INTRODUCTION TO TROPICAL BIODIVERSITY

September 28 - October 6, 2024



Workshop Participants and Guest Scientists Photo by Alex Sanchez

Sponsored by the Canopy Family and Naturalist Journeys

Participants: Ken, Paula, Beth, Marie, Mike, Tom, Cathy, Stan, Trish, Richard, Marianne, Rudy, Julianne, Don, Donna, Al and Elaine

Guest Scientists: Drs. Carol Simon and Howard Topoff

Canopy Guides: Igua Jimenez, Alex Sanchez, Jorge Pineda, Tino Sanchez and Danilo Rodriquez. With a special guest appearance by Canopy Biologist Rosannette Quesada

Prepared by Carol Simon and Howard Topoff



Canopy Tower
Photos by Carol Simon

A whopping 17 participants arrived at the Canopy Tower, eager to learn everything they could about the biodiversity of the region. Our two scientists and local Canopy guides quickly made everyone feel welcomed.

We were a most enthusiastic group and everyone, including some very accomplished birders, were more than willing to look at whatever appeared, in the sky, on the ground or in between. We saw a lot! We spent four nights at the Canopy Tower in the old Canal Zone lowlands, and then another four at the Canopy Lodge, just below cloud forest. With very different habitats, and at 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.

We visited scientific and cultural centers such as the El Valle Market, the Miraflores Locks on the Panama Canal, the BioMuseo in Panama City, herpetologist Mario Urriola's collections and the Amphibian Conservation Center, housing the Panamanian

Golden Frog, which exists only in captivity. Each morning participants could spend time atop the Tower, viewing a great variety of birds, mammals and even some iguanas. And while at the lodge there were also feeders that attracted the early morning crowd each day.

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



Canopy Scientist Dr. Rosette Quesada talks about spiders.
Photos by Carol Simon

Itinerary

September 28: Arrival and Orientation at Canopy Tower, Tower Grounds, Semaphore Hill

September 29: Canopy Tower, Summit Ponds, Old Gamboa Road, BioMuseo



BioMuseo, Amador Causeway Photos by Howard Topoff

September 30: Canopy Tower, Gatun Lake Boat Ride, Summit Gardens





The boat ride on Gatun Lake typically yields White-faced Capuchin Monkeys and American Crocodiles. Note that sex determination in crocodiles is determined by the temperature of the incubating eggs.

Photos by Stan Smith

October 1: Canopy Tower, Pipeline Road, Panama Canal Miraflores Locks, Night Walk on Plantation Road.



Typical Transport Photo by Howard Topoff



Great Potoo, resembling a tree stump. Carol's favorite tropical bird. Photo by Carol Simon

October 2: Plantation Road, Old Gamboa Resort Sloth/Butterfly/Frog ConservationCenter, Transfer to Canopy Lodge, Lodge Grounds, including night walk.





The lovely Plantation Road is on the left. (Photo by Carol Simon) We saw these Gladiator Tree Frogs mating (Photo by Stan Smith) on a night walk and the next morning found their eggs in a small, encircled depression that males make. Gladiator Tree Frogs are usually found in the treetops but they descend to the ground for mating. The term "gladiator" refers to the fighting males will do with sharp spines on their hands.

October 3: Lodge Grounds, Canopy Adventure, Las Minas Road, Mario Urriola Rescue Center and Herpetarium or Frog Conservation Center, Night Walk at Lodge

October 4: Lodge Grounds, Altos del Maria



At Altos del Maria we all had good looks at the iconic Red-eyed Tree Frog.

October 5: Lodge Grounds, Cerro Gaital Natural Monument, Candelario Trail, Mario Urriola Rescue Center and Herpetarium or Frog Conservation Center, El Valle Market





The Candelario Trail sported this Orange and Blue Eighty-eight Butterfly. (Photo by Carol Simon) The hard-to-see Dunn's Spiny-tailed Lizard was found at Cerro Gaital. (Photo by Stan Smith)

October 6: Lodge Grounds, Departures

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
Bird Brains
Ten Things You Didn't Know About Spiders

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* Little Tinamou, *Crypturellus soui* (HO)

Ducks, Swans, Geese - Anatidae Muscovy Duck, *Cairina moschata*

Currasows, Guans, Chacalacas - Cracidae Gray-headed Chachalaca, *Ortalis cinereiceps*

Grebes - Podicipedidae Pied-billed Grebe, *Podilymbus podiceps*

Pigeons, Doves - Columbidae
Pale-vented Pigeon, Patagioenas cayennensis
Scaled Pigeon, Patagioenas speciosa
Ruddy Ground-Dove, Columbina talpacoti
Blue Ground Dove, Claravis pretiosa
White-tipped Dove, Leptotila verreauxi

Cuckoos - Cuculidae Greater Ani, Crotophaga major Smooth-billed Ani, Crotophaga ani

Squirrel Cuckoo, *Piaya cayana* Gray-capped Cuckoo, *Coccyzus lansbergi*

Nightjars - Caprimulgidae Common Nighthawk, *Chordeiles minor* Rufous Nightjar, *Antrostomus rufus*

Potoos - Nyctibiidae Great Potoo, *Nyctibius grandis*

Swifts - Apodidae

White-collarred Swift, Streptoprocne zonaris Band-rumped Swift, Chaetura spinicaudus Short-tailed Swift, Chaetura brachyura

Hummingbirds - Trachilidae

White-necked Jacobin, Florisuga mellivora Rufous-breasted Hermit, Glaucis hirsutus Green Hermit, Phaethornis auv Long-billed Hermit, Phaethornis longirostris Stripe-throated Hermit, *Phaethornis striigularis* Purple-crowned Fairy, Heliothryx barroti Garden Emerald, Chlorostilbon assimilis Bronze-tailed Plumeleteer, Chalybura urochrysia White-vented Plumeleteer, Chalybura buffonii Crowned Woodnymph, Thalurania colombica Snowcap, Microchera albocoronata Snowy-bellied Hummingbird, Saucerottia edward Rufous-tailed Hummingbird, Amazilia tzacatl Sapphire-throated Hummingbird, *Chrysuronia coeruleogularis* Blue-chested Hummingbird, Polyerata amabilis Violet-bellied Hummingbird, Chlorestes julie

Rails, Gallinules, Coots - Rallidae Gray-cowled Wood-Rail, *Aramides cajaneus* Purple Gallinule, *Porphrio martinicus*

Limpkin - Aramidae Limpkin, *Aramus guarauna* **Plovers, Lapwings** - Charadriidae Southern Lapwing, *Vanellus chilensis*

Jacanas - Jacanidae Wattled Jacana, *Jacana jacana*

Sandpipers & Allies - Scolopacidae Spotted Sandpiper. *Actitus macularius*

Gulls, Terns, Skimmers - Laridae Caspian Tern, *Hydroprogne caspia* Royal Tern, *Thalasseus maximus*

Frigatebirds - Fregatidae Magnificent Frigatebird, *Fregata magnificens*

Darters - Anhingidae Anhinga, *Anhinga anhinga*

Cormorants, Shags - Phalacrocoracidae Neotropic Cormorant, *Nannopterum brasilianum*

Pelicans - Pelecanidae Brown Pelican, *Pelecanus occidentalis*

Herons, Egrets- Ardeidae
Rufescent Tiger-Heron, Tigrisoma lineatum
Great Egret, Ardea alba
Snowy Egret, Egreta thula
Cattle Egret, Bubulcus ibis
Green Heron, Butorides virescens
Boat-billed Heron, Cochlearius cochlearius

New World Vultures - Cathartidae Black Vulture, *Coragyps atratus* Turkey Vulture, *Cathartes aura*

Hawks, Eagles, Kites - Accipridae Black Hawk-Eagle, Spizaetus tyrannus Tiny Hawk, Accipiter superciliosus Crane Hawk, Geranaspiza caerulescens Snail Kite, Rostrhamus sociabilis Roadside Hawk, *Ruppornis magnirostris*Semiplumbeous Hawk, *Leucopternis semiplumbeous*Short-tailed Hawk, *Buteo brachyurus*Zone-tailed Hawk, *Buteo albonotatus*

Typical Owls - Strigidea

Tropical Screech Owl, *Megascops choliba* Spectacled Owl, *Pulsatrix perspicillata* Mottled Owl, *Cicada virgata* (HO)

Trogons - Trogonidae

Slaty-tailed Trogon, *Trogon massena*Black-tailed Trogon, *Trogon melanurus*Gartered Trogon, *Trogon caligatus*Black-throated Trogon, *Trogon rufus*Collared Trogon, *Trogon collaris*

Motmots - Momotidae

Lesson's Motmot, *Momotus lessonii* Whooping Motmot, *Momotus subrufescens* Rufous Motmot, *Baryphthengus martii* Broad-billed Motmot, *Electron platyrhynchum*

Kingfishers - Alcedinidae

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

Puffbirds - Bucconidae

White-necked Puffbird, *Notharchus hyperrhynchus* Black-breasted Puffbird, *Notharchus pectoralis* White-whiskered Puffbird, *Malacoptila panamensis*

Jacamars - Galbulidae

Great Jacamar, Jacamerops aureus

New World Barbets - Capitonidae

Spot-crowned Barbet, Capito maculicoronatus

Toucans - Ramphastidae

Northern Emerald-Toucanet, *Aulacorhynchus prasinus* Collared Aracari, *Pteroglossus torquatus* Keel-billed Toucan, *Ramphastos sulfuratus*

Woodpeckers - Picidae

Olivaceous Piculet, *Picumnus olivaceus*Black-cheeked Woodpecker, *Melanerpes pucherani*Red-crowned Woodpecker, *Melanerpes rubricapillus*Cinnamon Woodpecker, *Celeus Ioricatus*Lineated Woodpecker, *Dryocopus lineatus*

Falcons, Caracaras - Falconidae

Laughing Falcon, *Herpetotheres cachinnans* (HO) Crested Caracara, *Caracara plancus* Yellow-headed Caracara, *Milvago chimachima*

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*

Manakins - Pipridae

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) Blue Cotinga, Cotinga nattererii

Becards, Tityras & Allies - Tityridae

Masked Tityra, Tityra semifasciata

Royal Flycatchers - Tityridae

Sulphur-rumped Flycatcher, Myobius sulphureipygius

Tyrant Flycatchers - Tyrannidae

White-throated Spadebill, *Platyrinchus mystaceus* Scale-crested Pygmy-Tyrant, *Lophotriccus pileatus* Southern Bentbill, *Oncostoma olivaceum* Black-headed Tody-Flycatcher, *Todirostrum nigriceps* Yellow-winged Flatbill, *Tolmomyias flavotectus* Brown-capped Tyrannulet, *Ornithion brunneicapillus*

Yellow Tyrannulet, Capsiempis flaveola Yellow-bellied Elaenia, Elaenia flavogaster Mistletoe Tyrannulet, Zimmerius parvus Dusky Capped Flycatcher, Myiarchus tuberculifer Great Crested Flycatcher, Myiarchus crinitus Great Kiskadee, Pitangus sulpuratus Boat-billed Flycatcher, Megarynchus pitangua Rusty-margined Flycatcher, Myiozetetes cayanensis Social Flycatcher, Myiozetetes similis Streaked Flycatcher. Myiodynastes maculatus Suphur-bellied Flycatcher, Myiodynastes luteiventris Tropical Kingbird, Tyrannus melancholicus Eastern Kingbird, Tyrannus tyrannus Fork-tailed Flycatcher, Tyrannus savana Tufted flycatcher, Mitrephanes phaeocercus Olive-sided Flycatcher, Contopus cooperi Eastern Wood Pewee, Contopus virens Long-tailed Tyrant, Colonia colonus

Typical Antbirds - Thamnophilidae Fasciated Antbird, Cymbilaimus lineatus Great Antshrike, Taraba major Barred Antshrike, Thamnophilus doliatus Black-crowned Antshrike, Thamnophilus atrinucha Plain Antvireo, Dysithamnus mentalis Spot-crowned Antvireo, Dysithamnus puncticeps (HO) White-flanked Antwren, Myrmotherula axilaris Checker-throated Stipplethroat, Epinecrophylla fulviventris Dot-winged Antwren, Microrhopias quixensis Dusty Antbird, Cercomacroides tyrannina White-bellied Antbird, Myrmeciza longipes Spotted Antbird, Hylophylax naevioides Bicolored Antbird, Gymnopithys bicolor

Antthrushes - Formicariidae Black-faced Antthrush, *Formicarius analis*

Ovenbirds, Woodcreepers - Furnariidae
Plain-brown Woodcreeper, Dendrocincia fulginosa
Wedge-billed Woodcreeper, Glyphorynchus spirurus
Cocoa Woodcreeper, Xiphorhynchus susurrans
Spotted Woodcreeper, Xiphorhynchus erythropygius
Plain Xenops, Xenops minutus

Vireos - Vireonidae

Green Strike-Vireo, *Vireolanius pulchelius* (HO) Golden-fronted Greenlet, *Pachysylvia decurtata* Yellow-throated Vireo, *Vireo flavifrons* Red-eyed Vireo, *Vireo olivaceus*

Crows, Jays - Corvidae

Black-chested Jay, Cyanocorax affinis

Swallows - Hirundinidae

Bank Swallow, *Riparia riparia*Mangrove Swallow, *Tachycineta albilinea*Southern Rough-winged Swallow, *Stelgidopteryx ruficollis*Gray-breasted Martin, *Progne chalybea*Barn Swallow, *Hirundo rustica*

Gnatwrens, Gnatcatchers - Polioptilidae

Long-billed Gnatwren, *Ramphocaenus metanurus* Tawny-faced Gnatwren, *Microbates cinereiventris* Write-browed Gnatcatcher, *Polioptila bilineata*

Wrens - Troglodytidae

House Wren, *Troglodytes aedon*Ochraceous Wren, *Troglodytes ochraceus* (HO)
Rufous-breasted Wren, *Pheugopedius rutilus*Rufous-and-white Wren, *Thryophilus rufalbus* (HO)
Bay Wren, *Cantorchilus nigricapillus*Buff-creasted 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

Swainsons's Thrush, *Catharus ustulatus* Pale-vented Thrush, *Catharus obsoletus* Clay-colored Thrush, *Turdus grayi*

Goldfinches & Euphonias - Fringillidae

Thick-billed Euphonia, *Euphonia laniirostris* Fulvous-vented Euphonia, *Euphonia fulvicrissa*

Tawny-capped Euphonia, Euphonia anneae

New World Sparrows - Passerellidae Common Chlorospingus, *Chlorospingus flavopectus* Black-striped Sparrow, *Arremonops conirostris* Orange-billed Sparrow, *Arremon aurantiirostris*

New World Orioles & Blackbirds - Icteridae Yellow-billed Cacique, Amblycercus holosericeus (HO) Chestnut-headed Oropendula, Psarocolius wagleri Scarlet-rumped Cacique, Cacicus uropygialis Yellow-rumped Cacique, Cacicus cela Yellow-backed Oriole, Icterus chrysater (HO) Shiny Cowbird, Molothrus bonariensis Great-tailed Grackle, Quiscalus mexicanus

Wood Warblers - Parulidae

Louisiana Waterthrush, *Parkesia motacilla*Northern Waterthrush, *Parkesia noveboracensis*Black-and-white Warbler, *Mniotilta varia*Prothonotary Warbler, *Protonotaria citrea*Common Yellowthroat, *Geothlypis trichas*Blackburnian Warbler, *Setophaga fusca*Yellow Warbler, *Setophaga fusca*Buff-rumped Warbler, *Myiothlypis fulvicauda*Chestnut-capped Warbler, *Basileuterus delattrii*Canada Warbler, *Cardeliina canadensis*

Grosbeaks, Buntings & Allies - Cardinalidae

Hepatic Tanager, *Piranga flava*Summer Tanager, *Piranga rubra*Scarlet Tanager, *Piranga olivacea*Red-crowned Ant-Tanager, *Habia rubica*Red-throated Ant-Tanager, *Habia fuscicauda*Black-faced Grosbeak, *Caryothaustes poliogaster*

Mitospringid Tanagers - Mitrospringidae Dusky-faced Tanager, *Mitrospringus cassinii*

Tanagers - Thraupidae Blue-gray Tanager, *Thraupis episcopus* Palm Tanager, *Thraupis palmarum* Golden-hooded Tanager, *Stilpnia larvata*

Plain-colored Tanager, Tangara inornata Bay-headed Tananger, Tangara gyroia Silver-throated Tananger, Tangara icterocephala Green Honeycreeper, Chlorophanes spitza White-shouldered Tanager, Loriotus luctuosus Tawny-crested Tanager, Tachyphonus delatrii Flame-rumped Tanager, Ramphocelus flammigerus Crimson-backed Tanager, Ramphocelus dimidiatus Scarlet-thighed Dacnis, Dacnis venusta Blue Dacnis, Dacnis cayana Bananaquit, Coereba flaveola Yellow-faced Grassquit, *Tiaris olivaceous* Variable Seedeater, Sporophila corvina Yellow-bellied Seedeater, Sporophila nigricollis Buff-throated Saltator, Saltator maximus Slate-coloed Grosbeak, Saltator grossus Streaked Saltator, Saltator striatipectus

MAMMALS



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

Opposums - Didelphidae Common Opossum, *Didephis marsupialis* Central American Wooly Opossum, *Caluromys derbianus*

Anteaters - Myrmecophagidae Northern Tamandua, *Tamandua mexicana*

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

Silky Anteater - Cyclopedidae Silky Anteater, *Cyclopes didactylus*

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

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

Sac-winged Bats - Emballonuridae Proboscis Bat, *Rhynchonycteris naso*

Leaf-nosed Bats - Phyllostomidae
Orange Nectar Bat - Lanchophylla robusta
Seba's Short-tailed Bat - Carollia perspicillata
Jamaican Fruit-eating Bat - Artibeus jamaicensis
Common Tent-making Bat, Uroderma bilobatum

Tamarins, Capuchins, Squirrel Monkeys - Callitrichidae Geoffroy!s Tamarin, *Sanguinus geoffroyi* White-faced Capuchin, *Cebus capucinus*

Howler Monkeys - Atelidae Mantled Howler, *Alouatta paliatta*

Squirrels - Sciuridae Variegated Squirrel - *Sciurus variegatoides* Red-tailed Squirrel, *Sciurus granatensis*

Agoutis - Dasyproctidae Central American Agouti, *Dasyprocta punctata*

Raccoons & Allies - Procyonidae

White-nosed Coati, *Nasua narica* Kinkajou, *Potos flavus*

Weasels, Otters & Allies - Mustelidae Tayra, *Eira barbara*

Peccaries - Tayassuidae Collared Peccary, *Pecari tajacu*

AMPHIBIANS AND REPTILES



We were lucky to get a glimpse of this Parrot Snake at the Gamboa Resort. This species is venomous to prey, but the venom doesn't harm humans.

Photo by Stan Smith

True Toads - Bufonidae Forest Toad, *Rhinella alata* South American Common Toad, *Rhinella alata* Cane Toad, *Rhinella marina*

Glass Frogs - Centrolenidae

Plantation (Bare-hearted) Glass Frog - *Hyalinobatrachium colymbiphyllum* Fleischmann's Glass Frog, *Hyalinobatrachium fleischmanni* (HO)

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

Dart Poison Frogs - Dendrobatidae Rainforest (Striped) Rocket Frog, *Silverstoneia flotator* Green-and-black Poison Frog, *Dendrobates auratus* (CO) Talamanca (Striped) Rocket Frog, *Allobates talamancae*

New World Rain Frogs - Eleutherodactylidae Common Dink Frog, *Diasporus diastema* (HO)

Treefrogs - Hylidae Red-eyed Treefrog, *Agalychnis callidryas*Hourglass Treefrog, *Dendopsophus ebbractus*Rosenberg's Gladiator Treefrog, *Hypsiboas rosenbergi*Red-webbed Treefrog, *Hypsiboas rufitelus*Milky Treefrog, *Trachycephalus "vermiculatus"*

Tropical Grass (Foam) Frogs - Leptodactylidae Tungara Frog, *Engystomops pustulosus* Turbo White-lipped Frog, *Leptodactylus poecilochilus* Savage's Thin-toed (Foam) Frog, *Leptodactylus savagei*

True Frogs - Ranidae Brilliant Forest Frog, *Lithobates warszewitschii*

Pond Turtles - Emydidae Meso-American Slider, *Trachemys venusta*

Casque-headed Lizards - Corytophanidae Common Basilisk, *Basiliscus basiliscus*

Anoles - Dactyloidae Water Anole, *Anolis aquaticus* Green Tree Anole, *Anolis biporcatus* Slender Anole, *Anolis limifrons*

Hoplocercidae - Clubtails, Wood Lizards Dunn's Spiny-tailed Lizard, *Morunasaurus groi*

Iguanas - Iguanidae Black Spiny-tailed Iguana, *Ctenosaura simils* 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 - Teildae Giant Ameiva, Ameiva praesignis Central American Ameiva, Holcosus festivus

Colubrid Snakes - Colubridae Parrot Snake, *Leptophis ahaetulla*

Vipers - Viperidae Eyelash Viper, *Bothriechis schlegelli* Fer-de-lance/terciopelo, *Bothrops asper*

Crocodilians - Crocodylidae Spectacled Caiman, *Caiman crocodilius* American Crocodile, *Crocodylus acutus*



Although we didn't record Insects and Arachnids, we saw plenty. Would you believe that this is the larva of a Slug Caterpillar Moth in the Genus *Phobetron?*Photo by Howard Topoff









And we did have fun! Clockwise from upper left: Harpy Eagle Beth, Buttress Roots Elaine, Could that be Dunn's Spiny Lizard?, Guides Alex and Igua