Saccopteryx bilineata (Greater Sac-winged Bat)

Family: Emballonuridae (Sheath-tail and Sac-winged Bats)
Order: Chiroptera (Bats)
Class: Mammalia (Mammals)

Fig. 1. Greater sac-winged bat, *Saccopteryx bilineata*.

[http://www.thenighttour.com/alien2/white_lined_bats.htm, downloaded 9 March 2016]

TRAITS. The greater sac-winged bat is relatively small in size with black fur that fades to dark brown with age. It is also commonly referred to as the greater white-lined bat due to the two characteristic dorsally located white lines which span the length of the body between the shoulders and rump (Fig. 1). Colour of fur on ventral side is a blend of brown and grey. Ears are large and muzzle is simple. Wing sacs are present but more developed in males. Total length and mass range from 73-77mm and 8.5-9.3g respectively, with females typically being larger and heavier than males. Tails are about 18mm long (Yancey et al., 1998).

DISTRIBUTION. *Saccopteryx bilineata* is a neotropical species. It is therefore native to parts of Central and South America, with its geographical range beginning from southern Mexico and ending as far as Rio de Janeiro in Brazil (Fig. 2). This also includes the Caribbean region, particularly Trinidad and Tobago (Yancey et al., 1998).

HABITAT AND ACTIVITY. This bat is generally found within or near to tropical forests and water sources, with the exception of those found in urban areas, and at low altitudes. Roosts are located in tree cavities (Davidson and Wilkinson, 2002), caves and buildings. Rapid development in both urban and agricultural spheres of neotropical countries leads to habitat disturbance of the greater sac-winged bat (Geluso et al., 2009). This species is nocturnal, roosting during the day and feeding at night. The bats return to the roosts at dawn (Davidson and Wilkinson, 2002).

FOOD AND FEEDING. The greater sac-winged bat is strictly insectivorous, feeding on organisms such as flies and beetles. It also often preys on butterflies and moths but does not adhere to any specific prey type. Generally, it feeds with greatest frequency on whatever prey insects are most abundant in the foraging area. The greater sac-winged bat typically preys on larger insects when it is present in the same community as the proboscis bat, *Rhynchonycteris naso*. Although *Saccopteryx bilineata* sometimes occupy the same foraging region as *Saccopteryx leptura* and *Rhynchonycteris naso*, it forages alone. If there is heavy rain, the greater sac-winged bat will forgo foraging for that night. In open areas, the greater sac-winged bat pursues prey in a straight line about 3-8m above ground level, and is capable of turning sharply at a distance of 1-5m from any obstacle. Mean flight speed is 5.8m/s. Foraging lasts for 2-3 hours, with several periods of approximately 25 minutes. The bat forages around vegetation and changes location each month or two as a result of changes in prey availability (Yancey et al., 1998). Echolocation is used by the bat as a means of finding prey (Ratcliffe, 2011).

POPULATION ECOLOGY. *Saccopteryx bilineata* shares the same roosting sites with many different bat species, some of which are *Desmodus rotundus* (Fig. 3), *Saccopteryx leptura*, *Diaemus youngi* and *Peropteryx macrotis*. Within a shared roosting site, *Saccopteryx bilineata* occupies lower heights than *Saccopteryx leptura* and *Diaemus youngi*. Colony sizes are typically less than 15 individuals but may be as large as 50 individuals. Average colony size ranges from 5-8 individuals and colonies have a separation of about 60m. Colony sizes are variable and they commonly exist either as large or small colonies, with few of intermediate size. The population and biomass densities of the greater sac-winged bat across Trinidad are 0.7 bats/ha and 6 g/ha respectively (Yancey et al., 1998).

REPRODUCTION. Females have free choice of mates, and males therefore evolved intricate mating gestures in order to win a female over. These gestures involve filling their wing sacs (Fig. 4) with urine and other glandular secretions and hovering in front of the female to flaunt his scent. The males also perform complex songs for the females (Voigt and von Helversen, 1999). The gestation period in the female greater sac-winged bats begins in the dry season when food is in short supply. Birth of young coincides with the beginning of the rainy season as food is more readily available; that is, the end of May to the middle of June. Each female births only one offspring at a time and this develops during the period of maximum food availability. Food shortage during the gestation period results in prenatal death of offspring in 17% of females.

Young bats are either carried with the females for the duration of foraging, or relocated from the day roost to a secret night roost to ensure their safety. Offspring are capable of flight by 2 weeks of age and weaning occurs at 10-12 weeks of age (Yancey et al., 1998).

BEHAVIOUR. Greater sac-winged bat pups make vocalizations that are somewhat similar to the vocal range of adults. Communication between individuals occurs via vocalizations that vary in pitch, frequency and sound pattern (Knörnschild et al., 2006). Young females eventually scatter to different locations and can birth offspring by one year of age. Young males tend to linger in the harem where they were born, with the hope of one day taking over. The bats belonging to the same harem roost collectively, although about 62% of males roost on their own. Contrastingly, females tend to remain with one specific colony. Harems are generally protected by the males. However, whereas males are receptive to female newcomers, the females are antagonistic to all newcomers. Each colony has a designated area in which they can forage and all members of the colony forage near to each other (Yancey et al., 1998).

APPLIED ECOLOGY. *Saccopteryx bilineata* is classified as "Least Concern" by IUCN. This is owing to the fact that it is abundant in its natural environment, well-spread and capable of withstanding changes to the habitat. Conservation threats to these bats include urbanization and agricultural development which have the potential to increase the disturbance within the natural habitats. Conservation actions include protection and management of water and land, as well as in-depth research concerning the population ecology of the species (Solari, 2015). *Saccopteryx bilineata* is typically infected by ectoparasites such as the mites *Eutrombicula goldii, Trombiculida vesperuginis* (Yancey et al., 1998).

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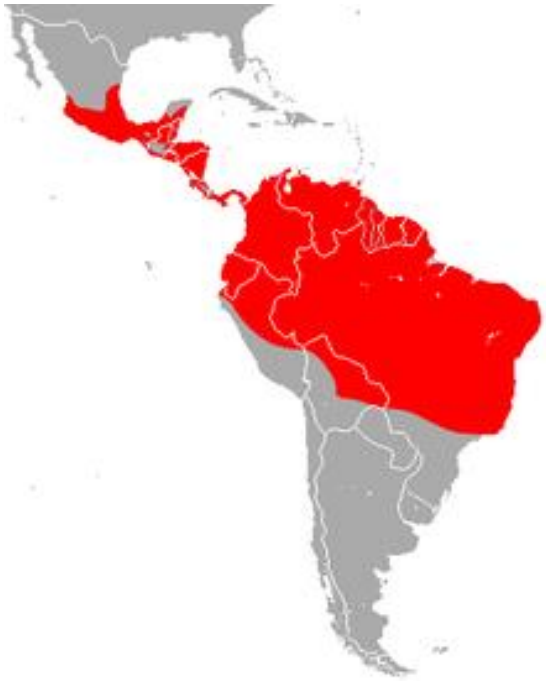

Fig. 2. Greater sac-winged bat geographic distribution.

[https://en.wikipedia.org/wiki/Greater_sac-winged_bat, downloaded 21 January 2016]

Fig. 3. Greater sac-winged bats roosting in a cave with common vampire bats, *Desmodus rotundus*.

[http://socialbat.org/2015/12/18/field-notes-on-vampire-catching/, downloaded 10 March 2016]

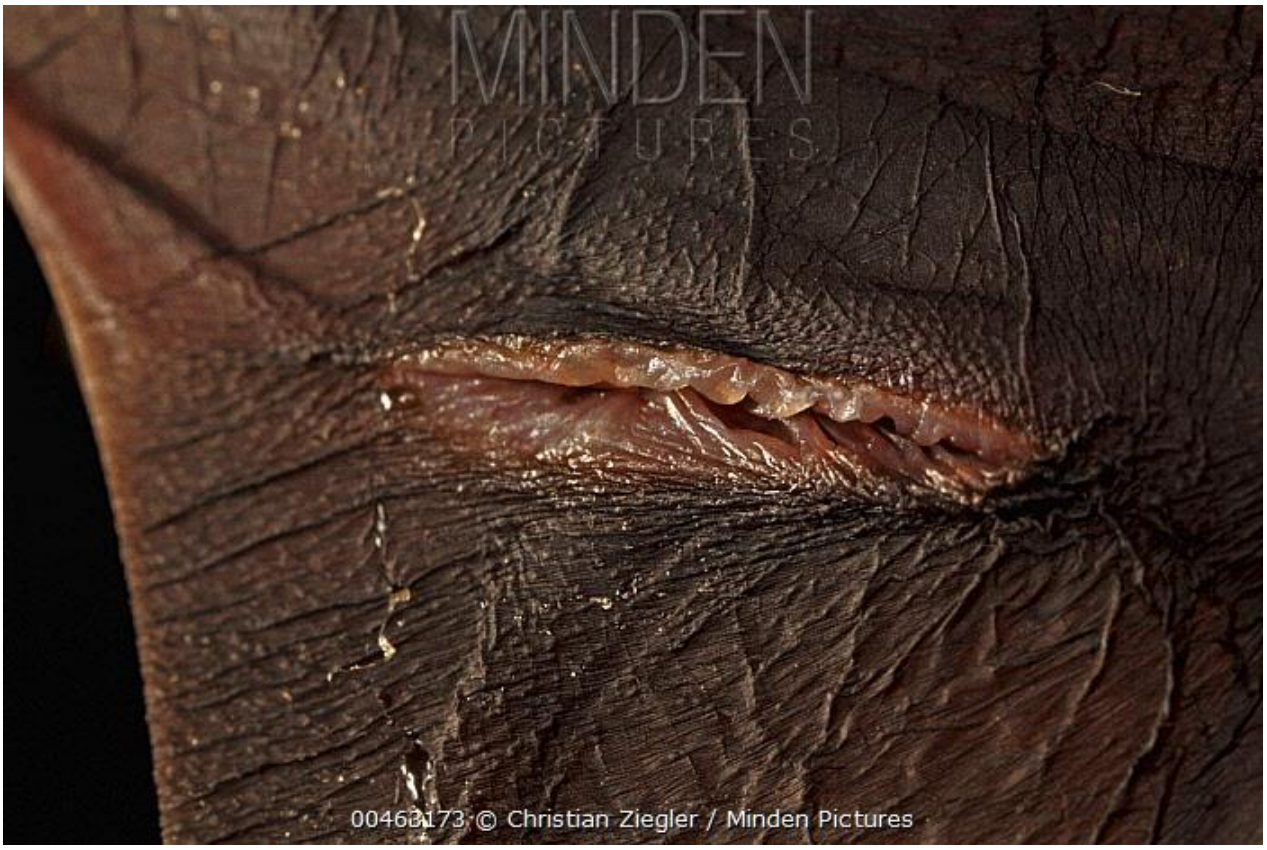

Fig. 4. Wing sac of a male greater sac-winged bat.

[http://www.mindenpictures.com/search/preview/greater-sac-winged-bat-saccopteryx-bilineata/0_00463173.html, downloaded 10 March 2016]