Monthly Report

African Bat Conservation

April 2018

Schlieffen's Bat (*Nycticeinops schlieffeni)*

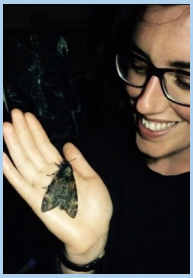
ABC Staff

Dr Emma Stone
Founder/Coordinator

Matt Town
Research Manager

Godwin Zimba
Community Engagement Officer

Tom Kitching
Research Assistant, Vwaza Marsh



Karen Shevlin
Entomologist, Vwaza Marsh

Andrew Mcvinish
Research Assistant, Lilongwe

Abi Robison
Research Assistant, Vwaza marsh

Becky Hazlewood
Research Assistant, Lilongwe

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Vwaza Marsh News

New bat for Vwasa marsh

By Hannah Daniels, volunteer

A new bat species for Vwaza Marsh Reserve was found this month. Picture a warm, clear, still April evening, in a high canopy Miombo woodland. The mist nets and harp traps are set up, the sun is setting and tsetse flies are being replaced by mosquitoes. Everyone is keen for the evening's survey ahead. First catch – a Scops owl. An hour after sunset, a variegated butterfly bat, *Glauconycteris variegata (Figure 1)*, gets everyone very excited. An unmistakeable plain faced bat in the Vesper family, it has golden fur and the wings have a unique dark vein-like pattern. Upon inspection, it's clear she's a lactating female adult – so is likely to have some young.

Figure 1 Variegated butterfly bat *Glauconycteris variegata, demonstrating its unique wing pattern a key identification feature.*

Found throughout East Africa, and as far west as Angola, northern Namibia and southern DRC, it is also found as far south as north eastern South Africa. The records of this species in Malawi had previously been restricted to the south, in farmland or open land. This habitat is pretty typical, although individuals are also found in open woodland, often riverine, and roost in dense vegetation either singly or in pairs.

The Miombo woodland area this bat was found in is quite different to the sites currently surveyed at Vwaza: the canopy is established with mature trees and an open understorey. Most other woodland survey sites are typically younger with large open areas. Not much else is known about the ecology of this bat species: it is a clutter edge feeder thought to typically eat Lepidoptera, and they've been found carrying young in November.
With the expansion of survey sites hopefully we'll find out more about this bat species and their ecology…watch this space!

Figure 2 *G. variegata, showing off its pale yellow pelage*

Rarely recorded bat found possibly roosting in Kazuni community

Human-wildlife conflict issues are well documented in cities, but conflicts often occur even in small conurbations. In many rural areas in Malawi, the structure of the houses means they are particularly accessible to bats; with open, unglazed windows and gaps between walls and roofs are common. It's not surprising then that people have issues with bats using and roosting in their living spaces, both in towns and rural areas. At Vwaza Marsh ABC's park team have been conducting weekly community bat surveys in the local villages, mostly in schools. Recently, we were informed of bats using a house locally, with the resident interested to know more about them.

Figure 3 Large slit-faced bat *Nycteris grandis*

After an initial survey confirming bats were using the house to roost, the ABC team conducted a dusk emergence survey. We used a heterodyne bat detector which enables us to hear bat echolocation calls, and discovered the bats are of the genus *Nycteris*. The bats were calling at a frequency of 20kHz, which is documented to be that of large slit-faced bat *Nycteris grandis (Figure 3)*, but further surveys will confirm the species. This is the first time we came across *Nycteris* bats roosting in a house, with usual bats found on community surveys being little free-tailed bat *Chaerephon pumilus (Figure 4)*.

Figure. 4 Little free-tailed bat *Chaerephon pumilus*

Urban (Lilongwe) Project News

Bats in the barn

ABC has been monitoring the largest known roost of Sundervall's leaf-nose bat (*Hipposideros caffer*) in Malawi for the last 3 years. The roost is at our new urban research centre on Kumbali Farm to the east of Lilongwe city. The bats are roosting in a disused tobacco drying barn, previously there were roosting in air tunnels under the barn but now are roosting in the roof. This is causing minor conflict issues with the owner as the bats are now defecating on farm machinery stored in the barn. The ABC team are working with Kumbali to allow the bats to return to roosting in the tunnels (Figure 5). It is likely that changes in the temperature regime in the tunnels made them less attractive to the bats and ABC

Figure 5: Urban Research Assistant Becky exploring the tunnels under the tobacco barn .

are working to restore the thermal regime to encourage the bats to use the tunnels.

H. caffer has a wide distribution across southern Africa ranging from South Africa, Mozambique, Zambia and into Malawi. A small leaf nosed bat with a maximum weight of only 11g, in Malawi there are two colour variants of this species, most commonly brown and a less frequent infrequent orange morph (Figure 6).

Figure 6: The two colour variants of Sundervall's leaf-nose bat (*H. caffer*)

Leaf-nose bats along with horseshoe bats and slit-faced bats echolocate via their noses, which have a variety of shapes to assist with echolcation. It is thought that by echolocating through their nose they are able to direct their echolocation calls enabling them to receive a better image of the landscape around them.

H. caffer is a clutter feeder which means it fly's slowly in dense habitats using high frequency echolocation calls to navigate and detect moths, caddisfly's and beetles which it catches in mid-flight. Its short wings mean that this is bat highly manoeuvrable which makes it a difficult bat to catch. ABC usually catches it using harp traps as it has a habit of preforming a 180° turn mid-flight once it hits a mist net.

H. caffer usually mates towards the end of the warmer months, the egg is fertilized and then the mother is able to slow down the embryos development. The embryo only begins to develop further once the weather begins to warm again.

Urban (Lilongwe) Project News

Exploring the effectiveness of bat guano as fertilizer

The Urban team has set up a new and exciting project to measure the efficacy of bat guano as an organic fertilizer in collaboration with Richard Carpenter from the University of Reading UK. This will involve conducting controlled crop trials to test the effectiveness of different guano application rates as a soil amendment. We aim to increase our understanding about how bat guano can be used by local farmers to improve crop yields and livelihoods enabling communities to derive benefits from bats promoting human—bat coexistence. We aim to raise awareness of the benefits of bats, which can also help farmers by controlling damaging crop pests.

The guano collected (Figure 7) for this study came from Koko primary school, located 40 minutes south west of Lilongwe. There have been ongoing conflict issues at this school with large Molossidae roost making some buildings unusable, however ABC has been working with the school to harvest guano and demonstrate the benefits of bats.

Figure 7: Guano collected from Koko primary school, bats produce small pellets , while the they resemble mouse dropping bat guano will crumble to the touch while mouse droppings are wet.

Our pot trials comprise four treatments to test different guano application rates including guano low, guano high, guano an fertilizer low and guano and fertilizer high. These will be compared to control plants which contain only fertilizer.

Maize takes approximately 110 to 120 days to reach maturity therefore we expect the study to show results by Nov 2018 (Figure 8).

Figure 8: The maize was planted in March and is showing some promising results with the high guano treatment growing the fastest.

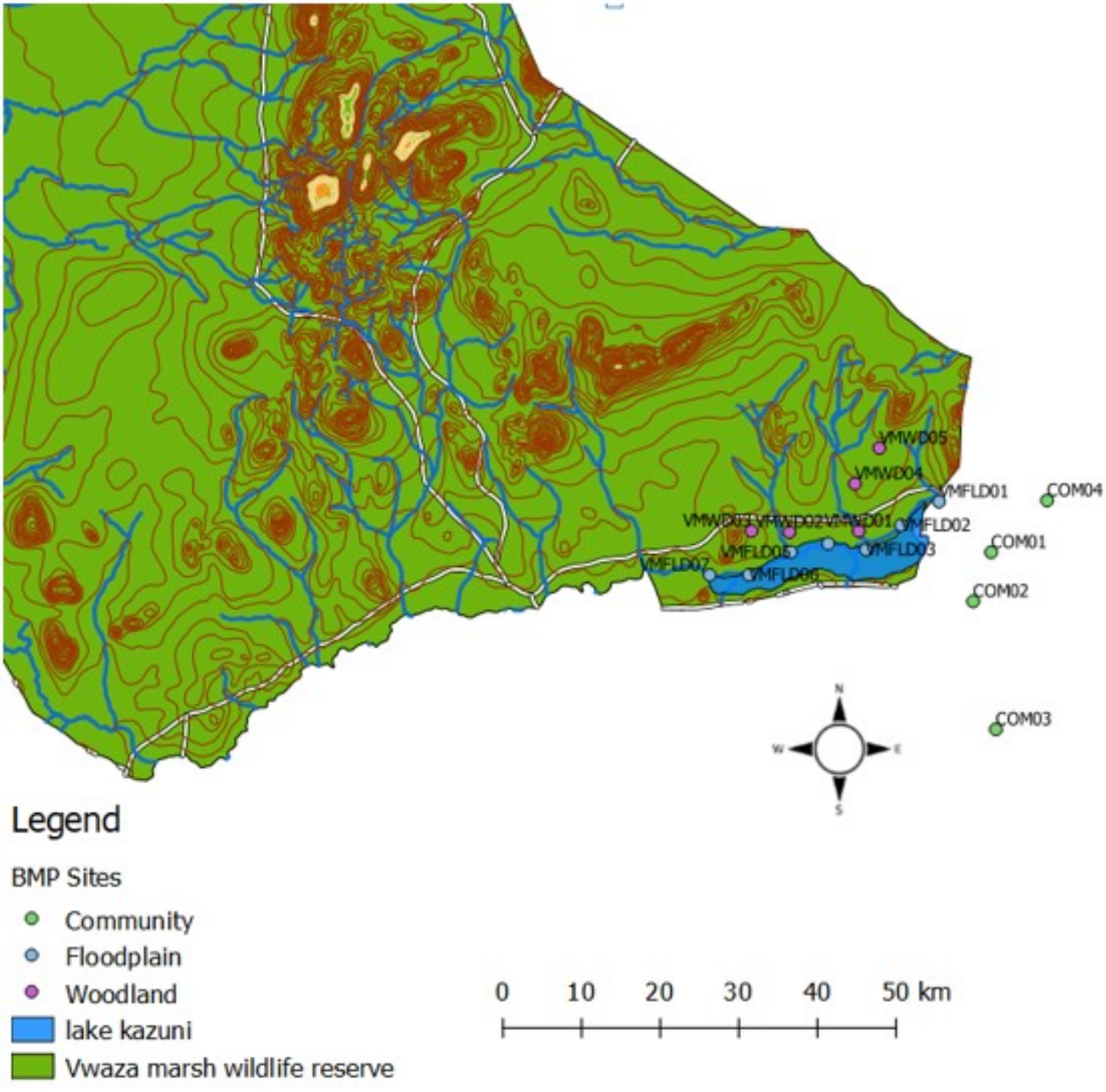
ABC Bat Species List

No	Latin Name	Common Name	Locations Caught				
			Liwonde Park	Lilongwe	Nyika NP	Vwaza Marsh WR	Other
1	Chaerephon sp.	Free-tailed bats		X			
2	Chaerephon ansorgei	Ansorge's free-tailed bat	X				
3	Chaerephon pumilus	Little free-tailed bat	X			X	
4	Eidolon helvum	Straw-coloured fruit bat		X			X
5	Epomophorus crypturus	Peters's epauletted fruit bat	X	X		X	X
6	Epomophorus labiatus	Little epauletted fruit bat	X	X		X	
7	Epomophorus wahlbergi	Wahlberg's epauletted fruit bat	X	X		X	X
8	Epomops dobsonii	Dobson's epauletted fruit bat		X		X	
9	Eptesicus hottentotus	Long-tailed serotine	X				
10	Glauconycteris variegata	Variegated butterfly bat	X			X	
11	Hipposideros caffer	Sundevall's leaf-nosed bat	X	X		X	
12	Hipposideros gigas	Giant leaf-nosed bat	X				X
13	Hipposideros ruber	Noack's leaf-nosed bat	X				
14	*Kerivoula lanosa*	Lesser woolly bat				X	
15	Laephotis botswanae	Botswana long-eared bat	X				X
16	Lissonycteris goliath	Harrison's soft-furred fruit bat					X
17	Mimetillus thomasi	Thomas's flat headed bat	X				
18	Miniopterus sp.	long-fingered bats	X				
19	Mops condylurus	Angolan free-tailed bat	X			X	X
20	Mops niveiventer	White-bellied free-tailed bat		X			X
21	Myotis bocagii	Rufous myotis	X	X		X	X
22	Myotis tricolor	Temminck's myotis	X				X
23	Myotis welwitschii	Welwitsch's myotis	X				
24	Neoromicia sp.*	Pipistrelles	X	X		X	X
25	Neoromicia nana	Banana bat	X	X		X	

ABC Bat Species List

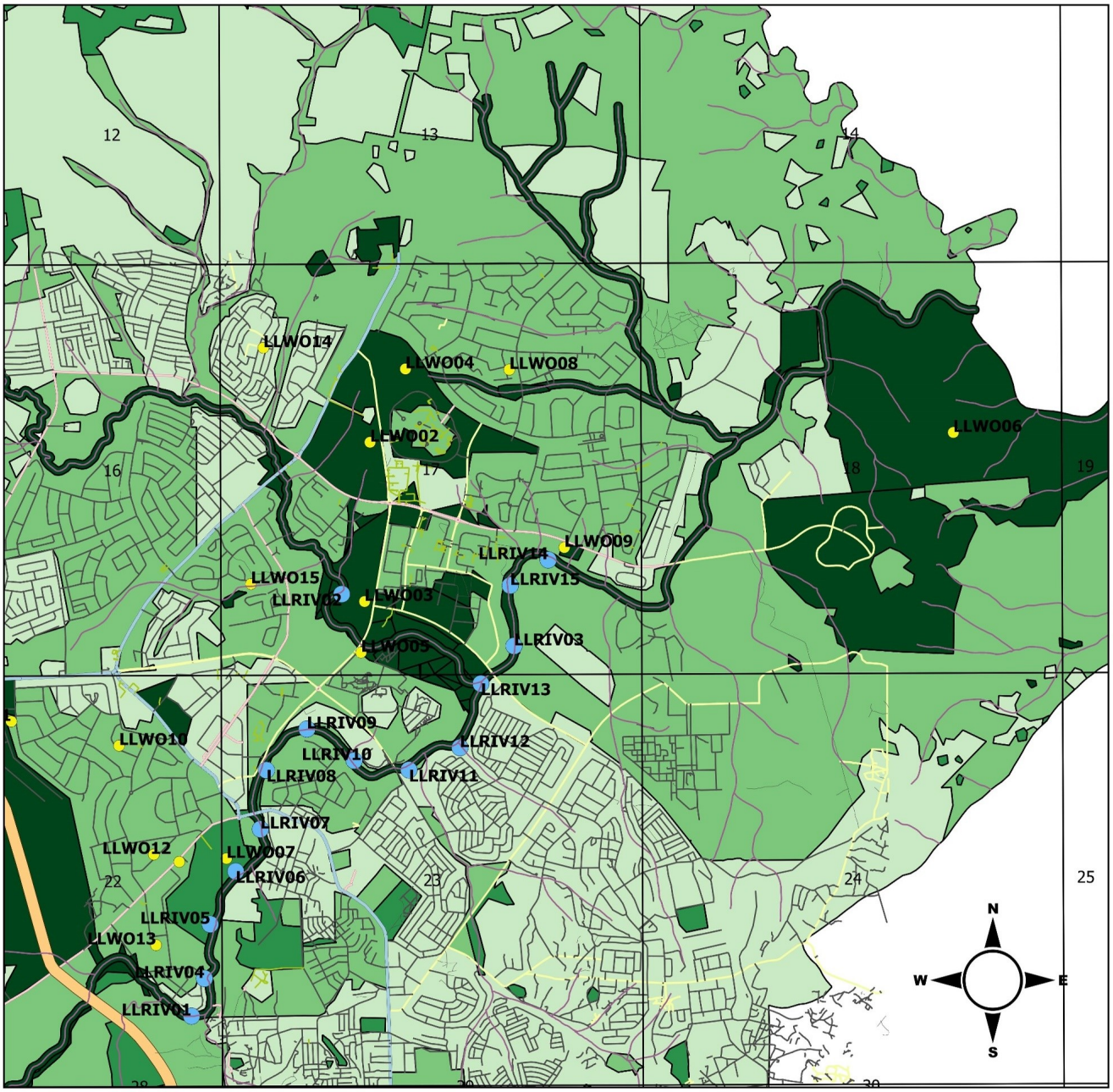
No	Latin Name	Common Name	Locations Caught				
			Liwonde NP	Lilongwe	Nyika NP	Vwaza Marsh WR	Other
26	Neoromicia rendalli	Rendall's serotine	X			X	
27	Nycteris grandis	Large slit-faced bat	X				
28	Nycteris hispida	Hairy slit-faced bat				X	
29	Nycteris macrotis	Large-eared slit-faced bat	X				
30	Nycteris thebaica	Egyptian slit faced bat	X			X	
31	Nycticeinops schlieffeni	Schlieffen's twighlight bat	X			X	
32	Pipistrellus sp.*	Pipistrelles	X	X	X	X	X
33	Pipistrellus rueppellii	Ruppell's pipistrelle	X			X	
34	Rhinolophus clivosus	Geoffroy's horseshoe bat		X			
35	Rhinolophus fumigatus	Ruppell's horseshoe bat	X			X	
36	Rhinolophus hildebrandtii	Hildebrandt's horseshoe bat	X			X	
37	Rousettus aegyptiacus	Egyptian rousette	X				
38	Rousettus lanosus	Hairy rousette			X		
39	Scotoecus hindei/albigula	Dark-winged lesser house bat	X	X		X	X
40	Scotophilus dinganii	Yellow-bellied house bat		X		X	X
41	Scotophilus leucogaster	White-bellied house bat	X				
42	Scotophilus viridis	Green house bat	X	X			
43	Scotophilus nigrita	Giant yellow house bat	X				
44	Tadarida aegyptica	Egyptian free-tailed bat					X
45	Tadarida ventralis	Giant free-tailed bat					X
46	Taphozous mauritianus	Mauritian tomb bat	X	X		X	
47	Triaenops afer	African trident bat	X				X

BMP Sites in Vwaza Marsh



BMP Sites in Lilongwe

Urban Bat Project BMP sites



Legend

- River sites
- Garden sites
- Priority
- High
- Medium
- Low

0 1 2 3 4 5 6 7 8 9 10 km

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