

## A survey amphibians from an Atlantic forest area (Reserva Ecológica de Guapiaçu) in Rio de Janeiro State, Brazil

**Introduction:** The Atlantic Rainforest is a vegetational type encountered parallel to Brazil's 4500km Atlantic seaboard in varying widths. This unique biome includes sand spit and beach vegetation/'Restinga' and mangroves along the coastline at sea level. It also includes wetlands and forests on the low plains next to the coastline and the forests growing on the hillsides. It includes the escarpments and granite summits, "paramos / Campos de altitude" with its characteristic sedge filled wetlands at 2500 meters above sea level. In 1500, when the Portuguese arrived, the Atlantic Rainforest covered an area of 1,477,500 km<sup>2</sup> (around 15% of Brazil). Since the very 1500s the forests of this region were selectively logged and the coffee plantations accounted for large areas being clear felled. By the early 21st century only 7% of the original extent remains, an area of 100,000 km<sup>2</sup>, and only an estimated 2% still in its virgin state making it the second most threatened biome in the world after Madagascar.

The Atlantic Forest is widely recognized as one of the planet's highest priorities for conservation. It was designated a World Biosphere Reserve (1988) and indicated as one of the 8 most threatened 'biodiversity hotspots' of the world by Conservation International. With estimates of up to 8,000 endemic plant species and 600 endemic species of terrestrial vertebrates, the Atlantic Forest is considered to be one of the most biodiverse ecoregions in the world. Figures published by IBAMA in 2003 show that 38 of the 69 severely endangered mammal species in Brazil are found in the Atlantic Rainforest, 118 of the 160 endangered bird species, 13 of the 20 endangered reptile species and all of the 16 endangered amphibian species. Hotspots and eco-regions are defined as areas having high levels of endemism together with habitat loss.



Fig 1 Photo of the REGUA region looking east, showing the mountains of the Serra do Mar with Mt Três Picos as the highest spot.

Students are coming to the REGUA reserve to study its biodiversity and amphibians are widely recognized as being bio-indicators of habitat quality . Through the flow of students studying their doctorates in Rio de Janeiro Universities, REGUA has been able to make a species list of the amphibians present

**Amphibians found at REGUA to date:** ( Report by visiting biologists, Vitor N.T. Borges-Junior & Mauricio Almeida-Gomes , Carla da Costa Siqueira)



Fig 2 Typical pit falls and anlysis

Methodology : Pit-fall traps were used for 20 days. Each pit-fall trap system consisted of ten 60-litre buckets (50 cm deep) buried on the ground and set 5 m apart, with soft plastic drift fences about 50 cm high extended between them. Each system was composed of six aligned buckets and, at each extremity, a line of two buckets set perpendicular to the main line, in opposite directions. Three pit-fall systems totaling 30 buckets were set. Pit-fall traps were checked once per day (always in the morning) and all frogs found inside them were removed

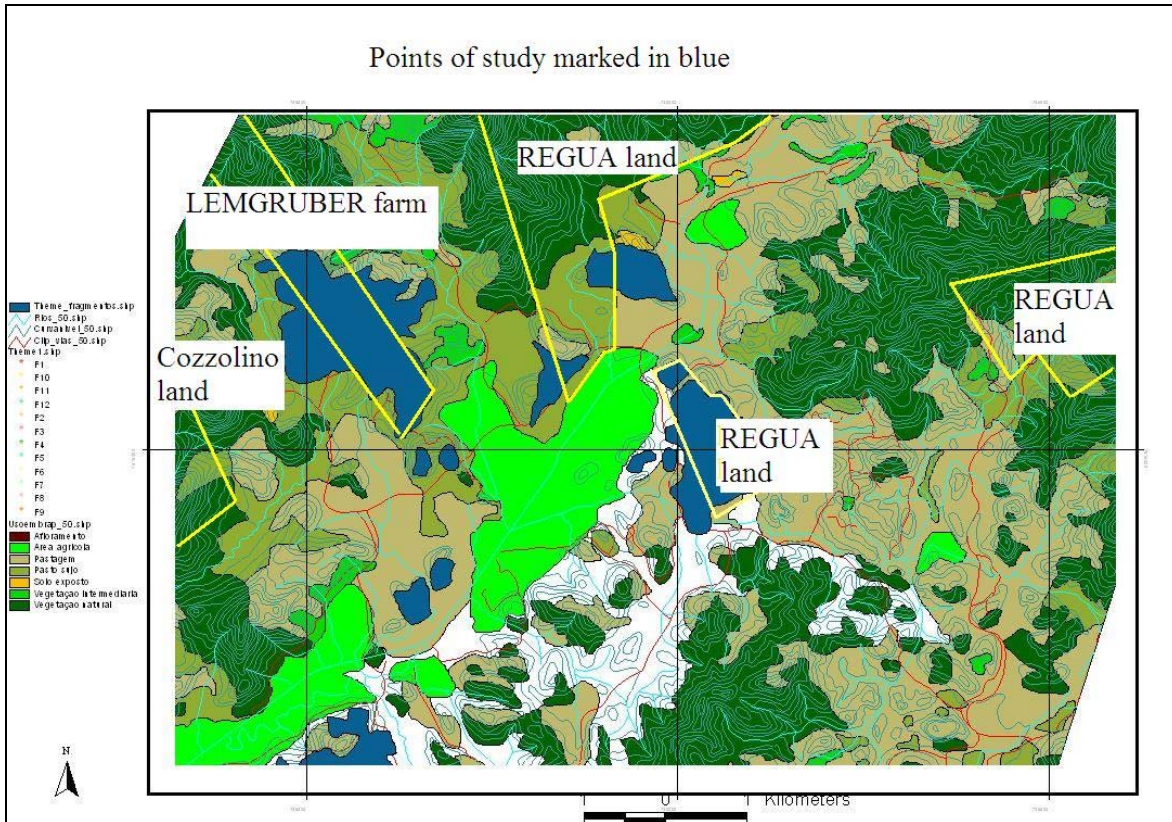


Fig 3 The study area around REGUA land

### 1) *Aplastodiscus eugenioi*

This species is known from sea level to 300m along the coasts of north-eastern São Paulo and south-western Rio de Janeiro States, south-east Brazil. It occurs near very straight, flowing streams inside lowland Atlantic Forest. During the day, adults can be found in bromeliads in high trees or in coiled leaves of (Musaceae) and (Marantaceae) vegetation. Males call at night from similar locations, and bushes or banana trees. Breeding is concentrated from August to January. The tadpoles are lotic-benthic, hiding between stones and pebbles on the sandy substrate of narrow canopied forest streams.

**Red List Category:** Near Threatened (NT)

### 2) *Chaunus ictericus*

This species occurs in central, southeastern and southern Brazil; Misiones and Corrientes, northeastern Argentina; and eastern Paraguay at 0 - 1,200m asl. It occurs in a large diversity of habitats, from forests to open areas such as cerrado habitat. It breeds in permanent and temporary ponds and streams. It occurs in substantially disturbed habitats.

**Red List Category:** Least Concern (LC)

### 3) *Chaunus ornatus*

This species is found in the Atlantic Forest of Brazil; from southern Espírito Santo State, through Rio de Janeiro and São Paulo States, to northern Paraná State. It is also possibly found in northeast Argentina, in Misiones and Corrientes Provinces. It is restricted to lowland Atlantic Forest and presumably reproduces by larval development in backwaters of streams and in temporary pools. The species is believed to be fairly tolerant of habitat modification.

**Red List Category:** Least Concern (LC)



Fig 4 chaunus ornatus

#### 4) *Chiasmocleis carvalhoi*

This species is known only from very low altitudes, up to 40m asl, in the States of Rio de Janeiro and São Paulo in southeastern Brazil, with disjunctive populations being found in the southern part of the State of Bahia in eastern Brazil. It is found in primary and secondary forest, but not in open areas. It has been observed in temporary ponds inside lowland forest, where it breeds explosively.

**Red List Category:** Endangered (EN)



Fig 5. *Chiasmocleis carvalhoi*

#### 5) *Crossodactylus aeneus*

This species from southeastern Brazil is known only from the States of Rio de Janeiro and São Paulo, at 800 - 1,200m asl. It lives on the ground near streams in primary and secondary forest. It breeds in streams.

**Red List Category:** Data Deficient (DD)

#### 6) *Cycloramphus brasiliensis*

This species is known from Serra dos Órgãos and Serra da Mantiqueira, in Rio de Janeiro State, Brazil, from 800 - 1,200m asl. It occurs on rock wall seeps and at forest streams in primary and good quality secondary forest. Larvae have been observed on rocks that are covered with a film of running water, either on exposed rocks in or next to streams.

**Red List Category:** Near Threatened (NT)

#### 7) *Dendropsophus anceps*

This species is known from the lowlands of the states of Rio de Janeiro, Minas Gerais, Espírito Santo and Bahia, in southeastern Brazil. It occurs up to 500m asl. Adults are found in stagnant water and on bulrushes (taboas) where there is no arboreal vegetation, in swamps. They breed in temporary or permanent stagnant pools. They have also been recorded in anthropogenic habitats such as gardens and artificial ponds.

**Red List Category:** Least Concern (LC)



Fig 6 *Dendropsophus anceps*

### 8) *Dendropsophus berthaltutzae*

This species from southern Brazil occurs in the coastal lowlands and the Serra do Mar, up to 1,200m, from Linhares in the State of Espírito Santo south to Florianópolis in the State of Santa Catarina. It lives on low vegetation in secondary forest, often near swamps. It has also been found in open areas, such as grassland. It hangs its eggs in the vegetation above temporary still water, into which the larvae fall and develop.

**Red List Category:** Least Concern (LC)



Fig 7 *Dedropsophus berthaltutzae*

**9) *Dendropsophus bipunctatus***

This species occurs in the coastal region of eastern Brazil from the State of Pernambuco, south to the State of Rio de Janeiro. It ranges up to 1,100m asl. It lives on low vegetation, usually near pools of still water, in open areas, grassland, pastureland, secondary forest, and coastal resting scrub, but not in primary forest. It breeds in permanent and temporary pools.

**Red List Category:** Least Concern (LC)

**10) *Dendropsophus elegans***

This species from the Atlantic forests of eastern Brazil ranges from the State of Rio Grande do Norte, south to State of Parana. It occurs up to 1,000m asl. It lives in primary and secondary forest, and in open areas (both natural and artificial habitats). It is usually on vegetation above and near the temporary and permanent small, still-waterbodies. It lays its eggs on vegetation above the water, into which the larvae fall and develop.

**Red List Category:** Least Concern (LC)



Fig 8 *Dendropsophus elegans*

**11) *Dendropsophus meridianus***

This species is confined to the lowlands in State of Rio de Janeiro, below 100m, southeastern Brazil, from Itaguaí in the west to Macaé in the east. It lives on vegetation near ponds and other still waters in a very wide array of habitats, from forest, to open areas, to cities. It breeds in temporary ponds.

**Red List Category:** Least Concern (LC)



Fig 9 *Dendropsophus meridianus*

### 12) *Dendropsophus seniculus*

This species from eastern Brazil ranges from Porto Seguro in the southern part of the State of Bahia, south through eastern Minas Gerais, Espírito Santo, and Rio de Janeiro, to Capao Bonito in the State of Sao Paulo. It occurs up to 1,000m asl. It lives in primary and secondary forest, and in gardens, but not in very open habitats. It is usually found on vegetation or on the ground near marshy patches, but is sometimes high up in trees where it is hard to find. It is an explosive breeder in temporary and permanent ponds on forest edges. The tadpoles eat other tadpoles.

**Red List Category:** Least Concern (LC)



Fig 10 *Dendropsophus seniculus*

**13) *Eleutherodactylus binotatus***

This species from eastern and southern Brazil occurs from the State of Bahia, south to the State of Rio Grande do Sul. It occurs up to 1,200m asl. It lives in primary and secondary forest and forest edges, but not in more open areas. It is usually found in the leaf litter on the forest floor, or on leaves in low vegetation inside the forest. It breeds by direct development.

**Red List Category:** Least Concern (LC)



Fig 11 *Eleutherodactylus binotatus*

**14) *Eleutherodactylus guentheri***

This species from southeastern Brazil ranges from the State of Espírito Santo, south to the State Rio Grando do Sul. It is also recorded from Misiones Province in northeastern Argentina. It occurs up to 1,200m asl. It lives in primary and old secondary forest, but not in more open areas. It is found on the forest floor and on low vegetation. It breeds by direct development, and the egg clutches are laid in shallow cavities on the forest floor.

**Red List Category:** Least Concern (LC)

**15) *Eleutherodactylus octavioi***

This species is known from Rio de Janeiro State including Ilha Grande, in Brazil. It occurs from sea level up to 1,200m asl. This species occurs on the ground inside primary and secondary forest. It presumably breeds by direct development, like others in the genus. It has not been recorded outside of forest.

**Red List Category:** Least Concern (LC)

**16) *Euparkerella cochranae***

This species is known from Serra dos Orgãos, and the lowlands of Silva Jardim and Casimiro de Abreu, in the state of Rio de Janeiro, Brazil. It has been recorded from sea level up to 600m asl. This species occurs among the forest leaf litter in primary and secondary forest. There is no information known about breeding, though it is believed to be by direct development. It has not been recorded outside of forest.

**Red List Category:** Least Concern (LC)



Fig 12 *Euparkerella cochranae*

**17) *Hylodes pipilans***

This species is known only from the Serra dos Orgaos, in the Municipality of Guapimirim and Cachoeiras de Macacu, State of Rio de Janeiro, southeastern Brazil. It is commonly found calling along the day on rocks inside or nearby rocky creeks.

**Red List Category:** This species was describe recently (Canedo & Pombal, 2007), so it was not included in the IUCN Red List.

**18) *Hypsiboas albomarginatus***

This species occurs in the Atlantic forests of eastern Brazil from the State of Pernambuco to the State of Santa Catarina. It ranges up to 1,100m asl. It lives on shrubs or on the ground near waterbodies on the edge tropical moist forests, in degraded forest, and in open areas near forest. It is not found in the interior of mature forest. It breeds in temporary or permanent still water, sometimes even in flowing water.

**Red List Category:** Least Concern (LC)



Fig 13 *Hypsiboas albomarginatus*

### 19) *Hypsiboas faber*

This species occurs in Misiones province, Argentina; Rio de Janeiro, Espirito Santo, Minas Gerais, Rio Grande do Sul, Parana, Santa Catarina, Sao Paulo and Bahia states, Brazil and in central, eastern and southern Oriental region, Paraguay, at 150 - 800m asl. It lives in tropical humid forests and at the edges of these forests. It reproduces by making nests in temporary and permanent pools (including artificial pools) and in slow-moving streams. It occurs in substantially altered habitats.

**Red List Category:** Least Concern (LC)

### 20) *Hypsiboas semilineatus*

This species occurs in eastern Brazil from the State of Pernambuco in the north, south to the State of Santa Catarina. It occurs up to 800m asl. It lives in primary and secondary forest, coastal resting scrub, and also disturbed habitats, such as pastureland, but needs shrubs and cover. It is usually found on vegetation near waterbodies in clearings or on the forest edge. It breeds in temporary and permanent ponds, and on the margins of lakes and reservoirs.

**Red List Category:** Least Concern (LC)

### 21) *Itapotihyla langsdorffii*

This species' geographic range is in the Atlantic forests from Bahia south to Santa Catarina, Brazil; northeastern Argentina; and central and southern Oriental region, Paraguay. Its altitudinal range is 0 - 700m asl. It is an arboreal frog that occurs on shrubs and trees inside rain forest. It reproduces in temporary and permanent pools inside forest. It is restricted to pristine habitats.

**Red List Category:** Least Concern (LC)



Fig 14 *Itapotihyla langsdorffii*

### 22) *Leptodactylus marmoratus*

This species from southeastern Brazil occurs in the States of Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo, Paraná and Santa Catarina. It ranges up to 1,200m asl. It is a diurnal species that live on the ground in primary and secondary forest, and also in clearings and on the forest edge, as well as in gardens. The males commonly call from the ground under vegetation in the late afternoons. The eggs are laid on the ground; tadpoles live and develop in the leaf litter outside water.

**Red List Category:** Least Concern (LC)

### 23) *Leptodactylus ocellatus*

This species occurs widely in South America east of the Andes. It has been recorded from sea level to around 1,400m asl. It occurs in many habitats, including savannahs, grasslands, open habitats in dry areas, forest edge, and along riverbanks in humid tropical forests. This species is well adapted to habitat modification and disturbance, and can be found in rural gardens, secondary habitats and urban areas. Reproduction takes place in temporary waterbodies. It is frequently found in ponds, small lakes or flooded areas. The spawn is deposited in large foam nests on the water surface.

**Red List Category:** Least Concern (LC)

### 24) *Myersiella microps*

This species from southeastern Brazil occurs in the following States: Espírito Santo, Rio de Janeiro, São Paulo, and southeastern Minas Gerais. It occurs up to 1,100m asl. It is found in primary and secondary forest, living in the leaf litter on the forest floor, and does not occur in open areas. It breeds by direct development: the larvae develop in the eggs in the leaf litter.

**Red List Category:** Least Concern (LC)



Fig 15 *Myersiella microps*

### 25) *Phylomedusa burmeisteri*

This species is known from Sergipe to São Paulo, in eastern Brazil, from sea level up to 1,000m asl. It is mainly known from the Atlantic Forest edge. It occurs on vegetation near standing waterbodies. The egg clutch is deposited in leaf nests above the water, and when hatched the larvae fall in to the water below where they develop further. It probably adapts well to moderate anthropogenic disturbance.

**Red List Category:** Least Concern (LC)

### 26) *Physalaemus signifer*

This species from southeastern and eastern Brazil ranges from the northern part of the State of São Paulo, north to the southern part of the State of Bahia. It occurs up to 1,200m asl. It is found in flooded areas, or near temporary and permanent ponds, inside or at the edge of primary and secondary forest. It does not occur outside forest. The eggs are laid in foam nests on the leaf litter or mud near temporary and permanent ponds, in which the larvae develop.

**Red List Category:** Least Concern (LC)

### 27) *Proceratophrys appendiculata*

This species from southeastern Brazil occurs in the States of Espírito Santo, Rio de Janeiro, São Paulo, and Paraná. It occurs at 500 - 1,700m asl. It is found in primary and secondary forest, but not open areas, living in leaf litter on the forest floor. Adults are sometimes found in the stumps of tree ferns. It breeds in mountain streams.

**Red List Category:** Least Concern (LC)

### 28) *Proceratophrys boiei*

This species from eastern Brazil ranges from the State of Pernambuco, south to the State Santa Catarina, with isolated populations at Maranguape and Ibiapaba in Ceara. It occurs up to 1,200m asl. It is found in primary and secondary forest, on the forest edge, and in degraded areas near forest. It lives in the forest leaf litter. It spawns in temporary slow-flowing water in forest or on the forest edge.

**Red List Category:** Least Concern (LC)



Fig 16 *Proceratophrys boiei*

### 29) *Scinax argyreornatus*

This species occurs in the coastal regions of eastern and southern Brazil, from the State of Bahia, south to the State of Santa Catarina. It ranges up to 1,100m asl. It lives in both forest and in more open areas, such as "restinga" shrubland, but not in farmland. It is commonly, but not always, associated with bromeliads. It is often found in forest on vegetation near temporary and permanent ponds where it breeds.

**Red List Category:** Least Concern (LC)

### 30) *Scinax albicans*

This species is known from Serra do Mar in the state of Rio de Janeiro, in Brazil. It occurs around 1,200m asl. They are found on vegetation near small streams and brooks in primary and old secondary forest where they also breed. They have not been recorded outside of forest.

**Red List Category:** Least Concern (LC)

### 31) *Scinax humilis*

This species occurs in the southeast of the state of Minas Gerais, and in the coastal Atlantic Forest of Rio de Janeiro and São Paulo States in southeastern Brazil. It occurs up to 1,200m asl. The species is found on the vegetation of the marshy ground inside primary and secondary forests of the coastal lowlands. It has also been recorded from disturbed forest and near the forest edge, but not from open areas. It breeds in temporary rain pools.

**Red List Category:** Least Concern (LC)



Fig 17 *Scinax humilis*

### 32) *Scinax similis*

This species is known from the coastal region of Caraguatatuba, in São Paulo State, to Rio de Janeiro State, in Brazil. It occurs up to 1,100m asl. It occurs in open areas such as savannahs, as well as in artificial habitats. It breeds in temporary pools from the rain, as well as in swamps. It is also found inside houses in rural areas, and in most artificial open areas.

**Red List Category:** Least Concern (LC)

### 33) *Scinax trapicheiroi*

This species is known from the coastal regions of the Atlantic forest of Rio de Janeiro State, and from Ilha Grande, in Brazil, up to 600m asl. It occurs inside primary and old secondary forest near slow-moving streams, and spawns in slow reaches of small brooks. It has not been recorded from disturbed areas.

**Red List Category:** Near Threatened (NT)

### 34) *Scinax* aff. *x-signatus*

This species occurs in Arauca, Meta and North Santander, Colombia, and in Venezuela, Guyana, Suriname, and eastern, southern and southeastern Brazil. It occurs from sea level up to 900m asl. It inhabits tropical savannahs, forest edge and open areas. It is very adaptable to human disturbance. Males have been observed calling from Heliconia leaf about 1.5m above the ground and 2m from the edge of a forest pond, or from other vegetation above temporary ponds, or tussock of grasses in the pond. In Bolívar state, males concentrate in low bushes around lagoons during the rainy season. It breeds in standing water (permanent and seasonal). The eggs and tadpoles are in the water.

**Red List Category:** Least Concern (LC)



Fig 18 *Scinax* aff. *x-signatus*

### 35) *Thoropa miliaris*

This species from southern and eastern Brazil ranges from the southern part of the State of Parana, north to the State of Bahia, inland to the eastern part of the State of Minas Gerais. It occurs up to 1,100m asl. It is found in rocky areas in forest, above forest, or near forest, living on wet rock walls near streams or waterfalls. The egg clutch is deposited in rock fissures. The tadpoles have been found on wet rock walls where water drains.

**Red List Category:** Least Concern (LC)

### 36) *Trachycephalus mesopheus*

This species occurs in eastern Brazil, from extreme southern Pernambuco to Rio Grande do Sul, inland to include eastern and central Minas Gerais. It ranges up to 800m asl. It is a species of primary and secondary forest and forest edge, living on vegetation near waterbodies. It is an explosive breeder, using temporary and permanent ponds. The egg clutches are laid floating on the water.

**Red List Category:** Least Concern (LC)



Fig 19 *Trachycephalus mesopheus*