

FROM THE “OL’ SOUTH” TO FARTHER SOUTH: KILLIES, MOLLIES, CICHLIDS, CHARACINS, AND KNIFEFISH IN HONDURAS



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(with assistance from Rudy Arndt and Fritz Rohde)

In March 2011, after a quick exploratory trip in 2008 by Fritz Rohde and Rudy Arndt, the three of us decided to make a return trip to Honduras. Fritz and Rudy went there in 2008 to visit a national park and potentially collect some killifish along the way. Fritz has an interest in *Rivulus* killies and we have (since then) spent significant amounts of time on trips to foreign lands chasing them. Doing an internet search on the fishes of Honduras, Fritz found that Wilfredo Matamoros, a PhD graduate of the University of Southern Mississippi and currently (2011) a post-doc at LSU, was from Honduras and had published a paper on the freshwater fishes of his country (Matamoros et al. 2009). Will's main interests were the Poeciliidae and their genetic relationships and he thought that there might be several undescribed species in Honduras. We made contact and Rudy decided to pay his travel expenses so he could join us on the trip and continue his studies of Honduran fishes. We would assist with the collections (he had a permit), take photographs to be included with his work, and see as many fish species as possible. What follows is a modified travel log maintained during the trip. It documents not only the ichthyological aspect of the trip but also includes observations on the culture and the country.



Figure 1. Honduras (<http://tdhontario.tdh.ca>).

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I arrived at the Atlanta airport early. As usual with every out of country expedition, I was excited and couldn't sleep. Fritz arrived shortly afterwards and later so did Rudy. The plane ride to San Pedro Sula (Figure 1), the business capital of Honduras, was short at about 3.5 hours, so we were up and down in no time. It was the roughest flight I've ever had, actually leaving my seat several times during the very turbulent first hour or so. However, we arrived in San Pedro Sula with no issues and cashed out \$140 US for lempira notes at a rate of 18ish per \$1. Rudy assured us that the random person patrolling the airport with a huge wad of lempira gave us a great deal. I've never traded money with a stranger in a third-world country and I am not totally sure it was the best idea both legally and financially. We found our rental pick-up truck and drove toward La Ceiba (third largest city in Honduras) on the Caribbean where we were to meet Wilfredo. We crossed many accessible areas with great water so I am looking forward to sampling there on the way back. On the way, we stopped and

Photos by the author unless otherwise indicated.

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Figure 2. Río Cangrejal.

bought some local produce, lychees, from a vendor near the small beach city of Tela, and manzanillas from a kid further down the road—both are tasty small fruits. We arrived at the Pizza Hut, our meeting place in La Ceiba about 4 PM, as scheduled, and were met by a guy who did not speak any English. He hung out with us for about 45 minutes and we were never sure who he was. At first, we thought he knew Will and was telling us to wait there for him. As it turned out, he was just a guy who helped people back out of parking spaces at the Hut for tips. Also, three kids who apparently only knew the English words “hungry” and “give me money” accosted/entertained us. They bothered us for a while and climbed all over our luggage while we waited. Finally, they gave up and ran off after an easier hit.

Will, with Juan Carlos, a local fisheries and large-mammal biologist, finally arrived around 4:45 and we were very glad to see them. It was getting close to dark and we had no Plan B if they didn't show. We followed them to Juan Carlos' house to get some supplies and then up a road that parallels the Río Cangrejal to a house owned by a gentleman named Pepe. I still do not have a firm grasp of who Pepe is, but his place is awesome: a villa right on the river with a caretaker family that lives in the first floor quarters. This Río (Figure 2) is a large mountain river with sections of whitewater over expansive exposed bedrock and known for its rafting and kayaking, similar to those of western North Carolina like the Nantahala or Chattooga.

After a quick tour of the premises and some unpacking, we went to a nearby very odd German restaurant/youth commune/outdoor outfitter called Omega Tours where I had a delicious dish of fish with fried plantains and rice. Our waitress was from California and had just arrived. She was there for five weeks to be a river guide and I guess to waitress to make money. She wants to be a nurse but plans to river guide again the following year if possible. I was struck by how many young, mostly foreign, kids were just mill-



Figure 3. Our truck and collecting gear at Río Belaire.

ing around at this place, literally in the middle of nowhere. While eating, a large butterfly flew into the outdoor hut we were eating in and it looked very much like a bat. Not to be outdone, a bat came in shortly after. We then returned to Pepe's for some planning and sleep. Our plan was to visit a nearby wildlife refuge in the morning, where there was a potentially new *Gambusia* species, similar to *G. nicaraguensis* (Poeciliidae). We were all very tired from our long day of travel so we decided not to get up early the next morning, then drive a few miles to a village, from which we would take a tiny narrow-gauge train to our destination.

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First, I had no idea it got this cold in Central America. I woke in the middle of the night freezing. Luckily, I found a blanket in the room and was able to keep warm. We started the day at the local Dunkin' Donuts. While eating, Juan Carlos received a call that the first train to the refuge that we had plans to visit had been robbed by armed bandits. Luckily, we chose to sleep in and catch the second. Since the police were going to keep the train tied up for some time, we changed our plan for the day and drove east towards Belaire where we sampled the Río Belaire (Figure 3) at the type locality for the cichlid *Theraps wesseli*. This was a clear-flowing stream that reminded me of ones typical of the Carolina piedmont. There were many fishes in the stream and we quickly found the *Theraps*, as well as two poeciliids, *Heterandria anzueto* and *Xiphophorus mayae*, which were a range extension for both. We also caught *Astyanax aeneus* (Characidae), *Rhamdia laticauda* (Heptapteridae), *Alfaro huberi*, *Poecilia* sp. aff. *gilli*, *P. hondurensis* (Poeciliidae), *Ophisternon aenigmaticum* (Synbranchidae), *Cryptoheros cutteri* (Cichlidae), and *Sicydium punctatum* (Gobiidae) (Figure 4). We were disappointed that we did not get any *Rivulus* since they had been taken in this spot on two prior occasions but there just didn't seem to be any suitable habitat this time.



Figure 4. Clockwise from top left: *Heterandria anzuetoii*, *Alfaro huberi*, *Cryptoheros cutteri*, *Sicydium punctatum*, *Theraps wes-seli*, *Poecilia hondurensis*, *Astyanax aeneus*, and *Xiphophorus mayae*.

We decided to try lower in the system, below where the Río Belaire entered the Río Papaloteca. This was a large site with easily workable areas that included sections of low flow and backwaters. We worked primarily the backwaters in hopes of finding *Rivulus*. We didn't get any but we did see *Atherinella milleri* (Atherinopsidae), *Belonesox belizanus* (Poeciliidae), *Amatitlania siquia*, *Amphilophus robertsoni*, *Parachromis loisellei*, *Vieja maculicauda* (Cichlidae), a possibly new and undescribed molly, and many of the previously seen species (Figure 5).

After this, we went to Ki'Bok Café, a local restaurant in La Ceiba that Will and Juan Carlos frequent. I had a watermelon juice and chilequiles, both delicious. The chilequiles were made with chicken but had lots of bones and cartilage in them. It was different but still very good.

We had hoped to get in one more spot but decided that it was likely too late in the day so Fritz, Rudy, and I headed to a nearby tributary to the Río Cangrejal that Will told us about. It was crystal clear and it had a perfect pool to snorkel in, though a bit cool. It was one of the most magnificent



Figure 5. *Amatitlania siquia* (top) and *Amphilophus robertsoni*.

snorkels I have ever had (Figure 6). There were thousands of fish, all in natural habitat. With the water clarity, it was like snorkeling in a very large aquarium. The eyes of the *Alfaro huberi* and the *Cryptoheros cutteri* glowed blue. The *Sicydium* gobies had pointed dorsal fins, and the fins of the dominant males were iridescent. They constantly displayed and chased each other. The *Theraps wesseli* almost looked like some of the eastern US bass because they were longer and more slender and had a row of large spots that formed a thick line on the side. There were also mollies and very large



Figure 6. Dustin snorkeling. (Photo by Fritz Rohde)

Astyanax. The tetras were the biggest I have ever seen, with many appearing to be over six inches long. We had hoped to get some video with Fritz's camera but for some reason it wouldn't work.

We planned to stop there again the next day for underwater video and photos. Fritz and I had dinner next to "our" villa at the River Lodge. The lodge is a whitewater rafting outfit owned by a Honduran man married to a Canadian. The mother of the Canadian was there and we got to hear the whole story. It was a nice place though a little confusing. When we arrived, we were more or less ignored for a while. We asked if we could have dinner and they said it would be ready in a half hour or so. As it turned out, they bring all the food at once and you get what you get. In this case, that wasn't a bad thing. We had a roasted quarter chicken served with rice and beans, a salad of sliced pepper, onion, and tomato, corn on the cob, and tortillas. Very tasty. The issue at this point was that we had no idea how much it cost or whom we should pay. We finally asked and it was a reasonable 300 lempira for everything.

On our return to Pepe's villa, we found an opossum that had been killed by a car. It was much smaller and darker than the species found at home but otherwise was very similar. I also glanced up at the sky then and the number and brightness of the stars was amazing. The uninterrupted darkness made for quite a display. Once back at Pepe's, the gate was locked and the dog was out. Luckily, we were able to crawl under the fence and the dog turned out to be friendly. Once again, we turned in early. The next day's plan included chasing another undescribed molly and the as-yet elusive *Rivulus*.

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This morning after waking we started out at the lodge next door. They didn't serve breakfast until 8 so we got a late start. Breakfast consisted of very dense pancakes and honey, with cereal available. Not exactly a typical Honduran breakfast. We left from there and drove on a rough dirt road up the mountain for some time. We reached a village where Will knew one of the people, also named Juan Carlos, with whom he had worked on occasion. He is a local and Will said if we had a local with us, we would have less chance of being robbed or vandalized. For this, we paid him \$30, apparently the equivalent of his three days' normal pay. He was eager to help and carried our electroshocker for us. This was no small feat since we had to hike, once we reached our destination, about a hundred yards down a steep trail through some foul mud/horse manure slurry to get to a creek, Quebrada Urraco. Hiking down wasn't so bad but later the trip back up with waders and a bucket of fish was a workout. The creek was very small and could easily be stepped over in a few spots. We did manage to get the fish we were after, a



Figure 7. Male *Rivulus tenuis*.

small *Poecilia* with a blotch in the caudal fin, rather than on the peduncle as is typical of the ubiquitous *Poecilia hondurensis*. It was more slender than the *hondurensis* as well. We hope that this is a new species and if so, Will, Fritz, and Rudy will describe it. I photographed the fish for use in the description if needed. The male did not want to cooperate but I think I photographed the necessary features. We also caught some very nice adult *Theraps wesseli* and I got photos of those too. Our photo tanks and equipment, as well as the fish, enthralled the local kids who had appeared.

One thing that struck me on the drive back down to the villa was that everyone carries a machete, men, women, kids, everyone. I rarely saw anyone chopping or anything chopped but they were always prepared. The other thing that was interesting was the number of livestock all over the road. There were pigs, chickens, geese, cows, and horses all over the place and we had to wait several times for the animals to make their way to the other side.

On the way down, clouds gathered and it started to rain. We got enough of a break to head to a rather foul location near La Ceiba where Will had previously taken *Rivulus*. We first tried a mucky ditch and got some possibly undescribed *Gambusia*, as well as *Phallichthys amates* and *Belonesox belizanus* (Poeciliidae). There was also a different looking *Poecilia*, which Will could not identify. Next, we tried a tannin-stained canal on the other side of the road. Here, I got my first mosquito bites of the trip. The biters were everywhere so I retreated and put on some spray, after which they generally left me alone. We caught a lot of *Eleotris perniger* as well as *Dormitator maculatus* (both Eleotridae) and a few other species. The *Eleotris* looked very much like *Rivulus* so I got excited when I got my first one, but after seeing the white belly and markings on the face, I knew it wasn't *Rivulus*. Eventually, I did catch the first *Rivulus*, a *R. tenuis*, of the trip (Figure 7). I was very proud of this until Fritz pulled one up a few minutes later. These were the only two we caught.

After leaving there, we went back to the same spot where we ate our late lunch the day before. This time I had the shrimp in garlic sauce that came with potatoes and veggies. It was also very good and I washed it down with a cantaloupe juice. We then went back to Pepe's villa to photograph

and sort the fish from the day. I was exhausted and got to bed early again. The next day we planned to head back east towards Jutiata to look for more *Rivulus* along the coast.

8 JAN 2011

This day began again at the Dunkin' Donuts where I could briefly have internet access. It actually is a good place for us since I can get a large coffee and an egg McMuffin for 50 lempira. Juan Carlos joined us and then quickly went off to whatever job he had for the day. We set out east past the town of Las Planes. We stopped at the Río Faust where we were greeted by an old man sporting an antique revolver on his side. It was a bit disconcerting to me but Will didn't flinch so I wasn't that concerned. The Río Faust was a sandy-bottomed, coastal plain stream with a few deep pools so the fish diversity was low. We did get one very nicely colored *Amatitlania siquia* (Cichlidae) and a huge *Synbranchus marmoratus* (Synbranchidae). We also got another range extension for *Heterandria anzuetoi*. We got our second *Parachromis* here as well, *P. managuense*.

After leaving, we decided to head to an area known as Sambo Creek to look for *Rivulus*. We stopped on the way at the Río Chiquito, right at the town of Jutiapa, and Will sampled with a cast net. We were hoping to see the red-finned molly that Fritz had seen there in 2008. We got the usual suspects, as well as a very nice *Amphilophus robertsoni* (Cichlidae) and lots of huge *Poecilia "orri"*, but not the red-fin. Will was not sure what the *Poecilia* were but thought that they most resembled *orri*.

From there, we headed towards Sambo Creek, a Garafina community. The Garafina are African in descent and are escaped slaves from the West Indies, which settled here in the 1600-1700s. We ate at a restaurant right on the beach where I had snapper filet along with a salad, rice, and fries. It was tasty but I am almost sure it was not snapper. It tasted the same as every other fish I had in Honduras. I took a few minutes while we were finishing up to check in with my wife in South Carolina. She told me about a winter storm moving in and that the forecast was for snow and ice in the coming days.

After lunch, we searched around and finally found ideal *Rivulus* habitat. We recruited a Garafina kid to help us and went to it. We caught many sleepers, both *Eleotris perniger* and *Dormitator maculatus*, but no *Rivulus*. After taking photos and cataloging the fish, we talked to the kid for a while. As it turns out, he works sporadically as a people smuggler. He helps move people at a rate of 30 or so a year from Central America to the United States. Just recently, he attempted to smuggle eight people. Five made it and three didn't. He also had a guy at his house that had had his leg cut off under a train while attempting to migrate across the border. I walked around to take some photos of the area and found a

plastic bag with a marijuana plant growing in it. This was a first for me.

After this, we stopped for the day and headed back into La Ceiba. We dropped Will off at the Ki'Bok Café to meet Juan Carlos. When we got to Pepe's house, we finally met Pepe, a middle-aged man of average stature and friendly demeanor. He is a consultant with the US government in some manner, as well as a tree farmer and self-proclaimed environmentalist. He is a very kind and generous man and he is interested in the preservation of the local area. He offered his villa to us at any time and he could help with permits for us in the future. We were to meet up with him at the Omega Tours/German restaurant later and he wanted to join us for some of our time the following day.

Dinner that night was interesting. Pepe asked that we provide an interview for the media exalting the fish fauna and natural splendor of the Río Cangrejal, for which there were plans to dam it and which Pepe did not want. He also suggested that we cut the day short the next day and take a kayaking tour down the river. We gladly participated in both, because we agree that the river and surrounding area is great and the float sounds good and that he has been very generous, providing us a week's worth of lodging gratis. We met Pepe at the Omega Tours area at a different spot. He was in a private bar area where we had to say we were meeting him in order to gain access. It was very nice with one table and a fancy couch. It also had a pool table and a dartboard and just felt very different from everywhere else in the country. I had the fish filet in coconut sauce with green bananas and rice. It was good but Fritz's chicken with spicy beans was really good. While we were eating, we noted that at the table behind us were Americans and they were discussing tagging dorsal fins. We talked to them for a while and found out that they were vet students from Cornell. The leader of the bunch was also good friends with Pepe. After dinner, we settled on a plan to head to the Cuero y Salado Wildlife Refuge the next morning, then possibly to a *Xiphophorus* site, and then back here by 3 PM to kayak the river.

9 JAN 2011

Once again, we started the day at Dunkin' Donuts but this time I tried the moyete: beans, cheese, and eggs on a small fresh hoagie roll. It was much better than I expected. I sent a few emails and then we headed to El Refugio de Vida Silvestre Cuero y Salado, which is 13,225 hectares of wetlands and coastline formed by the estuaries of three rivers, on the Caribbean shore.

The refuge was much safer now thanks to the recent robbery. There was a guard at the "station" and there were military police along with their assault rifles on the train with us. The miniature train had two cars powered by what looked and

sounded like a diesel car engine. The tracks were not in good repair to say the least and were not even visible in some areas due to the tall grass. The fifteen-minute ride took us through fields and swamps and over several questionable bridges. The ride was very pretty though, with tons of birds and butterflies. We rolled up into the end station to meet more armed guards with the naval police. There was a visitor center but it was essentially an empty room. There were no pamphlets, souvenirs, refreshments, or anything, which seemed a little odd. Will and Juan Carlos wanted to take a canoe over to the area we would be working but Rudy hesitated at the idea so we decided to walk. This was a very poor decision as it turns out. What would have been a fifteen-minute canoe ride turned into at least a half an hour walk through sand and carrying all of our sampling gear. By the end, I was tired, Fritz was beat, and I was concerned for Rudy's safety.

One thing that is odd here is the daily temperature cycle. During my time in Costa Rica, it was hot all the time along the coast and cool all of the time in the mountains. Here it is quite chilly at night and cool for a few hours after the sun comes up and a bit as the sun starts to go down. In the middle of the day, it is hot. We happened to make the trek to and from the area we worked, in the middle of the day so it was not all that pleasant. We did manage to get the *Gambusia* Will was looking for, but only females. He wanted living photos of it so I photographed the female. We also got our first *Agonostomus monticola* (Mugilidae) of the trip along with some marine species like *Caranx latus* (Carangidae) and *Evorthodus lyricus* (Gobiidae), and a new species of cichlid that was very nice, *Cichlasoma urophthalmus*.

On the walk back, Will told me a story about Juan Carlos. Apparently, he once got lost with a group in the jungle in an area called Pico Bonito for 11 days and survived by eating bugs and plants. After a huge rescue effort, they were found and then he got lost again a week later in Cuero y Salado, but I am not sure for how long the second time. Will said that he was the absolute last person you want to be your guide. Juan Carlos is an interesting guy though. He has many projects currently in progress. He tracks Jaguars and is active in the Honduran portion of a Jaguar passageway. He works a lot with coastal and estuarine species and has grants for various projects. He has an engineering degree from a Honduran school and is trying to get into graduate school in the states but his GRE scores are still a little low. This is solely due to his lack of fluency in English as he is very intelligent and dedicated to his study.

We made it back to the train loading area just in time to catch the departing train. Once we got back to the car, we decided to head on over to the *Xiphophorus mayae* spot that Juan Carlos wanted us to check out on the Río Zacate. We did end up catching it there, along with a very nice *Gymno-*

LA CEIBA Según los expertos la construcción de una represa en el río Cangrejal afectaría la comunidad de peces, por lo que se deben hacer estudios apropiados

Científicos encuentran nuevas especies de peces

FOTO: SAMUEL ZELAYA

■ Un equipo de científicos norteamericanos, junto a un hondureño, que desde el año 2005 realizan estudios sobre la diversidad de peces en los ríos del país, han descubierto unas 75 especies de animales vertebrados, especialmente en el litoral atlántico de Honduras.

Los científicos procedentes de Carolina del Sur, Norte y Nueva Jersey, realizaron sus estudios en los ríos Papaloteca, Lis Lis, Belaire y Cangrejal, así como algunas lagunas de la comunidad garífuna de Sambo Creek.

“El proyecto del río Cangrejal inició hace cinco años y la primera vez que venimos se pensaba que en el río sólo existían de tres a cuatro especies de peces pero se logró identificar más de 75 y se están encontrando más que son endémicas y no descritas para la ciencia”, dijo Wilfredo Matamoros, científico hondureño de la Universidad de Lousiana.

Al grupo se unió un técnico en toxicología forense de los peces que estudia el ADN y su composición química para detectar si tienen problemas de contaminación; además, el doctor Fred Rohde, de Carolina del Norte, que ha escrito dos libros sobre los peces de agua dulce de las Carolinas.

Biodiversidad

“Estamos sorprendidos por los descubrimientos hechos y la biodiversidad que se tiene en los ríos de Honduras”, explico Rohde.

El objetivo del estudio es poder determinar la relación entre los cambios ambientales y las comunidades de peces en los ríos para después ser publicado para la literatura científica.

“Se pretende elaborar una lista general de peces de agua dulce del país y una guía de los



En el refugio de vida silvestre Cuero y Salado han sido descubiertas para la ciencia en el ámbito mundial dos nuevas especies de peces.

SÉPALO

Con estos estudios se pretende elaborar un listado en general de las especies existentes en Honduras así como una guía de los que se pueden encontrar en el litoral atlántico en especial en los ríos de Pico Bonito, las que serán publicadas para los turistas que visiten el país.



En el grupo de científicos norteamericanos se encuentra un hondureño.

LO DIJO



“Me sorprende la biodiversidad que existe en los ríos de Honduras”.

Fred Rohde
Científico norteamericano

existentes en Pico Bonito y otras zonas del litoral atlántico”, agregó Matamoros.

Los expertos realizarán algunas investigaciones en el Jardín Botánico de Lancetilla en Tela, para posteriormente partir a elaborar los informes sobre la gira.

“Es un grupo que está estu-

diando la diversidad de especies de los ríos de la costa norte que tienen un gran potencial para la investigación científica”, dijo el ambientalista José Herrero, presidente de la Fundación Cuero y Salado.

El último aporte de los investigadores es el descubrimiento de

dos nuevas especies de peces en el refugio de Vida Silvestre de Cuero y Salado, “es un gran aporte de Honduras a la ciencia”, dijo el científico Juan Carlos Carrasco. □

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Figure 8. Newspaper article about our scientific endeavors.

tus cylindricus (Gymnotidae), (the first knifefish I have ever caught); they are such graceful animals. We also collected several other species previously seen.

From there, we hurried back to Pepe's in hopes of making the kayaking trip. We stopped in and saw Pepe's truck along with several other vehicles but no one was there so we decided to head up to the clear pool to snorkel again and get some video and photos since Fritz figured out how to use the camera. The snorkeling was great. The water was crystal clear and there were still tons of species there. I got some nice video and photos and enjoyed floating along for a while. Afterwards, we headed back to Pepe's. I decided to go down to the main river to snorkel for a while since we had a lot of daylight left and nothing else really to do.

There I saw some huge *Awaous* gobies (Gobiidae) as well as *Cryptoheros cutteri* (Cichlidae), very nice *T. wesseli*, *A. monticola*, *Poecilia* sp., *Sicydium* sp. and what appeared to be *Amatitlania nigrofasciata*, which would have been out of place there. While I was snorkeling, Pepe and crew came floating by. One of the guys had to go so they asked us if we wanted to join them. Fritz didn't want to but I did. It was awesome. Pepe was very patient in teaching me how to negotiate the rough areas and in the end just let me go. He said I did really well, but I would assume he says that to everyone. Regardless, I had a blast. I got to see the river from a different perspective as well as see things that you can't see from the road. I also got to ride through some pretty rough rapids and get wet. Afterwards, we headed back to Pepe's. On the way back up, while standing in the back of the truck balancing myself precariously against a kayak that was not tied down, I saw my first Morpho butterfly. It was huge, a brilliant blue and flitted away before I got to see it for long.

After we got back, we talked for a bit about the drug problems facing Honduras and most other Central American countries. One of the men with us, who currently lives in Atlanta, was in the Honduran air force at one time. He described all the planes and drug drops that occur on a daily basis here and how this is just woven into the daily lives of a huge portion of the population, both urban and rural. The collection and transportation of drugs accounts for a huge portion of the economy, especially in the rural areas.

After a bit, Pepe and the others left and we decided to go next door to the lodge for dinner. Tonight's fare consisted of a hunk of fish with rice and beans, potatoes, and a small salad. It was good though my fish filet still had what appeared to be a pectoral and a dorsal fin still attached. It was a little more expensive this time as well which leads me to believe the owner just charges whatever he feels like on any given night. We sat next to a Flemish couple from Belgium. They are travelers. They started travelling ten years prior and spent the first five years of that just travelling. The

last five years were spent doing six months at home and six months away. They do things on the cheap by camping and riding bicycles or buses for the most part. They have been all over including Africa, India, Asia, and all of the Americas and have spent substantial time in each place. They had interesting stories to tell so dinner was nice. Later, Fritz and Rudy packed up the specimens since this was to be our last night at Pepe's. The following day, we were heading towards Jardín Botánico Lancetilla, an active research station on the grounds of a former research station operated by the United Fruit Company, to spend the next two nights there.

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We started the day briefly at the Dunkin' Donuts before heading back to the Ki'Bok Café for breakfast with Pepe. I had the plata tipico, which is beans (refried with vinegar), scrambled egg, a rollup of ham (which tasted more like salami), a stick of cheese (like mozzarella), a dollop of crema (which looked more like mayo), and fried plantains. While there, we were interviewed and videotaped for the national newspaper and television. This was a very interesting event. A man with a camera and a video camera took video and photos of us and Fritz was interviewed using Will as a translator. They also interviewed Pepe. They are very interested in how hydroelectric dams will affect the fishes of the rivers since they are planning to start building dams across the country, including the Río Cangrejal. Fritz breezed through about an hour of interviews. We got a late start because of this so our day was relatively short. There was a TV story about this on the evening news (and an article in a next day's national newspaper) (Figure 8).

After leaving La Ceiba, we headed to the community of La Mosica to check a site with a previous collection of *Rivulus*. We found the town and the river but it was large and rocky without appropriate habitat so we kept going through town until we reached the countryside and found a smaller stream, the Río Santiago. This stream had a ton of vegetation and a very small pool in a sand bar about 50 yards downstream. The pool was beyond some barbed wire so we tried along the edges first. We got many fish including more *Xiphophorus* and *Synbranchus marmoratus*. I finally made it down to the pool and with one sweep; I had ten or so *Rivulus*. I made another sweep and got another ten or so along with multiple *Phallichthys*. I could have caught hundreds if I wanted to but we decided we had enough. After getting some great photos, we packed up and headed to our next spot.

We had a site in San Juan but decided to skip it. Will did not feel comfortable there and if he didn't, I certainly didn't. We drove through and it looked exactly like everywhere else we had been but there was no need to chance it. We drove on to the Río Coloradito where Fritz and Rudy had caught a few



Figure 9. Juan Carlos, Will, Rudy, Dustin, and Fritz

Rivulus on their previous trip. The water was lower than before and there wasn't much appropriate habitat. There were two pools that looked good but we only got *Phallichthys* and *Xiphophorus*. Will and I set out downstream to try some of the side vegetation. I found an area that was very shallow with some algae and made a couple of scoops. I caught one *Rivulus* on my first try and then two more. Will lost one when trying to transfer it to a small bottle but we still managed two from the site. I would like to note that out of the many, many *Rivulus* that we have taken to this point, Fritz caught exactly one.

We then headed towards Lancetilla for the night. Along the way, Rudy spotted a dead snake on the side of the road. As it turns out, it was a Fer de Lance. I have feared this highly venomous animal throughout all of my (later) trips to South and Central America. It was very strongly marked but its head was flat, which was a shame. It was beautiful but it was also crossing in an area that looked just like the last two sites we had sampled. It certainly makes you think.

We then looked for a gas station for something to drink. I had a pineapple juice and called my wife while we had time. She told me about the snow and ice they were having and the issues that Atlanta is having. Apparently, the winter storm has been severe and there is a possibility that the Atlanta airport will not be open when it is time for our return flight.

One thing I noted here while sitting in the car watching the guard at the door of the store wielding a sawed off shotgun is that maybe this isn't the safest country. I have seen more assault rifles, sawed-off shotguns, pistols, and machetes this week than I have in all the rest of my life. It is just an everyday thing here and people don't think twice. If your local police need to stand around in black outfits carrying assault rifles, maybe there is a small problem with crime. It appears, though, that these police officers are very easily bought and are just a show. [Editor's Note: In 2013 Honduras was named the most dangerous country in the world.]

We had to make it to Lancetilla by 4 PM so that we could get our rooms that were being saved for us before the Jardín Botánico closed. We passed by several lychee sellers because they didn't look very organized. I am hoping for better luck tomorrow. We then drove past a guard house and into the reserve.

It is a reserve and botanical garden with what appears to be a nice visitor center. We missed it today so we will try again tomorrow. We got our rooms that turned out to be small cabins that are connected. There are essentially three single beds packed into a small room and a small bathroom that has barely enough room to turn around in. It is clean though and has an air conditioner. The bathroom has hot water thanks to a Central American suicide bare-wired electric hot water heater. I am amazed that this is a viable solution for warming water but it is ubiquitous throughout Central America.

We moved our stuff into the room and walked down the road to the restaurant. Along the way, I saw my first live wild snake of the trip. It was a small slender snake with longitudinal gold lines and a white ring around its neck. I didn't know what it was so I trapped it under a rock and let Rudy decide whether to pick it up or not. He did, of course, and saved it to ID later.

We sat around the little local restaurant for a bit and then explored the Río Lancetilla in the park. We settled on heading to nearby Tela for dinner. On the ride back out of the Jardín we saw a Montezuma Oropendola, a very pretty bird with a yellow and black tail, and a toucan. Juan Carlos was meeting someone at the Maya Vista restaurant so we decided to go there as well. After a bit of directional confusion and Will having to ask multiple times where it was, we finally found it. It was a very nice restaurant and hotel atop a hill where you could see most of the town of Tela and the bay (Figure 9). I had the seafood soup, which was a coconut broth with shrimp, fish, lobster, yucca, and plantain, and a watermelon juice. It was very good and tasted sort of like my wife's curry though not as spicy. Afterwards, we headed back to the cabins for the night. We had turned the AC on in the little cabin before we left and when we returned it was cold.

Tomorrow we will check out Tela and the surrounding areas for the rest of Will's *Poecilia* work and for more *Rivulus* sites. We will probably only try for half a day and then spend the rest of the day sightseeing and packing. After settling in, I took the first hot shower I have had in Central America. It was not cool with the chill knocked off or lukewarm, but hot. Granted, I had to share it with multiple spiders, gnats, and other creepy crawlies, but it was worth it. Air conditioning and hot water—maybe this tiny dump of a room in the middle of nowhere wasn't so bad after all.

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Towards the end of every trip, I start to get a little homesick. This time it happened a little earlier. I would have been happy going home a couple of days earlier. I am not sure whether it is the fact that we have seen such little diversity here or because Sarah and the kids are out of school with snow and ice, but I am ready to go. Don't get me wrong, I have enjoyed the trip and would likely make it again if given the opportunity, but after some time you begin to miss the comforts of home.

We started the day with a typical breakfast of refried beans, scrambled eggs, cheese, crema, and tortillas. It was good except for a few small stones in the beans. I nearly broke a tooth twice. We left from there and went to Río Highland Creek. I know it sounds redundant, but that's what the sign said. Will wanted to get some mollies so he would have a known *orri* for his phylogenetic tree. We got *orri*, including a nice male. We also got *Awaous banana* (Gobiidae) and a pipefish, *Microphis brachyurus lineatus* (Syngnathidae), for the first time this trip.

After leaving that creek, we stopped by a nasty little ditch that flowed into the Río Lancetilla. It looked like decent *Rivulus* habitat but none were to be had. We actually didn't catch much of anything, except maybe cholera. Thank God for those vaccinations. We left empty handed and decided to call it a day.

Upon entering the botanical preserve, we decided to try a few of the small tribs that flowed right around the main area of the preserve. After a half hour or so Fritz caught one tiny *Rivulus* while I was sitting out and commenting on his technique. At this point, with some encouragement from Will, I decided to try to find some as well (Figure 10). In my first scoop, I caught five and ended up with at least 30 before I just stopped. In all fairness, Fritz caught a good many as well. After taking pics and packing the fish, we went for lunch at the local place. Like many other restaurants here, you don't really get a choice of what you get. If you want lunch, you get the lunch they are serving. Today's lunch consisted of a barbecued ham steak, rice, pinto beans, a salad of pickled vegetables, and some bowtie pasta with some mayo-type sauce on it served with tortillas. It was very good, except maybe the pasta.

After lunch, Rudy went for a nap and Will went to rest as well so Fritz and I walked around the gardens. We saw the plant that strychnine is derived from, the plant that quinine is derived from, and several others. We also saw a breadfruit tree and a huge kumquat tree. Afterwards, we went back to the room to get things packed up and ready to go the next day.

On my return to the states, I flew back into Atlanta. Atlanta was completely frozen over and many parts of the city



Figure 10. Pool at Lancetilla. (Photo by Rudy Arndt)

were inaccessible. I had to try several taxis before I found one that would take me home but he dropped me off several blocks away so that I had to walk up icy hills and through snow-covered streets while dragging my luggage.

Honduras is an interesting country. The people in the countryside were wonderful. They were eager to assist and always smiling and happy despite their meager lifestyle. The cities were a different story though. The omnipresent assault rifles and sawed-off shotguns were unsettling and I never felt completely safe and secure. Drug and human trafficking remain large portions of their economy. It is still a wonderland of fishes though. From the large cichlids and swordtails to the smaller jewels like *Rivulus* and *Phallichthys*, to the stream species like the *Sicydium* and *Alfaro*, there was something for everyone. The habitats, from coastal streams to mountain rivers, and associated species were diverse and reminiscent of my home state of South Carolina.

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