

# the **BIG** news



Newsletter of the Gauteng and Northern Regions Bat Interest Group

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Editor: Trevor Morgan

## *Bats of Belize*

By Julio Balona



A few months ago, I still thought Belize was some island in the Caribbean Sea. Then by some arcane rationale, including that it is one of the few countries in South and Central America that is geared towards eco-tourism, Erna and I decided we should visit the place.

After some research I learned that it was indeed on the Caribbean, although not actually an island, but a neighbour of Mexico and Guatemala. Famous for its magnificent snorkelling and scuba diving, it is also well known for its wildlife such as jaguars, toucans and howler monkeys.

Naturally, we were especially hoping to see some of their bats, of which Belize has a good supply: around eighty-five species in a country slightly larger than the Kruger National Park (there are nearly seventy species in the whole of South Africa).

At the Macaw Bank Jungle Lodge, I was thrilled that you are allowed to freely wander the approximately five miles of trails, on your own, day or night. And wander I did, spotting some strange animals typical of the Neotropics but so foreign to an African: mongoose/monkey like Kinkajous, Nine-banded armadillos and the odd Common Opossum that resembles a giant rat.

There was good bat activity along the forest paths at night, none that I could identify.

[www.batsgauteng.org.za](http://www.batsgauteng.org.za)





So, one night I erected a mistnet in a forest, only about two metres high. In the hour it was up, I captured about ten bats, consisting of four species. About seven bats were a type of **Short-tailed fruit bat** (*Carollia* spp.), most probably *Carollia perspicillata*. This is one of the most common forest denizens in the region, and feeds on both fruit and insects. It is quite particular to the fruits of the *Piper* family, of which pepper is a member. This plant is one of the pioneers and therefore these bats are very important seed dispersers for forest regeneration.



One of the many species of *Piper* plant. The cylindrical fruits are a favourite food of *Carollia* bats and project out of the bush as if to make it as easy as possible for them.



Short-tailed fruit bat (*Carollia* spp.)

One of the bats was a beautiful big-eyed beast, a type of **Yellow-shouldered fruit bat** (*Sturnira* spp.). Also, not uncommon, it feeds on fruit and nectar, especially the nectar of banana flowers.



Yellow-shouldered fruit bat (*Sturnira* spp.). The so called yellow shoulder is more of an orangey-brown and is the site of some sort of secretion, not unlike male African epauletted bats.



The seriously strong *Artibeus*.

The third species was another common fruit eater, one of the **Large Fruit-eating bats** (*Artibeus* spp.). A little smaller than our epauletted fruit bats, this muscular animal was far harder to handle with its shorter stronger jaws. So bad in fact, that I elected to rather release it before I could get a good photograph, since I could feel it was getting the better of me and would soon sink a fang through my glove. Like the Short-tailed fruit bat, it feeds mainly on fruit and sometimes insects, and is an important seed disperser.



*Myotis* spp.

The final bat was rather more familiar, a small *Myotis*, most probably *M. elegans*, and of course feeds on insects.

The three fruit eaters are all from a large and fascinating family unique to the Neotropics, the Phyllostomids. It includes a wide variety of bat types, many that are omnivores (fruit and insects), but also specialists such as the vampire bats and the frog-eating bat, as well as nectar feeders.

Almost all have some form of spear nose and these perform similar echolocational functions to the facial adornments of the Old World leaf-nosed bats.

While at the lodge, we did a day trip to the Xunantunich Mayan ruins, about ten kilometres away. On a tree, right next to the hand cranked ferry used to cross a river to get to the ruins, there was a colony of about thirty delightful **Proboscis** bats (*Rhynchonycteris naso*). These are a type of sheath-tailed bat, like our own Mauritian tomb bat but much smaller, and are apparently common. They are always found near water, roosting in groups in the characteristic pose of this family. When disturbed they fly off looking like large moths. Their name comes from their peculiarly long nose and they feed over the water, catching tiny insects.



Colony of Proboscis bats roosting on a tree above the water

Later, at the ruins itself, in one of the chambers we found a colony of about twenty of another kind of **sheath-tailed bat**.

Our guide was impressed with how pleased we were to see bats. He mentioned that they were busy developing a new tourist cave site nearby, where there was a colony of a different kind of bat.

What really intrigued us is that he claimed that these bats fed on birds, as indicated by the feathers on the floor of the cave. Thus, we asked if it was possible for him to take us there – we were excited by the possibility of seeing what must be the impressive False Vampire bat, the largest in the Neotropics and known to eat birds and other vertebrates, including other bats...





Least sac-winged bat (*Balantiopteryx io*)

High above in the ceiling of the cave we could vaguely see a cluster of bats, bird feathers strewn below. With some rock climbing and zoomed photographs, we managed a few reasonable photos of three **False Vampire** (*Vampyrum spectrum*) bats. They looked suitably predatory and I would have loved to get a closer view and see them returning to the cave with their prey. But was happy with the sighting we had.



False Vampire bats (*Vampyrum spectrum*)

Our second jungle destination in Belize was more remote, the Lamanai Outpost Lodge which is situated on a lagoon. It reminded me a lot of our St. Lucia Wetland Park and required an hour's drive and then an hour long boat ride along a river to get there.

A variety of creatures were found from extravagant toucans to howler monkeys, Red-rumped tarantulas to Mexican porcupines. Bat-wise, inspection of a hollow trees on walks was sometimes successful. Often, I could vaguely see bats fluttering about inside but not much more than that. In one tree I managed to get a decent photo of a **Little Big-eared bat** (*Micronycteris* spp.). Another phyllostomid, it sometimes feeds on fruit but mainly on large insects.



Little Big-eared bat (*Micronycteris* spp.)

He negotiated a fee for his service and arranged permission for us to visit. The cave site was about twenty minutes' drive away, along a newly cleared road through the surrounding forest. Around the parking area, builders were digging holes and various other things, installing the infrastructure for this new tourist site.

Although enthused about seeing some scarce and interesting bats, I wondered about their future with noisy tourists invading their home regularly...

It was difficult to properly explore the caves since we had no light source but our cell phones. But we easily saw yet another kind of sheath-tailed bat, **Least sac-winged bats** (*Balantiopteryx io*), distributed throughout the cave.

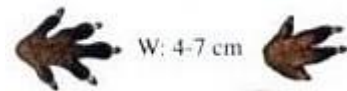


Proboscis bat (*Rhynchonycteris naso*) roosting underneath the pier.

In the afternoon, returning from a walk by boat, we realised that there was a colony of **Proboscis bats** roosting underneath the pier.

That night we went spotlighting from the boat on the lagoon and down one of the small rivers feeding it. **Proboscis bats** were foraging over the water, sometimes very close to the boat. And more than once we drifted past one hanging on a branch or reed, literally about a metre away.

Our spotter had either done many many spotlighting trips or had super eyes. He pointed out numerous sleeping birds, as well as crocodiles and iguanas. A highlight was when he spotted a **Fishing bat** flying ahead of us. It was reddish brown and distinctly larger than all the Proboscis bats flying around. Unfortunately, the sighting was only a matter of seconds before it disappeared.



# BELIZE FIELD GUIDE

## BATS

<p><b>Greater Bulldog Bat</b> Murciélago pescador mayor <i>Noctilio leporinus</i> 12 cm</p>	<p><b>False Vampire Bat</b> Falso vampiro <i>Vampyrus spectrum</i> 15 cm</p>	<p><b>Greater Sac-winged Bat</b> Murciélago con sacos alares <i>Saccopteryx bilineata</i> 5 cm</p>	<p><b>Northern Ghost Bat</b> Murciélago fantasma <i>Discidurus albus</i> 7 cm</p>
<p><b>Geoffroy's Tailless Bat</b> Bichichti, Tití, Tití del Chocó <i>Anoura geoffroyi</i> 7 cm</p>	<p><b>Frog-eating Bat</b> Murciélago come ranas <i>Trachops cirrhosus</i> 7 cm</p>	<p><b>Naked-backed Bat</b> Murciélago de espalda desnuda <i>Pteronotus davyi</i> 5 cm</p>	<p><b>Lesser Bulldog Bat</b> Murciélago pescador pequeño <i>Noctilio albiventris</i> 7 cm</p>
<p><b>Orange Nectar Bat</b> Murciélago nectarívoro anaranjado <i>Lonchophylla robusta</i> 7 cm</p>	<p><b>Pallas's Long-tongued Bat</b> Murciélaguito lenguilargo <i>Glossophaga soricina</i> 5 cm</p>	<p><b>Parnell's Mustached Bat</b> Murciélago-bigotudo de Parnell <i>Pteronotus parnellii</i> 7 cm</p>	<p><b>Proboscis Bat</b> Murciélaguito narizón <i>rhynchonycteris naso</i> 4 cm</p>



# BAT NEWS UPDATES

## Interesting new research

### New species of horseshoe bat in southern Africa

One of our scarce bat species, Swinny's horseshoe bat (*Rhinolophus swinnyi*), was thought to occur from the Eastern Cape all the way up to Zimbabwe, Zambia and northern Mozambique. Now work by Peter Taylor and other well-known authorities on African bats have determined that this is not accurate – the bat in the southern part of the range is not the same species as from the north.

This is based on molecular, morphological and echolocation differences with the southern species retaining its *R. swinnyi* name (calls at ~106 kHz) and the northern species becoming *R. rhodesiae* (calls at ~100 kHz).

I am not surprised by this finding and have been curious for some time about the dramatically different habitats spanned by 'Swinny's' horseshoe bats, from the moist forests in the Eastern Cape to semi-arid mopane veld near Pafuri (Kruger National Park). It struck me that it was odd for a scarce species to have such a wide habitat tolerance...

Another revelation is that the bats found in Mozambique's Gorongosa National Park are neither *R. swinnyi* or *R. rhodesiae* but actually an endemic species, dubbed *R. gorongosae*. And this bat is now considered Africa's smallest horseshoe.

The same paper also clarifies the taxonomic status of one of the rarer bats in South Africa, Landers' horseshoe bat (*R. landeri*), which is not the same animal that is found in West Africa and has now been designated *R. lobatus*.

<https://www.iol.co.za/saturday-star/news/serendipitous-new-bats-14841119>

<http://novataxa.blogspot.com/2018/04/rhinolophus-gorongosae.html>



*Rhinolophus rhodesiae*, Pafuri district

### Keeping your mouth shut

In Afrikaans there is a saying: "n' stil bek is n' heel bek" – a quiet mouth is a whole mouth. The wisdom imparted being that it is best to keep your mouth shut to avoid someone punching you in the face. And this appears to be a philosophy followed by Hoary bats (*Lasiurus cinereus*) in northern California. During the mating season (autumn), scientists found that bats were flying through river corridors using unusually soft echolocation, or none at all. This behaviour has so far not been found outside the mating season, hence the postulation that the bats are trying to sneak past competitors.



This can have unintended consequences and the scientists wonder if the behaviour is a reason for collision with wind turbines and may explain why bats can be captured in mistnets despite their echolocation. Another concern is that by flying so quietly, less bat activity can be picked up by bat detectors during pre-construction monitoring for wind farms.

## Master moth hunter's strategy

The curious looking Barbastelle bat (*Barbastella barbastellus*) from Europe appears to feed almost entirely on moths. This includes the tympanate moth types that have evolved the ability to hear sound at the high frequencies typically used by bats. Like our own slit-faced bats (*Nycteris* spp.) it is believed to fool the tympanate moths by keeping its calls very soft, so that by the time the prey has registered the presence of a hunting bat, it is too late to take evasive action.



More recent work by German researchers at the Max Planck Institute has revealed another aspect to these whispered calls. They found that the bat, already calling at low intensity so as not to startle the moth, would then consistently reduce call volume as it got closer so that its prey would perceive the bat as being the same safe distance away, until it was too late. Another interesting idea to emerge from this study is that the evolution of tympanate moths may have benefitted Barbastelles which now have exclusive access to a whole class of food unavailable to other bats.

<https://phys.org/news/2018-03-barbastelle-moths-echolocation.html>

<https://besjournals.onlinelibrary.wiley.com/doi/abs/10.1111/1365-2435.13073>

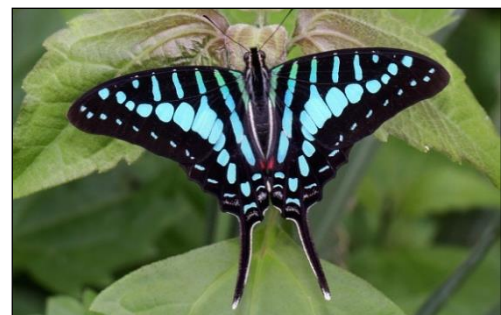
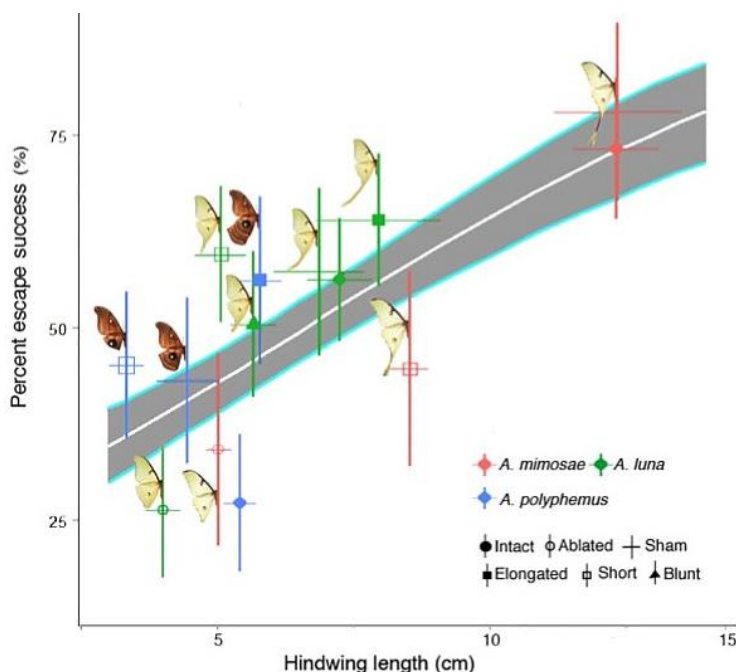
## Master bat dodger's strategy

Previously I described research which presented good evidence that the extended tail-like wings of North American Lunar moths function as decoys for bat sonar. Thus, it appears that the tails confuse the bats echolocation and result in misdirected attacks, with the moths incurring some hind wing damage but surviving the encounter.

Now the same crowd at the University of Florida in the USA, has delved deeper into the subject by artificially modifying wings of the moths and testing the effect. Thus, three types of silk moth (polyphemus moths, the North American Lunar moth and the African Lunar or Moon Moth) had sections cut away or glued on to their hind wings, they were then pitted against captive Big Brown bats (*Eptesicus fuscus*) in a lab. What they found is that by reducing the tail length of the Lunar moths, bat capture success increased.

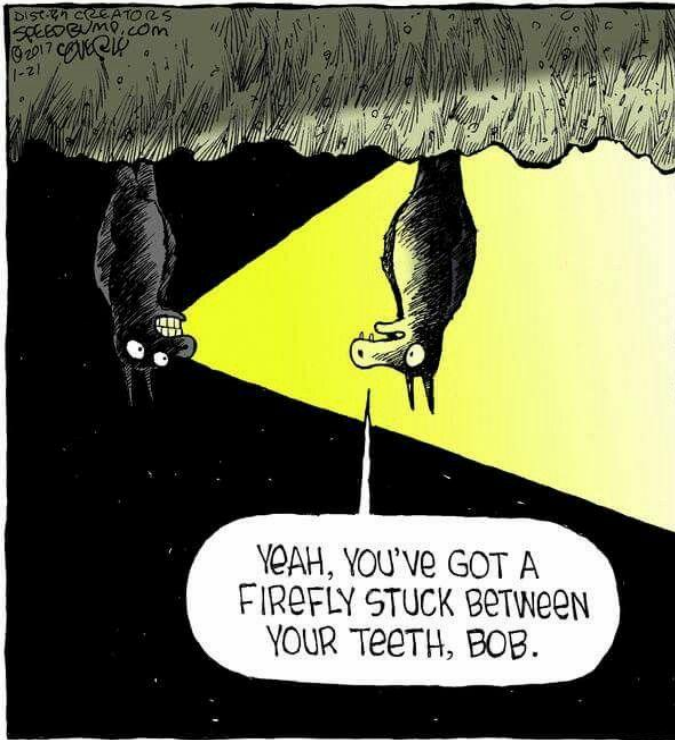
And when polyphemus moths' hind wings were enlarged, the bats caught less of them. Therefore, the larger the hind wings and the longer the tails, the more difficult it was for the bats to catch the moths.

Interesting results. But I wonder what is the explanation for the elaborate structure of the wings of certain butterflies, such as swordtails and swallowtails...



Swordtail butterfly

<https://www.sciencedaily.com/releases/2018/07/180704151856.htm>



## GNoRBIG Committee

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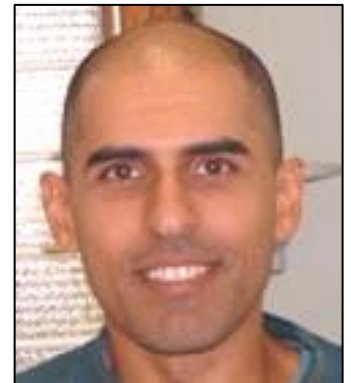
## Keep the date for GNoR BIG's 24<sup>th</sup> AGM:

Sat 4<sup>th</sup> August

We are delighted to have as our speaker:

**Prof. Ara Monadjem**

Professor at University of Swaziland



### Ara's work in his own words:

I am a zoologist specialising in the ecology and conservation of the birds and mammals of Africa. My focus is currently on African small mammals (specifically bats and rodents), and large birds (vultures, eagles and storks). I specialize in field surveys where the objectives are primarily to obtain distributional information on rare and threatened species, and to provide accurate identifications of these species. I am also involved in predictive modelling of distributions, and studies of population dynamics. I have worked in very remote locations across the African continent including the rain forests of Liberia, Sierra Leone and Uganda, and the savannas of Mozambique, Swaziland, Kenya, Tanzania, Namibia, South Africa and Angola. I have published widely including 4 books and > 120 scientific papers which are all available on ResearchGate.

My ultimate goals are: 1) to provide up-to-date and reliable scientific information on African mammals and birds that could be used in their long-term conservation; and 2) to share my enthusiasm for, and knowledge of, Africa's wildlife with students, colleagues and the general African public.

### Specialties:

- 1) Identification of African bats and rodents (I have co-authored the definitive guides to the bats of southern and central Africa, and the Rodents of Sub-Saharan Africa).
- 2) Survey of raptors and their nesting sites
- 3) Conservation assessment of threatened vertebrates
- 4) The use of GIS to map and model distributions
- 5) EIA studies for small mammals and birds of prey (including storks).





The quiz to test your skills on the identification of southern African bats.

The rules are:

- The mystery bat will be from the southern African region as defined by the countries South Africa, Swaziland, Lesotho, Mozambique, Zimbabwe and Namibia.
- It will not be a species that is a rare vagrant to the region (e.g. Bergman's collared fruit bat, *Myonycteris relicta*), although it could be one that is relatively scarce (e.g. Rüppell's pipistrelle, *Pipistrellus rueppellii*).
- There may or may not be supplemental information provided (e.g. frequency of bat call, geographical location, forearm size, etc.)

#### Identification of mystery bat No. 13

This one is a bit tricky and the location given is critical. The bat is obviously one of the 'little brown jobs, and appears to be some sort of pipistrelle. In the Free State, the only contenders with the lbj description are Lesueur's hairy bat, the Cape serotine, and perhaps

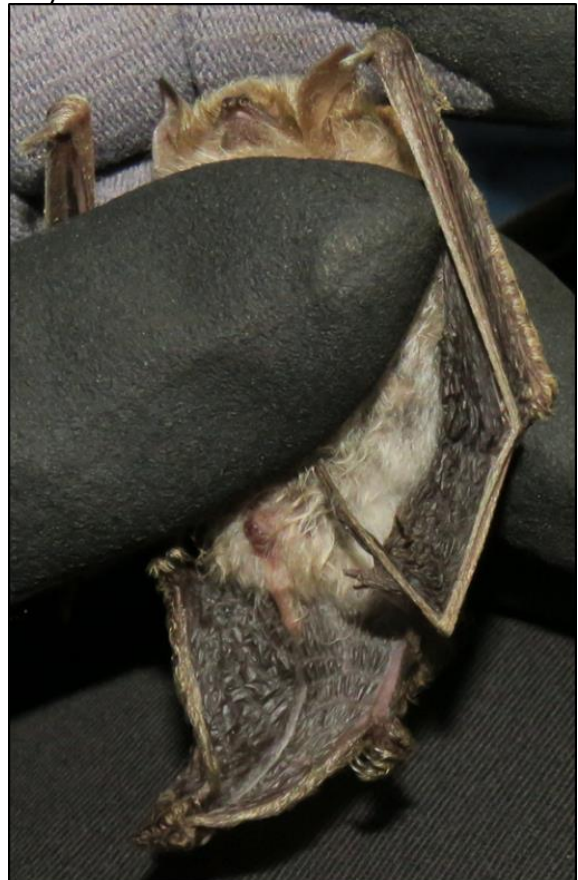


Location: Free State

the Dusky pipistrelle (*Pipistrellus hesperidus*) for which there is an isolated record from the Harrismith area. However, the tragus of the mystery bat has a long dagger shape like that of a *Myotis*, ruling out the former two species and revealing that it is a Lesueur's hairy bat (*Cistugo lesueurii*).

#### Mystery bat No. 14

Can you deduce the name of the beast below?



Forearm length = 33 mm

### Bats eat fish, fish eat bats

There are several bat species that are known to feed on fish. But the reverse is seldom recorded – fish eating bats. However, this inverted role is not direct in that there are no fish that specialize in preying on bats and it tends to be opportunistic.

A newly documented case is that of a bat being found by biologists in the stomach of a Northern Pike in the state of Washington, USA. This voracious predator is an invasive alien to the region and is threatening salmon populations. It also appears to feed on anything else that comes its way such as ducks and mice.

How it managed to catch a bat is an interesting question. Since the Northern Pike is an ambush predator I'm guessing the bat either found itself swimming after misjudging a drinking flight or falling from a roost and was snatched. A more impressive possibility is that of the fish jumping out of the water to catch a bat flying overhead or grabbing it when it touched the surface while drinking.

This seems unlikely but not as far-fetched as one might think when you consider the case of tiger fish catching swallows flying above as was captured on film a few years ago.



<https://www.king5.com/article/tech/science/environment/invasive-bat-eating-fish-threatens-washington-salmon-future/281-547805673>

### A beautiful figure



*A skeleton of a Molossidae bat stands in the Royal Institute of Natural Sciences in Brussels, Belgium, on May 9, 2018.*

<https://www.theatlantic.com/photo/2018/05/photos-of-the-week-a-welsh-owl-a-belgian-bat-an-alabamian-bee/560243/#img35>



## Bat versus Machine

Wind Turbines are known enemies of bats. Even its domestic cousin, the humble Ceiling Fan, sometimes claims lives when bats end up inside buildings where these fans are present.

The high speed rotational movement of both devices appears to fatally confuse bats, and one would think that if only a protective grid could be installed around the blades (admittedly huge and impractical in the case of a Wind Turbine), this would in theory prevent casualties. However, another member in the family of rotating air movers, the Extraction Fan, suggests that it may not be that simple. The photo below was taken in a factory in Sasolburg in the Free State in 2013. A dead bat, presumably a Cape serotine, stuck to the inlet grid of the offending machine.



Exactly what happened it is not possible to say. But from the way almost the entire membrane area of the bat is flat against the grid, it appears that the luckless animal was held by the suction pressure of the fan and could not escape. I doubt the draught was strong enough so that the bat was drawn in when flying past. More likely, it was trapped in the building and at some point, it landed on the grid, perhaps to rest or re-assess, only to find that when it stretched its wings in order to take off again, it was sucked in and unable to move.