



Herpetology at the Isthmus

14-22 June 2024

Trip Report

Day 1 – Friday, 14 June 2024

Guest Arrival & Orientation

Night walk of upper Semaphore Hill Road

We began our 5th Herpetology at the Isthmus program with Canopy by welcoming guests to the Tower. This year, our tour was led by Jessica (“Jessie”) Yates, a doctoral student at the University of Central Florida, with the help of Samuel (“Sam”) Sucre, a local amphibian biologist focused on the conservation of endangered frogs. Jessie, a herpetologist focusing on semi-aquatic reptiles, assisted the 2023 Herpetology tour and was pleased to return to Panama this year. Throughout the day, Jessie and Jorge (our Canopy guide for the Tower portion of this program) welcomed participants. After the guests settled in, they joined Jessie for appetizers and an introduction on the life-history of reptiles and amphibians and learned of the geological processes that produced the Isthmus of Panama. As everyone transitioned to the dinner table, the scurries and barks of House Geckos could be heard along the rafters.

After dinner, Jessie took everyone for a short hike along Semaphore Hill Road to observe the nocturnal behavior of herpetofauna. This hike introduced us to the music of the jungle at night– frogs and toads. As we hiked down the road, we noted the sounds of multiple species, including Tungara Frogs, Common Dink Frogs, and Rosenberg’s Gladiator Frogs. It didn’t take long for us to realize we were visiting Panama during the wet season, and our hike was cut short by the pouring rain. Despite the rain and mud, we were able to get a sense of the biological diversity we would observe over the next week.

Daily totals: 7 species, all of which were new for the tour.



Forest Toad (*Rhinella alata*) along Semaphore Hill Road.

Day 2 – Saturday, 15 June 2024

Semaphore Hill Road, Ammo Dump Ponds, Kent Marsh, & Gamboa Rainforest Resort
Night walk along Pipeline Road Trail

We began our first morning as a group on the observation deck at dawn. While enjoying some much-needed coffee on the roof, we were able to observe a variety of fauna, including Keel-billed Toucans and Green Iguanas. During this time, we noted the affinity of local primates (including Howler Monkeys and Geoffroy's Tamarins) to fruit offerings and their agility as they moved through the tree canopy. After breakfast, we were joined by Sam and headed downstairs to hike Semaphore Hill Road under drier conditions. By virtue of heading out early, we were able to see a mating pair of Sylvia's Treefrogs, which typically deposit eggs just after dawn. We began to notice the diversity of color and pattern in Forest Toads and observed our first Slim-fingered Rain Frog, a young individual. In addition to the herp diversity, we saw our first example of a Three-toed Sloth, a crowd favorite. After reaching the bottom of Semaphore Hill Road, Jorge was kind enough to give us a ride back up to the Tower, but not before we were able to see a Yellow-spotted Night Lizard that had taken up residence in a drainpipe opening.



Yellow-spotted Night Lizard (*Lepidophyma flavimaculatum*) along the edge of Canopy Tower.

Before lunch, Sam shared with us the pressures native Panamanian species face and his work on to conserve anurans. After lunch, we departed for Ammo Dump Ponds, just north of the city of Gamboa. Along the way, Jessie pointed out examples of Black Spiny-tailed Iguanas basking along the bank of the Panama Canal. After noting several examples of juvenile Green Iguanas and a quick look at a Giant Ameiva before it dashed away, we found our first crocodylian of the day– an adult Spectacled Caiman just over culvert. As we headed down the road and observed leafcutter ants hard at work, we were sadly reminded of urban pressures on wildlife, after finding a juvenile American Crocodile and Neuwied's False Boa dead along the road. Before leaving, we spent some time seated along the bank of the Canal, enjoying our view of basking Black Spiny-tailed Iguanas and Common Basilisks, and an adult American Crocodile out for an afternoon swim.

On our way to the Gamboa Rainforest Resort, we stopped by Kent Marsh, where we were able to listen to chorusing American White-lipped Frogs. Jessie and Jorge were able to get a quick look at a Savage's Thin-toed Frog before it dashed back into its burrow and out of view. At the resort, Jorge was able to briefly spot a Grass Anole as he and Jessie searched for a Keelback snake. We were able

to see many examples of the sexual dimorphism of Yellow-headed Geckos, and even got the chance to observe a Spectacled Caiman off the road.



Spectacled Caiman (*Caiman crocodilus*) at the Gamboa Rainforest Resort.

After dinner, we climbed aboard the open-canopied “El Tinamou” and departed for Pipeline Road Trail. Before arriving, Sam alerted Jorge to pull off the road after crossing the Canal. A quick trek around the marsh while listening to chorusing Tungara Frogs revealed a Gaige’s Anole and several examples of the unique Panamanian Humming Frog. As we finished our drive, Jessie spotted the diagnostic eyeshine of perched treefrogs along the road and we were able to get up-close looks at Red-eyed Treefrogs and a Masked Treefrog. While most of us were distracted by treefrogs and a House Gecko that hitched a ride on El Tinamou, Sam’s colleague and fellow biologist Makario pointed out a Cope’s Parrot Snake perched in the tree canopy. After a good look at the snake through the scope, we climbed back into the Tinamou and continued further along Pipeline road to the greetings of Howler Monkeys.

The parking location of the Tinamou allowed us to see tarantulas and a white, freshly-molted cockroach, before we made our way down to the creek bed. Despite drier conditions than we were hoping for, we were able to see examples of a Rhombic Cat-eyed Snake and a juvenile Common Basilisk– which decided not to demonstrate its ability to run on top of the water. After such a successful first full day, we climbed aboard the Tinamou and headed back for the Tower.

Daily totals: 26 species, 22 of which were new.

Day 3 – Sunday, 16 June 2024

Pipeline Road Trail, Old Gamboa Road, & Plantation Trail
Night walk in Plantation Swamp

After a restful night and satisfying breakfast, we headed back to Pipeline Road and, instead of taking the Tinamou deeper into the forest, we started our hike near the location of the Parrot Snake from the previous night. The weather was perfect for a scenic hike along one of the most famous trails to view central American fauna, and we were not disappointed. Such conditions were ideal for observing lizards, including basking male and female Common Basilisks, Panama City Anoles, and Green Iguanas. The sunshine peeking through the forest canopy also provided perfect conditions for observing Blue Morpho butterflies as we continued our hike. After a quick break with cool beverages and trail mix, we continued on the trail and Jessie decided to check out the creek bed from the night before in the hopes of finding a small crocodylian. While gone, some of the participants observed (and photographed) a Central American Ameiva. It was at this point we ran into some personnel from the Smithsonian Tropical Research Institute, who were conducting surveys for Panama City Anoles. We climbed back aboard the Tinamou as lunch was beckoning and headed back down the road, only to be interrupted by an impressive forest falcon spotted by Jorge.

Despite our stomachs calling us up to the 4th floor, Jessie corralled us to the Tower entrance with assurance that it would be worth it. While hiking Pipeline Road, another Canopy guide with herp experience, Erick, observed two Brown Vinesnakes near the Tower hummingbird feeders and was kind enough to hold onto one while we returned. After getting photos of the unique looking snake, Jessie attempted to release it onto a branch for some *in situ* shots. It turned out that the Vinesnake luckily had a better idea and instead followed the platform handrails back around toward the hummingbird feeders. Upon leaning over the railing and looking down at the forest floor (which other participants noted looked like a crew of seasick sailors), we noticed what likely was the second Vinesnake Erick saw earlier with an anole tail sticking out of its mouth! The perfect reminder that it was time to fill our own stomachs.

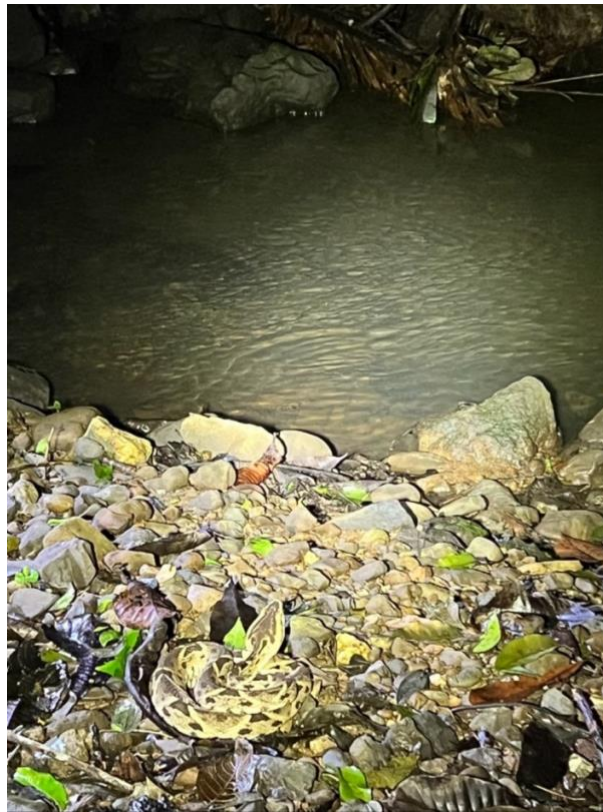


Brown Vinesnake (*Oxybelis aeneus*) at Canopy Tower.

After lunch, we headed out for a wet, muddy hike of Old Gamboa Road. Putting our ponchos and other rain gear to use, we first observed a resting Neotropical Green Anole on overhead branches. After an unsuccessful attempt of lassoing the lizard, Jessie headed up trail in the hopes of spotting a crocodile in Summit Ponds. Despite the lack of basking crocodylians, we were able to observe Common Basilisks and Sliders at the ponds. Further along the trail, we noticed sleeping Red-eyed Treefrogs perched on grasses. After observing a few beautiful examples of neotropical beetles and running into the Canopy birding tour, we headed back for the Tinamou. A quick break for drinks and trail mix was needed, and allowed us to observe a troupe of Howler Monkeys and even American White-lipped Frogs calling from a small puddle in a tire rut!

Upon drying off and a quick siesta, Jessie provided more information on the biology and conservation of snakes. We enjoyed a lively and delicious dinner before departing for our evening hike along nearby Plantation Trail. Before getting started, Sam's colleague and fellow biologist Melquiades, was able to share with us his passion for central American bats and a variety of species found in central

Panama. We began our hike to the songs of frogs, including Common Dink Frogs, Rosenberg's Gladiator Frogs, and Tungara Frogs. We could tell the hike was not going to disappoint, as immediately upon starting up the trail, we observed mating pair of Tungara Frogs and a Salmon-bellied Racer perched along trailside vegetation. We finally observed individuals of the glass frog group, with representatives of Tatayo's and Granular Glass Frogs demonstrating the variety in male signals and venter transparency. Back-to-back observations of a sleeping Bridled Anole and perched Turniptail Geckos allowed us to directly compare two of the most successful lizard groups side by side. After finishing our hike back to the Tinamou, Jorge called out to Jessie to alert her to our second serpent of the evening... an example of the highly anticipated Terciopelo/Fer-de-lance coiled along the edge of the creek! After some patience and assistance from Melquiades, Jessie was able to place the snake in a protective tube in such a way that we could observe the adult female up close!



Terciopelo (Fer-de-lance, *Bothrops asper*) at Soberania National Park.
Bottom image photographed by Jorge Pineda.

Daily totals: 22 species, 10 of which were new.

Day 4 – Monday, 17 June 2024

Plantation Trail & Natural Tanks

Night walk along Charco Trail

After a restful night, we headed back to Plantation Trail in the hopes of continuing our luck from the night before. The muggy morning meant anuran activity was high, including recently metamorphosed Savage's Thin-toed Frogs and Tungara Frogs. Sam spotted an example of parental care in Dart-poison Frogs, and we were able to get an up-close look at a male Talamanca (Striped) Rocket Frog carrying tadpoles down to the creek. As we hiked the trail and learned more of the trail's history from Jorge, we were able to enjoy the view of Blue Morpho butterflies in the sun beams through the tree canopy, a Two-toed Sloth, and a troupe of White-faced Capuchin Monkeys. The muggy morning quickly exhausted us, and we were ready for a shower and lunch break before our trip into the city.



Talamanca (Striped) Rocket Frog (*Allobates talamancae*) at Plantation Trail.

We piled into the van and headed into Panama City to check out Natural Tanks, where Sam breeds Panamanian amphibians to raise conservation funds. Here, we were able to observe many species of rare and critically-endangered amphibians, including Lemur Treefrogs, Horned Marsupial Frogs, and Morelet's Treefrogs. These observations led to many questions about conservation and amphibian husbandry, for which Sam was able to provide answers. Anxious to leave the heat of Panama City, we headed back to the Tower and had some spare time before dinner. A few of us joined Jorge and Jessie on the observation deck for guacamole and cervezas as we observed rainstorms roll into the city in the distance and enjoyed the feeling of cool rain drops before dinner.

For our night hike, we boarded the Tinamou for nearby Charco Trail, still located within Soberania. We were able to observe familiar Bridled Anoles, Green Iguanas, Red-eyed Treefrogs, Panama City Anoles, Granular Glass Frogs, Giant Toads, Tungara Frogs, and Common Basilisks, one of which was kind enough to demonstrate its ability to run on the water's surface. We also were able to observe new species, including Spiny Cochran Frogs and Stream Anoles. After observing mating pairs and calling Tungara Frogs, we headed back to the trailhead where we observed sleeping juvenile Green Iguanas as Jessie travelled downstream, following an adult female caiman.



Granular Glass Frog (*Cochranella granulosa*) at Charco Trail.

Daily totals: 19 species, 3 of which were new.

Day 5 – Tuesday, 18 June 2024

Transfer to Canopy Lodge & Lodge property

Night walk at Barrales Trail

Today was leisurely as we enjoyed our last morning at Canopy Tower. After a pleasant time on the observation deck and a delicious breakfast, we loaded up into the van to make the 2-hour drive to the Canopy Lodge in El Valle de Anton, nestled within the caldera of a former volcano. We stopped along the way for some supplies, before completing the drive to the Lodge. During the drive, Jessie must have been contacted by our Lodge guide, Eliécer, because upon arrival, she grabbed her snake supplies and instructed us to follow. To our pleasant surprise, a neonate Terciopelo was coiled next to the beverage fridge. Jessie moved the juvenile snake into better lighting for us to observe and photograph, before placing the animal in a tube so we could get an up-close look at the difference in tail color– which we learned is used by juvenile pit vipers in luring prey items. After Jessie released the small viper and we ate lunch, we enjoyed a quick siesta that included some exploration time, in which some of us observed Delicate Ameivas, Giant Toads, and Common Basilisks.



Terciopelo (Fer-de-lance, *Bothrops asper*) at El Valle de Anton.

Unfortunately, just as we were set to embark on an afternoon hike, a thunderstorm rolled in and we had to remain at the Lodge. We took the opportunity to unpack and catch up on reading. Later as we snacked on appetizers, Makario shared his thesis research results with us, describing new species of neotropical herpetofauna and demonstrating how the relative abundance of animals changes with altitude along cloud forest gradients.

For our evening hike, we loaded into the van and headed over to Barrales Trail. Upon exiting the vehicle, we were immediately greeted by the sounds of chorusing anurans, including Granular and Tatayo's Glass Frogs, Hourglass Treefrogs, and Tungara Frogs. Scanning nearby vegetation, we were able to observe examples of False Dart Frogs, Brilliant Forest Frogs, and Granular Streamside Treefrogs. Despite the abundance of diversity frogs and observing larval and adult leptodopterans, we were eager to see snakes. Makario observed a keelback that had slithered off into the vegetation. One of the participants, Aaron, demonstrated his snakey senses and after a quick trek up the trail, came back with an Ebony Keelback that exhibited gorgeous, iridescent scalation! Our luck for snakes continued, as Sam joined us with a Hoffmann's Earth Snake in hand, demonstrating the diversity of colors and patterns in the ultraviolet spectrum we are unable to see.



Granular Streamside Treefrog (*Smilisca sila*; left) and False Dart Frog (*Pristimantis gaigei*; right) at Barrales Trail.

Daily totals: 21 species, 12 of which were new.

Day 6 – Wednesday, 19 June 2024

Cerro Gaital Trail

Night walk at Canopy Lodge & Adventure

After enjoying our slumber to the sounds of Granular and Tatayo's Glass Frogs within the Lodge stream all night long, we enjoyed a lovely breakfast to the sound of Rainforest Rocket Frogs. We loaded into the van for Cerro Gaital Trail, an example of the geological formations from the volcano previously active in the valley. After exiting the van, Jessie investigated discarded construction materials around the bus stop and found a sheltering (yet no less quick) Delicate Ameiva. Our hike quickly provided examples of new and unique species, including shy Dunn's Spiny-tailed Lizards and endangered Vicente's Poison Frogs. As the group split up along different sections of the trail, some participants found a sheltered Panamanian Spiny Tegu and Sam and Eliécer found an Ibanez's Anole. As she attempted to capture a Spiny-tailed Lizard, Jessie noticed the forest floor was moving, changing— a bivouac consisting of tens of thousands of army ants was out foraging! Quickly stepping out of their way and moving the spotting scope, she was able to safely observe their hive-mind behavior. Once the group was reunited, we took a snack break while observing a resident sloth before heading out in search of Bush Anoles and Helmeted Iguanas. Despite not finding our target species of the stop, we were pleasantly surprised when Jessie caught a juvenile Werner's Sipo amongst the roadside vegetation.

A few of us decided to skip our afternoon siesta for a hike at Las Minas Trail, but we were unfortunately interrupted an afternoon thunderstorm. Our disappointment was short-lived, however, as Eliécer and Jessie soon showed us a hatchling Central American Coralsnake found at a nearby farm by Eliécer's brother. The snake was a favorite of both the herpetology and birding tours, and we felt grateful for the close-up example of an elapid snake.



Central American Coralsnake (*Micrurus nigrocinctus*)
at El Valle de Anton.

Our "local" hike of Canopy properties in El Valle tonight was extremely productive, as we heard and observed examples of previously encountered species such as Granular Streamside Treefrogs, Hourglass Treefrogs, and Giant Toads, and examples of new species, including Emerald Glass Frogs and Red-webbed Treefrogs.



Hourglass Treefrog (*Dendropsophus ebbacatus*)
at Canopy Lodge.

Daily totals: 21 species, 12 of which were new.

Day 7 – Thursday, 20 June 2024

Valle Bonito at Altos del Maria

Night walk along Cerro Gaital

After an early breakfast, we headed up into the cloud forest of the northeastern rim of the volcanic crater named Altos del Maria. Despite the beautiful views, we had mixed feelings of hiking this trail, as this was once the home of the Panamanian Golden Frog (now extinct in the wild) before chytrid fungus and human development eliminated the last known population at Altos. During our hike, we were able to observe the variety in color and pattern of Brilliant Forest Frogs and juvenile Giant Toads. The cloud forest was alive with more than herps, and we even observed an example of cordyceps fungus (which inspired the hit tv show *The Last of Us*) that had successfully invaded and killed a moth. After enjoying a lovely lakeside picnic lunch, Jessie went off in search of basking Ameivas along the lakeshore.

We packed up our picnic supplies and headed off to a second trailhead, which to our surprise, was blocked by a fallen tree. This extra portion of our hike was worth it, however, as we were able to additionally observe Delicate Ameivas, Panamanian Spiny Tegus, Red-webbed Treefrogs, and surprisingly even a tarantula and land crab sharing burrowed under the same rock! Sam descended the creek channel and alerted us to tadpoles of Lemur Treefrogs, a critically endangered species of anuran we had observed at Natural Tanks several days before. Satisfied with our time in the cloud forest, we climbed back into our 4x4 vehicles. Unfortunately, Sam and Jessie's vehicle broke down at the top of the hill, so they had to crown in with the others in the remaining vehicles.



Female Red-webbed Treefrog (*Hypsiboas rufitelus*) that felt the magnetic draw of our Herpetologist, Jessie, at Altos del Maria.

As we enjoyed appetizers, Jessie presented the final lecture of the trip, focused on the conservation of reptiles and amphibians, which prompted lively and passionate conversations about how to involve the general public and stakeholders in conservation discussions. After dinner, we prepped for our final night hike. We returned to Cerro Gaital, ready for an exciting night of herp activity. We were immediately greeted by examples of iconic Red-eyed and Masked Treefrogs and, while looking for examples of elusive dink frogs, saw a variety of scorpions, some even devouring prey! As Jessie promised, this site was perfect for snail eaters, and she bounded off with the help of participants to skillfully grab a perfectly camouflaged Blotched Snail-eating Snake foraging along vegetation hanging over the pond. Returning back to the trailhead, Sam and Eliécer were able to triangulate a male Yellow Dyer Rainfrog calling from epiphytic vegetation, while Jessie found Pygmy Rainfrogs and Chiriqui Robber Frogs. As we boarded the van, Sam found two examples of Slender Anoles on roadside vegetation. On our way back

to the Lodge, we stopped for one last chance for active Eyelash Vipers and, despite the lack of snakes, were pleased to find a sleeping fledgling Northern Emerald Toucanet and Chestnut-capped Warbler.



Masked Treefrog (*Smilisca phaeota*) at Cerro Gaital.

Daily totals: 21 species, 5 of which were new.

Day 8 – Friday, 21 June 2024

Candelario and Las Minas Trails; El Valle Amphibian Conservation Center, El Valle Serpentarium & Artisanal Market

Optional night walk on Canopy Lodge grounds

After much-needed coffee and breakfast, we boarded the van and rallied for one last morning hike. We started at Candelario Trail, observing skittering ameivas and a small example of a Pygmy Rainfrog. The trail was otherwise quiet herpetologically but was successful for the birding tour that we encountered along the trek. We decided to try our luck again at Las Minas Trail, hoping for better weather conditions. Here, we were immediately greeted by a juvenile Three-toed Sloth that was both inquisitive and eager to explore and test the strength of low tree limbs. Continuing up the trail, Jessie and Sam were able to observe many examples of Slender Anoles, and even one sneaky Bighead Anole. The recent rains seemed to be enough to satisfy local frogs, which had deposited their larvae in a shallow puddle along the trail. As we headed back to the trailhead, we caught one last look at a Neotropical Green Anole kind enough to remain still for all to photograph.



Neotropical Green Anole (*Anolis biporcatus*) along Las Minas Trail.

Upon finishing lunch, we headed out for some time exploring the attractions of El Valle, beginning with the El Valle Amphibian Conservation Center (EVACC). This center, run by colleagues of Sam, focuses on the conservation and potential reintroduction of Panamanian Golden Frogs, but keeps and displays other amphibian and reptile species native to Panama. Sam's presence allowed us to get a unique perspective on the operation, and we thoroughly enjoyed the opportunity to see such rare and iconic species. We then headed over to the El Valle Serpentarium, run by Mario Urriola, a local biologist and wildlife rehabilitator. We were able to observe many species native to Panama, not only the serpents for which the facility is named, but also a variety of lizards, turtles, crocodylians, and even mammals. This opportunity allowed us to confirm that we had seen a tayra skittering across Pipeline

Road in Gamboa days earlier. Finally, on our way back to the Lodge, we stopped by the local market with artisanal booths for a chance to do some souvenir shopping.

Before dinner, we joined Jessie for one last round of updating our checklist. It was here that, after determining our final tally, Jessie presented a final challenge to us: to find at least one new species to break the record for Herpetology at the Isthmus. Upon finishing dinner, a few of us joined Jessie for an easy walk around the Lodge property. In addition to observing more scorpions, Savage's Thin-toed Frogs, and Giant Toads, Aaron alerted us to our final new species: a Cloudy Snail-eating Snake! This beautiful, iridescent snake was the perfect conclusion to our program.



Cloudy Snail-eating Snake (*Sibon leucomelas*) at Canopy Lodge.

Daily totals: 10 species, 4 of which was new.

Day 9 – Saturday, 22 June 2024

Departures

Today we enjoyed the beautiful scenery and wildlife at the Canopy Lodge prior to our various departure times. We all thoroughly enjoyed the tour, observing and learning more about herpetofauna of Panama than we could imagine. Our thanks for Jessie and Sam for their enthusiasm and wealth of knowledge, and to our guides, Jorge and Eliécer. Overall, we saw 76 species of herps (36 species of amphibians and 40 reptile species), and a wide variety of neotropical mammals, birds, and other fauna. It was a memorable and fantastic program!

(Trip report written by Jessica R. Yates)



Herpetology at the Isthmus 2024 Tour group from left to right: Jessie, Aaron, Jane, Mike, Chris, Kelly, Dan, Eliécer, and Sam (with a rare and highly-desired pink boa).