Vampyrum spectrum (Spectral Bat)

Family: Phyllostomidae (Leaf-nosed Bats)
Order: Chiroptera (Bats)
Class: Mammalia (Mammals)

Fig. 1. Spectral bat, *Vampyrum spectrum*.

[http://www.wild-facts.com/2012/wild-fact-365-one-large-carnivore-spectral-bat, downloaded 16 March 2015]

TRAITS. The carnivorous bat *Vampyrum spectrum*, commonly known as the spectral bat or the false vampire bat, is the largest known species of bat found in the new world (Altringham, 2011). Although the sexual dimorphism tends towards the males being larger, the average wingspan is 60-92cm and the average length of the body is 12.5-13.5cm, and weight between 140-190g (Greenhall, 1968). These bats have dark brown or russet coat with fine short fur along their bodies. The fur of their underbody is even shorter in a greyish brown. The ears are characteristically long and curved (Fig. 1), their claws rounded (Fig. 2), snout thin and long with sharp incisors, and the animal has no tail. Like other bats, they have a thin skin membrane from forelimbs to their body and back to the hind limbs. The noseleaf of the spectral bat is large with a

size of around 17mm long and steeply curved. A noseleaf is a leaf shaped ornament found on the nose of most bats in the families Phyllostomidae, Rhinolophidae and Megadermatidae and is believed to be responsible for the focus and direction of the animal's echolocation which is transmitted through its nose. Another defining feature of *Vampyrum spectrum* is not only its large size (Fig. 3) but also its dental formula which sums to 34 teeth, with four upper and four lower incisors (Greenhall, 1968).

DISTRIBUTION. These bats are native to and generally well spread over northern and central Brazil, Trinidad, Guyana, southern Mexico and Suriname (Nowak, 1999). *Vampyrum spectrum* can be observed in forested areas below the elevation of 1,650m. No migratory patterns for this bat are observed as the seasonal climates are fairly consistent throughout the year.

HABITAT AND ACTIVITY. The habitat of *Vampyrum spectrum* is Neotropical forests, including evergreen forests, forest edges and some woodlands however they can be seen in great densities at riparian (riverside) zones and seen sometimes in the territories of humans (Wikipedia, 2015; Nowak, 1999). The favoured home of this species of bat is typically inside hollow trees or on the branches of trees (Nowak, 1999). At around dusk the bats appear from their roosts and begin foraging where it searches for insects, small birds, rodents and sometimes other bats (Altringham, 2011).

FOOD AND FEEDING. A fair share of the time spent outside of the bat's roost is dedicated to foraging. Beginning at dusk *Vampyrum spectrum* leaves its roost and begins seeking food. Previously it was thought that this species of bat also fed primarily on blood much like the true vampire bat *Diaemus youngi*, it was also believed that they may eat fruit as well as flesh however during captivity fruit was refused by the bats over a five year period (Greenhall, 1968). These carnivorous bats feed primarily on small vertebrates in the form of rodents, small birds, other bats and sometimes insects (Altringham, 2011). Prey selection is highly based on the availability of the species; the bat can switch between types of prey. They fly low and very slowly and typically cover an area of about 3 hectares of its home range in a single session which can take between 1 – 4 hours to do. The morphology of the bat's wing allows it to not only lift off with large prey but they can also fly into cluttered spaces with high manoeuverability (Nowak, 1999). Similar to related species, the spectral bat also uses echolocation while flying and hunting however, scent is used more often. In doing so birds with stronger odours are usually preferred by the bat (Altringham, 2011).

POPULATION ECOLOGY. The widely dispersed, decreasing population of *Vampyrum spectrum* stretches across several regions in various countries. The overall population of this bat is reasonably large, but their population density per area is low (Nowak, 1999). These bats usually reside in clusters of 3-5 members inclusive of a mate and an offspring which can remain with them until maturity (2-3 years) (Vehrencamp et al., 1977). Adults tend to roost and remain in the same tree for an extended period of time, in some cases over a year (Vehrencamp et al., 1977). The regional populations of *Vampyrum spectrum* are not largely affected by any external factors other than environmental disturbances by humans. Furthermore their populations do not increase with any obvious external or ecological factors as they seem to consistently produce a single offspring per year. With very large home ranges and a slow hunting/stalking time over a 3.2 hectare area, there is no significant competition for food or mates. Furthermore, due to the conditions at which the spectral bat hunts, there is a large abundance of nocturnal insects and small vertebrates from which the animal can select with not many other nocturnal predators

available to compete (Vehrencamp et al., 1977). The population influence of predation on the *Vampyrum spectrum* population is negligible as not many predators are able to chase or capture these evasive creatures other than the occasional snake or owl.

REPRODUCTION. The breeding season is unknown however suspected times of birth are between May – July and live young are produced, typical of mammals (Greenhall, 1968). The gestation period as well as juvenile growth and behaviour are unknown. These bats however are known for their formation of a monogamous pair which can extend throughout the entirety of their life and selection of a mate is suspected to be determined by the female. Each pair gives birth to one offspring annually which has led to the assumption that the breeding interval of the species is once per year. Of the known species of bat only two exhibit male parental care and of those, *Vampyrum spectrum* is included (Crichton et al., 2000). This is suspected to increase the odds of the survival of the female as well as male parental care allows for the female reproductive cycle to resume much faster as compared to if she were the sole provider for the offspring (Crichton et al., 2000). Both mature parents play a significant role in the care of the offspring in that they both return to the roost with food for the young and pay particular interest in the offspring until maturity (Nowak, 1999). Individuals of this species have been known to live up to five and a half years long when in captivity (Greenhall, 1968).

BEHAVIOUR. Little is known about the behaviour of juvenile members of the *Vampyrum spectrum* populations other than they are cared for by both parents and remain in their care for about 2 years (Nowak, 1999). These bats are not faced with many predation problems based on location and time of activity. The bat's roost is fairly secured primarily due to the location of their roost above the reach of most predators. Foraging starting at dusk and only spends a maximum of 4 hours away from their roost; during this time juveniles are open to tree dwelling predators such as snakes and wild cats as well as larger birds of prey such as owls (Greenhall, 1968). With these considerations the spectral bat has no specifically designed anti-predatory activity due to the low account of predators available. Males have been observed enclosing their young and female within their wings throughout the duration of their roost (Nowak, 1999). *Vampyrum spectrum* communicates amongst its species via visual, chemical, tactile and even auditory means while their designated modes of perception are tactile, chemical and echolocation (Greenhall, 1968).

APPLIED ECOLOGY. *Vampyrum spectrum* has been listed by the IUCN as "Near Threatened", it is however considered endangered in both Bolivia and Mexico and are usually found in protected areas making it illegal to hunt or capture them. Due to the species' dispersal pattern being very wide, it is difficult to study or estimate their numbers. For the same reason the species is prone to a population decrease from human activity. There is no published evidence stating how this species affects humans (ICUN, 2015).

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Fig. 2. A spectral bat captured.

[http://carnivoraforum.com/topic/10094629/1/, downloaded 16 March 2015]

Fig. 3. Captured spectral bat's wingspan being displayed.
[https://forums.dragcave.net/index.php?showtopic=105648&st=20, downloaded 16 March 2015]