In common with other callitrichides (tamarins and marmosets) , Geoffroy 's tamarin is a small monkey . With a length of between 225 and 240 millimetres (8 @.@ 9 and 9 @.@ 4 in) , excluding the tail , it is the smallest Central American monkey . The tail length is between 314 and 386 millimetres (12 @.@ 4 and 15 @.@ 2 in) . Males have an average weight of 486 grams (17 @.@ 1 oz) , and females are slightly larger on average , with an average weight of 507 grams (17 @.@ 9 oz) . The fur on its back is variegated black and yellow , with pale legs , feet and chest . Its face is nearly bare , but the head has reddish fur with a triangle @-@ shaped patch in the front of the head . The tail is chestnut @-@ red and has a black tip .

= = Behavior = =

Like all callitrichides , Geoffroy 's tamarin is diurnal and arboreal . Unlike some other New World monkeys , it does come down to the ground occasionally . This is normally done only in special circumstances , such as to acquire certain foods or to get to a tree it cannot otherwise reach . Group size is generally between three and nine monkeys , with three to five being most common . Groups often consist of more than one adult of each gender . Adults of both genders migrate between groups . Groups show some degree of territorial defense . Population densities on Barro Colorado Island in Panama range between 3 @.@ 6 and 5 @.@ 7 monkeys per square kilometer , but in other areas the population density can be as much as 20 to 30 monkeys per square kilometer . On average , Geoffroy 's tamarin ranges 2061 meters per day . Home range size varies between 9 @.@ 4 hectares and 32 hectares .

Communication occurs both through vocalization and by visual gestures . Vocalizations that have been recorded include whistles , twitters , trills , loud or soft sharp notes , sneezes and long rasps . Body postures and displays that reveal more of the white coloration , such as standing on hind legs and piloerection , tend to be associated with aggression . Females often signal willingness to mate by rapidly coiling their tails .

Unlike squirrels , which often move through the canopy by climbing and descending vertical tree trunks , Geoffroy 's tamarin generally avoids large vertical supports during travel . It prefers to move across thin branches , ascending and descending by long leaps . To the extent Geoffroy 's tamarin uses large vertical supports for travel , it uses them most often for ascending rather than descending .

Geoffroy 's tamarin generally avoids sympatric small and medium size monkey species such as the white @-@ headed capuchin and the Panamanian night monkey . Avoidance is spatial with respect to the capuchin , and temporal in the case of the night monkey , since Geoffroy 's tamarin is only active during daylight hours and the Panamanian night monkey is only active at night . Geoffroy 's tamarin is rarely observed in the vicinity of squirrels , although this appears to be the result of the squirrels avoiding interactions with the larger tamarins . Geoffroy 's tamarin generally attempts to escape when birds of prey approach , regardless of whether the bird presents a true danger . However , the tamarins ignore one bird of prey , the double @-@ toothed kite , which sometimes follows the tamarins in an apparent effort to feed on small animals disturbed by the tamarins .

The diet of Geoffroy 's tamarin is similar to some species of tyrant flycatcher birds in Panama , and they share similar vocalizations . The tamarins may use the flycatcher calls to help find favorable food sources . The flycatchers and tamarins have different patterns of activity , which minimizes competition for similar food sources . The flycatchers are most active shortly after dawn and tend to rest in the middle of the day . The tamarins do not become active until about 45 minutes after full daylight , but remain active for most of the remaining daylight hours until an hour or less before sunset .

== Diet ==

Geoffroy 's tamarin has a varied diet that includes fruits , insects , exudates (gums and saps) , and green plant parts . The diet varies seasonally . A study by Paul Garber estimated that the diet was made up of 40 % insects , 38 % fruit , 14 % exudates (almost entirely from *Anacardium excelsum* cashew trees) , and 8 % other items . Another study , on Barro Colorado Island , showed 60 % fruit , 30 % insects and 10 % green plant parts , including large amounts of elephant ear tree (*Enterolobium cyclocarpum*) sap . Another study showed a diet about equally split between insects (mostly grasshoppers) and fruit . Unlike marmosets , tamarins do not have dentition adapted for gouging trees , so Geoffroy 's tamarin eats sap only when it is easily accessible . It generally hunts for insects by making quick movements on thin , flexible supports . In contrast , it generally feeds on sap while clinging to large vertical tree trunks .

In one study , Geoffroy 's tamarin drank water from the corollas of *Ochroma limonesis* flowers . However , it is believed to also drink from tree holes , similar to other tamarin species .

== Reproduction ==

Geoffroy 's tamarin can give birth throughout the year , but the birthing peak is from April to June . A single infant or twins can be born , although it is not uncommon for one of the twins to perish within the first few months . The gestation period is believed to be about 145 days , similar to the cottontop tamarin . The interbirth period ranges between 154 and 540 days , with an average of 311 days . The longer interbirth periods occur after twins . Infants weigh between 40 and 50 grams (1 @.@ 4 and 1 @.@ 8 oz) and are born fully furred . The infant 's fur is colored differently than the parents ' ; the infant has black fur on the body and tail , with a beige blaze and white face . The infant coloration reduces the visibility of white , which is associated with aggressive displays by the species .

Both polyandrous and polygynous mating occurs , and males contribute heavily to parental care . But typically , only one adult female in a group is reproductively active , and reproductively active females mate with multiple males if given the opportunity . Males carry and groom infants more than females do . Older siblings may also contribute to infant care , although infants prefer to be carried by their parents than their siblings . Infants become mobile at 2 to 5 weeks , and begin eating solid food at 4 to 7 weeks . They are independent at 10 to 18 weeks and are fully weaned at 15 to 25 weeks . Geoffroy 's tamarin becomes sexually mature at about 2 years , and can live up to 13 years .

= = Distribution and habitat = =

Geoffroy 's tamarin lives in various types of forest , including primary and secondary forest , and dry and moist tropical forest . In Panama , it prefers secondary forests with moderate humidity . It occurs in central and eastern Panama , with the range extending slightly west of the Panama Canal zone . It is less common on the Atlantic coast of Panama than the Pacific coast , and is only abundant on the Atlantic coast in areas near the Canal zone that have been modified by man . It occurs in Metropolitan Natural Park , an urban park within Panama City . In Colombia , it occurs on the Pacific coast west of the Andes , south to the Rio San Juan . The eastern boundary of its range in Colombia was once thought to be the Rio Atrato , but has been reported further east , including the Las Orquídeas National Park . Older sources sometimes report the species occurring in southern Costa Rica , but these are most likely erroneous .

= = Conservation status = =

The International Union for Conservation of Nature classifies Geoffroy 's tamarin as being of " least concern " . However , in some localities the population may be declining due to habitat loss . It is also sometimes hunted and captured for the pet trade in Panama . A 1985 study in Panama concluded that Geoffroy tamarin population densities are higher in areas where human access is limited . Human activity in Panama can have both positive and negative effects on Geoffroy 's @-@ tamarin populations . While hunting decreases the population , cutting mature forest for agriculture provides more areas of secondary growth , which is beneficial for the tamarin .