Myotis nigricans (Black Myotis Bat)

Family: Vespertilionidae (Vesper or Evening Bats)
Order: Chiroptera (Bats)
Class: Mammalia (Mammals)

Fig. 1. Black Myotis bat, *Myotis nigricans.*

[http://morcegosdobrasil.blogspot.com/2011/09/myotis-nigricans.html downloaded 10 November 2014]

TRAITS. The genus *Myotis* includes 80 species; *Myotis nigricans* has an appearance like that of other New World species of the genus. This bat is known for its black fur but can vary from dark brown to light and reddish brown in colour with their wing and tail membranes, ears and face also black. The head length and the body is 38-49 mm; the tail is 33-44 mm; skull length is 12.8-15.0 mm (Wilson and LaVal, 1974). The eyes are small, there is no noseleaf, and they have pointed, narrow ears with a tragus (small pointed bump in the ear). The back of the bat has a silky and not woolly fur between 4.0-4.5mm in length; the dorsal hair tips contrast with the base hair slightly. The female bat is larger in size than the male bat which aids in reproduction and offspring rearing (Wilson and LaVal, 1974).

ECOLOGY. *Myotis nigricans* is neotropical, found in Central and South America (Bornholdt et al., 2008), including Tobago. The bats are known to inhabit scrubland, savannah, and all forms of forested areas from sea level up to 3,150m (Wilson and LaVal, 1974). They are also sometimes

located near agricultural ecosystems since they consume insects and can act as a form of biological control of pests (Aguiar and Antonini, 2008). Since there are also forms of human construction and human presence within their vicinity, they roost in buildings and in the roofs of homes (Myers, 1997). Adult males of *Myotis* are very territorial toward other males and are outnumbered by females at roosts by about two to one, due to the dispersal patterns of each gender. Competition occurs for food and housing with *Molossus molossus* and other insect-feeding bats (Wilson and LaVal, 1974. This species is prone to ectoparasites such as bat mites, ticks (both hard and soft ticks), fleas, chigger mites and bat flies, and endoparasites such as trematodes which inhabit the intestine and cause early death. *Myotis nigricans* are familiar with their surroundings and are able to return to their roosts within two days from 50km. This species is known to carry rabies and is considered a pest in the Canal Zone of Panama since they roost in buildings (Wilson and LaVal, 1974). During cool weather, the mother and her offspring cluster together and as the day gets warmer they move towards the ground if they are located in hot buildings, to cooler areas. *Myotis nigricans* catch their prey by aerial capture and use narrow bandwidth ultrasound signals in open spaces (Siemers et al., 2001).

ACTIVITY. *Myotis nigricans* become active at sunset, however they will not venture out during heavy rainfall and they return before sunrise to the same area where their roosts are established, but not always at the exact location. Temperatures above 42^0C can lead to death so they therefore move over to cooler areas of the roosts (Wilson and LaVal, 1974). Although there is often the presence of another species of bat there is little interaction between M*yotis nigricans* and *Molossus molossus,* they just compete for accommodation by territorial interactions. *Myotis nigricans* roost in large clusters mainly comprising the females and their young, and the male bats tend to be more solitary unless it is the mating season (Wilson and LaVal, 1974). Both male and female adults leave the roost at night to forage for food and the females return before the males to nurse their young where they can be found amongst groups of 50-100 offspring (Wilson, 2010). Specific sounds are emitted to help scan their environment and locate conspecifics (members of the same species), predators, or bats of another species such as *Molossus molossus.* By use of head movements they are able to enlarge their search volume by scanning their environment (Wilson, 2010).

FEEDING BEHAVIOUR. *Myotis nigricans* is mostly an insectivorous species which occasionally consumes small fish if insect presence is scarce. The diet of this insectivorous bat reflects their seasonal, temporal and geographical variation and prey selection (Aguair and Antonini, 2008). At sunset, male and female adult bats leave their roosts in search for insects and some of these insects include Lepidoptera (moths) and Coleoptera (beetles) and Hymenoptera (bees). *Myotis nigricans* faecal matter showed that the bats fed on Lepidoptera, Coleoptera and Hymenoptera since there are traces present (Wilson and LaVal, 1974). Some of these bats have showed eating habits of feeding on fish (Bornholdt et al., 2008).

REPRODUCTIVE BEHAVIOUR. *Myotis nigricans* has a reproductive cycle between January and August where copulations occur when they awake at late afternoon and move to the floor of the roost. The solitary males mix with the females where he finds a suitable mate; the male manoeuvres his hindquarters under the female uropagium (tail flap). The terminal swellings on the penis enable the male to hold onto the female during copulation (Wilson and LaVal, 1974). In Panama Canal Zone, implantation occurs in late December and early January, the gestation period

is 60 days (approximately) and finally in the month of February, parturition occurs with birthing in April-May and August. Spermatogenesis (sperm production) in males is similar to the female cycle, the male cycle stops during September, October and November and storage of sperm does not occur (Wilson and LaVal, 1974). During this period of spermatogenesis, copulation ceases as it is considered a resting stage for males. Males are able to mate 15-17 weeks after birth as adulthood occurs the latest at week 13 (Wilson and LaVal, 1974). The birthing period for most offspring happens during the onset of the rainy season where there is a large insect blooming period which is beneficial to the female bats that have not left their roosts for 2-3 days (Wilson and LaVal, 1974).

JUVENILE BEHAVIOUR. After birth the young remain attached to their mothers during the first 2-3 days. After this the offspring are left behind in their roosts to allow the females to leave and feed during the night. In order to correctly locate their young, upon their arrival the use of olfaction or audition occurs when they are returning to their roost (Wilson and LaVal, 1974). High mortality rates result after birth of the young bats as disease, predator and parasitism are present; the bats that survive achieve adult weight two weeks after birth, flight begins after three weeks, and full development into adulthood occurs between weeks 8-13 (Wilson and LaVal, 1974).

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Author: Kavita Hardyal

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