

## *Desmodus rotundus* (Common Vampire Bat)

Family: Phyllostomidae (Leaf-nosed Bats)

Order: Chiroptera (Bats)

Class: Mammalia (Mammals)



**Fig. 1.** Vampire bat, *Desmodus rotundus*.

[ [http://teedarcticmonkeystickni.blogspot.com/2010\\_12\\_01\\_archive.html](http://teedarcticmonkeystickni.blogspot.com/2010_12_01_archive.html) , downloaded 10th, Nov 2011]

**TRAITS.** The common vampire bats are highly adaptable mammals that can fly and feed entirely on blood. Size and weight: 7cm in length weigh approximately 57g with a wingspan of 18cm and well developed clawed thumbs on each wing to aid in climbing. Colour: fur reddish brown on back and lighter, yellowish-brown on its underside (Schober 1983). Their head is short and rounded with relatively large eyes, ears are large and pointy and their nose is broad and flat with a fleshy nose leaf. Their deeply grooved lower lip shows the abnormal dentition, where the number of teeth is greatly reduced: razor sharp incisors that lack enamel and razor sharp canines (Fig.1). They use their pectoral limbs for generating the upward thrust when they jump and their hind limbs are used for stabilization.

**ECOLOGY.** Common vampire bats are known to inhabit tropical and subtropical regions of North America to South America. Those found in the West Indies are bound mainly to Trinidad and tend to live in humid, warm climates and inhabit broad areas such as rainforest, dry coastal plains, mountains, brush and mesquite plains and even deserts. Mainly found occupying dark area in trees, caves, abandoned buildings, old deserted wells and mines. They can live with nine other bat species and tend to dominate the area because of their intelligence and superiority and they roost in numbers from as low as six to as much as two hundred (Fig 3). Feed entirely on mammal blood which makes them very distinctive from other bats and mammals. They have a wide variety of food choice, but this choice is not determined only by type of animal and breed, but by behavioral patterns that is specific too that animal and breed, colour of hide and even type of skin (Schober, 1983). Their period of activity is mainly in the darkest hours of the night.

**SOCIAL BEHAVIOUR.** Vampire bats tend to have a high level of co-operation. All the females stay together and have a strong social bond in their roost and have a moderately strong relationship with the males that stay together (Wilkinson 1984). A social co-operative behaviour observed in the bats are reciprocal altruism, where the bats share their food with each other, this is done by regurgitation of blood to feed to another bat. Soliciting blood from other bats are common and occurs when a bat is unsuccessful in feeding but sharing of blood also occurs between females and females and between males and females and even between males and males in a roost. Females also display alloparenting, where a female mother who is lactating will feed her baby as well as another baby whose mother has died. Vampire bats also take part in mutual grooming, where two bats clean each other concurrently. This grooming also aids in an intact social relationship, sharing of food and recognition of hunger. This is based on the relationship between the species.

In the day the *Desmodus rotundus* uses hollow trees with a group as their roost and tend to relate to other species living there for several years. There is an important association that exists between the adult females that live together but the adult male bats do not show as much association with females or other males. Monitoring the vampire bats that reside on trees and while foraging, and their feeding patterns with radiotelemetry, their relevance can be tested. The females tend to live as one in the roost, they (1) they share a similar microclimate, (2) keep away from other harmful animals, (3) evade infection from ectoparasite, (4) limit their travel to victims, (5) react highly to forcible males, (6) feed at the same time from a bite, (7) get rid of ectoparasites by allogrooming, and (8) share food by regurgitating blood to other bats within roosts. This is a social behaviour that allows them to prevail generations after generations (Wilkinson 1984).

**ACTIVITY.** *Desmodus rotundus* have been observed to leave their roost to feed after 21:00 h in summer and after 22:00 in winter, or they just leave their roost in the night when it is dark. They tend to leave when darkness is complete and they take a preliminary flight to check the moonlight. Vampires can be found flying around approximately one hour after darkness, but only a few hours after midnight. After leaving for flight they seem to return to their roost in a little time of 30 mins. Vampire bats tend to feed when there is absence of the moonlight because they prefer the darkness in times of foraging, any time before the moon rises or after it sets. Other factors such as mountains, cloudiness, rain disturbs the pattern of foraging (Brokx 1972). The individual *D. rotundus* travels several kilometers one direction to find their prey, depending on their passive hearing and infrared cues to locate their suitable food source and a particular bite

site (Kunz & Fenton 2003). They are also able to obtain while on the ground (Fig. 5), using their limbs for walking, running, hopping back and forth to obtain access to their host (Schober 1983).

**FORAGING BEHAVIOUR.** *Desmodus rotundus* feeds only in the night time, their only food intake is sucking or licking the blood of vertebrates (Fig. 4). They are considered as obligate parasites. Vampires in the wild feed primarily on livestock such as large mammals that rest at night, such as cattle, goats, pigs and horses as well as domestic poultry (Fig. 2) they have less interest for insectivorous species. Occasional attacks on sleeping humans have also occurred. Those in captivity have fed on snakes, lizards, toads, crocodiles, and turtles (Schober 1983).

**SEXUAL BEHAVIOUR.** Males occupy a roost that has mostly females, and defend their particular section from outside males. The defense mechanisms are chasing, pushing and fighting. The fighting includes gesturing, striking with the wings, and biting (Wilkinson 1984). The mating begins when the male climbs onto the females back and grasp her folded wings with his wings and hold the back of her neck with his mouth, this copulation last approximately 3 to 4 minutes. This mating system is said to be polygynous. Vampires are sexually active throughout the year but the peak breeding seasons are around April and May or October and November with an average of 2 offspring (Turner 1948).

**JUVENILE BEHAVIOR.** After the gestation period of seven months, the birth of a single young usually occurs and they approximately weigh 5-7 g at birth. They feed strictly on the mother's milk for this period, and during this time, the weight doubles. Their first blood meal is given to them by regurgitation from their mother at two months and they are able to accompany their mother until they are four months old. Their overall growth is completed when they are five months (Wilkinson 1984).

**COMMUNICATION.** Auditory system: sound waves from objects, animals or other bats are converted to mechanical vibrations that are amplified by the auditory nerves. The sound waves are considered as frequency transmissions via ultrasonic sounds are used as a means of communication. Bats use a low frequency for social interactions and higher frequency for echolocation. The production of a rhythmic pattern produces signal perception that provides a pacemaker for sniffing, chewing, and licking. Echolocation is created at pulses at repetition rates from 50 to over 500  $\text{sec}^{-1}$  and gives information about itself, its position and its course. (Fenton 1985)

Visual communication: optically the eyes of echolocating bats are consistent with the term that vision is used for detecting objects beyond the relatively short range of echolocation. The eyes of the *Desmodus rotundus* are equipped with sufficient amounts of photoreceptors and electroretinography which indicates that this species can see in brighter light as compared to other bat species. The visual communicative systems have not been studied in depth. The minimum visual angle of *Desmodus Rotundus* is 42' (Fenton 1985).

Olfactory system: the sources of olfactory signals are urine, feces, saliva and the other products of specific glands may be of a great importance. (Fenton1985). The receptor cells are located in the turbinals or scroll bones, which carries the information to the olfactory bulbs that sends it to the brains to be internalized.

**ANTIPREDATOR BEHAVIOUR.** There are not many studies on the predation of bats. Predators of bats are known to be owls, birds of prey, carnivores, other bat species and snakes. They tend to be susceptible to predation since they roost in the day and come out in large groups during the afternoon or night. The predators tend to wait outside of the roost and attack the bats when they leave. The antipredator behaviour towards these predators includes remaining in their sheltered roosts during the day and through supple flight in the night. They are also cryptically colored so it's difficult to see them in the night.

#### **REFERENCES**

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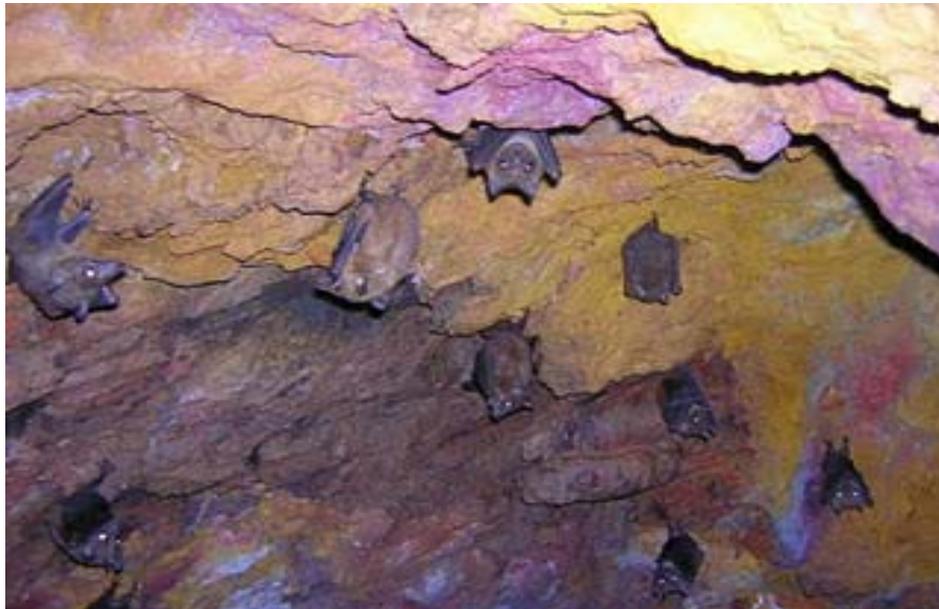
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**Fig. 2.** *Desmodus rotundus* feeding on cow's foot.

[ <http://www.sciencephoto.com/media/385373/enlarge>, downloaded 4<sup>th</sup> Nov, 2011]



**Fig. 3.** Vampire bats in roost (cave) along with other species of bats.

[ <http://vampirmetroublog.blogspot.com/2008/02/desmodus-rotundus.html> , downloaded 6<sup>th</sup>, Nov, 2011]



**Fig. 4.** Vampire bat feeding off the wound of an animal.

[ <http://animalworld.tumblr.com/post/3490709788/likely-common-vampire-bat-desmodus-rotundus> , downloaded 6th, Nov 2011]



**Fig. 5.** *D. rotundus* active on ground.

[[http://www.kostich.com/vampire\\_bat.htm](http://www.kostich.com/vampire_bat.htm), downloaded 10<sup>th</sup>, Nov 2011]

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