

Center for Amazon Community Ecology (CACE) & Camino Verde (CV)
Funding proposal for Marjorie Grant Whiting Center (MGWC), 2012

Presented by Robin Van Loon and Campbell Plowden, December 2011

Background

Camino Verde (CV) and the Center for Amazon Community Ecology (CACE) are non-profit conservation organizations based in the U.S. that promote forest conservation and sustainable livelihoods of forest communities in the Peruvian Amazon. CACE emphasizes research and community-based projects focused on the sustainable harvest and marketing of non-timber forest products (NTFPs) in the northern province of Loreto. CV focuses on reforesting secondary forests with rainforest trees whose products may be used for both timber and non-timber uses.

Both CV and CACE have received financial assistance from the Marjorie Grant Whiting Center in the past three years for select projects. MGWC approved a \$3,000 grant in June 2011 to both groups to explore ways they might collaborate to support their respective missions and the goals of the Center in its final year. This grant resulted in a July visit by CACE's Campbell Plowden and Yully Rojas to CV's center in Tambopata, Madre de Dios, and a subsequent visit by CV's Robin Van Loon and Breon Hoyo to CACE's project sites in Loreto in November.

These visits highlighted the parallel and complimentary strategies pursued by each organization and greatly clarified the options and opportunities for collaboration between the two. Progress reports were submitted to MGWC after each visit to share experiences and discuss next steps, and correspondence between Plowden and Van Loon ultimately culminated in the elaboration of the present proposal for the project's continuation in 2012.

Introduction

As discussed in our previously submitted progress reports, the most important opportunities for cooperation and direct collaboration identified by CACE and CV draw from the experiences and strengths of each organization. The project proposed below is an organic extension of the work carried out by CACE and CV to date. It was our intention to identify activities that would not involve "starting from scratch," but rather would expand and deepen past work in meaningful ways while emphasizing areas of overlap between each of our organizations.

This joint project focuses on three trees that are the source of an economically and/or culturally significant non-timber forest product (NTFP). Working on these species will foster complementary efforts between our groups since we will engage with each NTFP

at a different stage of development and a correspondingly different kind of activity ranging from a research-oriented focus to direct community-level action. Ultimately the over-arching theme of this proposal is developing NTFPs to benefit local Amazonian forest-based communities – a core objective of both CACE and CV.

Focus areas

1. Sangre de grado (Dragon's blood)

One well-known and well-studied NTFP of the Peruvian Amazon is *sangre de grado*, sometimes called “dragon’s blood” in English. This fast growing tree is typically found along rivers and streams in Madre de Dios and throughout the lowland forests of Peru. When wounded the trees “bleed” a reddish brown blood-like resin that earns it its name. This resin is used in a myriad of healing applications, backed up by several scientific studies. *Sangre de grado* is marketed well beyond its native Amazonian range in the Andean and coastal regions of Peru and in recent years has also been exported to worldwide markets for natural medicines.

Like many other popular and economically significant Amazon medicinal plants, little attention has been given to the sustainable harvest of *sangre de grado*. In Madre de Dios, commercial harvesters of *sangre de grado* usually cut down the tree to extract as much resin as possible. Increased domestic and international demand for the product may well be threatening wild populations of *sangre de grado* trees. CV responded to this concern by planting about 250 trees at its center in 2010 to determine sustainable harvest levels of its liquid resin.

During CACE’s visit to CV in July 2011, Plowden and Van Loon identified *sangre de grado* as an area of mutual interest. This project proposes to begin developing a system for the sustainable harvest of *sangre de grado* as an important step toward reversing the reckless harvesting of this important forest resource. Dr. Plowden from CACE will return to Madre de Dios in March, 2012 during the traditional rainy season harvest time to work with CV to conduct baseline studies on the production of *sangre de grado* resin from a group of ten to fifteen mature trees on the property of CV and neighbors willing to collaborate in this initial experiment. Based on interviews with experienced harvesters, they will wound trees used a standard “best practice” to collect *sangre de grado* resin and compare these amounts to tree diameter. The wounding technique will be standardized according to variables including depth, length, and angle of cuts and timing of harvesting. Other trees of comparable size will also be measured and remain unharvested as a “control” group for long-term observation of the impact of harvesting on tree health, growth and reproductive output. The results of the first round of experimental harvesting will be applied to design a more comprehensive study of the production and impact of *sangre de grado* resin harvesting with CV’s other 250 *sangre de grado* trees when they reach harvestable size in 2013 or 2014. These trials will test additional factors such as frequency and season of harvest. The first phase of this project will, therefore, also

include careful measurement of these young trees so their growth rates and other indicators of well-being can be compared with and without harvesting.

The results of these experimental harvests of *sangre de grado* will be analyzed to present information about the relationships between harvest method(s), tree size, resin production and the short to medium-term impact of harvesting on tree growth and other quantifiable measures of tree fitness. These findings and accompanying recommendations will be presented in both English and Spanish to reach a variety of potential audiences including community-level harvesters, government agencies that regulate forestry practices and the scientific community.

2. Moena (Lauraceae)

In the Peruvian Amazon, the common name *moena* usually refers to trees in the closely-related genera of *Aniba*, *Octoea* and *Nectandra* (family Lauraceae) and one species in the family Annonaceae. Moenas are characterized by their durable, beautiful timber and aromatic essential oils found in the bark, leaves, and wood of the tree. Two of the most commonly used species (both in the genus *Ocotea*) are *alcanforada moena* (“camphor moena”) and *canela moena* (“cinnamon moena”).

While moenas have been commonly exploited for timber for decades, several enterprises have successfully distilled and commercialized essential oils from several species in recent years. These efforts were likely inspired by the lucrative but wildly unsustainable harvest of the related *palo rosa* (“Brazilian rosewood”) for the perfume industry.

While rosewood has been well studied, the essential oil production potential of most moena species has never been tested. In 2008 CV planted over 500 saplings of *alcanforada moena* (a valuable timber tree in Madre de Dios) to evaluate the essential oil production potential of this species with a rich camphor-like aroma. CV’s two-and-a-half year old trees are now at a perfect age for a first harvest of leaves and small side branches for oil production.

In direct parallel to CV’s plans for *alcanforada moena*, CACE and its native Bora partners from the village of Brillo Nuevo identified the closely related *canela moena*, also known in its native Loreto for its rich aroma (and durable timber) as a potential source of fragrant essential oil. While CV has focused on using these trees in reforesting degraded forests, based on initial community input, CACE first intended to evaluate the potential for sustainably harvesting bark from wild moena populations. Given strong concerns about the unsustainability of bark removal, CACE is now shifting its interest to studies on more readily renewable *canela moena* leaves.

In the second part of this joint project, therefore, CV and CACE propose to experimentally harvest leaves and small branches from the sister moena species in their respective areas in 2012 and conduct trial distillations of these materials to evaluate the quantity and quality of essential oil from both. Two harvests will be carried out during the year to compare the impact of seasonality (wet versus dry conditions) on both leaf abundance and essential oil yield. CACE and CV will measure the growth and observe

the regrowth of leaves on a group of harvested and sample of un-harvested “control” trees to assess the impact of harvesting on tree health.

CV and CACE will acquire comparable equipment and use the same methodology to distill samples of leaves and small branches from canela moena in Loreta and alcanforada moena in Madre de Dios. Samples of these experimental distillations will be shared with several essential oil buyers that both groups have already identified as interested in purchasing these sorts of products. These studies and their feedback will help assess market interest and potential revenues from developing one or more of these enterprises with communities.

3. Palo rosa (Rosewood)

Palo rosa or *palo de rosa*, also known as rosewood or Brazilian rosewood (*Aniba rosaeodora*), is an emblematic species for over-exploitation of Amazonian resources. Like moena cousins mentioned above, *palo rosa* is recognized for its excellent timber and striking aroma, equated with the scent of fresh roses and lavender. Though essential oil implies a non-timber forest product, oil processing in the past has typically meant entire trees—roots, trunk and all—were ground up for distillation. Unrelenting rosewood harvest so depleted its wild populations that IUCN placed it on its red list of endangered species.

Because of its established market and known productivity, *palo rosa* is one of the few “safe bets” for reforestation. Studies have already demonstrated that quality oil can be distilled from its leaves – not just from the non-renewable trunk and roots. The literature and field experience indicate newly planted *palo rosa* will tolerate modest levels of leaf harvest after two or two-and-a-half years.

CV and CACE visits to the Bora native community of Brillo Nuevo and Yagua native community of San José de Piri revealed that both communities would be very interested in hosting small-scale reforestation plots with *palo rosa* to provide a potentially valuable NTFP resource.

This project proposes to enlist CV as a consultant to provide information and technical service to one or if possible both communities in two visits in 2012 to initially plant up to 1 hectare plots with 500 to 1000 seedlings per site. These visits would include developing community management plans for tree cultivation and weed control in the first two critical years of sapling growth. Seeds would be acquired from San José de Piri and/or other sources being investigated in Loreto. Leaves would also be collected from trees at this site to begin experimental distillations similar to ones described for canela moena. CACE would provide follow-up assistance to both communities in its regular visits. When these planted trees reach harvestable age, CACE would work with the communities to further develop their capacity for distilling and marketing the essential oil.

If possible, CV will acquire palo rosa seeds from a source in Loreto to include this species in its reforestation program in the Tambopata region of Madre de Dios.

Beyond the seed funding provided by MGWC to launch this project in 2012, CACE commits to carry out the next phase of project support in 2013 and product development and marketing in 2014 and 2015. (around 2014-15). CV also commits to allocate funds from its general budget for follow up visits to the participating communities in 2013 and 2014.

Budget summary

Both organizations will contribute considerable time of its directors and field staff to support this project without additional expense to this project budget. This proposal, therefore, requests funding from MGWC to cover travel, community related expenses, and equipment needed for this specific project. Expense categories are estimates, and both CACE and CV commit to provide the balance where additional funds are needed, or reallocate funds appropriately if estimates for specific categories prove too high.

Travel

1. Airfare and travel expenses for Plowden to visit Peru in February/March, 2012. Will include quick consultations with CACE sites in Loreto and 10 days in Madre de Dios focused on designing and carrying out initial sangre de grado experimental harvests - \$2,000
2. Airfare and travel expenses for Van Loon to make two trips to Loreto to advise CACE partner communities on establishing trial plots of palo rosa: 2 x \$1000 = \$2,000

Sub-total: \$4,000

Stipends and community support

1. Daily stipends for community members involved in experimental leaf harvest of canela moena in Brillo Nuevo and leaf and seed harvest of palo rosa in San José de Piri: 20 days x \$10/day = \$200
2. Food for community members assisting in reforestation plot establishment and maintenance: 4 days x \$50/day = \$200

Sub-total: \$400

Equipment and supplies

1. Distillation equipment, gas and accessories for Camino Verde: \$1,300
2. Distillation equipment, gas and accessories for CACE: \$800
3. Seed purchase and planting supplies: \$200
4. Climbing and leaf collecting equipment: \$300

Sub-total: \$2,600

Total: \$7,000

Allocation to Camino Verde: \$3,500

Allocation to CACE: \$3,500