

# THE BRASILIAN ATLANTIC RAINFOREST

*- A Mammal Survey, April 10th to June 8th 2013*



*The forest at sunset.*

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## **1 Introduction: The Brazilian Atlantic Rainforest**

Only around 7% of the original Atlantic Forest remains and little of this is primary forest. Most of the area has long been cleared for coffee, bananas and ranching and in the few surviving wild areas illegal hunting is rife. Selective logging has taken many of the oldest and best trees. And the remaining fragments of forest are often isolated from each other, separated by open farmland, or worse, by roads and towns.

But against this depressing backdrop, one organisation has been fighting back. The Reserva Ecologica de Guapiacu - or REGUA - has been systematically acquiring and re-foresting land in the upper Guapiacu valley, creating a large and mainly contiguous band of forest adjacent to the larger, (and perhaps better known), state park of Tres Picos. Hunting has been dramatically reduced by the clever expedient of hiring the most successful hunters as rangers and guides. And the forest is gradually beginning to come back to life: birds, butterflies and bats are becoming prolific and now terrestrial mammals are slowly making a comeback. Thanks to the sterling work of the proprietors Nicklas and Raquel Locke, this part of the forest at least appears to have a future and is becoming acknowledged as a model for conservation programmes elsewhere.

When I was asked last year if I was interested in volunteering to do a mammal survey I jumped at the chance. I would have free rein to investigate 20,000 hectares of forest, day and night, with scarcely any restrictions. Who wouldn't be interested?

## **2 The Survey**

I had two months to find out as much as I could about the diversity of mammals and their abundance (or scarcity!). In particular, I had to look at how the mammal population of the most recently re-forested areas was doing. Were mammals re-colonising these areas and, if so, which species were the early pioneers?

I took a four-pronged approach:

- direct observation, walking the trails looking for mammals
- live trapping
- indirect observation of field signs, (tracks, scrapes, scats etc)
- Camera trapping.

These all contributed to the picture I built up, though camera trapping provided the most dramatic results! I managed to obtain some very nice videos of Puma, Ocelot, Tayra, Coati and Crab-eating Fox.

I should stress that, given the limited time and resources available, this exercise could only ever provide a rough and ready assessment. I found which species were relatively common and which other species were present but apparently uncommon. But I certainly wouldn't claim to have any scientifically valid estimates of population size for any species.

## **3 The REGUA Landscape**

The Reserve headquarters and Bird Lodge is located at the extreme south of the reserve, where three fairly large wetlands has been created (in 2005/6). A network of trails surrounds these

wetlands, all or any of which can be walked comfortably in a morning. The forest here is very young and, (though it is hard to believe), was pasture until as recently as 2006. It already looks quite naturalised and birders tell me it is possible to record up to 80 or 90 species in a single day along these trails.



*The wetland: in 2006 this was pasture with cows grazing!*

In the hinterland of these very new areas lies a huge area of older forest, accessible through a much bigger network of trails. The forest here is richer and more mature. The trees are much taller, many of them covered in vines, and the canopy often interlocks above. The trails are less frequented than the easy wetland trails and are steep and, sometimes, muddy and difficult. But the rewards are correspondingly greater - the rarer birds in many cases can only be found along these remoter trails and the diversity of mammals is much greater too. Indeed, quite a few mammal species are seldom or never found in the wetland area at all.

#### **4 The Mammals of The Wetlands and The Inner Trails**

The wetlands hold a population of 40-50 Capybara which are easily seen by day resting and feeding on or near to the various islands. At night they venture further away from the water, often invading the nearby fields to graze on grass; (I filmed a family group of fourteen of them several nights in a row proceeding along an overflow stream to graze on pasture about three hundred metres away).

At dusk the wetlands see hundreds of insectivorous bats circling above the water feeding on insects. These are mostly Velvety Free-tailed Mastiff Bats (*Molossus molossus*) but there are a few Black



Mastiffs (*Molossus rufus*) in with them too. They roost by day in the roofs of buildings around the reserve headquarters and I managed to capture a couple for a close inspection and identification. I also found, (clinging to our kitchen wall!), a Black Myotis (*Myotis nigricans*), which I suspect is the most common small insectivorous bat present.



*South-eastern Common Opossum: caught by live trapping.*

I tried quite hard to trap small mammals around the wetlands, catching a number of Large-headed Rice Rats (*Hylaemys macrocephalus*), several Black Rats (*Rattus rattus*) and a juvenile South-eastern Common Opossum (*Didelphis aurita*). The last of these caused quite a bit of confusion as juvenile White-eared Opossum looks very similar to juvenile South-eastern Common; (both have white ears!). But the biologists at Universidade Estado Rio de Janeiro (UERJ) were sure it was *aurita* and not *albiventris*. I also caught, rather more by accident than design, a Black-footed Pygmy Rice Rat (*Oligoryzomys nigripes*). It fell into a garbage bin and couldn't get out!

Camera trapping at a baited site on a dry, well-drained hillside produced nightly visits from Paca and quite frequent visits from Nine-banded Armadillo, White-tufted Marmoset and Opossums. By creeping along the trails very quietly after dark I eventually managed to sight the Armadillo "in the flesh" - the key being to move extremely slowly and quietly and to keep the torch off (or at least very dim) until rustling is heard in the leaf litter close by. Then, when you give it the torch, the Armadillo generally shoots off like an express train, but at least you get a glimpse of it! The Paca took me a long time to see. Only after weeks and weeks of baiting (with bananas, corn and chopped manioc) did it become confident enough to spend prolonged spells at the baited site. And then, as with the

Armadillo, I had to use the dimmest of dim headlights to get a glimpse of it. The full beam sent it off in an instant panic.

The camera traps also turned up Crab-eating Foxes and a Crab-eating Raccoon along the Brown Trail (one of the inner trails), though these species seemed impossible to see at first hand. Walking the trail after dark and spot-lighting in a conventional manner produced absolutely nothing. One can only see for fifty metres or less on most of the trails and, evidently, the flight distance of these animals is much longer than that.

## 5 The Outer Trails

Walking these trails by day produced Brown-throated Three-toed Sloth (quite common), Guianan Squirrel (fairly common), Brown Capuchin (uncommon but not too hard to find), Orange-spined Hairy Dwarf Porcupine (apparently rare and pretty hard to spot in the trees) and a lone Coati (common but hard to see). I heard Brown Howler Monkey on one occasion but was too far away to see them; few people do I discovered. I tried hard for both Southern Muriqui and Red-rumped Agouti but in vain. (I found tracks of the latter on two occasions). One other birder chanced upon a Tayra, a species which is evidently not rare but is difficult to see.

At dusk, by the Cecropia tree outside the Casa Pesquisa Research House, I found Greater Fruit-eating Bats (*Artibeus lituratus*) one evening. These huge bats, adorned with bright white facial stripes, are unmistakable. The evening was made all the more memorable by the presence of Short-tailed Nighthawks and a pair of Mottled Owls. At a disused building not far from the start of the so-called 4x4 Trail, I found a roost of 50-100 Fringe-lipped Bats (*Trachops cirrhosus*) and a lone Greater Spear-nosed Bat (*Phyllostomus hastatus*). The Fringe-lipped Bat has weird tubercles around its lips which are used, apparently, to detect potential venom on the skin of the frogs it eats. Imagine being tasted before your predator decides whether or not to eat you!

Night walks along these trails produced zip. I had hoped for Southern Bamboo Rat at a big stand of bamboo, (having been previously tipped off). But several extensive searches produced nothing. Neither did I find anything else, however slowly and carefully I crept along these trails. Similarly, live trapping was ineffective.

But camera trapping *did* deliver the goods. I baited a spot on the 4x4 Trail where a "runway" either side of the trail suggested frequent animal movement. Things were slow initially but after a couple of weeks I regularly had Coati, South-eastern Common Opossum and Guianan Squirrel visiting. Then a pair of Tayra turned up, with a youngster in tow. Then an Ocelot and a family of three Crab-eating Foxes put in a couple of brief appearances. Then a Paca showed up, gorging itself on my bananas. And, to crown it, two Pumas (a female and a juvenile) showed up as well.

Further along the trail I discovered a tree with scratch marks and old scats, one apparently used by Puma for territorial marking. I put a camera trap here as well in the hope of more Puma footage. But the Pumas then promptly disappeared. I had previously been finding Puma tracks quite regularly along the lower part of the trail but suddenly it all dried up; obviously the pair had moved to another part of their territory. However, this merely signalled the start of the action - within hours of the Pumas' departure a Tayra arrived and vigorously scent-marked. Then, that evening, the Ocelot came and scratched his mark on the tree. Over the next week or so it was a procession: more visits from

both the Ocelot and the Tayra as well as frequent visits from Crab-eating Fox, Crab-eating Raccoon and Coati. By the time I had to leave for home I felt I was starting to get to know the local inhabitants quite well - the feisty Fox family (mother and two rumbustuous cubs), the big male Ocelot, the group of four Coatis, the pair of Tayras (including one with a limp), the singleton Tayra, the lone crab-eating Raccoon and so on.



*Fringe-lipped Bats in a roost near the 4x4 Trail*

Camera trapping on other trails was much less productive. I tried to get Water Opossum on camera but failed ignominiously. They had been seen previously so I knew they were present - somewhere - but I couldn't find them.

## **6 The Conclusions of The Survey**

I recorded evidence of 29 species of mammal. The main conclusions were:

- diversity is good with quite a wide variety of species present
- numbers vary; some areas are well populated, others thinly so
- older, more established forest holds both a greater diversity and larger numbers of mammals
- the newer, more recently established forest is deficient in primates and some carnivores
- small rodents were surprisingly scarce.

The quickest re-colonising species seemed to be Bats (unsurprisingly), Armadillos, Opossums, Sloths and Pacas. Primates, carnivores and small rodents seemed to require longer.

Most species can be seen much more easily elsewhere and some, such as Crab-eating Fox or Coati, are straightforward in many other places. For this reason, specialist mammal-watchers may be scarce at Regua for a while. But the birding is very good and many birders will wish, no doubt, to see whatever mammals they can while at Regua. My advice would be:

- build up baited sites to gain the confidence of the animals
- search carefully along the Green and 4x4 Trails for Sloth and Porcupine
- creep very slowly and quietly along the Brown and Yellow Trails after dark for Armadillo, Paca and Opossum, keeping light to an absolute minimum and listening for movement
- keep a sharp eye out for Tayra - a sighting will inevitably be brief
- the Brown Trail, (markers 700-1200) is good for Guianan Squirrel
- try the Blue and Red Trails for primates such as Brown Capuchin or Brown Howler
- stay overnight at the campground (upper Green Trail) for possible Kinkajou
- search all old and/or disused buildings for Bat roosts.

And, finally, a visit to Regua - whatever species are seen - at least offers the satisfaction of seeing the forest being re-born. There can be very few conservation stories as rewarding and successful as that at Regua.

## Annex 1 - List of Mammals Recorded

The full list of mammal species identified as being present was as follows:

Species	Latin Name	CT/V	Notes
Grey Four-eyed Opossum	Philander opossum	V/CT	One-time visitor to Site 1
South-eastern Common Opossum	Didelphis aurita	CT	Red and Brown Trails, 4x4 Trail.
White-tufted Marmoset	Callithrix jacchus jacchus	V/CT	Frequent around Office/kitchen.
Brown Capuchin	Cebus nigrinus	V	4x4 trail.
Brown Howler Monkey	Alouatta fusca	H	Red Trail 3000.
Brown-throated Three-toed Sloth	Bradypus variegatus	V	Resting in tree seen from Lodge Hide.
Crab-eating Raccoon	Procyon cancrivorus	CT	Brown 1780
Crab-eating Fox	Cerdocyon thous	CT	Brown 1780
Coati Mundi	Nasua nasua	V/CT	Blue 1300.
Tayra	Eira barbara	CT	4x4 Trail.
Ocelot	Leopardus pardalis	CT	4x4 Trail
Puma	Puma concolor	CT	4x4 trail
Nine-banded Armadillo	Dasytus novemcinctus	V/CT	Site 1.
Orange-spined Hairy Dwarf Porcupine	Coendu villosus (spinosus)	V	4x4 trail
Paca	Agouti paca	CT/V	Nightly visitor to Site 1
Red-rumped Agouti	Dasyprocta agouti	T	Tracks on Green Trail.
Guianan Squirrel	Sciurus aestuans	V	B850.
Large-headed Rice Rat	Hylaeamys macrocephalus	V	Yellow 1800 in LMT.
Black-footed Pygmy Rice Rat	Oligoryzomys nigripes	V	Courtyard.
Black Rat	Rattus rattus	V	Brown 200 in LMT.
Capybara	Hydrochaeris hydrochaeris	V/CT	Wetland.
Collared Peccary	Tayassu tajacu	T	Red Trail.
Black Myotis	Myotis nigricans	V	On kitchen wall.
Great Fruit-eating Bat	Artibeus lituratus	V	Outside Casa Pesquisa.
Seba's Short-tailed Fruit Bat	Carollia perspicillata	V	Juan's captured specimen.
Fringe-lipped Bat	Trachops cirrhosus	V	Schincariol roost site.
Spear-nosed Bat	Phyllostomus hastatus	V	Schincariol roost site.
Velvety Free-tailed Mastiff Bat	Molossus molossus	V	Outside Casa 1, wetland. Captive Casa 2.
Black Mastiff Bat	Molossus rufus	V	Outside Casa 1
<b>Total Recorded</b>	<b>29</b>		

### Key

V = visual record

H = heard

CT = camera trap

T = tracks or field signs



## Annex 2 - List of Birds Recorded

I was not focusing on birds but I did lift my binoculars on a few occasions to gaze at the more interesting and spectacular species around me. I even went on a special trip to see the Giant Snipe. In general, I didn't bother trying to identify Flycatchers, Tyrannulets and other "little brown jobs". These were the species I did bother to identify:

Species	Latin Name	Notes
Magnificent Frigatebird	<i>Fregata magnificens</i>	Rio de Janeiro
Neotropic Cormorant	<i>Phalacrocorax brasilianus</i>	Wetland
Striated Heron	<i>Butoroides striatus</i>	Frequent on wetland.
Rufescent Tiger Heron	<i>Tigrisoma lineatum</i>	Frequent on wetland.
Snowy Egret	<i>Egretta thula</i>	Frequent on wetland.
Great Egret	<i>Ardea alba</i>	Frequent on wetland.
Cattle Egret	<i>Bubulcus ibis</i>	Large roosts on wetland, c 400+
Capped Heron	<i>Pilherodius pileatus</i>	Quite frequent on wetland.
Cocoi Heron	<i>Ardea cocoi</i>	Quite frequent on wetland.
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Roosting pair on wetland.
Limpkin	<i>Aramus guarauna</i>	Fish Ponds outside Regua
Black-bellied Whistling Duck	<i>Dendrocygna autumnalis</i>	On wetland
White-faced Whistling Duck	<i>Dendrocygna viduata</i>	On wetland.
Muscovy Duck	<i>Cairina moschata</i>	Frequent on wetland.
Braslian Teal	<i>Amazonetta brasiliensis</i>	Abundant on wetland.
Black Vulture	<i>Coragys atratus</i>	Daily above wetland area.
Turkey Vulture	<i>Cathartes aura</i>	Daily above wetland area.
Roadside Hawk	<i>Buteo magnirostris</i>	One on Brown Trail c B2000
Savannah Hawk	<i>Heterospizias meridionalis</i>	Wetland.
Mantled Hawk	<i>Leucopternis polionotus</i>	Tres Picos
Laughing Falcon	<i>Herpetotheres cachinans</i>	One at Matumbo.
Yellow headed Cara Cara	<i>Milvago chimachima</i>	Frequent around Regua.
Southern Caracara	<i>Caracara plancus</i>	Frequent around Regua.
Rusty Margined Guan	<i>Penelope superciliaris</i>	Green Trail.
Spot-winged Wood Quail	<i>Odontophorus capueira</i>	Red Trail.
Wattled Jacana	<i>Jacana jacana</i>	Abundant on wetland.
Moorhen	<i>Gallinula chloropus</i>	Very abundant on wetland.
Purple Gallinule	<i>Porphyrio martinica</i>	Common along wetland margins.
Southern Lapwing	<i>Vanellus chilensis</i>	Common everywhere.
Giant Snipe	<i>Gallinago undulata</i>	Matumbo.
Ruddy Ground Dove	<i>Columbina talpacoti</i>	Abundant around wetland trails.
Feral Pigeon	<i>Columba livia</i>	Abundant around habitation.
Picazuro Pigeon	<i>Patagioenas picazuro</i>	Roosting in wetland.

Maroon-bellied Parakeet	<i>Pyrrhura frontalis</i>	On Yellow Trail (c 2200).
Greater Ani	<i>Crotophaga major</i>	
Smooth-billed Ani	<i>Crotophaga ani</i>	Common around wetland.
Squirrel Cuckoo	<i>Piaya cayana</i>	Farm Trail.
Guira Cuckoo	<i>Guira guira</i>	Brown 450.
Burrowing Owl	<i>Athene cunicularia</i>	Outside Regua entrance.
Mottled Owl	<i>Strix virgata</i>	Two at Casa Pesquisa.
Black-capped Screech Owl	<i>Otus atricapilla</i>	Yellow Trail
Common Parakeet	<i>Nyctidromus albicollis</i>	Yellow Trail at night.
Short-tailed Nighthawk	<i>Lurocalis semitorquatus</i>	Casa Pesquisa.
Swallow-tailed Hummingbird	<i>Eupotemena macroura</i>	Feeders at Casa Pesquisa.
Rufous-tailed Jacamar	<i>Galbula ruficauda</i>	Brown Trail
Ringed Kingfisher	<i>Megaceryle torquata</i>	Amanda's Hide.
Amazon Kingfisher	<i>Chloroceryle amazona</i>	Wetland, Yellow Trail.
Green kingfisher	<i>Chloroceryle americana</i>	Raquel's Lake.
Spot-billed Toucanet	<i>Selenedira maculirostris</i>	Blue Trail, 4x4 Trail
Channel-billed Toucan	<i>Ramphastos vitellinus</i>	Brown Trail
White-barred Piculet	<i>Picumnus cirratus</i>	Yellow Trail Short Cut.
Yellow-throated Woodpecker	<i>Piculus flavigula</i>	Green Trail.
Planalto Woodcreeper	<i>Dendroclaptes platyrostris</i>	Green Trail.
Thrush-like Woodcreeper	<i>Dendrocincla turdina</i>	4x4 trail
Scaled Woodcreeper	<i>Lepidoclaptes squamatus</i>	Green Trail.
Lesser Woodcreeper	<i>Xiphorhynchus fuscus</i>	Schincariol Trail
Wing-banded Hornero	<i>Furnarius figulus</i>	Yellow Trail
Rufous Hornero	<i>Furnarius rufus</i>	Common around wetland.
Chestnut-backed Antshrike	<i>Thamnophilus palliatus</i>	Yellow 1500.
Scaled Antbird	<i>Drymophila squamta</i>	Bamboo, Green 800.
Rufous-capped Antthrush	<i>Formicarius colma</i>	Green Trail.
Slaty Bristlefront	<i>Merulaxis ater</i>	Green Trail.
Squamate Antbird	<i>Myrmeciza squamosa</i>	Green Trail.
White-flanked Antwren	<i>Myrmotherula axillaris</i>	Schincariol Trail
Blue Manakin	<i>Chiroxiphia caudata</i>	Green Trail.
White-bearded Manakin	<i>Manacus manacus</i>	Fragment.
Bare-throated Bellbird	<i>Procnias nudicollis</i>	Outside Casa Christina.
Grayish Mourner	<i>Rhytipterna simplex</i>	Green 500.
Ochre-breasted Foliage Gleaner	<i>Philydor lichtensteini</i>	Blue Trail
Pale-breasted Thrush	<i>Turdus leucomelas</i>	Access Road to Casa Pesquisa.
Cattle Tyrant	<i>Machetornix rixosa</i>	Common around fields
Eared Pygmy-tyrant	<i>Myiornis auricularis</i>	Brown Trail
Ring-eyed Tody-tyrant	<i>Hemitriccus orbitatus</i>	Fragment.
Masked Water Tyrant	<i>Fluvicolor nengeta</i>	Common around wetland.
White-headed Marsh Tyrant	<i>Arundinicolor leucocephala</i>	Quite common around wetland.
Long-tailed Tyrant	<i>Colonia colonus</i>	Tres Picos
Olivaceous Elaenia	<i>Alaena mesoleuca</i>	Brown Trail
Great Kiskadee	<i>Pitangus sulphuratus</i>	Abundant around wetland.
Social Flycatcher	<i>Myiozetetes similis</i>	Common around wetland
Bananquit	<i>Coereba flaviola</i>	Courtyard
Boat-billed Flycatcher	<i>Megarhynchus pitangua</i>	Schincariol Trail

Tropical Kingbird	<i>Tyrannus melancholicus</i>	Around Regua buildings.
Ochre-bellied Flycatcher	<i>Mionectes oleagineus</i>	4x4trail
Rufous crowned Greenlet	<i>Hylophilus poicilotis</i>	Dark Green Trail.
House Wren	<i>Troglodytes musculus</i>	Volunteer Houses.
White-collared Swift	<i>Streptoprocne zonaris</i>	Road to Casa Pesquisa.
Brown-chested Martin	<i>Progne tapera</i>	Common over wetland.
Black-capped Donacobius	<i>Donacobius atracapilla</i>	Brown Trail near Sao Jose Trail.
Grey-hooded Atitila	<i>Attila citriniventris</i>	Start of Yellow Trail.
Purple-throated Euphonia	<i>Euphonia chlorotica</i>	4x4 Trail.
Violacious Euphonia	<i>Euphonia violacea</i>	Outside Casa 1
Chestnut-bellied Euphonia	<i>Euphonia pectoralis</i>	Blue Trail
White-rumped Monjita	<i>Xolmis velatus</i>	Access road near Casa Raquel
Red-rumped Cacique	<i>Cacicus haemorrhous</i>	Common along trails.
Chestnut-capped Blackbird	<i>Chrysomus ruficapillus</i>	Quite common around wetland.
Rufous-bellied Thrush	<i>Turdus rufiventris</i>	Common around Regua.
Brasilian Tanager	<i>Ramphocelas bresilius</i>	Quite common around wetland.
Chestnut-vented Conebill	<i>Conirostrum speciosum</i>	Wetland trails.
Olive-green Tanager	<i>Orthogonys chloricterus</i>	Green Trail.
Sayaca Tanager	<i>Thraupis sayaca</i>	Matumbo
Flame-crested Tanager	<i>Tachyphonus cristatus</i>	Brown Trail
Blue Dacnis	<i>Dacnis cayana</i>	Schincariol Trail
Saffron Finch	<i>Sicalis flaveola</i>	Outside Casa 1
Pileated Finch	<i>Coryphospingus pileatus</i>	Yellow 2450 trail
House Sparrow	<i>Passer domesticus</i>	Common around towns.
<b>Total</b>	<b>106</b>	