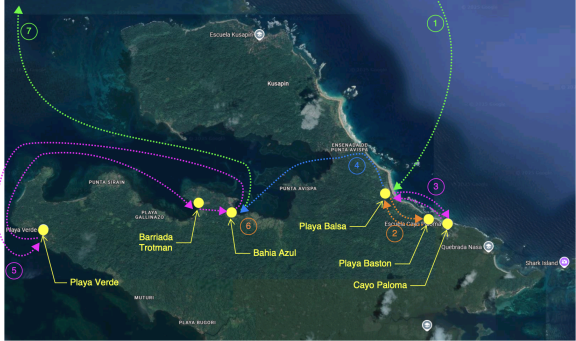




The Ñokribu is a land of staggering beauty, caring humanity and subsistence poverty. Protected from development, the Ñokribu is a small corner of the Comarca Ngöbe/Bugle--the largest of Panama's system of indigenous reserves. Maggie and I were lucky enough to have been volunteers there with the Peace Corps a decade and a half ago. When WEFTA offered us a chance to return and review the condition of various aqueduct projects (some of which we had worked on) we were elated. It would be our first time back to the comarca in over a decade.

Before the trip we mapped out a reasonable itinerary over land and sea. Six sites, ten systems, with stays in two villages over seven days. The first stay was in Playa Balsa, a postcard vision



on the Caribbean within walking distance of seven gravity fed aqueducts of vastly different sizes. Maggie Jones, who currently works for the city of Columbia, Missouri as a Stormwater Utility Engineering Supervisor, had been a volunteer in Playa Balsa from 2012 to 2014.

Our second stay would be in Bahia Azul, a town with a large secondary school and a very complicated aqueduct built with funds from the United Nations Millennial Fund and Operación

Panamericana. Bahia Azul had been the site of the legendary Peace Corps volunteer Louis Gram, known in these parts as Tolichi, who at the age of 72, was on his third tour in the Peruvian foothills of the Andes. When we reached out to him on Telegram he said he'd take some personal leave and meet us on the peninsula.

Maggie and I booked flights to Panama City. We overnighted in Casco Viejo and caught a 45 minute flight to Bocas the next day. On Isla Colón we found our boat driver in the central plaza and stashed our bags in his boat. I spotted a young man with a pushcart delivering supplies in the Cooperativo and asked him where we could buy bulk frozen chicken and proper rubber boots. He took us to the store where he worked and we bought a cooler, \$100 worth of frozen chicken, pasta, rice and soap for a big reunion in Playa Balsa. We then went to the hardware store for boots.



WEFTA had sent word that we would be arriving in mid March and when we landed on the beach Maggie was surrounded by the women and men of her community. They call her Osi. They gave her hugs and stood back and laughed and cried. Her host mom invited us to stay at her house--Chilo at his--and we were offered us a cup of *michila*: that beloved hot sweet coconut banana mash.

I felt I needed to let my community know that I had arrived. I left Maggie to catch up with her old friends and I walked barefoot two and a half miles to La Ensenada along the beach, over a landslide and through the jungle. Dugout canoes lined the path. In Nidori, Luis told me the aqueduct that we had built in 2012 had been washed away by a landslide in a big storm and the one they built to replace it didn't work.



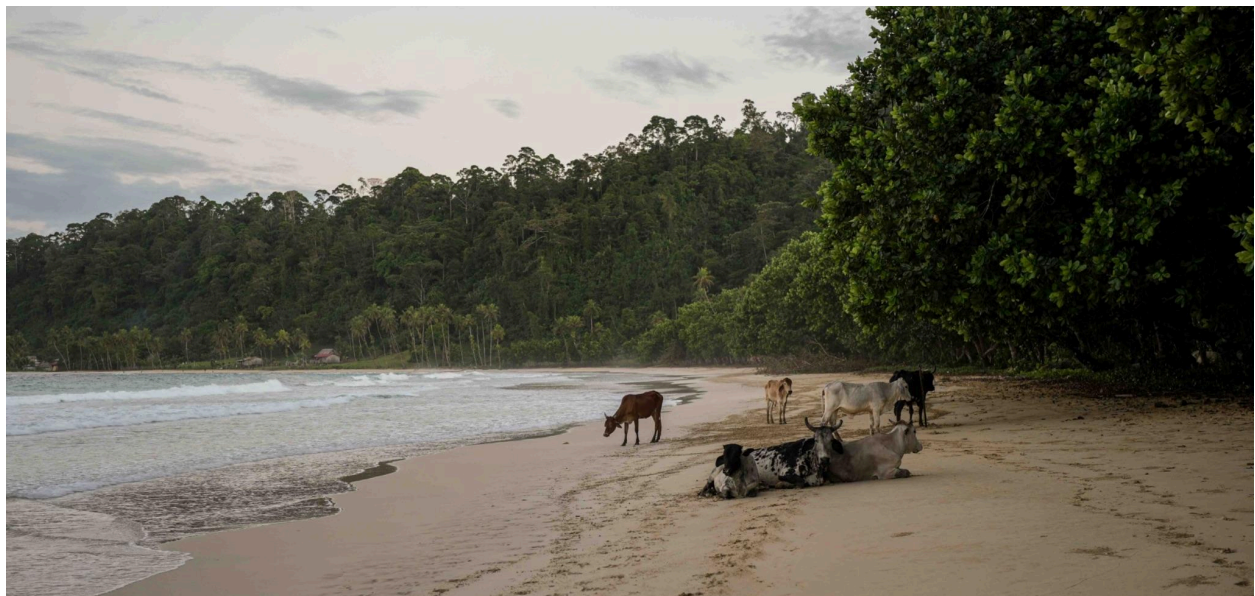
When I got to Ensenada and sat down next to Roda, she didn't recognize me. She tried to brush me off as if I was just another random gringo, but I kept talking and grinning and looking at her and waiting until she turned to me and narrowed her eyes and said, Chotri? She shook her head and yelled out for her daughter. Chotri is my given Ngöbere name.

We laughed and talked and Maxi showed off her children and I told them that I would be back after our work with WEFTA to introduce my daughter to the community and throw a reunion for the folks of Ensenada. Roda also told me they had a new sidewalk that meant I didn't have to walk over the landslide in Nidori. She warned me that *la gente*--the people--slip and fall on the sidewalk.



I visited old friends along the path and nearly slipped myself. I drank everything that was offered to me and marveled at the growth of their families. I told folks I'd be passing through in a few days and back with my daughter in a week or so--after our WEFTA work was done.

I photographed my way slowly back to Marilyn's house in Balsa along the beach. The cattle in their community were bedding down for the night. We hung up our hammocks, but Marilyn recommended Maggie bring hers inside because that side of the porch gets wet when it rains. In the night it rained and the wind blew and Maggie would have been soaked. I was fine on my side of the *patio* and very happy with my setup.



Day 2

“Fifty years of patches”

“Cincuenta años de empates”

– *Peligro*, describing the condition of the distribution pipes

Early in the morning I realized I had, what felt like, a proper case of giardia. I suspected as much because I’d had it before and I recognized the rumbling in my guts and the foul egg taste of my burps. I’m pretty sure it came from some street food I’d had for breakfast in Panama City. At that point I figured I’d just lose some weight and test the water quality by drinking from any and all water sources. Maggie, on the other hand, drank exclusively from her water bottle with a ceramic micro filter in it. She did not get sick.



Arrestedes “Chilo” William met us in the morning and eyed my new boots. He asked if I wanted to trade, because his pair was too big. I told him I’d think about it.

Boots are an essential bit of kit in the *Ñokribu*. The word itself means Rain-big-place. One misstep in the *swampo*--or a slip off the log--and you’re sunk like this cow, up to your thighs in muck. Good luck getting your boot back.

We walked to Cayo Paloma and arranged a reunion for tomorrow afternoon and a tour of their system. We also paid a dollar for Starlink internet access. I texted my wife and let Tolichi know we had arrived. The president of the aqueduct committee, Marcario “Peligro” Taylor, chased us down and as we waited for responses I asked him the series of questions from our report about the state of the water committee in Cayo Paloma.

He joked and said the PVC tubing was older than the president of the committee (which was himself) and that the distribution line was pretty much just a collection of fifty years of *empates*--homemade patches. We told them we’d be back after church services tomorrow for a reunion and a tour of the system.

Back to Playa Bastón, which has a community of around 80 people, and met a young Reinaldo Chichi--both the president of the water committee and its plumber. A voluntary unpaid position. The water committee in Playa Bastón is rather unorganized and no one pays fees. They don’t meet and they have no money saved. People not connected to the system use streams or holes dug in the ground for washing, cooking and sanitation.



"Hormigon" ferro concrete tank at Playa Baston with plomero

We inspected the water source--a small dam in the creek underneath a jumble of trees fallen from the recent storms. We visited the ferrocement tank built by the community and designed by Eta, the volunteer that followed up after Maggie. The tank was in good condition and I snapped a photo of Reinaldo triumphantly on top.

We then held a meeting which was attended by a dozen or so people and we took them through the next steps if they

were to try and ask WEFTA for support in the future. They seemed frustrated and a little disappointed that WEFTA wasn't going to come in and upgrade their system. But we told them that they have to organize and be ready to help themselves so that WEFTA knows its resources will make a lasting impact. Most importantly, they would need a stronger, well organized, water committee for WEFTA to work with. Without that, I explained, support was pretty much a non starter.

Folks in attendance talked and shared difficulties: because some homes have bathrooms and like to wash their clothes with system water whereas other homes have broken tubes or leave their taps on the water doesn't last in *verano*--which literally translates to summer--but here means a few days without rain at any time of the year.

When Maggie asked if they had any money saved up a woman admitted that they had used it to buy chocolate some time ago. We all laughed.

Our hostess had lunch ready at her house. Tolichi came walking up the path with three young men helping carry his gear. He had with him a small backpack, a new *cubo*--or a five gallon bucket--and wore new boots he'd bought a size too small because the hardware stores didn't stock boots for Texan sized feet.

And then we were off to Lago Rojo, the most arduous and difficult of the Playa Balsa waterlines. I complained to Tolichi on the walk along the beach that I might be a little slow because of my giardiasis. I wondered if it would last all week, but he said, "Don't worry Chotri, you'll probably be better by tomorrow."





The former water committee president of Lago Rojo, Enrique Williams, was ill and resting in a hammock. He was emotional at seeing Maggie and filled her in on the current state of the aqueduct and the lack of a water committee.

There were no funds for repairs, he said, and a landslide from recent storms had badly damaged the *toma*--the area where water is first collected before it goes to the tank.

Ebodio the plumber and a young boy guided us. After a mile of *swampo*, overtopped boots, lost trails and steep hills we arrived at the catchment--multiple springs capped in concrete that looked like fingers on a large hand. A fallen tree had cracked two of the concrete fingers and surface water was entering their system.



The committee was so impoverished that they couldn't afford even the most basic of parts, like a 90 degree pipe fixture or a section of one inch tubing. Osi found her name from when she had been a part of its final construction a dozen years earlier.



Why was there a piece of tubing resting on a cow on our walk back home? Who knew.

We ate a delicious dinner of coconut rice. Marilin apologized that there was no meat. Tolichi aired up his mattress and tucked himself in on the dry side of the porch and asked me if I'd trade boots with him because his were too small. He also asked if Peligro was still water committee president and hinted that he knew why Peligro

was called Peligro. We might want to ask. For a laugh.

Day 3



The weather continued to hold. We charged our batteries by the power of the sun and left our lovely little patio under the arc of a rainbow. Notice the typical kitchen sink setup with working tap and drain to a ditch behind the black plastic sack in the left hand window.

Chilo met us and I suggested he and Tolichi trade boots. Problem solved. Chilo guided us to the first of the three remaining water systems in Playa Balsa. Chilo served as representative because there was no water committee and took us first to Opidio's water line.

Opidio's system is in good shape and is a fine example of a well maintained aqueduct that serves twenty users. The spring capture system works well and the tank is holding up. Opidio cleans the system every three months or so. It does suffer from dry spells but Opidio pointed out that more houses were in the planning and that they would want to connect to the system.



Filesteo's system is also in good condition. It supplies another nine houses with water from a simple creek capture that needs constant cleaning. The tank is in good shape and never seems to go dry.



The third and most ambitious system, Macho Monte's, has not fared as well. While all of Playa Balsa's watersheds are well vegetated with little human disturbance, recent storms have toppled trees and sent large amounts of debris into the catchments and caused various degrees of damage. The Macho Monte system has collapsed.

The creek does not dry up, but a slide filled it with debris. The intake itself was full of mud, trees had fallen all around it and the line to the tank had been disconnected and abandoned. The original distribution design used a three inch line from the tank in an attempt to maintain water pressure, but this type of tubing is costly and fragile and livestock in the area had crushed it and it had not been replaced. The tank had been abandoned three or more years prior and whatever

tubing remained was removed and reused elsewhere. When the system was built, all the houses were connected, but in the time since, other houses have been built and now only one has water.



The other fifty or so people have gone back to looking for water in the creek or digging small holes that fill when it rains.

A simple one inch distribution line directly from the *toma* itself didn't seem feasible because someone would have to regulate water usage by certain houses lower down in the system and no one wanted that job. They sincerely wanted the tank reconnected, but that would take a complete hydraulic redesign and a reconstruction of the distribution system with smaller and more durable tubing.

After lunch we walked back to Cayo Paloma and held the reunion before heading up to visit the system. This community is well organized and recognizes the value of having water in their houses. They are proud of their system and their ability to maintain it. The operator had come with specific information on their population (285 souls) and the number of houses served by the system (56) with another half dozen houses without.

The committee charged fifty cents a month per tap and people paid. That afforded the community two plumbers at a salary of \$10 a month. They were concerned that there wasn't enough water during *verano*--the dry spells that rarely last more than a week--and during that time the operator typically shuts off the system and lets the tank fill.

We walked up to the head of the water catchment and it was clean and well vegetated. The spring box is large, old and leaky. A new spring box would help. The 3,000 gallon ferrocement tank was built in 2014 by the community with design guidance from Eta and Tolichi. The tank was in great condition and pride of construction was shared by both the community and Tolichi himself.

We asked why Peligro was called Peligro and it sent everyone laughing and ducking for cover. Oh, they said, waving a hand in front of their faces as if something smelled bad, You don't want to know.



Of course the community would like a larger tank. Maggie suggested that fixing the spring box to prevent leaks might help the tank fill faster.

MINSA, the Ministry of Health, had stopped providing chlorine tablets to treat the water.

We explored a second spring source on Marcario's land. The spring is at a lower elevation than the existing tank and would therefore require another distribution system that could help the other side of the community that does not have water in their houses.



On our walk out of town Marcario asked me to take and edit a video of the dire state of their school. The storms had blown the roof off of their schoolhouse and the children no longer had classes. He made an impassioned plea to send support to rebuild their school's roof so the kids could learn. Many folks in the comarca were upset at the lack of government support during this current administration--from the lack of chlorine tablets to the neglect of the education infrastructure, it was a refrain we'd hear over and over again.

After Cayo Paloma, we walked back to our host mother's house to wash up and get ready for the



reunion in Playa Balsa. Charles Walker, known as Sili, was the first beloved volunteer in Playa Balsa and he had entrusted me with the \$100 for food and supplies to throw a reunion for the community. The food was ready when we got there and dozens of people were waiting.



After thanks was given and Sili's letter was opened, talk turned to when they might see some support for their aqueducts. I gave them my speech about how strong water committees were in a better position for strong support. Without a strong committee to keep up with the contacts, organize the work and make sure the systems were maintained, WEFTA wouldn't even be able to provide support. How were they going to contact the water committee if there wasn't a water committee to contact?

The group seemed disappointed. They had no functioning water committees.

Tolichi and Maggie hashed out a plan to send some of the smaller items--a section of tube and a couple of elbows--things that could make an immediate impact. He told them he would arrange to deliver the supplies when he returned to Chiriqui Grande to help soften their disappointment.

But they also realized they needed to take some action. Two groups voted to form two separate water committees: one for Lago Rojo and one for the other three systems we had visited today.

My optometrist had generously donated 25 pairs of reading glasses and I handed them out to the older women and men at the reunion. A woman put a pair on and threw her hands in the air and jumped up and down like a little kid. I had given one pair to my host mom the day before, and she had been overjoyed. Her daughter brought out her copy of the bible and when she opened it she realized she could read again and she shook her head and let out an audible sigh of gratitude and reached out and touched my hand.

A group gathered on Marilyn's porch after dark. Maggie and Tolichi cleaned up all of the day's technical notes and compiled a list of parts to send to Chilo by electric lamp light. A tailor followed up on a to claim a pair of promised reading glasses. Hot boiled chocolate was served. A minister said a few words of thanks and appreciation and read a short passage from the bible by the light of his flashlight.



Day 4



The dry weather held. Laundry hanging from lines everywhere. We packed our bags and walked the new sidewalk over the hills and across the new boardwalk over a treacherous stretch of *swampo* to La Ensenada. By now we were known and we stopped again and again to chat with folks on their porches, or people walking down the beach, on the sidewalk, or swinging from a hammock under their houses. Children peaked out at us from gaps in the siding.

In Ensenada I was stopped by Doña Delphina--a loud matriarch that speaks in a rapid-fire *dialecto* with a brash sense of humor and an easy laugh. We joked and laughed and Maggie and Tolichi walked on ahead. I mentioned that we needed someone to paddle us across the bay and she volunteered her grandson.

I ambled up to the dock a half hour later and told them we had a boat. School was in session and the kids peered out from their classrooms at us. I joked with Roda that I might have to “borrow” an additional dugout from some of the school kids while they were in class to paddle myself across the bay--just like folks used to “borrow” with my dugout canoe back when I lived

there. Two boys that paddled Tolichi and Maggie across agreed to bring whoever's boat I had "borrowed" back before school let out. I hoped they'd never even know.



Bahia Azul is Tolichi's territory. He has deep roots in the town. A close family of his set us up in a house in part of their complex. It was not photogenic, but it came with love.

We were shown to their family latrine: a ramshackle hut of rust holed tin and cast off boards with sack cloth for walls where the tin didn't suffice. The door was held shut by a twist of twine and a bare white toilet bowl somehow balanced on muddy boards placed directly on the red earth. There was a spigot connected to a pipe from a spot unknown over a plastic basin for the brown water to pool in and the bottom half a white plastic jug roughly cut off and floating on its surface used to throw water on yourself or pour into the toilet to flush it into the quebrada. With my giardia still kicking it looked perfect to me. And it was.



I sourced some johnnycakes and a tin of "fresh fish" from the corner store--which I thought was tuna but turned out to be ground sardines. Mixed with some mayonnaise and salt and pepper it was a bit more edible than canned catfood.

We put on our boots and got to work.

Ornesimo Record is the vice president of the water committee in Bahia Azul and he estimated that the system served between 600 and 800 people not including the teachers and students at the high school. The committee collects one dollar per month per tap and uses the money to pay the operators, the money collector and to buy materials like glue and fittings. Bahia Azul's is by far the largest of the systems we would survey.

Even so, people still needed to set up bathing and washing stations in creeks or from springs. The operator often had to close the system to allow the tanks to fill. When there isn't drinking water available from the aqueduct, people reverted to using the creek water for cooking.



Typical supplemental washing station in village



Typical quebrada washing station with bathers

Ornesimo took us past the end of Bahia Azul's sidewalk and along sections of the distribution line where the pipe runs through swampy terrain and substantial leaks and breaks caused by livestock often go undetected. On top of the hill we came to the committee president, Esua Hooker's, house. He wasn't there, but a few minutes later he came walking up the hill dripping wet, a diving mask and snorkel dangling from his hands.



Water committee president's house with spare tubing stored underneath



We walked to the top of the system which was completely rebuilt in 2012 by La Organización Panamericana de la Salud (OPS) with funds from the United Nations Millennium Fund. It was an overbuilt and over-complicated catchment that Tolichi had argued with the engineers about while they were building it in 2011. Esua had largely bypassed their work with a single, two inch line and an earthen dam that compensated for failures in the OPS work.



The original design had a three inch line from the intake structure to the reservoir tank, but it was sucking air and causing issues, so he reduced it to two inch tubing. There are two automatic Air Release Valves along the route from the intake to the tank, and neither are working, but a hole with a wooden plug suffices. The sand filters failed upon installation back in 2011 and had been abandoned. MINSA no longer supplied chlorine tablets.

As we walked back to the tanks--which are both well constructed and in good condition--the president explained that the original design had eliminated the old tank in favor of the new 8,000 gallon one, but he realized if he could invent a way to fill the old one too the town would have an additional 4,000 gallons of water storage.



As we took our final notes, the effectiveness of his invention revealed itself. The new tank topped out, overflowed into two tubes and the overflow ran directly into the old tank.

Maggie and Tolichi recommended that they check and see how full the tank is in the early morning prior to opening the valve for the day. If the tank is not overflowing, it likely means the inflow is not sufficient and they need an additional water source. If the tank is overflowing, it likely means the flow is sufficient and they may need to reassess their volume of storage.

Furthermore the operator could leave the valve open at night and see if the tank fills. If it fills, it likely means the distribution system isn't losing much water overnight. If it does not fill sufficiently, there is likely a major break (or just an open faucet) in the distribution system.



Day 5

“Water is something primordial.”

“El agua es algo primordial”
--*Aurelio Smith*



We arose before daylight. Maggie called out in a tone that meant something was definitely not right. I bolted into her room. There were drops of fresh blood all over the floor. It was her toe and it wouldn't stop bleeding. The sheet at the foot of her bed was soaked in blood too.

Vampire bats are small--smaller than a mouse--and they bite tiny holes in livestock or other mammals, like Maggie, and then spit an anticoagulant into the wound and lap up the blood as it flows out. That was why her toe refused to stop bleeding.

As horrifying as this is, these bats don't generally pose health risks to their victims. And because Maggie is hard core, she just washed out the anticoagulant, stuck on a bandaid, pulled on her boots and said she felt bad for ruining their sheets.

At the dock a scrum of boats pulled in to pick up passengers like us, but we were waiting for a particular boat Tolichi had coordinated that would drop us off at Playa Verde and then pick us up on their return from Chiriqui Grande and ferry us to Bariada Trotman. We could walk over the hill and through the woods from there.

In Playa Verde I asked the man sitting in a small store on the beach if he had any coffee. I explained who we were and he lit up and said he was expecting us! He'd make us coffee. Please, take a seat. He was Aurelio Smith, the ex-president of the water committee.



As the sun crept over the mountains and lit up the palms, children walked to school and we drank coffee and talked about the importance of water and the difficulties of getting folks organized. He told us the committee was no longer functioning. He waxed philosophical and profound and outlined the most basic challenges facing his community.

Our conversation lasted two pots.

He recommended his grandson, Jairo, to guide us up to see the two tanks that had long ago been abandoned. Jairo guided us up around the church, over a hill covered in pineapple plants, under an old woman's house, down across a swamp, onto a beach where a man was carving a



dugout canoe with nothing more than an axe and an adze and up along a well trodden jungle path that went to the next village.

The two tanks we came to looked like something out of a Raiders of the Lost Ark movie: abandoned and covered in lianas. He didn't know where the actual toma capture site was and didn't seem interested in finding it. We explored the stream and checked it for flow. In the distance hounds called back and forth to their masters as they hunted lowland paca for dinner.



The ex-president fed us a delicious rice and chicken lunch at his house and then we led ourselves to inspect a rainwater catchment system on the other side of town built by Eta and Tolichi a dozen years earlier. It too had been abandoned.

The tank was still in fine shape, but the *rancho* that had been built to harvest the rainwater had fallen over and never been rebuilt. The tin roof of a nice house a dozed feet away would have provided plenty of water, but no one was interested or had the material to hook it up.

Our lancha arrived and we motored around Punta Toro. Aptly named for the waves that ricochet off the point in the worst weather and where the rough water sometimes sink boats like ours.



Mario Baker met us in Barriada Trotman and took us up to an artesian spring the community has used for generations. As part of a Peace Corps project in 2016 a concrete spring box was placed atop the spring, with an outlet tube conveying water directly to a distribution network to the houses below. But the outlet tube broke away and now water just spills into a stream where it pools and is collected in several different tubes by a small dirt dam.

The water committee is minimally effective. Mario Baker is very motivated, but there is no one else on the water committee. There is no operator. People like Mario volunteer their time as problems arise. The community has not collected fees since January 2023 and has been hit-and-miss about paying their monthly fifty cents.

As we inspected the spring a woman filled a bucket with water and carried it on her shoulders back up to her house. The community wants to get their water committee started again.



Mario noted he would set up a community meeting for everyone to discuss next steps.

On the other side of Trotman Bay, is another aqueduct set up by Toribio Rolet in the cacao plantation he tends above his house. We borrowed dugouts and paddled around the mouth of a mangrove swamp, past an empty schoolhouse, and up the stream to access the site.

Toribio's system consists of two open spring catchments that converge into a plastic tank that sometimes goes dry in times of little rain. We advised installing a roof over the tank to prevent it from deteriorating in the sun. It would also keep the water cooler.





Even though Toribio was not there, we were fed a second lunch of fried *sardines* (tiny fish no larger than pene pasta) over rice with delicious cups of boiled chocolate in their kitchen under a high thatch roof. Three (or perhaps four generations) of Rolets shared their food with us. An old *cayuco*, as is common, suspended from the back of the kitchen served as their sink.

We walked back to our canoes and paddled back to the other side of the mangrove and then found our way up over the hill to Bahia Azul. The way was still familiar after all these years.



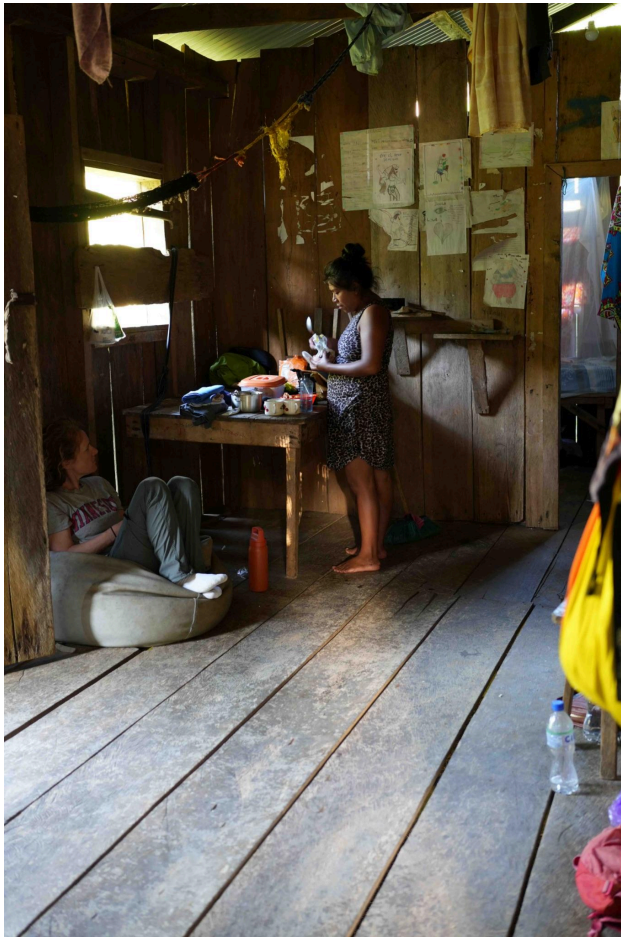
Lisbeña had replaced and washed Maggie's sheets and covered the bed in mosquito netting to keep the bats out. She comforted us by saying that her kids get bitten all the time and no one has ever gotten sick. Tolichi and I had consulted Chat GTP, on the other hand, and it rang a five alarm bell. Trained on North American insectivorous bat data--which never normally bite people unless infected with rabies--artificial intelligence was convinced Maggie should be rushed to the hospital and injected with

rabies prophylaxis right away otherwise she had an approximately 100% chance of death.

We talked about it. Apparently rabies isn't a thing in Panama. At least that's what Lordes told Tolichi back on his first tour in 2010. And vampire bats bite people and livestock all the time in this part of town. They don't seem to be dying from rabies. If they were, people would know, and it would be a thing. And as there weren't likely any hospitals with the capacity to treat rabies anywhere in the whole Panama, Maggie decided not to worry about it.

Aunts and children visited. We gossiped about the headaches men invariably bring, the sicknesses plaguing folks, or the fight to get the children of the village to speak Ngobe and how much everyone missed Tolichi. After bucket showers Tolichi went to bed with his socks on, I pinched the top of my hammock together and Maggie crawled in under her mosquito net.

Day 6



Lisbeña made us coffee grown on her family's property. It was delicious. We had a relaxing morning--all of our surveying goals having been met and no one suffering from any more vampire bat bites in the night.

At around 9 o'clock the water committee showed up to take us on an exploratory mission to find a new source of water. A fabled spring that never went dry, perfectly located to provide additional water for the town. All they would need to do was build another tank and hook it all up.

We walked up the hill behind their family's house and marveled at the vista. We took a well trodden path into the jungle, our guides pointed out butterflies and birds and laughed when they lost their footing and slid down the trail.

We came to a beautiful steep *quebrada* with ample flow, even at the end of a five day dry stretch. We measured the flow with a piece of tubing and a gallon jug. I decided I wanted to

see the source of this water, this fabled spring, but the entire northern side of the watershed had been cleared for a new banana plantation. Our guides grumbled that the clearing was illegal. It had been done without permission. I crawled up through the fallen trees and a young man followed me. Tolichi and Maggie wanted no part of it. I came to a piece of tubing in the creek, but it wasn't the spring. Up and over more fallen trees we went, scratched and poked by thorny vines and spikes on dead branches. The *quebrada* never turned into a spring. It was just a very steep first order stream that cut right down into the black uplifted oceanic basalt.



Panoramic view of illegal clearing above secondary Bahia Azul toma for banana plantation

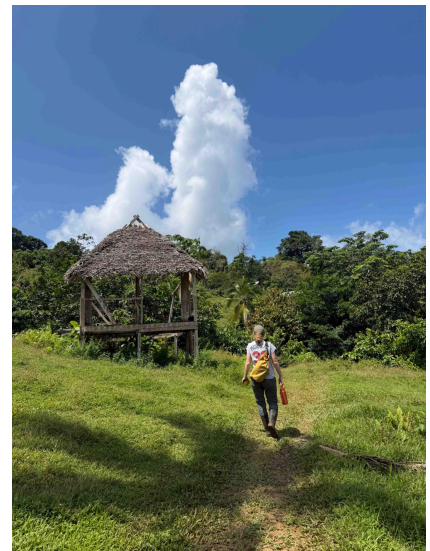
I took a 180 degree panoramic photo of the clearing. My guide and I decided to use a series of vines to let us down an adjacent ravine, right out of the movies, so as to avoid the fallen trees.

We followed the path that the waterline would take to the tank and used our cell phone GPS to estimate the altitude. The readings were all over the place. At first glance, a tank looks feasible, but it would need to be surveyed by an engineer and it would not be a small undertaking.

We came across a mill site where someone had been hand milling lumber with a chainsaw. Tolichi dared me to lift one of the boards. I managed to pull it off. Tolichi demonstrated the simple boot drain technique he had learned from Tim Wellman--the WEFTA founder and a previous Panamanian Peace Corps assistant director himself--bend your knee and lift your leg, the water runs right out. We stopped to look at the birds, eat raw cacao, and enjoyed our trip.



We finished up the notes, paid our dollar for some internet and enjoyed the afternoon. We walked past the skeletal remains of Tolichi's old thatch house on the way back to our homestay. Various folks paid us a visit and we shared another delicious meal of boiled root vegetables, fried fish and rice. I stocked up on water from the town aqueduct while it was on.



The Last Day

Tolichi woke up before first-light and went outside. He came back a little confused because his face was wet but it wasn't raining. His forehead was covered in blood. I confirmed it with the light from my cell phone. The bats hadn't bothered with his toes, covered in socks as they were, but had bitten him right below his hairline. It was not pretty. From Peace Corps tours here in Bahia Azul to Vanuatu to Peru and back to Panama again--just to be bitten on the forehead by a thumb sized vampire bat! He has stories to tell. Lisbeña came with coffee and we laughed off Tolichi's bat bite.

Maggie and I had our boat scheduled for nine in the morning. Our boat driver thought it was an entirely unreasonable hour and we were given opportunity after opportunity to reschedule. And yet we insisted on leaving at 9am. My wife and daughter were flying in on the same plane as Maggie was flying out on the next day. I was excited to take them back and introduce them to the community that had taken care of me in Playa Balsa and La Ensenada so well. I needed time to give my boots away.

Tolichi walked us to the dock--he would stay another day and visit all the people that he hadn't had a chance to catch up with. As he did we passed three school-aged girls doing the morning's washing by hand--smiling, laughing, enjoying themselves--behind the whitewashed walls of their secondary school in the background.



Project List

Rank	Community	Project Name (Description)	Rationale
1	Cayo Paloma	Rebuild Intake Structure	<ul style="list-style-type: none"> Highly motivated, active water committee. Age of system (50+ years old)
2	Playa Balsa (Lago Rojo)	Intake modifications (Rebuild concrete cap over spring source)	<ul style="list-style-type: none"> Motivated community but poor water committee Project would be moderately easy to complete and inexpensive
3	Barriada Trotman	Intake modifications (Adding a concrete cover and adding concrete to the bottom of the spring box to minimize leaks)	<ul style="list-style-type: none"> Minimal interest, no functioning water committee Simple project would be easy to complete and relatively inexpensive
4	Playa Balsa (Opidio)	System Modifications (Connect secondary water source to tank, minor intake upgrades)	<ul style="list-style-type: none"> Motivated community but poor water committee Connecting from Filesteo water source will require small amount of engineering work but minimal cost
5	Playa Baston	Secondary Water Source (Intake, Tank and Distribution)	<ul style="list-style-type: none"> Water committee is not active, although there is community interest Larger time & financial investment for design of system
6	Playa Balsa (Macho Monte)	Distribution upgrades (Redesign to reduce 3" main to 2")	<ul style="list-style-type: none"> Motivated community but poor water committee Engineering modeling & analysis to use smaller pipe size
7	Cayo Paloma	Secondary Water Source (Intake, Tank and Distribution)	<ul style="list-style-type: none"> Highly motivated, active water committee. Age of system (50+ years old)
8	Barriada Trotman	Tank Additions (Install secondary tank at TR system, and a new tank at 3rd intake)	<ul style="list-style-type: none"> Minimal interest, no functioning water committee Project requires some engineering analysis to determine flow rates and tank size
9	Playa Balsa (Macho Monte)	Intake upgrades (Rebuild intake at higher elevation)	<ul style="list-style-type: none"> Motivated community but poor water committee Current intake functions ok, so

			project is not as critical as others
-	Bahia Azul	<i>No project at this time</i>	<ul style="list-style-type: none"> • Motivated, active water committee • The community is too big for WEFTA's assistance (?)
-	Playa Balsa (Filesteo)	<i>No project at this time</i>	<ul style="list-style-type: none"> • System functions well; no need for major improvements right now
-	Playa Verde	<i>No project at this time</i>	<ul style="list-style-type: none"> • No water committee • Lack of community interest

