

# Center for Amazon Community Ecology

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## Project Progress Report to the Marjorie Grant Whiting Center – December, 2012

### Copal and essential oil development

The Center for Amazon Community Ecology (CACE) began working with native communities in the Ampiyacu River region of the northern Peruvian Amazon in 2008 to promote forest conservation through the development and marketing of value-added non-timber forest products (NTFPs). One major objective has been to assess the potential for sustainably harvesting aromatic resin lumps from select species of copal (Burseraceae) trees and distilling this resin into an essential oil that communities could sell to fragrance companies.

In the first phase of the project supported with grants from the MGWC and the Rufford Small Grant Fund, CACE launched a pilot phase in the Bora native community of Brillo Nuevo. From January 2010 through May 2011, Project manager Yully Rojas and a rotating team of four or five Bora woodsmen conducted inventories in 351 ha (in 48 distinct plots) of primary and secondary forest areas near Brillo Nuevo, Ancon Colonia and two sites farther upriver. These surveys noted the GPS position, diameter and when possible collected leaf and resin samples from 595 copal trees. A botanist from the local university herbarium confirmed this group represents a diverse spectrum of the Burseraceae that includes 28 species from five genera. The majority of these trees were *Dacryodes peruviana* trees planted in fallow fields ten or so years ago as a source of edible fruit. Resin lumps were collected from this and 16 other species. The inventories also marked other trees and plants of interest to the community including 77 moena trees, 52 clavo huasca vines (potential sources of aromatic bark and leaves), and 37 huayruru trees (seeds used in crafts).

Since the start of the second phase of the MGWC grant in June 2011, we conducted one more primary forest inventory. This survey that searched 11 ha (in two plots) found 12 copal trees from 8 species (3 genera) – ten of which had resin lumps on them. The team also found five more moena trees.

### Copal monitoring

Since July, the field work at Brillo Nuevo has concentrated on revisiting plots that were previously inventoried to quantify the presence of resin lumps and assess the recovery of lumps from trees that were harvested in 2010. This process has revealed two sets of insights and challenges. First, there was no difficulty locating marked areas and locations for the sites that were close to the village – including several plantations of one type of copal tree. The team found, however, that a number of these trees had been cut down – presumably as an easy way to harvest their fruit – the original purpose for their planting. While the survey team had originally

only harvested half of the resin lumps from study trees, they found that many trees now lacked any resin lumps – perhaps because they had been harvested as boat caulking material or decorating masks for a traditional festival. Since the owner of these plots had been included in or at least given permission for the initial survey, it seemed that these removals had been done without permission of the plot owner.

Where study trees were located in primary forest, the monitoring team often found it hard to relocate marked trees. It became apparent that the main reason for this difficulty was that last year's local project coordinator had not properly used the GPS device to save the location of the plot corners and tree locations. These errors forced the team to spend much more time searching areas for study trees. These delays did not occur in plots where the project manager had recorded the locations. This situation highlighted the need for more extensive training and testing of team member's skills before entrusting someone other than the project coordinator to be responsible for this critical operation in inventories. The other challenge of this monitoring had been complying with community pressure to include a rotating group of men in the teams. While we understood their desire to fairly distribute the opportunities for earning a few days wages in the community, we reached an accord that permitted us to include at least two of the original inventory team in the follow-up monitoring team so the people who already knew those areas best could help make the process more efficient.

Through December 2011, the monitoring teams have revisited 20 plots in 191 ha – six in primary forest and 14 in plantations near the communities. They have found that just under one-third of the 390 trees they observed had resin lumps on them with the rate of recovery being much higher in the primary forest trees than those in the plantations (perhaps due to reasons cited above). The good news, though, is that post-harvest resin lump recuperation is proceeding at a healthy pace. Parallel studies on resin lumps recovery that CACE has been conducting at Jenaro Herrera on the Ucayali River have indicated that it will likely take six years for the average amount of resin per tree to return to pre-harvest levels after all resin lumps have been removed. This study near Brillo Nuevo will show if reducing harvesting intensity to 50% will permit a shorter harvest and recovery cycle.

### **Copal resin distillation**

From January 2010 through March 2011, we distilled resin samples from five trees. This number was limited because the study trees had not yet been identified to form large enough batches of resin to distill according to our initial criteria. In these trials, we distilled three 1-2 kg samples of resin from the same species of tree in succession – one batch of fresh resin, one that had matured for six months and one batch collected a year before. Distillation of fresh resin had a 1.8 – 3% essential oil yield by weight while the yield from older samples ranged from 0 to 0.35%. We are awaiting feedback from a fragrance company to see if any of these samples is commercially promising – particularly if the oil from the more mature samples has extra value to compensate for the lower yield.

In the second phase of the project, we distilled resin samples from three trees in September 2011 whose resin was harvested fifteen months before. The average yield of essential oil from these trials was 0.9 %. In the next few months, we will distill samples from five known species of

copal which have at least three kg. of resin available. Depending on results of upcoming inventories, we will be able to conduct additional distillations of another 12 species of which we currently have several grams to one kg. of resin available. One limitation in efficiently testing these smaller samples is our 20 liter copper distillation unit. While it is appropriate for medium-sized samples, we are exploring different designs of glass distillation set-ups that would give us more flexibility to test smaller samples.

### **Other aromatic plants**

Besides copal, the Bora identified the bark from the canela moena tree (cinnamon moena - *Ocotea aciphylla*) and clavo huasca vine (*Tynanthus panurensis*) as aromatic materials that could also yield a fragrant essential oil. As indicated above, the forest inventories have marked the location of more than 120 plants of these and related species. Since commercial-scale bark removal has frequently threatened populations of other species exploited for their medicinal and aromatic properties, we have held off conducting distillation experiments. As a result of the newly developing collaboration with Camino Verde, we have begun to seriously consider collecting and distilling leaves of aromatic plants as a more viable approach to producing essential oils without harming the target plants. Developing this work is one of the focal areas described in the separate joint CACE-CV proposal to MGWC.

### **Handicraft development and community benefits**

At the outset of our handicraft development program in the Ampiyacu region in 2010, about ten Bora women chose to work with our pilot project in the village of Brillo Nuevo. This number grew to 19 by the end of 2010 and 29 by May 2011 as the diversity of products they were making for us grew to include belts, guitar straps, trivets, and net bags. This summer we added two new types of products – dog collars and dog leashes. This has provided CACE with an increased flow of crafts to sell in the U.S. which in turn stimulated repeat orders to the artisans. Before the formal project, CACE sales of crafts from Brillo Nuevo were \$155 in 2008 and \$192 in 2009. With project support, these sales increased to \$2242 in 2010 and \$2550 in 2011 making it the top supplier of crafts to CACE.

Following the CACE policy of setting aside 20% of the sales of crafts (and related products from that community including photos) from partner communities to support their needs in the areas of health, education and/conservation, the social rebate account for Brillo Nuevo stood at \$637 in June 2011. In a general meeting of the community, the assembly decided to spend \$133 of this amount to buy medicines for the community pharmacy and another \$133 to buy seven saw heads. See more about these saws in Chambira conservation below. The Brillo Nuevo social rebate account now stands at \$892. Yully will request that community members consider if and how they wish to use these funds at their next general assembly in 2012.

The largest challenge in the handicraft component of this project in Brillo Nuevo is the ongoing need for intensive one-on-one interaction between project manager Yully Rojas and the artisans. Yully has increasingly insisted she will only buy crafts that are aesthetically pleasing and well-made, but she still frequently needs to ask artisans to fix details on crafts several times before they meet this standard. While the artisans grumble about this, most readily acknowledge that

this practice has helped them improve the quality and consistency of their work. Unfortunately our encouragement for them to empower the members of the three-person quality control committee they elected to give them similar feedback or help them with difficult steps has progressed very slowly. We continue to encourage them to absorb this collective responsibility since Yully will not be able to play this role indefinitely. Artisans also welcomed the idea of awarding prizes for notable achievements (e.g. most sales, best new design for a guitar strap, and significant service to fellow artisans) as positive incentives for them to put their best efforts into these tasks.

### **Chambira palm conservation**

One role model for successful development of community-level craft enterprise has been basket makers from the Tahuayo River region of Peru. Three communities there now produce and export more than 800 baskets from 20+ approved designs every three to more months. The down-side of this success is that stocks of chambira palm trees near the villages have been seriously depleted. We are trying to introduce two sets of practices from this region to Brillo Nuevo to preserve the chambira palm resource there before increasing demand for crafts from its artisans overwhelm their local supplies.

Our first immediate action is to beginning to encourage artisans and their family members to use a saw to harvest chambira. Mounting this pruning saw on a 6 – 8 foot wooden pole instead of a machete allows someone to carefully harvest one stem of a chambira palm tree for craft making without damaging the adjacent mature or immature stems. As mentioned above, we purchased seven of these saws in Lima with funds from the handicraft sale social rebate. These saws have been entrusted to the new local project coordinator Oscar López Flores to check out (and receive back) from any interested artisan. Requests to borrow these saws were not common in the fall so we plan to conduct a workshop in the new year to show people how and why using these saws can prolong the health of the chambira and be safer for them since people often get cuts or punctures using a machete to cut the spiny stems.

To promote medium to long-term chambira palm conservation, we have begun to assess the status of chambira palms around the village. While some palms are harvested in primary forest, we have learned that most people collect stems in their old fallow areas – some from trees they have planted, others from trees that have grown on their own in these recovering forests.

In June we began by sampling the chambira in circular plots in the fallow fields of two artisan families. It took one day to take basic measurements (size, number of harvestable stems (“cogollos”) of 40 palms in a 1.1 ha plot, but the process took two and a half days to complete in a larger plot with 223 trees (95 of which had cogollos). Since there were 27 other artisans with fields to be surveyed, we decided to back off from this full procedure until we had a better sense about the scope of this endeavor. In the past few months, Yully and small teams have completed walks around eight fields – using the GPS to record the perimeter of the field and then use these data to calculate the plot area. When this preliminary stage is complete, we will design a workable sampling procedure to estimate the density and quantity of harvestable chambira in each plot.

Ultimately we hope that each artisan will be able to use this information to gauge how many crafts they can make from their available stock per year. If they wish to make more crafts, they should plant more chambira.

Conversations with artisans about chambira have revealed some underlying sore points and problems that need to be addressed. The main one is a complaint that chambira cogollos (harvestable stems) are sometimes cut (in their words robbed) without permission by non-family members. This action is sometimes made worse by the careless removal of the stem with a machete in a way that damages the whole tree. Although these complaints have been aired at village public assemblies, the problem has persisted. Several artisans pointed a finger at one of their own who they thought was guilty of this practice since she didn't have her own field to harvest from.

In the Tahuayo region, every artisan must demonstrate that they are obtaining their raw material from a well-managed source in order to participate in the collective craft sales opportunities. NGOs (including CACE) have provided some financial assistance to one village to support collective activities ("mingas") to help establish and tend young chambira areas. Our hope is that rather than just witness social ostracism of skilled artisans who don't currently have access to their own chambira stock, we can encourage every artisan to at least partner with someone else who does have a known inventoried area until she can establish her own.

### **New craft partner artisans and communities**

The other growth area in the second phase of this project has been the expansion of craft related activities in Brillo Nuevo to three other communities – Puca Urquillo (with one Bora section and one Huitoto section), the Ocaina community of Nueva Esperanza and the Yagua village of San José de Piri. These communities were chosen in consultation with FECONA (the native federation that represents all 14 native communities in the Ampiyacu watershed) with the goal of including at least one community from each of the four ethnic groups represented in the region. Yully and I made the initial rounds of these villages in June 2011 and Yully has made follow-up trips to each village every month since then. We began by discussing and choosing one product as a starting point to assess the skills and interests of artisans in each community.

Our initial efforts in Puca Urquillo have gotten off to a good start with the participation of 13 Huitoto and 16 Bora artisans. Our first products developed in consultation with Bora and Huitoto artisans there were two lines of Christmas tree ornaments. Both types are made from a two to three and a half-inch wide pod of the calabash tree with a loop of chambira twine for hanging and some seeds or pebbles inside to make it double as a small rattle. One basic design features images of birds, snakes, or butterflies etched directly on the dark brown pod; the other design features a woven cover of chambira with horizontal bars of two to three colors going around it. These ornaments, particularly the etched models, sold well at fall craft fairs and a Christmas tree shop that carried them on consignment. Our challenge will be to encourage the two men who do this etching to share their skills with the women artisans who currently only make the woven models.

In the smaller community of Nueva Esperanza, eight artisans first made prototypes of woven coin purses that sold well in fall craft fairs. Observing trivets made by a few artisans from Brillo Nuevo, a few of the Ocaina artisans then made their own beautiful chambira hot pads. Yully will next introduce them to some of the other products that have been selling well.

While the community of San José de Piri received us enthusiastically during our introductory meeting, our efforts to initiate a handicraft project there have progressed very slowly. A few factors may explain this pace. First, this community located next to the town of Pebas has access to very few intact forest resources including chambira and fewer experienced artisans. Second, these artisans had a bad experience with another recent craft project which required the artisans to provide their crafts up front without pay and then failed to return many of the unsold crafts. Yully's persistence in visiting the community and discussing the progress of our craft work in other communities has now convinced two Yagua artisans to try working with us to develop some marketable products. If things go well with these, we expect that others will join in. If working with this community proves too challenging for us, we may approach another Yagua community.

### **CACE participation in the Ampiyacu-Apayacu Regional Conservation Area Management Committee**

As greater responsibility for the administration of protected shifts from the federal to provincial level in Peru, the government of Loreto has so far established three regional conservation areas including one that covers a large section of the Ampiyacu and Apayacu watersheds. While generally supportive of this process, the decree of protective status for this area in December 2010 has been very controversial among the native communities in the area – principally because it will ban logging activities at the end of 2011. Cutting and selling logs to outside timber companies has provided some individuals in Brillo Nuevo and other Ampiyacu communities with moderate to considerable income. CACE was invited to participate in the committee charged with managing the affairs of this area. We have tried to steer clear of the intense political infighting that accompanies these deliberations, but it is clear that as legal restrictions on logging take hold, there will be an increasing demand for alternate sources of income. I hope that CACE can continue to help communities sustainably develop their non-timber resources to help meet this need.

We very much appreciate MGWC's support of our efforts and will keep you apprised of our progress in the coming year. Please visit our Facebook page at <http://www.facebook.com/pages/Center-for-Amazon-Community-Ecology/227442140617990?sk=photos> to see photos of our artisan partners and a wide range of their innovative handicrafts. Please visit my blog at <http://amazonecology.wordpress.com/category/campbells-amazon-journal/> to see photos and read accounts of some of my visits to Ampiyacu communities in 2010.