



## Herpetology at the Isthmus

15-23 June 2025

Trip Report

### **Day 1 – Sunday, 15 June 2025**

*Guest arrival and Orientation*

*Night walk of upper Semaphore Hill Road and Canopy Tower*

Throughout the day, we welcomed all the participants of our 6<sup>th</sup> Herpetology at the Isthmus program to the Canopy Tower. The herpetologist, Dr. Stephen Mullin (“Steve”), was assisted by Jessica Yates (“Jessie”), a doctoral student at the University of Central Florida whose specialty is semi-aquatic reptiles. As participants arrived, we were able to point out a Rosenberg’s Gladiator Treefrog that had taken up a daytime roost near one of the hummingbird feeders by the sundeck. Before dinner, Steve and our guide for the Tower portion of this program, Jorge Pineda, provided an overview of the facilities. During this time, people were distracted by the House Geckos that scurried across the walls – this introduced species is effectively a co-resident of all Canopy facilities.

After dinner, we were joined by another guide, Iguá, and Rosanette Quesada, resident biologist and media relations director for the Canopy organization. She studies Opiliones, the group of spider-like arachnids that includes harvestmen and daddy-longlegs. As we strolled down Semaphore Hill Road to look for night-active amphibians and reptiles, she pointed out some of the amazing biodiversity of invertebrates. In addition to seeing several examples of Fitzinger’s Robber Frogs, Jessie was able to reach a lone specimen of Sylvia’s Treefrog. Although humid, the conditions were relatively dry, so the usual breeding activity of this and other frog species was somewhat muted. That said, we heard calls of Yellow Dyer Rainfrogs, Túngara Frogs, and Rosenberg’s Gladiator Treefrogs (perhaps the individual seen earlier had moved to a calling site). The hike also introduced us to examples of Giant Toads, Panama City Anoles, as well as a sleeping Neotropical Green Anole. Along the sides of the Tower, we also encountered several Yellow-headed Geckos, two Turnip-tailed Geckos, and a hatchling Green Iguana.



Rosenberg’s Gladiator Treefrog on Tower property.

Daily totals: 15 species, all of which were new for the tour.

## **Day 2 – Monday, 16 June 2025**

*Semaphore Hill Road & Ammo Dump Ponds*

*Night walk along Plantation Road Trail*

We started the day on the observation deck at dawn. While enjoying coffee and tea on the roof, we were able to observe many colorful parrots, honeycreepers, and toucans in the forest canopy. After breakfast, we hiked the length of Semaphore Hill Road in the hope of finding some herps within Soberania National Park. As we descended from the Tower, we were serenaded by many Rainforest Rocket Frogs, leaf-litter specialists that are related to the dart-poison frogs. We also spotted several Forest Toads and gained an appreciation for the range of color and pattern variation seen in this species. In the debris along the road edge, we found a couple of Central American Ameivas and few recent metamorphs of Savage's Thin-toed Frogs, one of which still a small nub of its tail. Unfortunately, the only snakes seen that morning were both road-killed specimens: a Night Ground Snake and a Keeled Forest Racer, the latter of which had probably been run over earlier that morning.

After lunch, we climbed aboard the open-canopied "El Tinamou" truck for a drive over to the Ammo Dump Ponds, just north of the city of Gamboa. A few hatchling Green Iguanas were spotted in the vegetation along an abandoned set of railroad tracks, but they were too wary to be caught with snare-poles. Most of the group had surveyed the tree line closest to the railbed, but Jorge pointed out an adult Central American Boa Constrictor that blended in with the leaf litter. Steve caught the snake, determined it as a female, but found it in poor condition. More than a dozen ticks were attached between its scales, and the skin was very loose along the length of the body. We decided to help the snake out, so Jessie applied some nail polish that irritates the ticks to the point where they drop off the snake.

We walked further along the roadbed that overlooks the marsh, encountering several Yellow-headed Geckos and hearing a chorus of American White-lipped Frogs. We also easily caught an adult Milky Treefrog because it had taken up an unusual daytime roost along a guardrail. The skin secretions from this animal felt like rubber cement adhesive. Just after Jorge used a spotting scope to show us an adult American Crocodile on the opposite bank of the canal, we observed a couple of juveniles basking in vegetation near the boat launch to Barro Colorado Island, the field station for the Smithsonian Tropical Research Institute (STRI). When moving to get a better look at these younger animals, Steve flushed out a Giant Ameiva. Both this specimen and a Black Spiny-tailed Iguana avoided capture using the snare-pole. As we drove back along the banks of the Chagres River, however, we spotted a several Black Spiny-tailed Iguanas basking along the rocky banks.

After Steve's lecture about the general herpetology of Panama and a delicious dinner, we drove down to the Plantation Road trailhead to search for nocturnal herps. Among the first of several frog species were Rosenberg's Gladiator Treefrogs and an adult Savage's Thin-toed Frog (considerably larger than the metamorphs we had encountered that morning). Persistence paid off with one well-hidden species, and we were able to locate an example of the Yellow Dyer Rainfrog that we could hear calling throughout the hike. We also observed several foam nests that had been deposited by Túngara Frogs in the small pools along the trail. A lone specimen of the False Dart Frog was initially confusing because it didn't present as showy a coloration as specimens seen at other sites later that week.

Daily totals: 25 species, 13 of which were new.

### **Day 3 – Tuesday, 17 June 2025**

*Pipeline Road Trail & El Charco Park, Old Gamboa Road/Summit Ponds  
Night walk in El Charco Park*

We had wrapped up this morning's breakfast and were preparing for our hike along Pipeline Road when Jorge alerted us to a snake that had just been spotted from the observation deck. Several bird species were mobbing a Central American Boa Constrictor moving across branches about 10 meters above ground level. From the 2<sup>nd</sup> floor staircase landing, Jessie pointed out a Green Iguana further down in the foliage. Before even entering the forest at Pipeline Road, Iguana and Jorge treated us to a great view of roosting Panamanian Night Monkeys. Not far into the hike, we observed a Bridled Anole, the largest representative within that lizard group. Initially, the other species seen that morning were nearly all frogs (e.g., Forest Toads, Fitzinger's Robber Frogs), but the diversity of reptiles improved when we reached the Juan Grande Stream. In addition to seeing a hatchling Common Basilisk race across the water surface, we were also treated to a good look at a female Western Meso-American Slider. That observation set the stage for Jorge's pointing out a Scorpion Mud Turtle in a small creek bed further down the trail.

After lunch at the Canopy Tower, we drove to El Charco Park, a managed parcel of Soberania National Park with a loop-trail that traverses along a tributary to the canal. The park ranger greeting us pointed out an adult Spectacled Caiman lurking in the water across the road from the trailhead. Shortly after beginning our hike, we observed a few Green-and-black Poison Frogs boldly hopping through the leaf litter. In addition to several of the common species (e.g., Panama City Anoles, Central American Ameivas), a frenzied group effort was required to capture what initially was thought to be a semi-aquatic snake. Upon closer inspection, we identified this wriggler as a small American Eel.

We then wrapped up the afternoon with a short hike along Old Gamboa Road. The first half of the hike along the northern half of the trail yielded subadult Giant Toads and hatchling Green Iguanas, and another chorus of American White-lipped Frogs. At the ponds on either side of the south trailhead, we spotted Common Basilisks and slider turtles, but couldn't definitively identify the latter species (even using the spotting scope). The surprise at the end of that afternoon occurred when Jorge discovered a Panama Humming Frog underneath a rock. This small terrestrial species hadn't been observed at this site during previous tours and is easily overlooked on account of its small size.



Panama Humming Frog at Old Gamboa Road

We returned to El Charco Park for that evening's night hike, and our expectations for plenty of frog activity were met. In addition to seeing Savage's Thin-toed Frogs and Yellow Dyer Rainfrogs, we heard choruses of Banded Rainfrogs and Granular Glass Frogs. We also caught (and re-caught!) a Slim-fingered Rain Frog near the swimming hole within the creek. Steve discovered a recent metamorph of a Green-and-black Poison Frog that had taken refuge

in the water collected in a void at the base of a tree trunk. A vibrantly patterned Turniptail Gecko was also seen along the walls of the entrance building for the park.

Daily totals: 26 species, 8 of which were new.

#### **Day 4 – Wednesday, 18 June 2025**

*Plantation Road Trail & Gamboa Rainforest Resort  
Night walks at Kent Marsh and Pipeline Road Trail*

After breakfast, we boarded El Tinamou and headed down to the trailhead of Plantation Road. Again, we were able to easily spot the results of Túngara Frogs breeding efforts with multiple foam nests in the puddles along the trail. We also were treated to our first sightings of Litter Geckos and Truando Toads, the latter being unique in having relatively few tubercles on its skin.

The highlight of that morning, however, was a young-of-the-year Terciopelo. Steve carefully moved the snake to the middle of the trail and allowed it to calm down under a dark cloth so that we were afforded a better opportunity to photograph it. Like several other species of vipers, the last 2 cm of its tail were greenish-yellow, in contrast to the more cryptic dead-leaf patterning on the rest of the snake's body. The tail coloration helps young snakes lure prey items within striking distance. Toward the end of the hike, we also found another vibrant example of the Green-and-black Poison Frog.



Litter Gecko at Plantation Trail

After lunch, we headed over to the Gamboa Rainforest Resort (GRR) property so that we could walk through the "Tierra de Ranas" exhibit. Within this enclosed habitat for dart-poison frogs, we observed several Strawberry Poison Frogs and Green-and-black Poison Frogs. The resort grounds provided examples of both Four-lined and Giant Ameivas, and a particularly healthy male of the latter species was snared by Steve and Jessie.

Given the manicured habitat, we were surprised both to find a few more examples of the Panama Humming Frog and, when examining one specimen, to have a hatchling Green Iguana land on a participant's backpack. Jorge also discovered a Rhombic Cat-eyed Snake under some debris adjacent to one of the buildings, and it tolerated our posing it on the twig of a tree prior to its release. Before leaving GRR and crossing back over the Chagres River, we spotted an adult Spectacled Caiman, the perfect segue to enjoying appetizers at the Tower and Jessie's lecture about the biology of crocodilians.



Spectacled Caiman at Gamboa Rainforest Resort

We drove back over to Gamboa for our last night hike at the Tower and were joined by Samuel Sucre, an amphibian biologist, and a couple of his associates. Our first stop was Kent Marsh, adjacent to the STRI research facilities. None of us were prepared for the levels of diversity and biomass inhabiting these wetlands, which included several Northern Spectacled Lizards that appeared to be out of their element moving among the marsh grasses. Among the 12(!) species of frogs observed were the iconic Red-eyed Treefrog, as well as Hourglass

Treefrogs and Yellow Treefrogs. Other animals evidently take advantage of these breeding aggregations because we caught two more Rhombic Cat-eyed Snakes and saw a spider halfway through making a meal out of a Yellow Treefrog. Jessie was in her element when catching a couple of juvenile Spectacled Caimans, and we were surprised to find a full-grown adult inching along a concrete drainage ditch of the adjacent road.

Our excitement was sustained over on Pipeline Road, where we walked along the bed of the Juan Grande Stream. We caught examples of Giant Toads, Banded Rainfrogs, hatchling Common Basilisks, and another Rhombic Cat-eyed Snake. All the while, we were serenaded by choruses of Granular Glass Frogs, Tatayo's Glass Frogs, and Common Dink Frogs. In the meantime, one of Samuel Sucre's assistants had set up a mist net which successfully caught a species of leaf-nosed bat. From the bridge that crossed back over the stream, Jessie spotted an adult American Crocodile.



Spider consuming Yellow Treefrog in Kent Marsh

Daily totals: 40 species, 14 of which were new.

### **Day 5 – Thursday, 19 June 2025**

*Transfer to Canopy Lodge & trails at Canopy Adventure  
Night walk at Canopy Lodge*

If anybody was dreaming of a leisurely morning before our commute to El Valle de Anton, those dreams were interrupted by the dawn chorus of the local troop of Howler Monkeys. Despite this early revelry, we enjoyed our last morning on the observation deck of Canopy Tower which included another sighting of the Boa Constrictor from the previous morning. We said our goodbyes to Jorge and the Tower staff and boarded the van for the 2.5-hour drive to the Canopy Lodge, nestled in forest of the northwestern portion of a volcanic caldera. Our arrival was announced by a chorus of Talamanca Rocket Frogs and we were met by Faustino Sánchez (“Tino”), our guide for the Lodge portion of the program. After Tino's excellent orientation to the Lodge facilities, we had nearly an hour to settle in before lunch. During this time, Steve and Jessie observed several Common Basilisks in the stream channel and a Scorpion Mud Turtle basking in the middle of the pond on the grounds.

We were joined by Danilo Sr. for our afternoon hike, heading uphill to the trail system at Canopy Adventure. Similar to our first find at the Tower, we observed a Red-webbed Treefrog resting motionless on the roadside vegetation. Once on the Canopy Adventure property, we also saw a Stream Anole and a Turniptail Gecko. Passing beyond the downstream end of Canopy Adventure, we hiked along the forest trail back to the Lodge. This provided our first observations of the Black-backed Frog and the Gamboa Worm Salamander.



Gamboa Worm Salamander at Canopy Lodge

Steve's pre-dinner presentation reviewed the advantages stemming from the absence of two hallmark traits of terrestrial vertebrates: no lungs in many salamanders and no limbs in several lizards and all snakes. During the meal, we started hearing several frog choruses over the background of the nearby stream. So little encouragement was needed to slip on our calf boots and headlamps for our return to the trails throughout Lodge property. Everyone had good looks at Hourglass Treefrogs, Yellow Treefrogs, and Red-Webbed Treefrogs, as well as an earful of their calls. Jessie pointed out a Drab Treefrog, and we were able to identify a White-spotted Glass Frog by virtue of its green limb bones. We discovered a few Masked Treefrogs availing themselves to a birdbath, and saw examples of Giant Toads and Savage's Thin-toed Frogs. Besides the House Geckos scaling the walls of the Lodge, the reptile species observed that evening was a Hoffman's Earth Snake found crawling along one of the paths.

Daily totals: 24 species, 9 of which were new.

## **Day 6 – Friday, 20 June 2025**

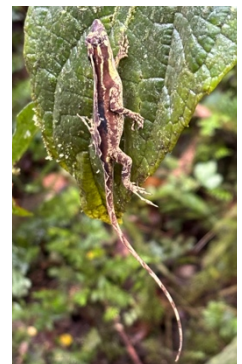
*Candelario and Las Minas Trails at La Mesa & Cerro Gaital Trail*  
*Night walk at Cerro Gaital*

This morning's activities included two hikes, the first of which followed the Candelario Trail along an ecotone, or edge habitat, between agricultural fields and secondary rainforest. We observed additional examples of Fitzinger's Robber Frogs and Black-backed Frogs, while also hearing plenty of Talamanca Rocket Frogs. About halfway along the trail, Steve was able to catch one of several hatchling Bighead Anoles.

Our second hike that morning covered the first 150 meters of Las Minas trail. Similar to Candelario Trail, this path follows the ecotone between a parcel of forest and an adjacent poultry farm. Danilo Sr. had seen a Central American Eyelash Viper when leading a birding tour several days earlier but, despite an extensive search of the moss-draped branches, we weren't successful in locating this iconic species.

Southern Tree Anole at Cerro Gaital

Following our lunch at the Lodge, we drove to the Cerro Gaital National Monument, a protected area along the north rim of the caldera covered in montane forest. En route, Jessie and Tino spotted a road-killed snake that yielded a surprise. The gut was exposed on this fresh specimen, so Steve donned a pair of gloves and extracted a hatchling snake of the same species. The injuries to the larger snake also revealed the copulatory organs – indicating it was a male – and using a cloacal probe, Steve determined the cannibalized snake was female. Steve and Jessie also collected length and mass data in case there are no previously published records of cannibalism in this snake species.



Shortly after starting our gradual ascent of the Cerro Gaital trail, we encountered our sixth anole species, a vibrant example of the Southern Tree Anole. Two other lizard species were added to our list on that hike: Panamanian Spiny Tegu and Dunn's Spiny-tailed Lizard. The latter of these was seen only through the spotting scope on account of being so skittish. Everybody was afforded much closer examinations of unique life-history traits when Steve found a male Pratt's Rocket Frog carrying multiple tadpoles on his back, and Eliécer spied a Golden-spotted Rain Frog tucked up under a clump of moss on a tree trunk.

Simon Harper, a graduate student specializing in arboreal salamanders, joined us for the nighttime survey of the Cerro Gaital trail. The conditions were ideal for amphibians, and we were delighted to see Red-eyed Treefrogs again. Although we didn't locate any salamanders on this hike, everyone adopted the demeanor of discrete voyeurs when we discovered two Clay-colored Rainfrogs in amplexus. The Panamanian Spiny Tegu was encountered under the same log where it had been found that afternoon. Steve also detected the delicate calls of two species of dink frogs. Upon our return to the Lodge, we were greeted by a more boisterous chorus from at least five different frog species around the water features on the property.



Clay-colored Rainfrogs at Cerro Gaital

Daily totals: 27 species, 11 of which were new.

### **Day 7 – Saturday, 21 June 2025**

*Watercress Trail at Los Berrales & Artisanal Market, El Valle Amphibian Conservation Center, and El Valle Serpentario*  
*Night walk along Watercress Trail*

Our hike this morning was located on a different face of the caldera slope, and ascended between patches of secondary rainforest and terraced wetlands used to produce watercress sprouts. Water diverted from an adjacent stream is used to irrigate the watercress operation, so we expected to find more amphibian species. Sure enough, we found several examples of Brilliant Forest Frogs, along with a couple of Talamanca Rocket Frogs and subadult Giant Toads. On our way back down to El Valle, we stopped briefly at the municipal water treatment facility to search for a few species that had been reported as occurring in the roadside vegetation. We detected a few individuals, but no new species were observed. Before returning to the Lodge, we stopped at the local market and artisanal shops in town, a great opportunity to acquire some souvenirs to commemorate our collective experience in El Valle.

In the afternoon, we visited two attractions in El Valle. Tino and Danilo Jr. first took us to the El Valle Amphibian Conservation Center (EVACC). This small facility is dedicated to the conservation of Panamanian Golden Frogs, a beautiful species endemic to the El Valle area. In addition to viewing a few representatives of this taxon, we perused the enclosures containing other herpetofauna, all native to the region. The EVACC's dedication to critical amphibian conservation was very apparent. Our original plans to hike a short trail behind that facility took a different turn upon learning that 50% of the sales from a recently established microbrewery were allocated to frog conservation efforts. Everybody enjoyed a refreshing *cerveza* and Steve even discovered a Giant Toad that had taken refuge in the beer garden.

Next, it was over to the El Valle Serpentario, run by Mario Urriola, a local wildlife rescuer. The facility has a primary focus on snakes, but our tour around the grounds introduced us to examples of several other reptile species.

Given what we had observed during the previous night hike, the lecture that Steve gave during the appetizer hour was appropriate in describing some of the variety in frog mating

systems and reproductive tactics. Following a delicious dinner, we returned to hike the Watercress Trail at night. It seemed as though we were surveying a different habitat because the number of species documented on that hike was over three times that observed that morning. Among the highlights were a Central American Ameiva, Truando Toads, and False Dart Frogs. We made a concerted effort to locate a male within a chorus of Granular Glass Frogs, but multiple individuals eluded us again. Jessie encountered a healthy specimen of the Gamboa Worm Salamander that patiently posed for photographs.

Daily totals: 24 species, 2 of which were new.

### **Day 8 – Sunday, 22 June 2025**

*Trails in Valle Bonito at Altos del Maria*

*Optional night walk on Canopy Lodge grounds*

This morning started auspiciously with the discovery of our 23<sup>rd</sup> lizard species outside one of the bungalows at the Lodge, a Humble Anole. Our hikes for the last full day in El Valle occurred at Altos del Maria along the outer slope of northeastern crater rim, the highest elevation site for the entire program. The housing development being constructed there is controversial, but the central Valle Bonito offers examples of relatively intact cloud forest. This region had been known to contain populations of Panamanian Golden Frogs, now believed extinct in the wild. Our first hike, initially along an undeveloped cul-de-sac where we encountered a few Panamanian Spiny Tegus, transitioned to a forest path that crossed a couple of small streams. We observed several tadpoles in the water, but could not diagnose them to the species level.

After a refreshment break, we began our second hike by following the shoreline of a small lake, hearing Talamanca Rocket Frogs and spotting another example of a Bighead Anole. Where the paved trail transitioned to a boardwalk elevated above the lake, Jessie pointed out the call of American White-lipped Frogs and egg masses of at least two frog species, one of which was produced by Red-eyed Treefrogs. As we turned into the forest, we observed a few examples of Brilliant Forest Frogs and subadult Giant Toads. The highlights for the day, however, were yet to come....



Frog egg masses at Lagu Bonito

Our deliberate pace slowed to a crawl in an area of the forest where Tino and Steve had previously encountered two Central American Eyelash Vipers. As Steve was describing those finds, Tino's keen eye located a striking representative of this iconic snake, resting on a slender moss-draped tree trunk less than 5 meters away. After multiple *in situ* photos, Steve carefully guided the snake onto a metal hook so that we could safely examine it in the brighter lighting available on the trail. Everyone was still discussing this exciting observation as we hiked further into the forest, when Tino called Jessie back for a "quiz." With little additional guidance, she was able to locate Tino's second remarkable find, a Helmeted Iguana, perched in a vertical orientation on a small tree. The unusual shape of the lizard's head helps it blend with the surrounding foliage.



Helmeted Iguana

Specimens at  
Altos del Maria



Central American Eyelash Viper

The rain that started to fall shortly thereafter certainly did not dampen our spirits, but succeeded in soaking most of our clothing and curtailed the activity of most of the herpetofauna for the remainder of the hike. A few frog species were calling back at the lake, but everybody was content to enjoy a belated picnic lunch under the shelter of a gazebo along the shoreline.

Steve's final lecture for the program focused on conservation, highlighting some of the key contributors to species loss in the Central American tropics, as well as other exemplary cases from around the world. We also recapped the day's sightings, memorable events of the tour, and indulged in a final evening of delicious appetizers, dinner, and some lively conversation. When not making a final effort to set eyes on the chorusing Granular Glass Frogs, we made sure to say our goodbyes to Steve and Jessie who were each leaving early the next morning.

Daily totals: 20 species, 3 of which were new.

## Day 9 – Monday, 23 June 2025

### *Departures*

This morning, we enjoyed breakfast whilst observing the nearby plant and wildlife specimens, soaking up as much as possible before departing the Canopy Lodge. A fantastic time was had by everyone, and we learned much about tropical herpetology. Our thanks to Dr. Steve Mullin and Jessica Yates for their enthusiasm and wealth of knowledge, to our primary guides, Jorge and Tino, and to the participants who joined us this year. Overall, we saw 75 species of herps — with a nearly-even split of 38 amphibian species and 37 reptile species — along with many other fascinating examples of animal, botanical, and fungal life. Suffice it to say, we experienced a memorable iteration of Herpetology at the Isthmus!

*(Trip report written by Steve Mullin)*

Photographing a Golden-spotted Rain Frog  
at Cerro Gaital

