

INTRODUCTION TO TROPICAL BIODIVERSITY

September 24 - October 2, 2026



Workshop Participants and Guest Scientists

Sponsored by the Canopy Family and Naturalist Journeys

Participants: Marcia, Marie, Megan, Karen, Andrew, Kathy, Nayeem and Lori

Guest Scientists: Drs. Carol Simon and Howard Topoff

Canopy Guides: Igua Jimenez, Yina Carter, Danielo Rodriquez, Jr., Danielo Rodriquez. Sr. and Tino Sanchez. With a special guest appearance by Canopy Biologist Rosannette Quesada

Prepared by Carol Simon and Howard Topoff

Eight very enthusiastic participants arrived at the Canopy Tower, eager to learn everything they could about the biodiversity of the region. This was one of our nicest groups ever! All welcomed the chance to meet new people and experience unique places, plants and animals. Our two scientists, Carol and Howard, and local Canopy guides, Igua and Yina, quickly made everyone feel welcomed. Each morning participants could spend time atop the Tower, viewing a great variety of birds, mammals and even some iguanas. We spent four nights at the Canopy Tower in the old Canal Zone lowlands



Howard, Igua and Yina next to our typical transportation at the Tower.
Photo by Carol Simon



Carol
Photo by Howard Topoff

We then stayed another four nights at the Canopy Lodge, just below cloud forest. Here our guides were Danielo, Jr., Danileo, Sr. and Tino. Danielo, Sr. is Canopy's most senior guide. While at the lodge the bird feeders certainly attracted viewers throughout the day.



Danielo Senior and Junior
Photo by Howard Topoff

With very different habitats, and at very different elevations, conditions were optimal to see a great variety of insects and arachnids, plants, frogs, lizards, birds and mammals. We even saw a few snakes. Although we concentrated on every creature we saw, the dedicated birders were very happy with their avian viewing thanks to our talented Canopy guides. We were usually in the field in the mornings, with other activities in the afternoons. We also added several optional night excursions. These included both a night drive and night walk at the Tower, and a night walk at the Lodge.

We visited scientific and cultural centers such as the El Valle Market, the Miraflores Locks on the Panama Canal and the BioMuseo in Panama City.



The BioMuseo on the Amador Causeway in Panama City was designed by Canadian architect Frank Gehry. Photos by Howard Topoff

A highlight of the trip was the daily presentations by our scientists.

Presentations by our Guest Scientists

Introduction to Tropical Rainforests
 Tropical Botany
 Social Insects of the Rainforest
 100 Years of the Panama Canal
 Poisonous Amphibians and Venomous Reptiles
 Butterflies
 Bird Brains
 Ten Things You Didn't Know About Spiders

Canopy Biologist Dr. Rosanette Quesada talks about spiders.
 Photo by Carol Simon



Itinerary

September 24: Arrival and Orientation at Canopy Tower

September 25: Canopy Tower, Plantation Road, Summit Gardens, Night Drive on Semaphore Hill



The lovely Plantation Road
Photo by Carol Simon

September 26: Canopy Tower, Pipeline Road, BioMuseo, Night Walk El Charco

September 27: Canopy Tower, Summit Ponds, Old Gamboa Road, Gamboa Resort Sloth/Butterfly/Frog Conservation Center, including La Chunga,

September 28: Canopy Tower, Gatun Lake Boat Ride, Miraflores Locks including the IMax Movie *Panama Canal in 3D: A Land Divided, a World United*. Transfer to Canopy Lodge.



American Crocodile on Gatun Lake

Note that sex determination in crocodiles is determined by the temperature of the incubating eggs.
Photo by Stan Smith

September 29: Canopy Lodge, Cerro GaitalCandelario, Mario's Trail (El Cicio).



The very secretive Dunn's Spiny Lizard was found at Cerro Gaital by the very persistent Tino. These animals live on a dark damp hillside. As ectotherms it is hard to image how they get warm enough to survive. This one looks pretty healthy.
Photo by Stan Smith

The Candelario Trail yielded Black-crowned Antpitta. This secretive ground-dweller hops through leaf litter, foraging for insects, spiders, scorpions, and small vertebrates like frogs. It is one of many birds with the habit of following army ant swarms to catch flushed prey.

Photo by Carol Simon



September 30: Canopy Lodge, Altos del Maria/Valle Bonito, Night Walk on Lodge Grounds



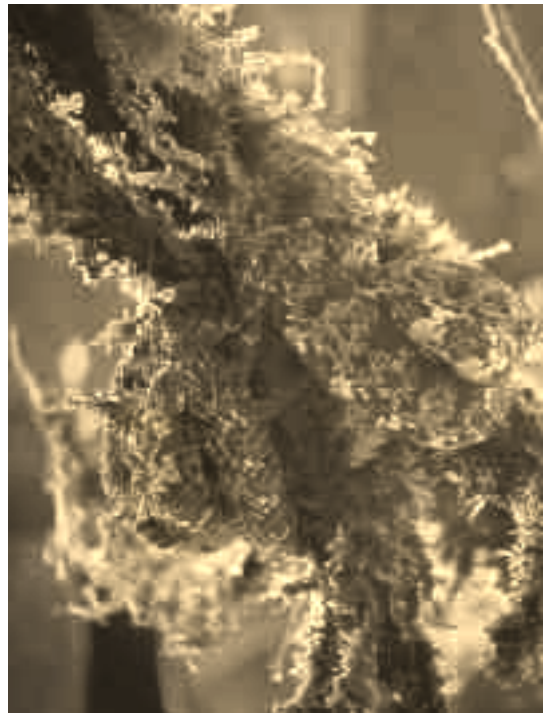
The trail at Altos Maria is simply stunning. For many of us it was our favorite walk. Imagine spotting this frog on brown bark. It is a Golden Spotted Rain Frog and is quite the mess! But camouflage is the name of the game here.

Photos by Carol Simon

October 1: Las Minas/Mesa Road, Canopy Adventure, Las Mozas Trail, El Valle Market

The prize on Las Minas Road was a Central American Eyelash Viper, safely high in a tree. The “eyelashes” are actually protruding scales above the eyes. These are venomous sit-and-wait predators and their superb camouflage allows them to be successful. They can, however, also hunt for their prey.

Photo by Kathy Gudgel



October 6: Lodge Grounds, Departures. We all had a grand time!



Birds



Keel-billed Toucan

We learned that toucan bills are filled with capillaries that can help the birds thermoregulate.

Photo by Howard Topoff

Tinamous - Tinamidae

Great Tinamou, *Tinamus major* (HO)

Ducks, Geese and Waterfowl - Anatidae

Black-bellied Whistling Duck, *Dendrocygna autumnalis*

Guans, Chachalacas and Curassows - Cracidae

Gray-headed Chachalaca, *Ortalis cinereiceps*

Pigeons and Doves - Columbidae

Rock Pigeon, *Columba livia*

Pale-vented Pigeon, *Patagioenas cayennensis*

Scaled Pigeon, *Patagioenas speciosa*

Ruddy Ground-Dove, *Columbina talpacoti*

White-tipped Dove, *Leptotila verreauxi*

Cuckoos - Cuculidae

Greater Ani, *Crotophaga major*

Smooth-billed Ani, *Crotophaga ani*

Common Squirrel Cuckoo, *Piaya cayana*

Nightjars and Allies - Caprimulgidae

Common Nighthawk, *Chordeiles minor*

Swifts - Apodidae

Band-rumped Swift, *Chaetura spinicaudus*

Short-tailed Swift, *Chaetura brachyura*

Hummingbirds - Trachilidae

White-necked Jacobin, *Florisuga mellivora*

Green Hermit, *Phaethornis guy*

Purple-crowned Fairy, *Heliothryx barroti*

Green Thorntail, *Discosura conversii*

Garden Emerald, *Chlorostilbon assimilis*

Violet-headed Hummingbird, *Klais guimeti*

White-vented Plumeleteer, *Chalybura buffonii*

Crowned Woodnymph, *Thalurania colombica*

Snowcap, *Microchera albocoronata*

Rufous-tailed Hummingbird, *Amazilia tzacatl*

Blue-chested Hummingbird, *Polyerata amabilis*

Violet-bellied Hummingbird, *Chlorestes julie*

Rails, Gallinules and Coots - Rallidae

Gray-cowled Wood-Rail, *Aramides cajaneus*

Purple Gallinule, *Porphrio martinicus*

Limpkin - Aramididae

Limpkin, *Aramus guarauna*

Plovers and Lapwings - Charadriidae

Southern Lapwing, *Vanellus chilensis*

Jacanas - Jacanidae

Wattled Jacana, *Jacana jacana*

Sandpipers and Allies - Scolopacidae

Spotted Sandpiper, *Actitis macularius*

Gulls, Terns and Skimmers - Laridae

Royal Tern, *Thalasseus maximus*

Storks - Ciconiidae

Wood Stork, *Mycteria americana*

Frigatebirds - Fregatidae

Magnificent Frigatebird, *Fregata magnificens*

Anhingas - Anhingidae

Anhinga, *Anhinga anhinga*

Cormorants and Shags - Phalacrocoracidae

Neotropic Cormorant, *Nannopterum brasilianum*

Hérons, Egrets and Bitterns - Ardeidae

Boat-billed Heron, *Cochlearius cochlearius*

Yellow-crowned Night Heron, *Nyctanassa violacea*

Little Blue Heron - *Egretta cerulean*

Snowy Egret, *Egretta thula*

Green Heron, *Butorides virescens*

Western Cattle Egret, *Bubulcus ibis*

Great Egret, *Ardea alba*

Great Blue Heron, *Ardea herodias*

Cocoi Heron, *Ardea cocoi*

Pelicans - Pelecanidae

Brown Pelican, *Pelecanus occidentalis*

New World Vultures - Cathartidae

Black Vulture, *Coragyps atratus*

Turkey Vulture, *Cathartes aura*

Osprey - Pandionidae

Osprey, *Pandion haliaetus*

Hawks, Eagles and Kites - Accipridae

Gray-headed Kite, *Leptodon cayanensis*

Swallow-tailed Kite, *Elanoides forficatus*

Black Hawk-Eagle, *Spizaetus tyrannus*

Plumbeous Kite, *Ictinia plumb*

Crane Hawk, *Geranospiza caerulescens*

Snail Kite, *Rostrhamus sociabilis*

Common Black Hawk, *Buteogallus anthracinus*
Roadside Hawk, *Rupornis magnirostris*
Short-tailed Hawk, *Buteo brachyurus*

Owls - Strigidea

Tropical Screech Owl, *Megascops choliba*
Crested Owl, *Lophotrix cristata*
Spectacled Owl, *Pulsatrix perspicillata*

Trogons - Trogonidae

Slaty-tailed Trogon, *Trogon massena*
Black-tailed Trogon, *Trogon melanurus*
White-tailed Trogon, *Trogon chionurus* (HO)
Gartered Trogon, *Trogon caligatus* (HO)
Graceful Black-throated Trogon, *Trogon tenellus*
Collared Trogon, *Trogon collaris*

Motmots - Momotidae

Tody Motmot, *Hylomanes momotula*
Whooping Motmot, *Momotus subrufescens*
Rufous Motmot, *Baryphthengus martii*
Broad-billed Motmot, *Electron platyrhynchum*

Kingfishers - Alcedinidae

Ringed Kingfisher, *Megaceryle torquata*
Amazon Kingfisher, *Chloroceryle amazona*

Puffbirds - Bucconidae

White-necked Puffbird, *Notharchus hyperhynchus*

Toucans - Ramphastidae

Collared Aracari, *Pteroglossus torquatus* (HO)
Yellow-throated Toucan, *Ramphastos ambiguus*
Keel-billed Toucan, *Ramphastos sulfuratus*

Woodpeckers - Picidae

Black-cheeked Woodpecker, *Melanerpes pucherani*
Red-crowned Woodpecker, *Melanerpes rubricapillus*
Lineated Woodpecker, *Dryocopus lineatus*
Cinnamon Woodpecker, *Celeus loricatus*

Falcons and Caracaras - Falconidae

Collared Forest-Falcon, *Herpetotheres cachinnans* (HO)

Yellow-headed Caracara, *Milvago chimachima*

New World and African Parrots - Psittacidae

Orange-chinned Parakeet, *Brotogeris jugularis*

Brown-hooded Parrot, *Pyrilia haematotis*

Blue-headed Parrot, *Pionus menstruus*

Red-lored Amazon, *Amazona autumnalis*

Mealy Parrot, *Amazona farinosa*

Typical Antbirds - Thamnophilidae

Black-crowned Antshrike, *Thamnophilus atrinucha*

Spot-crowned Antwren, *Dysithamnus puncticeps*

Checker-throated Stipplethroat, *Epinecrophylla fulviventris*

White-flanked Antwren, *Myrmotherula axilaris*

Slaty Antwren, *Myrmotherula schisticolor*

Dot-winged Antwren, *Microrhopias quixensis*

Dusty Antbird, *Cercomacroides tyrannina*

Chestnut-backed Antbird, *Poliocrania exsul*

Bicolored Antbird, *Gymnopithys bicolor* (HO)

Spotted Antbird, *Hylophylax naevioides*

Gnateaters - Conopophagidae

Black-crowned Antpitta, *Pittasoma michleri*

Antpittas - Grallariidae

Streak-chested Antpitta, *Hylopezus perspicillatus* (HO)

Ovenbirds and Woodcreepers - Furnariidae

Olivaceous Woodcreeper, *Sittasomus griseicapillus*

Cocoa Woodcreeper, *Xiphorhynchus susurrans*

Northern Plain Xenops, *Xenops mexicanus*

Manakins - Pipridae

Lance-tailed Manakin, *Chiroxiphia lanceolata* (HO)

White-ruffed Manakin, *Corapipo altera*

Velvety Manakin, *Lepidothrix velutina*

Golden-collared Manakin, *Manacus vitellinus*

Red-capped Manakin, *Ceratopipra mentalis*

Cotingas - Cotingidae

Purple-throated Fruit Crow, *Querula purpurata* (HO)

Sharpbill, Royal Flycatcher and Allies - Tityridae

Ruddy-tailed Flycatcher, *Terenotriccus erythrurus*

Tyrant Flycatchers - Tyrannidae

Ochrebellied Flycatcher, *Mionectes oleagineus*

Yellow-winged Flatbill, *Tolmomyias flavotectus*

Western Olivaceous Flatbill, *Rhynchocyclus aequinoctialis*

Yellow-olive Flatbill, *Tolmomyias sulphurescens*

Brown-capped Tyrannulet, *Ornithion brunneicapillus*

Forest Elaenia, *Miopagis gaimardii*

Tufted flycatcher, *Mitrephanes phaeocercus*

Western Wood Pewee, *Contopus virens*

Great Kiskadee, *Pitangus sulphuratus*

Boat-billed Flycatcher, *Megarynchus pitangua*

Rusty-margined Flycatcher, *Myiozetetes cayanensis*

Social Flycatcher, *Myiozetetes similis*

Streaked Flycatcher, *Myiodynastes maculatus*

Sulphur-bellied Flycatcher, *Myiodynastes luteiventris*

Tropical Kingbird, *Tyrannus melancholicus*

Eastern Kingbird, *Tyrannus tyrannus*

Vireos Shrike-Babblers and Erpornis- Vireonidae

Green Strike-Vireo, *Vireolanius pulchellus* (HO)

Lesser Greenlet, *Pachysylvia aurantiifrons*

Red-eyed Vireo, *Vireo olivaceus*

Crows, Jays and Magpies - Corvidae

Black-chested Jay, *Cyanocorax affinis*

Swallows - Hirundinidae

Bank Swallow, *Riparia riparia*

Mangrove Swallow, *Tachycineta albilinea*

Gray-breasted Martin, *Progne chalybea*

Barn Swallow, *Hirundo rustica*

Cliff Swallow - *Petrochelidon cyanoleuca*

Gnatcatchers - Polioptilidae

White-browed Gnatcatcher, *Polioptila bilineata*

Wrens - Troglodytidae

Southern House Wren, *Troglodytes musculus*

Rufous-breasted Wren, *Pheugopedius rutilus* (HO)

Rufous-and-white Wren, *Thryophilus rufalbus* (HO)

Bay Wren, *Cantorchilus nigricapillus* (HO)

Buff-crested Wren, *Cantorchilus leucotis* (HO)
White-breasted Wood-Wren, *Henicorhina leucosticta*
Gray-breasted Wood-Wren, *Henicorhina leucophrys* (HO)

Mockingbirds & Allies - Mimidae
Tropical Mockingbird, *Mimus gilvus*

Thrushes - Turdidae
Clay-colored Thrush, *Turdus grayi*

Finches, Euphonias and Allies - Fringillidae
Thick-billed Euphonia, *Euphonia lanirostris*
Fulvous-vented Euphonia, *Euphonia fulvicrissa*
Tawny-capped Euphonia, *Euphonia anae*

New World Sparrows - Passerellidae
Orange-billed Sparrow, *Arremon aurantirostris* (HO)

Troupials & Allies - Icteridae
Crested Oropendola, *Psarocolius decumanus*
Chestnut-headed Oropendola, *Psarocolius wagleri*
Scarlet-rumped Cacique, *Cacicus uropygialis*
Yellow-rumped Cacique, *Cacicus cela*
Yellow-backed Oriole, *Icterus chrysater* (HO)
Great-tailed Grackle, *Quiscalus mexicanus*

New World Warblers - Parulidae
Louisiana Waterthrush, *Parkesia motacilla*
Northern Waterthrush, *Parkesia noveboracensis*
Prothonotary Warbler, *Protonotaria citrea*
Blackburnian Warbler, *Setophaga fusca*

Cardinals and Allies - Cardinalidae
Red-throated Ant-Tanager, *Habia fuscicauda*
Blue-black Grosbeak, *Cyanoloxia cyanooides*
Dickcissel, *Spiza americana*

Mitrospingid Tanagers - Mitrospingidae
Dusky-faced Tanager, *Mitrospingus cassinii*

Tanagers and Allies - Thraupidae
Gray-headed Tanager, *Eucometis penicillata*
White-shouldered Tanager, *Loriotus luctuosus*

Tawny-crested Tanager, *Tachyphonus delatrii*
Flame-rumped Tanager, *Ramphocelus flammigerus*
Crimson-backed Tanager, *Ramphocelus dimidiatus*
Blue-gray Tanager, *Thraupis episcopus*
Palm Tanager, *Thraupis palmarum*
Plain-colored Tanager, *Tangara inornata*
Bay-headed Tanager, *Tangara gyroia*
Emerald Tanager, *Tangara florida*
Silver-throated Tanager, *Tangara icterocephala*
Scarlet-thighed Dacnis, *Dacnis venusta*
Blue Dacnis, *Dacnis cayana*
Green Honeycreeper, *Chlorophanes spitza*
Variable Seedeater, *Sporophila corvina*
Bananaquit, *Coereba flaveola*
Slate-colored Grosbeak, *Saltator grossus* (HO)



Spectacled Owls and Rufous Motmot - Photos by Howard Topoff

Mammals



Nocturnal Proboscis Bats have the Unusual habit of Sleeping in a Line on Tree Trunks
Photo by Stan Smith

Opposums - Didelphidae

Common Opossum, *Didelphis marsupialis*

Central American Woolly Opossum, *Caluromys derbianus*

Anteaters - Myrmecophagidae

Northern Tamandua, *Tamandua mexicana*

Two-toed Sloths - Choloepodidae

Hoffman's Two-toed Sloth, *Choloepus hoffmanni*

Three-toed Sloths - Bradypodidae

Brown-throated Three-toed Sloth, *Bradypus variegatus*

Silky Anteater - Cyclopedidae

Silky Anteater, *Cyclopes didactylus*

Three-toed Sloths - Bradypodidae

Brown-throated Three-toed Sloth, *Bradypus variegatus*

Sac-winged Bats - Emballonuridae

Proboscis Bat, *Rhynchonycteris naso*

Leaf-nosed Bats - Phyllostomidae

Seba's Short-tailed Bat - *Carollia perspicillata*

Great Fruit-eating Bat - *Artibeus lituratus*

Common Tent-making Bat, *Uroderma bilobatum*

Tamarins, Capuchins, Squirrel Monkeys - Callitrichidae

Geoffroy's Tamarin, *Sanguinus geoffroyi*

White-faced Capuchin, *Cebus capucinus*

Night Monkeys - Aotidae

Western Night Monkey, *Aotus lemurinus*

Howler, Spider and Woolly Monkeys - Atelidae

Mantled Howler, *Alouatta palliata*

Squirrels - Sciuridae

Red-tailed Squirrel, *Sciurus granatensis*

New World Porcupines - Erethizontidae

Rothchild's Porcupine, *Coendou rothschildi*

Capybaras - Caviidae

Lesser Capybara, *Hydrochoerus isthmus*

Agoutis - Dasyproctidae

Central American Agouti, *Dasyprocta punctata*

Raccoons & Allies - Procyonidae

White-nosed Coati, *Nasua narica*

Kinkajou, *Potos flavus*

Allen's Olingo, *Bassaricyon alleni*

Northern Tamandua

These are toothless creatures! They have long sticky tongues for feeding at ant and termite nests.

Photo by Carol



Amphibians and Reptiles



We saw this Blunt-headed Tree Snake at the Lodge. These common snakes have specialized interlocking vertebrae and can extend two-thirds of their body length into midair in a straight line. This helps them reach sleeping lizards at the edges of leaves. These rear-fanged snakes are mildly venomous to their prey but are harmless to humans.

Photo by Kathy Kudgel

Forest Toad, *Rhinella alata*

Giant (Cane) Toad, *Rhinella (marina) horribilis*

Glass Frogs - Centrolenidae

Emerald Glass Frog, *Espadarana prosoblepon*

Tatayo's (Fleischmann's) Glass Frog, *Hyalinobatrachium (fleischmanni) tatayoi*

Robber Frogs - Craugastoridae

Fitzinger's Robber (Common Rain) Frog, *Craugastor fitzingeri*

Dart Poison Frogs - Dendrobatidae

Talamanca (Striped) Rocket Frog, *Allobates talamancae*

Rainforest (Striped) Rocket Frog, *Silverstoneia flotator*

New World Rain Frogs - Eleutherodactylidae

Common Dink Frog, *Diasporus diastema* (HO)

Treefrogs - Hylidae

Hourglass Treefrog, *Dendropsophus ebbractus*

Rosenberg's Gladiator Treefrog, *Hypsiboas rosenbergi*
Red-webbed (Canal Zone) Treefrog, *Hypsiboas rufitelus*
Masked Treefrog, *Smilisca phaeota*

Tropical Grass (Foam) Frogs - Leptodactylidae

Tungara Frog, *Engystomops pustulosus*
Savage's Thin-toed (Foam) Frog, *Leptodactylus savagei*

Pond Turtles - Emydidae

Pond Slider, *Trachemys scripta*
Eastern Meso-American Slider, *Trachemys venusta*

Casque-headed Lizards - Corytophanidae

Common Basilisk, *Basiliscus basiliscus*

Anoles - Dactyloidae

Panama City Anole, *Anolis apletophallus*
Neotropical Green Anole, *Anolis biporcatus*
(Giant) Bridled Anole, *Anolis frenatus*
Slender Anole, *Anolis limifrons*
Stream Anole, *Anolis oxylophus*

Spectacled Lizards - Gymnophthalmidae

Bromeliad Lizard, *Anadia ocellata*

Clubtails, Wood Lizards - Hoplocercidae

Dunn's Spiny-tailed Lizard, *Enyalioides groi*

Iguanas - Iguanidae

Black Spiny-tailed Iguana, *Ctenosaura similis*
Common Green Iguana, *Iguana iguana*

Spectacled Geckos - Gekkonidae

Common House Gecko, *Hemidactylus frenatus*

Leaf-Toed Geckos - Phyllodactylidae

Turnip-tailed Gecko, *Thecadactylus rapicauda*

Dwarf Geckos - Sphaerodactylidae

Yellow-headed Geckos, *Gonatodes albogularis*

Whiptails, Tegus - Teiidae

Giant Ameiva, *Ameiva praesignis*

Central American Ameiva, *Holcosus festivus*

Colubrid Snakes - Colubridae

Blunt-headed Tree Snake, *Imantodes cenchoa*

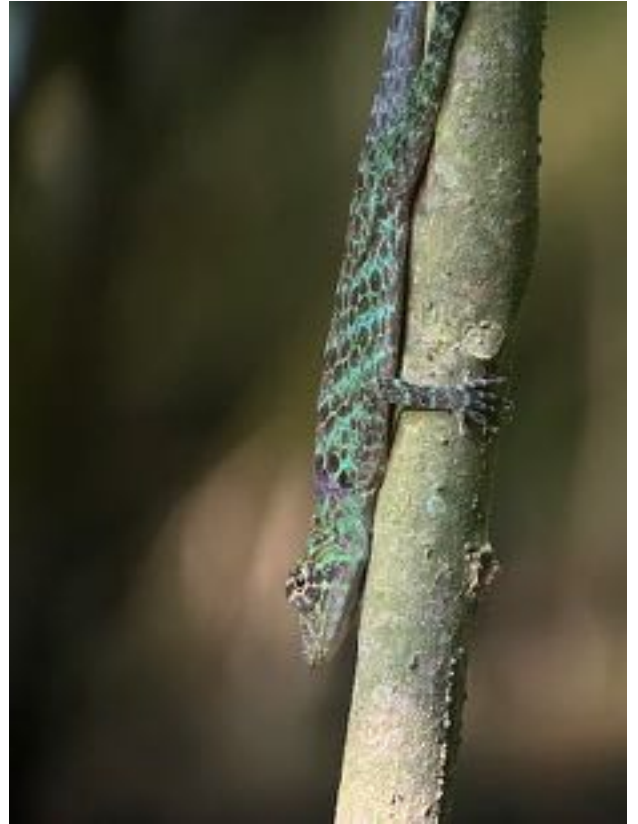
Vipers - Viperidae

Eyelash Viper, *Bothriechis schlegelli*

Crocodylians - Crocodylidae

Spectacled Caiman, *Caiman crocodilius*

American Crocodile, *Crocodylus acutus*



This Giant Bridled Anole was along the walkway as we entered the Lodge. It is strictly arboreal and eats insects and other invertebrates.

Photo by Danielo Rodriquez