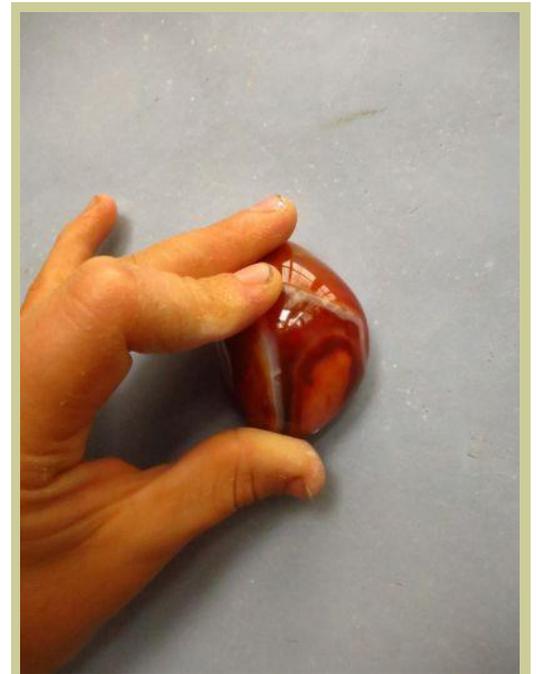


Rancho Mastatal Updates

First Quarter 2014

The kickoff to 2014 has been as great as any that we can remember since moving to Mastatal full-time in 2001. We have been blessed with an incredible local and “in-house” staff and intern crew whom all have helped make this a productive, pleasurable, stable and beautiful start to the year. The first months were packed with so much project and people diversity that I'm struggling to know where to start this first newsletter of the “new” year. We've hosted an incredibly wide variety of groups and workshops and have engaged in countless activities and endeavors while simultaneously continuing to improve greatly on our planning and organizational techniques. This has been a recipe for a vibrant and spirited atmosphere though with a tempered and steady energy. As is normal during our drier months, we've been dedicating a fair amount of energy to building endeavors such as the Casucha and Honey Hut additions and a long list of earth-based construction projects that has recently been brought to the forefront after hosting two amazing workshops on Earth Building and Earthen Plasters and Tadelakt with LIZ JOHNDROW and RYAN CHIVERS. We filled both classes with a diverse group of mostly Central-American focused students as it seems as earth is “in” on the isthmus. We've also harvested multiple gallons of honey, started brewing all of our own hooch, and gotten ever deeper into the world of whole foods processing all while making exciting moves forward with plans for an accredited semester program and a North American based venture. Dreams of a book have also started to bubble to the surface though admittedly an endeavor this large, if it ever happened, would still be many years away. As the rains return we're slowly turning our focus to the fields and orchards again as we transition much of our energy to plants and food even though interior building projects will certainly make up a big part of our indoor rainy afternoon project list. After a non-stop quarter, we're looking forward to a quieter May before our summer high-season kicks into gear with our annual Permaculture Design Course starting on June 1. This year is flying by with many of us already wondering how we're going to get it all done before our fall stateside visit. We hope that you enjoy yet another interesting newsletter. Please stay in touch, send your stories and pictures, and follow us however you can.



Tadelakt Finishing Work

This month's update includes:

[RM Program News](#): Semester Course

[Building Report](#): Earth and Wood

[Conservation Update](#): Aerial Mapping

[Farm Facts](#): A Road Map

[Community Stories](#): Ojoche Harvest
[Intern/Guest Gossip](#): Black Bean Brownies
[Comida Corner](#): Ojoche with Bacon
[Inspirational Impressions](#): Poop

RM Program News: Semester Course

We have begun the arduous task of planning for and working towards an accredited semester program through the University of Montana to be offered in 2016. We're concentrating our efforts on a skills and place-based curriculum made up of three 5-credit classes focused on food, shelter and community that will help students prepare for a changing and increasingly challenging world. We feel that the time is prime to roll out an offering that we believe is important and pertinent given the current state of human

and planetary affairs and desired by a growing number of individuals looking to immerse themselves in meaningfully studies and work. We intend to offer a unique syllabus that will engage students in experiential education while teaching them skills that they will be able to put into practice to help create solutions to global issues such as food sovereignty, poverty, sanitation, and access to affordable housing and energy. As we begin to refine our learning outcomes and course outlines we'd love to hear from anyone out there with academic contacts that might be interested in this type of program for undergraduate or graduate students. We're hoping to be able to offer this or a similar semester program to students from other universities including SUNY-ESP in the coming years as we have hopes of making this the crux of our educational offerings in the not-too-distant future.



Lime Plastering the Lounge

Building Report: Earth and Wood



It's been another exciting couple of months of building at the Ranch. Following last year's successful Earth Building class with LIZ JOHNDROW, we are once again lucky to have her with us for a rerun of this popular course in addition to having her co-teach our new Earthen Plasters course with RYAN CHIVERS, a tadelakt expert from Colorado. We are thrilled about the prospect of adding tadelakt, an ancient and beautiful lime plaster finish, to the Ranch's structures. Traditionally, tadelakt is a finish for lime plaster that is waterproof and has been used for centuries in the public bathing houses (hammams) of Morocco and North Africa. The original recipes called for the addition of non-native marble dust which was traded for sugarcane with the Romans. Nowadays a variety of ingredients can be used. The key is burnishing the plaster with precious stones, a very slow and methodical task. Soap is then applied to create a smooth and waterproof finish.

In other building news the Timber Framing Course is fast approaching with preparations nearly completed for the extension that is going to be put onto the Casucha. Laura and Scott have dedicated so much time and energy to the Ranch that it was decided that they should have a little more space in the place that they have called home for the last few years. The addition should nearly double their floor space and provide some much needed room to have some desks and a couch so that they can do more work, more efficiently!

The Earth Building class installed the walls for the soon-to-be "fully fitted" bathroom addition at the Honey Hut which will make this our first en-suite composting toilet and shower. Until now showers and toilets have exclusively been the domain of outbuildings and we look forward to the luxury of a midnight visit to the toilet without meandering through in a pile of fire ants!!

We're honored and proud to be on the cutting edge of natural building in Costa Rica and invite you to visit or share pictures of our growing collection of incredible buildings.

Conservation Update: Aerial Mapping

Conservation drones have recently become a powerful tool in conservation management strategy. As made popular in [Lian Pin Koh TED talk](#), drones are allowing wildlife managers to track hunters, nesting patterns, and more. Pushed as an affordable bootstrap technology, drones are changing the way conservation as a practice is approached. With a DJI Phantom Drone Quadcopter and a GoPro camera for close to US\$700 anyone can own and operate this technology. Not surprisingly permaculture designers are



Aerial Photo

beginning to use drones for aerial imagery and mapping.

Thanks to FERNANDO GIACCAGLIA of Aerie Backcountry Medicine and KENDAL GOTTHELF, one of our all-star interns, we had the opportunity to use this technology. In a short Sunday morning we flew the copter around the main Ranch property taking timelapse photos every five seconds. The result was approximately 300 high quality aerial photos of our campus and farm.

While we are still working out the kinks in the photos (fisheye lens distortion), we hope to stitch everything together soon and overlay this map into a GIS program to start playing with bigger picture design challenges and opportunities. This detailed overview of our land will give us a better understanding of key patterns related to our watershed, biological corridors, vegetative patches and erosion, and deforestation. As an accurate and detailed base map, we can quickly use overlays to throw out different design ideas as we contemplate re-working the paths in our zone 1 or siting a natural swimming pool at the Choza.

In order to speed up the learning curve I will be taking a GIS/mapping course for permaculture designer's this summer called EarthMetrics. This coupled with the accurate photos and mapping potential of drone technology will continue to build our skill sets as permaculture designers.

Scott Gallant



Machete Work

Farm Facts: A Road Map

The rainy season looms over us. With approximately two inches of rain since the first of the year, we are in need of water on the landscape. This initial rain reignites the nearly dormant microbial life in the soil, unleashing a flush of nutrients, particularly nitrogen that we hope to *aprovechar* with properly timed plantings. A year of propagation and a recent nursery run have filled our coffers, and with the first drizzle of rain we are moving young plants out into the elements to harden them off.

2014 is the year of simplification, dialing in existing projects, and clarifying our goals. In this vein we continue to focus on soil fertility, erosion control, and planting staple tree crops. Ready to go into the ground as we speak are 80+ fruit and nut trees and palms; highlighted by Pili Nut, Mayan Breadnut, Breadfruit, and Pejibaye. These are the tree crops that provide ample quantities of carbohydrates, proteins, fats, and oils. We are trialing different species and varieties, hoping to extend the harvest season and find what works best.

In addition 1500+ leguminous trees and 40+ kilos of cover crop seeds will provide soil stability, moisture retention, erosion mitigation, and nutrient sequestration. Our efforts extend in many directions as swales are dug, biochar is charged with manure effluent, access paths are widened and

improved, vetiver is planted, chickens are hatched, and much more.

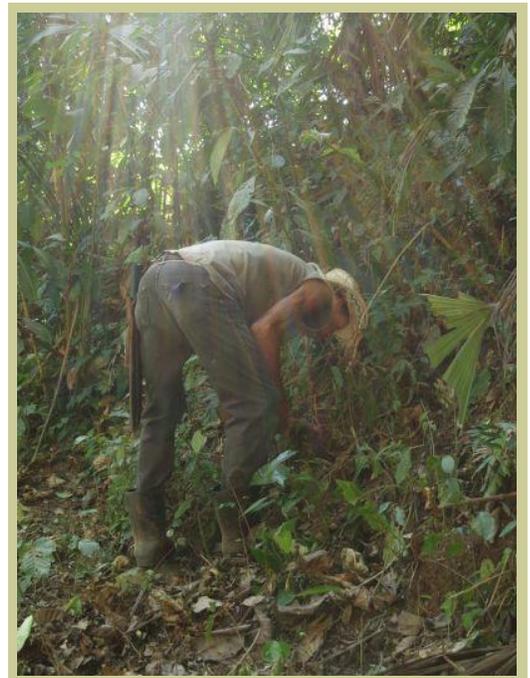
All of this work has us approaching two capacity thresholds that we are keenly aware of. The first being the capacity of our land to physically fit anymore large orchard spaces, and the second the capacity of our crew to maintain the current plantings. These thresholds and the feedback we receive from them are clearly letting us know that to expand our work further we would need to increase our team. This feedback means that we will be focusing on maintenance and “detail” work such as paths, privacy barriers, aesthetics, etc. in the years ahead. This will allow us to provide optimal care and slowly, as flowering and fruiting occur, determine which species demand more of our attention. The opportunity to select and propagate the best species and individual plants is exciting. This plant material will then become available in the region, and then we can begin truly talking about food sovereignty. This is the abridged road map that we will be following over the next few years, so sharpen your machete and get involved!

Scott Gallant

Community Stories: Ojoche Harvest

On the phone, Domingo’s accent is more lilting, more defined than I remember. “The ojoche is ready and you have to come now,” he says. I check my schedule. It’s Monday. “Can we come Thursday?” “No, you have to come now—the animals will eat everything if you don’t.” So the next morning SCOTT, STOVIE, JOE, GEORGE, ALI, KENDAL, BREN, ANGIE, and I grab a half dozen rice sacks, pile into Nick’s 1976 Toyota, and take an intern field trip to Zapaton for the ojoche harvest.

We meet Domingo at seven in the morning at the top of the trail in Zapaton. He wears his old canvas cowboy hat and has his horse Grillo (Cricket) by his side. He got up at four to hike from his house in the river valley to meet us here. I haven’t seen him since we visited him there almost a year ago. He looks the same—still spy, smiling, and wiry strong at 72.



Ojoche Harvest with Domingo

Domingo and Grillo lead the way down the worn out trail towards the river. It’s about a 40 minute hike. He opens the barbed wire gate for us at his house. The house is made of wooden planks, has three rooms, a tube that trickles water into a bowl from a nearby spring, and solar electric panels installed on the roof two years ago by Ian Woofenden’s solar energy class. The outside porch has a poster of a woman in a bikini, a homemade birdcage with a songbird flitting inside, and a dozen rice sacks full of rice and beans.

When we arrive Domingo immediately lets Grillo into a corral, where she chomps down a bowl of banana peels. We stop to admire Domingo’s coffee bushes, and his year’s coffee harvest fermenting in a bucket outside. Then he opens the rice sacks on the porch to show us his store of

rice and beans. Everything is grown in the fields on the hills just outside his house. He dips a hand into the rice, and pulls out a handful of golden unhusked grains. “I grow so much I can’t eat it all myself,” he smiles. Next to the rice sacks is a meter-tall wooden bowl and giant pestle he uses to pound the husks off the rice when he can’t bring it to the community threshing machine in town. Domingo is the real deal.

After a few minutes’ chat we grab our sacks and travel down the trail into the forest to find the ojoche trees. There are four which have produced this year. The ojoche, or Mayan Breadnut, is a tall, buttressing rainforest tree that yields a high protein, edible nut. Over the course of a couple of weeks the trees drop thousands of these nuts to the ground, where they are eaten by small mammals, birds, and wild pigs. Hundreds of years ago ojoche was thought to be a staple crop for the Mayans. In modern times its use has been usurped by the sudden global shift to increased cattle production and high intensity annual crops like corn and rice. The older generation in Mastatal and Zapaton remember eating ojoche—cooking it with ashes to remove the outer skin, and grinding it into tortillas. But for the most part knowledge of the tree and its value has been lost. We have followed Domingo here to regain the knowledge of how to use this ancient food.

Once we get to the trees our work is simple. We squat down in a line and pick the nuts off the ground and put them in sacks. As we work Domingo explains natural treatments for snake bites and scorpion stings, and pops ojoches into his mouth to chew raw. A few days ago, he says, there were twice as many nuts, but the cows and wild pigs got in and ate them. Even so, the ten of us are well occupied for two hours picking the nuts out of the leaf litter below the trees. It is simple, gentle work—and considering that the trees produce year after year with no added fertilizer, weeding, or hoeing—it is an extremely productive harvest.

When it starts getting hot we take a quick river dip to cool off. Along the way Domingo shows us medicinal plants and identifies rare hardwoods. Looking up at the hills that line the river bank, there are clear distinctions between forest and cattle fields. The forest is tall, green, dynamic. The fields are stubby, barren, and slide downward toward the river. It seems like they cannot possibly last. And yet, somehow it is the ojoche that is harder and harder to find, and the cattle industry that grows in its place.

We return to the path heading homeward. At the trailhead we offer Domingo whatever ojoche he wants, to add to his larder, but he declines. “I only eat a handful,” he says. And he has his many sacks of rice and beans.

We hike up to the truck with the heavy sacks of ojoche on our backs. On the way back to Mastatal we fill a small bag with ojoche to leave at Gerardo’s house. Gerardo, like Domingo, grew up eating ojoche but rarely does anymore. Our neighbor Lily also grew up eating ojoche, as did Lorena’s grandparents. But Lorena has never eaten the nuts, and Lily hasn’t seen it in many years. The trees are few and far between now, and it really isn’t worth a long hike to harvest when there is easy access to cheap, familiar, rice and beans. Ojoche is a food of the past, remembered in anecdotes about the old days, but in practice almost entirely replaced by the sweeping reach of short lived, high input row crops.

There are good reasons that small farmers eking out a life on the land are drawn to high input

crops—when fertilizers are cheap and the land is fresh, the output is also high. But our neighbors all around us have been telling us a new story now, that the land suddenly doesn't produce as much, the seeds aren't strong anymore, and the cost and labor of growing them is starting to seem like it's no longer worth it.

Trees grow in the tropics. They form a living, breathing skin over the fragile topsoil, regenerating themselves and their surroundings by conjuring the strange and magical alchemy of sun spun into energy. There is no foot of topsoil here, anywhere. The life and power and transformation of this ecosystem is generated and held in its multi storied trees. It's what works here, grows here, thrives here. And it's where we can get our food. Ojoche is just one of hundreds of underutilized tree crops that produce food in the tropics.

Luckily, there are still some people, like Domingo, that are able to tell us the story of these forest-food plants, show us where they are, and help us understand their forgotten value. And with the seedlings that are now sprouting in the nursery, hopefully we will be able to help nurture their return to this community's food web. Maybe there is a way, after all, that our forests and our farms can look more similar than different; that we can build diversity and resilience at the same time we grow our food.

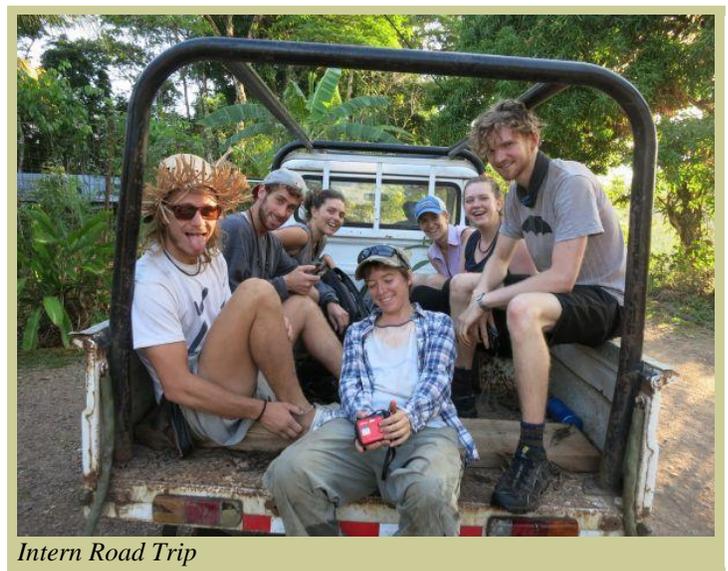
As the ojoche dries in the sun by the front gate, it lets of a soft, sweet, smell. It's fun to talk to people walking past about what the strange dark nuts are and how we hope to use them. We have already eaten several meals with it--once salted and toasted, another time whipped with chocolate, and one tasty version sautéed with NIC's home smoked bacon. The possibilities are endless, and delicious, and exciting.

Laura Killingbeck

For more information on ojoche please see the [Mayanut Institute's website](#).

Intern/Guest Gossip: Black Bean Brownies

“Intern Operations” at Rancho Mastatal are alive and thriving. We've got 10 different interns with 10 different personalities, strengths, and experiences, keeping things diverse and dynamic. Interests range from Acupuncture and the Healing Arts, to Joinery, Fermentation, Earth Building, to Biodigester Effluent and Nutrient Cycling. Some of us are here with more formal interests and timelines (ANGIE STIRES of SUNY ESF is here working on her Graduate Thesis), while others of us are using this time to escape such structure altogether.



Intern Road Trip

For Rancho Mastatal interns, a big challenge (generally speaking) is to narrow down your interests

enough to actually focus on a single project. Because this experience is so multi-faceted and educational, the range of interests and opportunities tend to expand as you learn, making a single focus nigh impossible. Thus, writing just one article about “Intern Operations” (rather than one article per intern) seemed a challenging undertaking. But then, Eureka! We remembered that there’s one place where all Interns and Ranch Staff regularly work and learn together, and that place is the kitchen.

The *Cocina* de Rancho Mastatal has something for everyone. There’s alternatively-fueled cookstoves of various types, as well as solar ovens, a fermentation emporium, *abodega* full of an ever-expanding variety of tropical fruits and veggies, and a community full of hungry recipe-testers. In our kitchen, we build friendships, dream up new farming strategies, have dance parties, nourish microbes by the millions, and eat a whole lot of tasty food. One particular strength of this intern crew is the ability to think outside the box, which is probably why (though they didn’t author it) this group loves the following recipe so much.

It’s an unusual and intriguing mix we’d like to share with the masses; a surprisingly yummy dessert combo: Black Bean Brownies. Interns KENDAL and ALI are especially fond of making these in our solar oven, where they bake into creamy, fudgy squares of chocolaty goodness. No one who isn’t forewarned would ever guess that the secret ingredient is black beans. They’re a great way to use up leftover beans, and can easily be made gluten-free and/or dairy-free.

Black Bean Brownies

16 oz. *cooked black beans
4 eggs
1 c. maple syrup
1 stick butter -or- ½ c oil
4 oz. bittersweet chocolate
1 Tbsp. ground coffee
1 tsp. vanilla
1 tsp. salt

Preheat your oven to 350° (or set your solar oven outside when you wake up). Rinse all the juice off of the beans (*canned beans add an undesirable flavor and are typically not soft enough, try to use home-cooked). Melt the chocolate, butter, and vanilla in a double-boiler over medium heat. Puree the beans and eggs in a food processor (or mixer, blender, etc.) until smooth and liquid. Combine the chocolate mixture, black bean puree, and remaining ingredients. Pour into a greased pan and bake for 25 minutes (or most of the day in a hot solar oven). The top will typically crack when they’re done. Note – the deeper the pan, the fudgier the brownies. A 9”x11” rectangle pan works well.

Have fun indulging in these little “protein bars”, and enjoy letting your friends guess at the secret ingredient. The uses for black beans are at least as diverse as our intern crew this year, so remember to stay creative in the kitchen, enjoy local cuisine, and buen provencho!

Bren Muirhead



Comida Corner: Ojoche with Bacon

Ojoche (*Brosimum alicastrum*) is a tropical rainforest tree that produces a highly nutritious edible nut. The nuts can be cooked with lime or ashes and eaten with salt, or can be dried and ground into flour. Ojoche is native to Central America and is thought to have been one of the staple food crops of the Mayans.

Nixtamalized Ojoche with Sea Salt

Ingredients:

5 cups whole Ojoche Nuts, fruit coating removed
1.5 tablespoons Hydrated Lime (calcium hydroxide), sifted
Sea Salt to taste

Instructions:

Rinse the ojoche thoroughly and put in a pot. Cover with at least four inches of water. Mix in lime. Boil this mixture for 40 minutes, or until the ojoche is tender and the papery husks rub off easily.

Take the ojoche off the heat, strain, and let cool. Then rub the nuts between your hands or against the sides of a basket or colander until the papery husks fall away. The jet setting on a hose works well for this.

Sprinkle the ojoche with sea salt to taste, and enjoy.

Ojoche Simmered with Smoked Bacon

Ingredients:

4 cups nixtamalized Ojoche, roughly chopped
1 cup Smoked Bacon* chopped into 1 cm squares
2 Tomatoes, roughly chopped
1 medium Onion, diced
2 cloves Garlic, minced
Tapa Dulce or other sweetener, to taste
Salt, to taste
Water, as needed

Instructions:

Cook bacon until it just begins to crisp around the edges, but not all over. Add tomatoes, onions and garlic and cook for a few more minutes, until onions start to soften. Add a little bit of water as

needed to keep the tomato/bacon mixture from sticking. Add Ojoche and simmer for 15-20 minutes or longer (longer cooking allows the flavors to deepen , adding a bit of liquid if the mix starts to stick or look too dry. As the mixture simmers, add salt and a little bit of Tapa Dulce to taste. Delicious served with GOOCH's fresh ground cornbread and sautéed Hoop Vine!

*Bacon by DONATI.

Laura Killingbeck

Inspirational Impressions: Poop

“The only thing worse than it raining after you wash your car... is having to poop as soon as you get out of the shower.”

--- Unknown

Abrazos,

The Ranch Crew



Toucan in Flight

photo by Emilie Gooch