

By Miranda Collett

Introduction

Reserva Don Luis is a privately owned natural reserve in the north of the Esteros del Ibera or Ibera Marshes which is the second largest wetland in the Americas after the Pantanal. The former cattle ranch consists of 1600 hectares of grassland/wetland interspersed with small isolated woodlands of native plants.

It is run by the Jersey based non-profit Collett Trust for Endangered Species, which includes the founder trustee and two Argentine trustees. It has one full time employee who acts as a ranger, and a series of volunteers who help to keep the place maintained and assist with the projects.

The aim of the trust is to preserve the habitat for the native flora and fauna, and to conduct research into its species.

Bat research is one of the key projects and this has been ongoing since 2011. Initially we used echolocation as a means to identify the bat species then added netting in order to visually identify the bat in hand. Authorisation to capture bats and release them unharmed in the Ibera Marshes was granted by Parques y Reservas, Corrientes.

In total, we have captured 13 different species at the reserve, from three different families: Molossidae, Vespertilionidae and Phyllostomidae.

Methodology

We used up to date equipment to record the bats at the reserve from 2011. Initially we used the Batbox Griffin which at the time was a great advance on previous detectors/recorders and we obtained good results from this, and are still doing so. Peterson Batsound was used to analyse the recordings. However as there is no bat call library in Argentina, it was not easy to match up the recordings to the species. We enlisted the help of Bruce Miller from Michigan who had spent many years recording Neotropical bats, and were able to make some progress using his experience and advice. There appeared to be around 16 different species of bat at the reserve as a result of the recordings.

The next step was to try to capture some of these bats, to try to match up the calls to the species. In 2014, after specific training in the UK, we started capturing bats using nets and a Harp trap. We received the appropriate authority to conduct this research from Parques y Reservas, Corrientes. We referred to the book 'Bats of Argentina' by Ruben Barquez, Norberto Giannini and Michael Marcs. and were generally able to identify the species that we captured. We were also helped by Argentine bat biologist, Cesar Bracamonte.

In time we bought new equipment and to date we use a triple high apparatus which consists of 3 x 12m nets on top of each other using aluminium poles and a system of

pulleys, a double high (2 nets on top of each other), many single nets of all lengths plus 2 Harp traps.

The captured bats are weighed, we measure their forearm and collect data on age and reproductive state. They are sometime photographed and the Vespertilionidae and Molossidae species are recorded on release. Phyllostomidae bats do not use echolocation as much and it is probably not worth recording them.

In 2016 we applied to Recursos Naturales to expand our studies to the bats of Corrientes, and in time were granted authorisation to carry out bat research in the whole province. In 2018 we applied to the Ministerio de Ecología in Misiones to conduct research on the bats of Misiones which is where we are currently concentrating.

The bat detecting/recording equipment that we now use is Wildlife Acoustics Echo Meter Touch professional and the static recorder SM4Bat. We tend to use Kaleidoscope to analyse our recordings now although Batsound is always a good standby. We have recorded *Promops centralis*, which has a very distinctive call shape and frequency, at the reserve many times, and we believe that *Lasiurus cinereus* migrates through our area. These are both bats which are difficult to capture.

We have discovered at least 2 roosts of *Desmodus rotundus* which is one of our commonest bats, and we have had a *Eumops* species residing in one of our Kent bat boxes for 2 years now. The roofs of the houses are generally full of Molossidae species and we discovered a *Lasiurus* ega in one of our bamboo plants. The bat condo, which we constructed in June 2018 has been largely unoccupied as presumably the bats around the houses prefer to roost in the zinc roofs.

Results

Table 1 describes the families and species that we have captured and released at the reserve.

FAMILY	SPECIES	COMMON NAME	STATUS LOCALLY
Molossidae	<i>Molossops temminckii</i>	Dwarf Dog-faced Bat	Abundant
	<i>Eumops patagonicus</i>	Patagonian Bonneted Bat	Abundant
	<i>Eumops bonariensis</i>	Peter's Mastiff Bat	Uncommon
	<i>Molossus rufus</i>	Black Mastiff Bat	Common
Vespertilionidae	<i>Eptesicus brasiliensis</i>	Brasilian Brown Bat	Rare
	<i>Eptesicus furinalis</i>	Argentine Brown Bat	Abundant
	<i>Myotis nigricans</i>	Black Myotis	Common
	<i>Myotis riparius</i>	Riparian Myotis	Common
	<i>Lasiurus blossevillii</i>	Western Red Bat	Uncommon
	<i>Lasiurus ega</i>	Southern Yellow Bat	Scarce
Phyllostomidae	<i>Sturnira lilium</i>	Yellow-shouldered Bat	Common in summer
	<i>Desmodus rotundus</i>	Common Vampire Bat	Abundant
	<i>Platyrrhinus lineatus</i>	White-lined Bat	Scarce
Table 1			

The most recent new species for the reserve was *Platyrrhinus lineatus* which we captured in one of our Harp traps in October 2017. Since then, we have concentrated more on other areas of the province in which to place our nets etc as the chance of capturing a new species at the reserve is low. However, when training our volunteers, we necessarily use the woodlands of the reserve and of course are always hoping for a new species. We know that *Promops centralis* is in the area but this is a high, fast flying bat, which is difficult to capture in a net unless one can find out where it roosts.

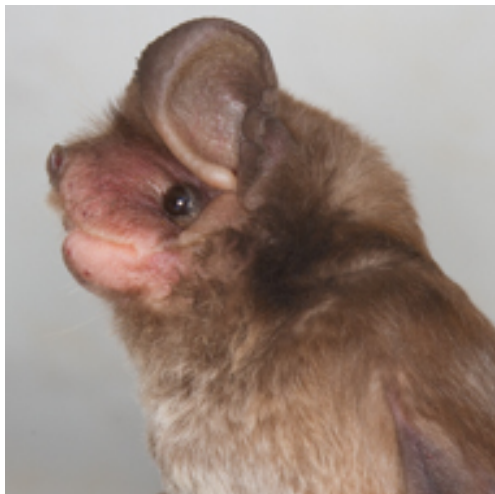
Here follows a more detailed description and photo of the bats that we have captured at Reserva Don Luis.

Molossops temminckii
Family Molossidae



Molossops temminckii is the smallest Molossidae that we have in Argentina and its small, widely spaced, triangular shaped ears are not typical of the family. This species roosts in the corrugated roofs of the buildings at Reserva Don Luis. The base of the fur is very pale and the tips are a mid-brown colour. Weight is in the region of 7-12 g and the forearm measures between 29-33mm. It has a long calcar, which reaches more than half way to the tail, a small triangular tragus and a wide anti-tragus. As with all Molossidae, the tail extends beyond the uropatagium. Wings are long and narrow which enable it to fly fast.

Eumops patagonicus
Family Molossidae



Eumops patagonicus is the other common resident of the roofs at the reserve. This is a medium sized bat with large, wide ears that join in the centre of the head in a deep V shape. Base of the fur is usually pale and tips are a pale grey/brown. Scattered white hairs on the dorsum are common sometimes forming spots or lines. Venter is paler. Weight is typically 15-20g with forearm of 43-47mm. It has a long calcar and long tail extending from uropatagium. Eyes are large, dark and round. Robust feet with long white hairs. Long narrow wings which enable it to fly fast.

Family Molossidae
Eumops bonariensis



Eumops bonariensis is similar to *Eumops patagonicus* but it has a longer forearm and is generally more reddish in colour. The inner keel of the ear is fleshier than that of *patagonicus*. We capture this species occasionally in the woodlands but more commonly around the houses so it probably roosts in the roofs. It weighs 16-24g and the forearm measures 46-49mm. This species generally flies from the hand whereas *patagonicus* is less inclined as it needs more altitude to gain sufficient speed. It has a free-tail and long narrow wings for fast flying.

Family Molossidae
Molossus rufus



This beautiful large bat has become commoner at the reserve during the past 3 years and is nearly always captured around the woodlands. It has strong, rubbery, long narrow wings that enable it to fly high and fast. It varies in fur colour. Commonly dark brown, we sometimes come across orange, yellow, brown or red examples. Weight is 28-50g with males being larger and forearm measures between 48-53mm. The ears are rounded, broad and wide and have a small gap between them. The tragus is small and hidden behind a large round anti-tragus. This species rarely flies from the hand. Short, broad tail extension.

Eptesicus brasiliensis
Family Vespertilionidae



This is a rare species for Argentina. We have only caught 2 examples in the past 2 years. It is similar to *Eptesicus furinalis* but has a longer forearm of between 41-45mm. Weight between 7-12g. Dorsal fur with dark base and paler tips (bicolour), Paler venter. Tragus is slightly rounded at the tip and held more upright than the similar *furinalis*. Its roosts are unknown but it may use the roofs as well as holes in trees. The wings are broad enabling good manoeuvrability. It is insectivorous.

Eptesicus furinalis

Family Vespertilionidae



This small to medium sized bat is probably the commonest in Argentina. Its fur is usually brown (bicolour with darker base) but we often find orange examples, especially in the spring. The nose appears inflated and the tragus is slightly rounded and tends to be more horizontal than upright. Fur abruptly ends at base of body and there is a 1-2mm tail extension from base of the papery uropatagium. Upper incisors are uneven in length. It is insectivorous and we sometimes catch it in the Harp trap as well as nets. It tends to hunt in cluttered environments. Weight 8-12g, F/A 36-42mm

Myotis nigricans

Family Vespertilionidae



This very small bat (3-6g) is usually found in the woodlands and we often catch it in the Harp traps. It is part of a large radiation of the genus *Myotis*, which is found worldwide. In Argentina, there are 9 *Myotis* species. In general dorsal fur is dark brown unicolour. Venter has dark base with paler tips. Ears are long and pointed, well spaced with a tall, slightly curved tragus. Fur extends from body to uropatagium. There is an apparent gap between the canine and first pre-molar and upper incisors are even in length. It has wide papery wings and is very manoeuvrable. F/A 32-36mm

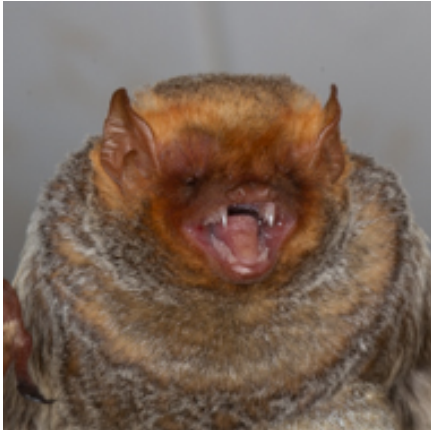
Myotis riparius

Family Vespertilionidae



Myotis riparius is similar to *nigricans* and care is necessary to differentiate these 2 species especially in NE Argentina. Dorsal fur has dark base with yellowish tips and venter is lighter. Ears tend to point backwards, otherwise they are similar to *nigricans*. Fur extends down uropatagium within which tail is completely enclosed. Weight 4-9g, F/A 33-36mm. As with *nigricans* wings are broad and manoeuvrable.

Lasiurus blossevillii
Family Vespertilionidae



This beautiful small bat is occasionally caught around the woodlands and houses at the reserve. It roosts in bamboo and in the leaves of trees hence its thick fur. It has long tricoloured fur, predominantly red around the head, with frosted tips. The forearm is covered in fur and the thumbs have a spot of white fur. The uropatagium is thickly furred. Ears are short and rounded & held tightly against sides. Females have 4 nipples & can have up to 4 pups at a time. Eyes are small and canines are long. It is insectivorous with wide, rounded wings. Weight 7-11g, F/A 37-42mm

Lasiurus (Dasypterus) ega
Family Vespertilionidae



Lasiurus ega, sometimes known as *Dasypterus ega* is uncommon at the reserve. It roosts in leaves in trees and we found one example roosting in a bamboo plant. Colour is overall brownish yellow with a dark base. Ears are short, rounded and well spaced. Tragus is quite long, rounded and curved. We catch this insectivorous species around the woodlands. Face is mostly hairless with pink skin and eyes are small. Weight 14-19g, F/A 43-50mm

Desmodus rotundus
Family Phyllostomidae



Desmodus rotundus is one of our commonest bats at the reserve. It is large and consumes the blood of mammals such as cattle and horses. It is intelligent as well as being very strong. It has a reduced nose leaf and medium sized pointed ears either side of head. It has 2 large upper incisors which it uses to make a hole in the skin and inject an anti-coagulant so the blood flows. It then laps the blood and the victim is often unaware. The fur is stiff, brown/grey with a paler venter. Tail is absent and uropatagium is reduced to narrow, hairy membrane. Legs also hairy. Weight 39-55g, F/A 60-67mm. Can fly directly from ground.

Sturnira lilium

Family Phyllostomidae



This medium to large bat is very common in Corrientes and Misiones. We find it in our woodlands in late spring, summer and early autumn. It is an attractive Phyllostomid with a small noseleaf and generally yellowish fur (although it can be greyish or brownish). The distinguishing feature is the gland on the shoulder, especially on the males, which excretes a dark fluid and appears as an orange mark. It consumes fruit, principally *Solanum* species. The uropatagium is reduced and hairy, there is no tail. Legs are hairy. Lips bordered by papillae and there is a wart on the chin bordered by smaller ones.

Platyrrhinus lineatus

Family Phyllostomidae



This beautiful medium to large bat was captured in a Harp trap inside a woodland at the reserve in 2017. It has 2 cream coloured facial stripes each side of face and a dorsal stripe that runs from the crown to the top of tail. Medium sized ears with bright yellow interior and tragus. Fur bicoloured pale brown. Wings very broad & curved. Chin wart bordered by smaller ones. Reduced hairy uropatagium. Weight around 25g and F/A 45-50mm. It consumes fruit and the broad wings enable it to manoeuvre in cluttered environments.

Current Studies

Our bat team consists of 4 permanent members, sometimes augmented by volunteers at the reserve who mostly like to get involved with our bat research. In general, little is known about the bat species of Argentina and we are trying to educate the locals on the benefits of these remarkable flying mammals.

We have now captured and studied 33 species in Argentina although there are around 30 more species to find in other provinces. Our work is now mainly in Misiones which is the second richest province for bats. Jujuy is the most specious and we spent 2 trips there under the guidance of bat expert Cesar Bracamonte who taught us a lot.

We have many specific interests including the diet of the fruit-eating bats, the flight of bats, their parasites and the big question of where do they roost.

Current plans include fitting radio transmitters to the rarer species to track them to their roosts and in the future when the experts produce a small enough GPS tag, we would like to use it on migratory species to find out where they go and how they get there.

The Collett Trust Bat Team have recently captured 2 species from the family Noctilionidae, as well as the largest bat in Argentina, *Chrotopterus auritus*. We expect to capture a new species for the province or perhaps for Argentina in the future, as we are probably the only bat researchers in the area at the moment.

Here are some photos of our equipment:



Bat Condo at Reserva Don Luis



Harp trap from Faunatech, Australia



Single 12m mist net set up in Ituzaingo

The next page shows a graph of the bats captured in Reserva Don Luis during the past 3 years with reference to seasons.