SGP The GEF Small Grants Programme

COMMUNITIES CONTRIBUTING TO BIODIVERSITY

Biodiversity Products from Latin America and the Caribbean

gef GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

UNDP

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FOREWORD

Meaningful partnerships are the foundation for success in environmental progress. Since its inception, the Global Environment Facility (GEF) has fostered partnerships with the public, private and nonprofit sector to increase its impact in the developing world. Over time, we have found that one of the most robust alliances that can be achieved is with civil society and community based organizations (CSOs and CBOs) whose expertise in the field helps us to communicate more effectively with the communities and people we serve.

When it comes to biodiversity, CSOs and CBOs stimulate local action that makes a visible impact on global biodiversity. Through this manifold of small partnerships a global constituency to save biodiversity is engaged. Partnering with CSOs therefore is a critical step in funding any GEF project.

To date about 13 percent of our projects have been granted directly to CSOs translating into catalytic benefits, both globally and locally. Through the Small Grants Programme (SGP) we have supported over 12,000 projects in 122 participating countries since the inception of the programme. Thus, the GEF, together with its partners, has made a significant and visible difference to the environment and the quality of life of thousands of local communities while at the same time achieving global benefits and supporting the implementation of international agreements.

This publication is a part of that process. The region of Latin America and the Caribbean is pivotal for building the SGP's model of success. Six of the countries included in this catalog were the first to develop SGP projects. They began as pilot projects to expand on the notion that biodiversity conservation and human development are mutually attainable. Today, biodiversity conservation connected to sustainable livelihood is a working model for SGP projects around the world.

The biodiversity products featured here showcase our successes. Furthermore, they are a celebration of biodiversity. The multitude of productive landscapes, the abundance of ecosystems, the diversity of cultural expressions and the economic opportunities created are all part of biodiversity.

We encourage GEF stakeholders from all sectors, public, private and nonprofit, to read these pages and offer guidance to ensure the GEF stays on the right path. It is through the guidance and collaboration of many partners and constituencies that we will save biodiversity both locally and globally.

Monique Barbut
CEO and Chairperson
Global Environment Facility

PREFACE

Launched in 1992, SGP has implemented more than 12,500 projects at the community level to protect the global environment. This publication captures the experiences and results of the SGP's Latin American and Caribbean (LAC) portfolio of over 2,700 projects in the biodiversity focal area. Since its inception, the biodiversity focus of the SGP has stressed sustainable development through improved livelihoods. The sustainable use of biodiversity-based products and commodities are one example of UNDP's commitment to meeting communities' development needs whilst also guaranteeing the conservation goals for global biodiversity protection.

Biodiversity loss resulting from climate change, over exploitation, invasive species and habitat destruction is a major challenge for poverty reduction. Communities' reliance on biodiversity for income, as well as for basic needs like food, shelter, clean water and clothing, is often understated. One of the foundations for sustainable development is acknowledging biodiversity's value for communities. Improving the livelihoods for the poor requires a dual approach: firstly documenting the crucial sustaining services provided by biodiversity, and secondly in making an economic case for investing in these vital services.

This catalog publication documents the biodiversity vital to LAC communities for sustainable development. It is a step towards educating the public, private and civil society sectors about the realities on the ground for LAC communities. Most exciting is the vision to form alliances and partnerships with funders, retailers, researchers, governments, non-governmental organizations and small producer organizations to further improve LAC communities' livelihoods. Investing time, money and expertise, through these collaborations, will accelerate the path towards healthy, prosperous, sustainable communities throughout the region.

Each profile featured here documents what the local biodiversity product is and how it is sustainably produced - many of which are not well-known as globally traded commodities. The high quality photography of each product is a tremendous achievement and the first of its kind for a SGP regional publication. The catalog design itself was developed for the ease of reading and accessibility for multiple audiences. It can be read from front to back or by product categories depending on your interests. The wealth of information included is educational and provides a solid foundation to build deeper relationships across all sectors.

Steps are also already underway to make the profiles available on-line through an emerging partnership with key capacity-building organizations supporting the strengthening of supply chains of local producer organizations. UNDP hopes that this catalog marks the beginning of stronger partnerships for recognizing the role that biodiversity-based products and commodities play as a means for poverty reduction and sustainable development. The communities we serve and the biodiversity we all cherish are clear reasons for UNDP to renew its commitment to demonstrating the undeniable linkage between the sustainable use of biodiversity, community empowerment and poverty reduction.

Yannick Glemarec
Executive Coordinator
UNDP/GEF

WORKING WITH BIODIVERSITY TO SAVE IT

Terence Hay-Edie
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THE VALUE OF BIODIVERSITY

2010 is the International Year of Biodiversity. The United Nations is fostering collaboration across its many agencies to work with non-governmental organizations, the private sector and people everywhere to act to protect our biodiversity. Biodiversity is the natural wealth that exists in life on Earth. We rely on it to sustain us economically and for the health of the planet. It provides us food, fuel, medicine, and a cultural and spiritual connection to nature.

Habitat loss, over-exploitation, climate change, invasive species and pollution are the main threats to biodiversity.

Biodiversity can be viewed from several perspectives. From a species perspective, there are 1.75 million species known to scientists on Earth. Many believe that number may actually be about 13 million species. Biodiversity includes the genetic make-up of those species, which is the backbone to ensuring our future food security through varieties of crops and livestock. Biodiversity is also part of the variety of ecosystems – deserts, forests, wetlands, mountains, lakes, rivers, and agricultural landscapes – that contribute to our dynamic

planet. Each landscape is a productive landscape that provides for humans and other living creatures. These "ecosystem services" are clean water and air, healthy soil, and abundant natural resources. The value of biodiversity speaks for itself in what it provides. Yet, its role and function in our economies, cultures and ecosystems are coming to light because of how severely we've eroded these sustaining services.

It is through your imagination that the future of communities contributing to and marketing biodiversity can be told.

Habitat loss, over-exploitation, climate change, invasive species and pollution are the main threats to biodiversity. In more than half of the Earth's 14 terrestrial biomes between 20% and 50% of their total area is converted to cropland today. Whilst there are huge differences in the consumption levels of different social groups, our collective demand for fish, timber, and food is out-pacing the supply that nature is providing. Climate change is shifting the very ecosystems that sustain life. Changes in flowering and migration patterns are affecting species distribution and quite possibly our food supply. Invasive species that are introduced into non-native geographical areas are altering the genetic and species composition of biodiversity hotspots around the world. Pollution from expanding agricultural and land and coastal development are destroying sensitive ecosystems like mangroves.

Biodiversity and sustainable human development are tightly connected. On World Food Day 2009, the executive secretary for the Convention on Biological Diversity (CBD), Ahmed Djoghlaf, talked about the link between hunger and biodiversity loss:

> One sixth of humanity is suffering from hunger…During the second half of the twentieth century, the global food system was able to respond to the doubling of the world population by more than doubling food production whilst also contributing significantly to reducing poverty. However, the rate of growth in agricultural productivity is declining in parallel to the alarming loss of agricultural biodiversity and the increasing reliance of agriculture on a dangerously narrow base of biodiversity.

Over the past 12,000 years approximately 7,000 plant species and several thousand animal species have been used for human food. Today, 75% of the food crops once grown have disappeared in only 100 years.

The products described inside these pages, and more importantly the stories of the communities, present a different scenario. Rural communities rely on a much larger quantity of our biodiversity. For example, some indigenous and traditional communities use up to 200 species for food. Yet, many still have to contend with the global environmental threats. It is how they are responding that is changing the future of biodiversity. Through the support of UNDP/GEF's Small Grants Programme (SGP), communities are finding innovation where there once was degradation. They are teaching us how to live more sustainably and to work with biodiversity as integral to our economies and communities.

BIODIVERSITY IN LATIN AMERICAN AND THE CARIBBEAN

Latin American and the Caribbean (LAC) consists of 33 countries. It is amongst the most biologically diverse regions of the world with 5 of the 12 mega diverse countries that harbor 70% of global biodiversity. According to some of the most widely used biodiversity classifications, LAC houses 28% of the Conservation International global hotspots and 26% of the World Wildlife Fund's Global 200 ecoregions -- with similar percentages in each of the terrestrial, freshwater and marine ecoregions. Based on a LAC-specific categorization of terrestrial biodiversity (Dinerstein 1995)[1], 9 distinct bioregions can be identified. Within these 178 ecoregions identified, 17% are critical in terms of conservation status, and 51% are endangered.

[1] Dinerstein, E.; M. Olson, David; J. Graham, Douglas; L. Webster, Avis; A. Primm, Steven; P. Bookbinder, Marnie; Ledec, G. (1995) A Conservation Assessment of the Terrestrial Ecoregions of Latin America and the Caribbean. World Bank: Washington, DC.

Efforts to promote biodiversity conservation in production landscapes are increasingly supportive of community marketing and economic exchange of biodiversity. SGP supports a multitude of local communities and farmers around the LAC region to conserve biodiversity through commercialization and exchange of biodiversity products (i.e. by putting a value on products to ensure that habitat is also worth conserving). This catalog provides an overview of the biodiversity products coming out of SGP's communities. There are 112 biodiversity products represented. Each example is but one of many that exists in LAC communities. They cover 15 categories of biodiversity used for food, housing, income, medicine and health, art and culture and environmental restoration and conservation.

Each product and community has a unique story to tell. Some are changing the local economy and diet. In Argentina's high valleys, the Cauqueva cooperative is reviving the ancient technique for growing the wild grains of kiwicha and quinoa. Their work is restoring a native, nutritious diet and ecological health to the upland valleys, a critical habitat for wild grains. In Brazil, the endangered Cerrado, a grassy savannah ecosystem, is central to rural communities' livelihoods. Education about the endemic fruits and nuts of the Cerrado is leading to a change in the local food economy. Toasted palqui, a Cerrado nut, is now popular with school breakfast programs.

Many communities are protecting biodiversity directly in national parks, biological corridors, UNESCO Biosphere Reverses and World Heritage Sites. In Costa Rica, the Association of Small Producers of Talamanca, whose membership is 80% indigenous, harvests araza fruit in the Talamanca Caribbean Biological Corridor as part of the country's payment for ecosystem services program. In Mexico, Noh Bec manages a community forest in the Sian Ka'an Biosphere Revere. One portion of the forest is for sustainable forestry and the other for permanent conservation. Both communities are linked to international fair trade markets.

Others are learning how to create new livelihoods to replenish biodiversity. In the Cuban fishing village Carahatas, fishermen collaborated with researchers to develop sustainable techniques to harvest natural marine sponges. In the past, the area was fished with bottom trawlers that damaged spawning areas for commercially valuable fish species. In many coastal marine communities in LAC, mangroves and tidal areas are being treated with a new sensitivity to their role in the reproduction of fisheries. Communities are leading the way with products that don't deplete the fish stock, such as seamoss and naturally-seeded clams and conch.

Communities are teaching us how to live more sustainably and to work with biodiversity as integral to our economies and communities.

Communities are making use of native and/or rare species for products. In honey production, there is an intentional effort to create wild honey from local flower and tree species and native bees. In Brazil, Natmel is made from bees native to the endangered Cerrado biome. The native bees are crucial for pollination of native flora and maintaining the Cerrado as a healthy, functioning ecosystem. In Ecuador, a dry flower honey comes from the nectars of two trees *Erythrina crista-galli* (ceibo) and *Ceratonia siliqua* (algarrobo), which are important to the Sancán dry forest.

Some products are directly associated with our well-being and human connection to nature. The Pacari Cerrado Medicinal Plants Network in Brazil, a mostly women run organization, is educating Cerrado communities about traditional medicinal knowledge. Along with education, the network makes medicinal and personal care products with native species.

Lastly, communities are relating to biodiversity through their cultural expressions. In Bolivia, in the Gran Chaco eco-region, a hot and semiarid lowland region, the women devised a management plan to continue with the Ayoreode cultural tradition of satchel making with the rare *B. hieronymi* plant. They recognized that the raw material

was disappearing in the wild and their harvesting techniques were contributing to desertification. Today, they plant *B. hieronymi* by the thousands. Their actions have led to a new forest conservation area and buffer zone for their economic activity. In Peru, the artisans of Mórrope district joined together to restore the native cotton that grew in the fields of the ancient Peruvians. They rescued this species from extinction by collecting seeds from the few plants that remained in forgotten old crop fields.

It is our hope that through showcasing the biodiversity products found in LAC that greater stride for communities and biodiversity can be made. There are efforts underway within the UNDP to further understand the economic value and ecosystem services provided by biodiversity in LAC. Through the UNDP LAC Regional Biodiversity Initiative a consultation process surveyed biodiversity's function and role in LAC to inform policymakers and key international meetings, including the 10th Conference of the Parties to the Convention on Biological Diversity. Already, the LAC Biodiversity Products Catalog process has unearthed useful information for the UNDP consultation. For example, LAC communities such as the Association of Small Producers of Talamanca in Costa Rica are earning millions of dollars annually for biodiversity products in markets that previously didn't existed.

Yet, many of the communities and products represented in the catalog are isolated from marketing channels, education and infrastructure development. Increased funding and, most importantly, relationship building are key to communities' success in biodiversity conservation and marketing. For some communities, they have well-established enterprises that can serve as models for new projects. For others, the appropriate connections are still needed for further research or possible retail markets. The needs are varied, and, yet, there is a tremendous wealth already being created both economically and environmentally.

The stories and vision of LAC communities will captivate you. It is through your imagination that the future of communities contributing to biodiversity and its wider economic exchange can be told. Share the catalog with your colleagues, get in touch with the SGP National Country teams, and join us in supporting community-based efforts towards conserving our global biological and cultural diversity.

A FUTURE TOWARDS COMMUNITIES CONTRIBUTING TO BIODIVERSITY AND ITS WIDER ECONOMIC EXCHANGE[2]

Michel Pimbert
Director of the Sustainable Agriculture, Biodiversity and Livelihoods Program,
International Institute for Environment and Development

An important message of this book is that sustainable and effective conservation of biodiversity in Latin America and the Caribbean calls for an emphasis on community-based management and enabling policy frameworks. These are not the easy options. Contemporary patterns of economic growth, of modernisation and nation building all have strong anti-participatory traits. The integration of rural communities and local institutions into larger, more complex, urban centred and global systems often stifles whatever capacity for decision making the local community might have had and renders its traditional institutions obsolete. Achieving community based management of biodiversity implies a number of fundamental reversals. To spread and sustain community-based conservation considerable attention will have to be given to the following in particular.

Debunk the "wilderness" myth and recognise the co-creators of biodiversity. Most parts of the world have been modified, managed and, in some instances, improved by people for centuries. The very biodiversity which conservationists seek to protect may be of anthropogenic origin, since there is often a close link between moderate intensities of human disturbance and biodiversity. If species and landscapes have been moulded or modified by human presence, they are not automatically considered to be in the public domain. Local communities may therefore claim special rights of access, decision, control and property over them. This historical reality should be the starting point of community-based conservation wherever local people have shaped local ecologies over generations. Community-based conservation must begin with the notion that biodiversity rich areas are *social spaces*, where culture and nature are renewed *with*, *by* and *for* local people.

Strengthen local rights, security and territory. Denying resource use to local people severely reduces their incentive to conserve it and undermines local livelihood security. Policies for community-based conservation clearly need to reaffirm and protect local rights of ownership and use over biological resources for ethical, as well as practical reasons.

Build on local priorities, the diversity of livelihoods and local definitions of well-being. From the outset, the definition of what is to be conserved, how it should be managed, and for whom should be based an interactive dialogue to understand how local livelihoods are constructed, including local and indigenous people's own definitions of well being. Participatory, community-based conservation starts not with analysis by the powerful and dominant outsiders, but with enabling local people, especially the poor, to define their own priorities.

Build on local systems of knowledge and management. Local management systems are generally tuned to the needs of local people and often enhance their capacity to adapt to dynamic social and ecological circumstances. Despite the pressures that increasingly undermine local systems of knowledge and management, community-based biodiversity conservation should start with what people know and do well already, so as to secure their livelihoods and sustain the diversity of natural resources on which they depend.

Build on local institutions and social organisation. Local organisations are crucial for the conservation and sustainable use of biodiversity. Local groups enforce rules, incentives and penalties for eliciting behaviour conducive to rational and effective resource conservation and use. In developing community-based management schemes, increased attention needs to be given to action through local institutions and user groups. Outside interventions must be designed in such a way that at the end of the project cycle there are local institutions and skills in place to ensure the continuation of biodiversity and natural resource management, without further need for external inputs.

[2] This section draws extensively on Pimbert, 1996 and 2010

Emphasise locally available resources and technologies to meet fundamental human needs. Community-based conservation that seeks to provide benefits for local and national economies should give preference to informal innovation systems, reliance on local resources and local satisfiers of human needs. Preference should be given to local technologies by emphasising the opportunities for intensification in the use of available resources. Sustainable and cheaper solutions can often be found when groups or communities are involved in identification of technology needs; in the design and testing of technologies, their adaptation to local conditions; and finally, in their extension and replication to others. The potential for intensification of internal resource use without reliance on external inputs is enormous.

Support negotiated agreements and enabling policies for local action. The success of people-oriented conservation will hinge on promoting socially differentiated goals in which the differing perspectives and priorities of local community members and outsiders (conservationists, foresters, bioprospectors) must be carefully balanced and negotiated. Signed agreements between external institutions and local community organisations could promote responsible and accountable interaction as well as equity and social inclusion. In the case of indigenous peoples, national policies need to be brought in line with internationally recognised human rights standards: policies which allow indigenous peoples to represent their own interests through their own organisations, and not through artificial consultative processes controlled by external organisations.

Introduce economic incentives and policies for the equitable sharing of conservation benefits. Many of the schemes designed to compensate or/and provide local economic incentives for community-based conservation need to pay greater attention to equity and human rights issues. Unfortunately in many well publicised "community-based" ecotourism and bio-prospecting schemes in the past, benefits have tended to be one sided, going mainly to external groups interested in conservation and not to local people. Community-based conservation of biodiversity has little chance of success where benefits are not distributed equitably among various members of the community, - including women and youth. The distribution of benefits within the community should also be administered by a local institution that carries out its activities in a transparent way and is accountable to the community.

Rely on plural forms of economic exchange and not just money-based markets. There is currently a widespread emphasis on market-based solutions to solve environmental problems and meet human needs and desires. However, the focus on commercial and money-based markets often overlooks the importance of more plural forms of economic exchange (subsistence-based markets, barter, solidarity and cultural 'gift' economies). Whilst largely unseen and ignored in national accounting and planning, economic exchanges based on barter, reciprocity, gifts and solidarity principles are key to sustaining biodiversity in a variety of local settings. There is thus an urgent need to embrace a broader and more inclusive understanding of economics in biodiversity conservation programmes. New institutional innovations for the conservation and sustainable use of biodiversity will need to rely on creative combinations of use and exchange values as well as on more plural forms of economic exchange that may (or may not, as the case may be) include commercial markets linked to global supply chains.

It should be emphasised here that the devolution of biodiversity conservation to local communities does not mean that government agencies and other external institutions have no role or responsibilities. Throughout Latin America and the Caribbean, as elsewhere, the government's application of appropriate regulations to prevent pollution and resource-degrading activities is essential to control the activities of rich and powerful interests (such as timber, mining and 'land grabbing' corporations) with little concern for local-level biodiversity conservation efforts.

Another central challenge is in finding ways of allocating limited government resources so as to obtain widespread replication of

community initiatives. New partnerships between local and national governments, rural people and the organisations representing them are also needed to understand the dynamic complexity of local ecologies; honour indigenous knowledge and local intellectual property rights; promote wider access to biological information and funds; redirect public subsidies from the very rich to rural communities who nurture biodiversity rich cultural landscapes; and design policies, technologies, as well as plural forms of economic exchange on the basis of local knowledge, needs and aspirations.

I leave you with this vision. The valley of Lares-Yanatile in Cusco, Peru is rich in biodiversity. It contains three different agro-ecological zones between the altitudes of 1,000 to 4,850 metres: *yunga*, *quechua*, and *puna*. Andean tubers and potatoes are grown in the highest zone; corn, legumes and vegetables in the middle area; and fruit trees, coffee, cacao and yucca in the lower part. Every week a barter market is held in the middle area of the valley. Here nearly 50 tonnes of goods are traded each market day, ten times the volume of food distributed by the National Programme of Food Assistance.

Anyone can participate in the market and can trade any amount of any crop. Women are key players in this non-monetary market, which is vital in ensuring that their families have enough food to eat, and that they have a balanced diet. A web of local organisations operating at different scales (from the household to the whole landscape) governs these forms of economic exchange and contributes to the adaptive management of environmental processes and natural resources.

In addition to contributing to the food security of the poorest of the poor, this decentralised web of local organisations also enhances cultural, social and ecological resilience in the face of risk and uncertainty. At this market is the web of biodiversity, the web of relations, and the spinning of a larger web of a biological diverse, sustainable, and just world.

AGRICULTURAL PROUDCTS

Native Plants and Animal Products

QUINOA AND KIWICHA FLOURS

Name of species and ecosystem: Quinoa belongs to the *Quenopodium* genus and is native to the Andean region. Kiwicha belongs to the *Amaranthus* genus and is native to the Americas.

Product location: Quinoa is found 2,000 m above sea level in the Quebrada de Humahuaca, Puma, and High valleys in Jujuy, Salta, and Valles Calchaquíes, Argentina. Kiwicha can be adapted to 2,800 m above sea level, and in general to warm and temperate climates, such as in Quebrada de Humahuaca, Argentina.

Global distribution: These two products are found throughout the Americas. Due to genetic and technological developments, the grains can be found on other continents. However, the native varieties are restricted to small valleys with limited areas for cultivating.

Production description: Cultivated in mountain towns and small valleys, respectively, quinoa and kiwicha are traditional grains known for their high nutritional content. As wild varieties that grow naturally, conservation of their habitat is paramount to their survival. Both grains nearly disappeared from their natural environments due to lack of knowledge about their nutritional and ecological value. In Argentina, public and private institutions have promoted their recovery through workshops and programs. Recovery of the species has been slow, which signifies the great importance of highlighting the unique conservation and consumer qualities of these products.

Over the years, the grains have been in increased demand because, with their high protein content and all amino acids present, they are considered a complete protein. Not only are these grains a good source of protein for consumers everywhere, they are also vital to enrich the diets of often economically poor local farming communities. The grains are milled into flours and used in a variety of traditional dishes.

Quinoa and kiwicha flours made from the wild grains. They are high in protein content and contain all the amino acids we need for a complete protein. Kiwicha flour has a particularly useful texture and flavor that makes it easy to mix with less nutritional flours.

The grains are cultivated with old, native techniques that produce only small amounts. Due to the critical habitats needed to grow them, only a few Argentinean towns produce quinoa and kiwicha today. Traditionally, these towns were called “collas” because they preserved the genetic varieties and maintained the crops for all; there used to be many collas. Today, there are only a few that preserve the old ways of cultivation.

The Cauqueva cooperative is a self-managed organization whose membership is made of 150 small producers from these small towns, who maintain the tradition of quinoa and kiwicha cultivation. They are mainly in Quebrada de Humahuaca in the province of Jujuy. The cooperative aims to improve the standard of living of its members by producing and marketing ancient and horticultural products. The cooperative does trainings as a way to value ancient productive techniques and the native diet. Currently, the cooperative produces 400 kg of quinoa and kiwicha flours annually, with little capacity to increase production.

ANDEAN CORNMEAL

Name of the species and ecosystem: Corn from the *Zea* genus

Product location: Native to the Americas. Within the northwest of Argentina, it can be found in the lowest areas of the Andean mountains environment. Even though the strongest hypothesis claims that the origin of corn is in Mexico, corn dated 3,000 years older than corn found in Mexico is found in Huachichocana, Argentina (Purmamarca, Quebrada de Humahuaca, province of Jujuy).

Global distribution: The old corns are distributed all through America. In general, their preservation is associated with the existence of native communities.

Production description: The culture of Quebrada de Humahuaca has relied on cornmeal since its inception as a dietary staple. Today, the communities of the Cauqueva cooperative produce corn flour using a technique that loosens the starch in corn, which produces the slightly sweet flour used in sweet recipes. The cooperative also produces a blander cornmeal called "culli," or purple, which is used for breads and pasta. The cooperative's work with these ancient corn varieties is maintaining their genetic stock in the environment from which they came. Without these methods, the corn varieties, which require cross-pollination in the wild, might be threatened to disappear, as would the mountainous ecosystems where they grow.

Corn remains an important ingredient to the Quebrada de Humahuaca communities today. It is boiled for a meal called choclo or elote; toasted or used as raw flour to elaborate various dishes (tamales, anchi, soups), drinks (chicha, api, ulpada, chilcan), and sweets (capias, alfajores, maicenitas); and combined with boiled hard wheat for mote and tijtinchas.

The cooperative does trainings as a way to value ancient productive techniques and the native diet. They trade 2,500 kg of cornmeal flour each year. See description of the Cauqueva cooperative in the previous product description.

Andean cornmeal produced from ancient corn varieties called capia. The cornmeal is slightly sweet and good for sweet recipes. There is also a blander cornmeal called "culli," or purple, available, which is used for breads and pasta.

Native Plants and Animal Products

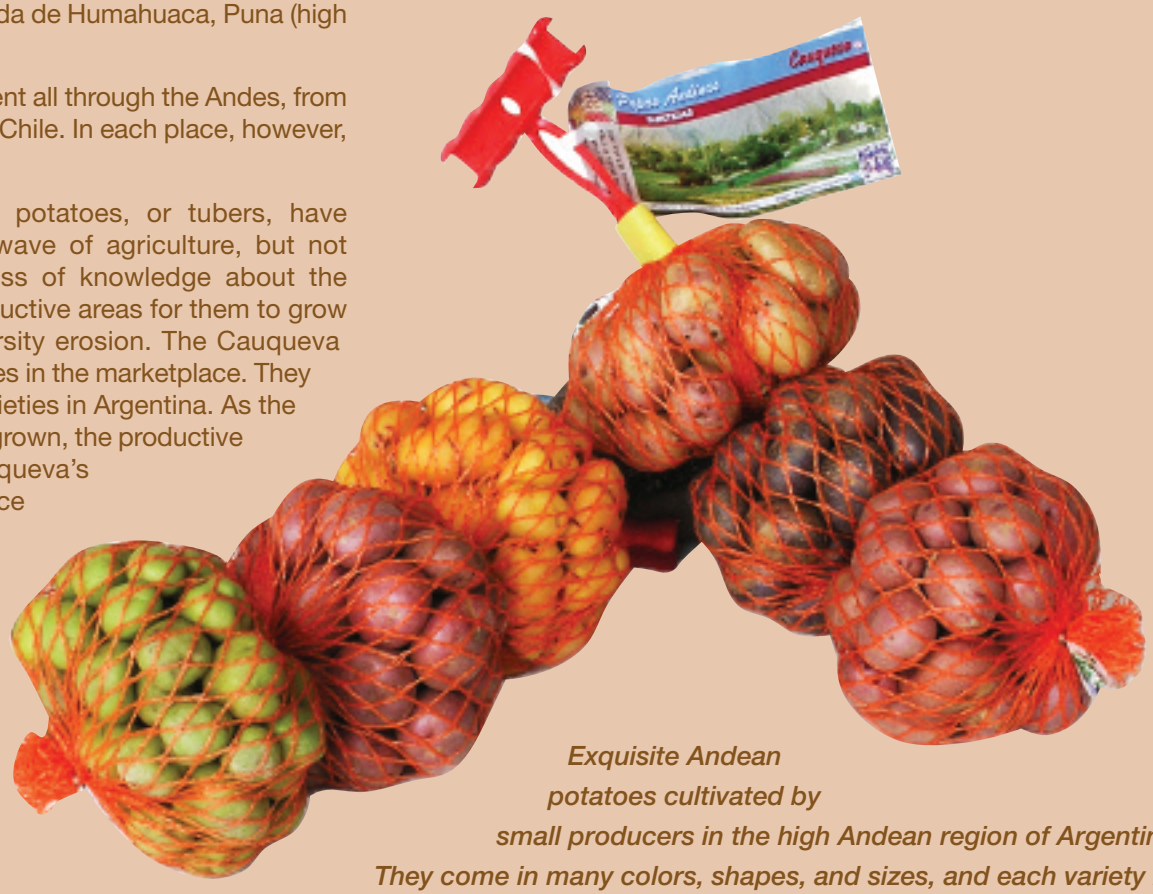
ANDEAN POTATOES

Name of species and ecosystem: *Solanum tuberosum*; scientists are considering whether the Andean varieties are a subspecies. In Argentina, where they are called Andean potatoes, there are Andean tubers of different types.

Product location: Limited to three places, mainly in the provinces of Jujuy and Salta; these are Quebrada de Humahuaca, Puna (high plain) and High valleys.

Global distribution: They are present all through the Andes, from Colombia to northern Argentina and Chile. In each place, however, there are different varieties.

Production description: Native potatoes, or tubers, have managed to survive the modern wave of agriculture, but not without some losses. Both the loss of knowledge about the Andean potato varieties and of productive areas for them to grow contributes to their overall biodiversity erosion. The Cauqueva cooperative is restoring these varieties in the marketplace. They produce and trade more than 50 varieties in Argentina. As the market value for these varieties has grown, the productive area has begun to recover. Cauqueva's example demonstrates the importance of generating commercial chains for biodiversity products in order to conserve natural habitats.



Exquisite Andean potatoes cultivated by small producers in the high Andean region of Argentina. They come in many colors, shapes, and sizes, and each variety is distinguished by its texture and taste. The range in their flavor and texture allows for a variety of uses, from mashed to fried potatoes (these tubers have a higher percentage of dry matter, making them prime for frying).

DEHYDRATED SUILLUS LUTEUS MUSHROOMS

Dehydrated Suillus luteus mushrooms, locally called k'allampa, from the pine forests of Bolivia. S. luteus has a sweet-smelling, tender flesh. High in protein and carbohydrates and low in fat, it is easy to prepare and available at any time of year.

Name of the species and ecosystem: *Suillus luteus*; the species belongs to mountain forests with a predominance of *Pinus radiata*, with which it has a symbiotic relationship.

Product location: Local communities in the municipality of Alalay, third section of the Mizque province, the department of Cochabamba, Bolivia

Global distribution: Found throughout the northern hemisphere in pine forests.

Production description: The mushroom species grows in symbiosis with pine trees; the mycorrhizal strands (the root tuber for mushrooms) of the mushroom spread out across the forest floor, absorbing nutrients that both the mushroom and the trees benefit from. This relationship supports the growth of indigenous natural forests and commercial plantations.

The producing communities in Bolivia are Yanagaga, Brrr, Viscachani, Canadas, and Mizque, in the Wankuni province of the Cochabamba department. The communities live in high altitudes that can reach freezing temperatures in the winter months of June and July. The S. luteus mushroom has contributed to a reassessment of the economic value of this harsh environment. As a byproduct of pine and eucalyptus forests, the mushroom has become an important complementary source of income.

The Mushroom Growers Association and Agroecological Alalay Forest township are rapidly increasing sales. Production is currently limited, due to the number of mushrooms dryers available for the 120 families participating in the project. The city of Cochabamba, the main market for the communities, has a market demand of four tons per month. The mushroom growers have the capacity to triple their current sales and meet the market demand with additional drying infrastructure.

Native Plants and Animal Products

Oca flour produced by the indigenous communities of Torko and Pocorasi in the Andes region of Bolivia. Oca flour is combined with citric acid, sugar, cloves, and cinnamon for cooking. (A sugarless variety is also available.)

OCA (OXALIS TUBEROSA) FLOUR

Name of species and ecosystem: *Oxalis tuberosa*; characteristic of semiarid ecosystems of mountain altitudinal ranges of 2,500 to 4,000 meters.

Product location: Department of Potosí, province of Chayanta Pocoata township, Uma Uma Indian district in rural communities of northern Potosi, Bolivia.

Global distribution: Located in Andean countries: Peru, Ecuador, and Bolivia.

Production description: Oca is *Oxalis tuberosa*, a root tuber like potato native to the Andes region. As an endemic species, it has high conservation value with respect to agricultural biodiversity. Oca is an important crop for food security and for preserving the genetic stock of the *Oxalis* genus

There is great potential in the cultivation of oca, commonly known as kellu, yuraj, puca tani tani, belt, flashing waca, and yana, among others.

The native communities in the Potosí region receive little support from the local government or the central state. As a result, they rely on their own productive means. They have a processing plant where they produce oca flour to the standards of market requirements. They formed a productive organization called Kawi Producers Association of Community Torko, which aims to contribute to economic development and to strengthen the productive capacity of the community.

LA GRANACHA ORGANIC SWISS CHEESE

Product location: Communities of La Granacha, Tejera, and Jalacate, municipality of San Nicolás, department of Estelí, Nicaragua.

Production description: Members of the communities are responsible for each step in the cheese production. They first process the cheese in the association's small artisanal factory and then let it mature in a cellar, a process that ages the cheese and creates a special flavor. The cooperative produces the most appreciated type of Swiss-style cheese, the famous Gruyere. In the future, they also plan to produce other Swiss-style cheeses such as Tilsit, Vacherin, and cream cheese. This type of cheese production is unique in Nicaragua and has quickly gained the recognition of many consumers around the country. Tourists are eager to visit the factory during their holidays.

La Granacha organic Swiss-style cheese is produced in communities located near the nature reserve of Tesomoto/ Pataste. The reserve contains a major source of water that supplies several surrounding communities in a dry region. Unsustainable land-use practices in the area have damaged the ecosystem and have contributed to dry soil conditions. The aims to encourage the villagers to develop sustainable production techniques and to aid in the recovery of the area's natural resources.

The community is composed of 20 low-income families. In an area dominated by coffee production, the community is a pioneer in the field of organic products in Nicaragua. The cheese is made in association with Programa Agrícola San Nicolás (ASOPASN).

A savory organic artisanal Swiss-style cheese made from cow's milk or goat's milk. Each pound of cheese costs 70 to 80 córdobas (about US$3.40 to $3.90).

Native Plants and Animal Products

GUINEA PIG

Name of species and ecosystem: *Cavia porcollus*; valleys of Peru.

Product location: High San Gabriel village of Lima, Peru.

Global distribution: Inter-Andes in South America.

Production description: In a small village of Lima, Peru, the Mother Builders of High San Gabriel raise guinea pigs as a vital protein source for their community. People from all over the country migrated to High San Gabriel and brought with them the pre-Incan tradition of raising guinea pigs for consumption on special occasions. The manure produced by raising guinea pigs is used for an organic fertilizer. Guinea pigs are easily raised and exported, and therefore have a high potential for profitability, especially to markets in Asia.

Guinea pigs raised for food and medicinal use. Guinea pig meat is high in protein, low in fat, and a source of essential fatty and amino acids.

PALQUI

Name of the species and ecosystem: *Acacia feddeana*, *Fabaceae-Mimosoideae*; dry forest systems.

Product location: Cotagaita township, Nor Chichas province, Bolivia (190 km south of the city of Potosí).

Global distribution: Southern Bolivia and northern Argentina, with a distribution ranging from 2,600 to 3,200 meters.

Production description: Palqui is a drought-resistant bean plant that grows on steep slopes, in shallow soils, and on rocks. Grazing pressure has led to 60% vegetative cover loss in the dry forests. In recent years, economic interest in palqui has led to its inclusion, and that of the dry forest ecosystem where it is found, in the National Strategy for Biodiversity Conservation.

A group of enterprising farmers from the rural communities of Cotagaita municipality formed the Ecological and Production Association Palqui (APROPALQUI) to work together in palqui harvesting and management. The association promotes the conservation and sustainable management of the native dry forest and of palqui. Due to their role in the communities, the farmers have positioned themselves to be a leading food production source in the municipality.

Toasted palqui is popular with the school breakfast program in Cotagaita township. Farmers currently produce 5,000 units per month and anticipate increasing their capacity, with newly purchased equipment, to 12,000 units. The production of dried palqui has benefited from the new equipment and is expected to increase from 2,000 units per month to 8,000. Palqui café is available in APROPALQUI stores and produced at 250 units (or 1,000 g) per month.

Today, the main markets for palqui products are the local markets in the Cotagaita municipality. APROPALQUI sees market opportunities in nearby municipalities and surrounding areas, such as the mining center of Potosí city. The association is currently improving packaging for a better presentation in the market.

Palqui in three forms—toasted, dried, and café — is wild-harvested in raw form in the dry forests of southern Bolivia. Palqui is a high-energy food source, with a chemical composition of 13.1% fat, 38.9% protein, and 38.5% carbohydrate, and as a source of calcium, iron, magnesium, phosphorus, and vitamin C.

Fruits and Nuts

BARU TOASTED NUT

Name of species and ecosystem: The baru tree, *Dipteryx alata*, is native to the Cerrado biome.

Product location: Pirenópolis, Goiás state, Brazil.

Global distribution: : Exclusive of the Cerrado biome.

Production description: The baru tree grows in rich soils in an extremely threatened ecosystem that has been deforested due to the expansion of monoculture crops and the creation of pastures. The tree itself is vulnerable because of its high quality timber, which is sought after to build fences and houses, and for charcoal. Promessa de Futuro, a family agriculture association, produces and commercializes many Cerrado products regionally and locally, including baru nut. These products promote the Cerrado and create value in conserving the landscape.

Promessa de Futuro's diverse production of marmalades, chutneys, preserves, teas, beans, and baru nut are either collected in the Cerrado or are planted organically in the community. The seasonality of baru fruit production varies significantly, and does not follow a registered pattern. In 2007 and 2008 the trees' productivity was high, but in 2009 there will be no baru to collect. The last harvest generated 500 kg. Promessa de Futuro sells toasted baru in packages of 50 g, 100 g, 250 g and 1 kg.

The tasty baru nut has many uses, from a nutritious food to a medicinal. Baru nut, rich in many minerals, especially iron and zinc, can be used to prepare recipes such as cakes, cereal bars, cookies, liquor, granola, flour, and ice cream. Studies show that the oil from the nut can reduce pain in cases of osteoarthritis, arthritis, and rheumatism.

DEHYDRATED CERRADO CASHEW

Name of the species and ecosystem: *Anacardium humile*; native of the Cerrado biome

Product location: Diorama, Goiás state, Brazil.

Global distribution: Cerrado biome.

Production description: Cerrado cashew's short harvesting period of two weeks produces a small quantity, with exceptional flavor. The Small Farmers' Agroecological Technology Center (Agrotec) organizes the Cerrado cashew harvest and teaches the farmers techniques to ensure a successful harvest and to protect the biodiversity of the area. Since the 1990s, Agrotec has worked with families to make use of a fraction of a 125-hectare area to earn a living. These harvesters are changing their relationship to the Cerrado, preserving their areas, and making additional profit from the Cerrado trees.

The dehydration process involves adding brown sugar, improving on its natural sour flavor. Agrotec invests in the diversification of the products they offer. In addition to the dehydrated cashews, they also produce toasted baru, baru cereal bars, and baru oils.

The Agrotec families harvest the cashews in September. Production rates vary depending on the amount produced the previous year. In 2008, 50 kg of cashews were harvested and sold in 100 g packages.

Dehydrated Cerrado cashews are a special treat with a distinct flavor from the grasslands of central Brazil. Cashews are rich in Vitamin C and fibers and contain antioxidant properties. This practical product is durable, nutritious, and very portable, making it easy to be eaten anytime and anywhere. The cashews can be eaten naturally or as an ingredient in liquors, juices, ice creams, and marmalades.

Fruits and Nuts

PEQUI

Name of species and ecosystem: *Caryocar brasiliense*; typical to the Cerrado biome.

Product location: Japonvar, northern Minas Gerais state, Brazil

Global distribution: Cerrado biome.

Pequi preserve made from the Cerrado fruit. Pequi fruit is rich in vitamin A; each 100 g of pulp contains 40 times more vitamin A than the recommended amount for adults. Vitamin A is beneficial for the skin, eyes, sinus, and throat, and protects against bronchial infections. In addition to Vitamin A, pequi contains high levels of riboflavin and thiamine, all of which indicate the fruit's great nutritional value.

Production description: The pequi fruit tree symbolizes the Cerrado biome, with the fruit's use in traditional regional dishes and the tree's role in conservation. The Cerrado, particularly the northern region of Minas Gerais state, is threatened by the expansion of eucalyptus and soy monocultures. Recognizing the need to protect the pequi tree and the livelihood of local communities, the Cooperjap Cooperative worked with its 210 members to establish the Pró-Pequi Law (state law 13.965), which regulates pequi extraction and protects the tree from being cut down. The pequi tree is now helping protect natural areas as it generates income for local communities that no longer need to cut down the Cerrado in order to make a living.

Traditionally, pequi is used in a variety of recipes. The most famous dishes are chicken with pequi and rice with pequi. Pequi oil is also frequently used to cook and to make soap. The Cooperjap Cooperative sells pequi fruit primarily as a preserve, since it's only naturally available for two to three months. The Cooperjap has developed new products, such as pequi flour, pequi flour with dehydrated meat, pequi cream, and pequi liquor.

Pequi production is concentrated in the months of November and December, but the seasonality between years fluctuates. The production at the end of 2007 was 12 tons; and in 2008, it was 4 tons, due to the higher production the year before. The pequi preserve is sold in jars of 340 g and 585 g, as well as in packages of 1 kg and 5 kg (primarily sold to restaurants).

ARAZA

Name of the species and ecosystem: Aracá-boi or araza; tropical rain forest, western Amazonia

Product location: Talamanca, Limón, Costa Rica.

Global distribution: The araza is a tropical fruit from the Peruvian Amazon and western Amazon in Brazil. It was introduced to Costa Rica, and occurs in greater quantity in the area of the Costa Rican Caribbean.

Production description: Born in the wilds of the Amazon rain forest, araza is a durable fruit for making juice. The Association of Small Producers of Talamanca (APPTA) members harvest the yellow fruit in the Talamanca Caribbean Biological Corridor, which is part of the Amistad International Park and the Friendship Biosphere Reserve in Costa Rica. As part of an important biodiversity area, APPTA participates in the government's payment for environmental services by harvesting the araza fruit throughout the forest system. Over 80% of APPTA's members belong to the indigenous reservations. APPTA serves as both a marketing channel for products like araza and an educator on sustainable harvesting techniques to protect biodiversity.

APPTA producers harvest 29,000 pounds of araza per year in two harvesting seasons: October to January and April to June. The producers envision accessing larger markets through a new marketing strategy design.

The araza is sold in fair trade and organic markets in Europe and the United States either as a pasteurized juice mixed with exotic fruits or as a frozen pulp. The araza juice can be stored longer than other tropical fruits, due to its biochemical and physical makeup. In addition to juices, araza can be used in soft drinks, nectars, jelly, and liquor.

Fruits and Nuts

ORGANIC BANANAS

Name of species and ecosystem: *Musa acuminata* and *Musa balbisiana*.

Product location: Talamanca, Limón, Costa Rica.

Global distribution: Bananas are grown in over 130 countries, from Southeast Asia to Oceania and South America. The world's largest producer is India. The leading exporter is Ecuador.

Production description: The growth and harvest of bananas worldwide is no coincidence. Bananas are an important food source for sustaining energy and balance in the body. The bananas cultivated and harvested by the Association of Small Producers of Talamanca (APPTA) are not only a healthy food, they are good for conservation. Small producers harvest the bananas in the Talamanca Caribbean Biological Corridor, which is part of the Amistad International Park and the Friendship Biosphere Reserve in Costa Rica. As part of an important biodiversity area, APPTA participates in the government's payment for environmental services by harvesting organic bananas throughout the forest system. In doing so, the project contributes to reducing the intensive use of pesticides in the country which has been associated with a high level of stomach cancer in the country. Over 80% of APPTA's members belong to the indigenous reservations. APPTA serves as both a marketing channel for products like bananas and an educator on sustainable harvesting techniques to protect biodiversity.

APPTA harvests 1,600,000 kg of organic bananas per year. Their sights are on even more production with greater market access.

Organic bananas from the wild. Bananas contain three natural sugars: sucrose, fructose, and glucose. These sugars combined with fiber make bananas a substantial energy source for the body. Research has shown that two bananas provide enough energy for 90 minutes of strenuous activity. Bananas can also help with depression, anemia, stress, and hangovers. In the tropics, they say "a banana a day keeps the doctor away."

MASICA, "QUEEN OF NATURAL NUTRITION" / MAYA NUT

Name of the species and ecosystem: *Brosimum alicastrum*; tropical forest

Product location: The Guayabo, Dulce Nombre de Olancho Culmi, Honduras

Global distribution: Tropical Forests of Central and South America

Production description: Ancient and nutritious masica, or Maya nut, was the main source of food for the Mayans. Today, rural communities in the buffer zone of the Rio Platano Biosphere are reviving the traditional food. The masica tree is an instrumental natural resource for humans and the forest. Not only does it provide a super food for humans, it's a source of nutrition for animals; it protects and maintains healthy soils and water sources; and it's harvested naturally with no chemicals or invasive techniques such as cutting down trees. The masica tree can grow only in virgin, primary forest, making it a symbol of successful forest conservation.

COMGABIL (Cooperativa Mixta the Guayabo) is a company dedicated to marketing and managing the masica. The cooperative worked to rescue and spread knowledge and appreciation of masica in the rural communities of Honduras. In particular, the cooperative works with women to educate them about the nutritional and environmental importance of the fruit. This project has given women the opportunity to improve their lives and strengthen their self-esteem. COMGABIL has participated in trainings with women farmers and technicians in other communities, and has been responsible for the markedly increased consumption of masica in the communities from 2% to 83%. The product is being marketed locally and nationally, which is helping to raise awareness about protecting the species. As a result, farmers have planted more than 5,000 trees and continue to protect the species.

Masica, or Maya nut, is high in protein; vitamins A, B, C and E; fiber; calcium; potassium; zinc; iron; and folate. Due to its incredible nutritional qualities, masica is a very good food for vegetarians, pregnant women, infants, malnourished children, and the elderly. Masica is known to lower blood pressure, reduce stress, help with sleep, prevent child malnutrition, and enhance breast milk production for nursing women. The nut is used in a variety of recipes. With a more savory taste, often said to have a potato flavor, masica dishes include salads, tortillas, tamales, soups, buñuelos (an often sweet fried-dough-like treat), and quesadillas. Another way to prepare masica is with flour, lending a chocolaty flavor to many foods such as bread, biscuits, ice cream, cakes, atole (a hot drink), and coffee.

Fruits and Nuts

SUSTAINABLY GROWN CASHEWS

Name of species and ecosystem: *Anacardium occidentale*; dry tropical ecosystems.

Product location: Chinandega, Nicaragua

Global distribution: Cashews are native to northeastern Brazil but are now grown widely in tropical regions.

Production description: In Nicaragua, cashews are a popular snack because they provide energy and are part of the country's culinary tradition. Due to destructive agricultural practices, producing sustainably grown cashews became an economic opportunity. The large-scale production of cotton, banana and other crops created chemical contamination in the western part of Nicaragua. Sustainable plantations of cashew nuts have helped mitigate the impact of desertification and land degradation in the region and have improved the productivity of the area. Furthermore, the establishment of the sustainable cashew plantations was carried out cooperatively with programs of reforestation and education on the use of organic fertilizers.

The Osejos Carolina Cooperative is the leader in the cashew industry in Nicaragua. The cooperative has managed to improve the environmental and economic conditions in the community of July 15th at Villa Somotillo Chinandega. In an area with otherwise high rates of unemployment, the cooperative generates employment for 50% of the community. The cooperative consists of about 40 women members, who are committed to developing the cooperative and to its goals of sustainability. The cashews harvested and marketed by the cooperative are sold locally and exported abroad.

Cashew nuts grown on sustainable plantations. Cashews contain omega-3 fatty acids, monounsaturated fats, and high amounts of glutamic acid. These components are thought to aid in natural cell regeneration and improved memory, and are suggested to have aphrodisiac properties.

Carob-derived products, including carob flour and roasted carob, made using artisanal techniques. A restorative food that provides energy for physical and mental activities, carob is used in pastries and cocktails, and in cooking to enhance the flavor of meat and other dishes. The extract is credited with therapeutic benefits in treating anemia, digestion issues, and appetite loss.

As a healthy natural stimulant that has no caffeine, toasted carob is used in hot and cold drinks. For a hot drink, it's combined with milk and hot water; and for a cold drink, water, lemon juice, and ice. Carob flour is made with select carob for a 100% natural and highly nutritious product. The flour's fiber content regulates the digestive system. The flour, used in baked goods such as biscuits, cakes, and pancakes, can also be used in place of cocoa in drinks and desserts.

CAROB

Name of the species and ecosystem: *Ceratonia siliqua*; inhabits the tropical dry forest ecosystem on the northern coast of Peru

Product location: Can be found in Tumbes, Piura, and Lambayeque, the farming communities settled in the dry forests on the northern coast of Peru.

Global distribution: Tropical dry forests are found in Peru, with three million hectares on the north coast, as well as in Argentina, Chile, and Africa (in Cameroon and other countries).

Production description: The use of the carob tree in its natural environment creates an alternative to logging and promotes species and forest conservation. The carob is a natural extract obtained from the fruits (pods) of the carob tree. Carob is obtained through a process of boiling the pods to make a concentrated extract. The techniques used today are reminiscent of the practices of the Tallanes, Viscus, and Moche pre-Incan cultures.

Three main rural community organizations produce this carob: Association of Inhabitants of Caserio del Chutuque (Sechura, Piura), Community Company of St. Mary of Locuto (Tambogrande, Piura), and Development Association Maria de los Angeles Santiaguero (Santiaguero, Chulucanas, Piura).

Cacao

NATIVE THIN WHITE CACAO

Name of species and ecosystem: *Theobroma ovalifolium*; tropical forest ecosystems

Product location: Tuma La Dalia, Matagalpa department, Nicaragua

Global distribution: *Theobroma ovalifolium* is native to Central America and is currently at risk of extinction.

Production description: *Theobroma ovalifolium* is native to Central America and is currently at risk of extinction.Thin white cacao is grown by 20 small producers who are members of Cooperativa Agropecuaria de Servicios, based in the community of Tuma La Dalia in the Matagalpa region. Native cacao is an important part of the cultural history of the community and has been grown and marketed there since pre-Columbian times.

Thin white cacao is a type of chocolate that can be used to make a wide range of gourmet products. Due to its vulnerability to disease and insects, thin white cacao represents only 5% of world chocolate production and is mainly used in high-end chocolates.

AROMATIC ORGANIC CACAO

Name of the species and ecosystem: *Theobroma cacao* L.; Chocó tropical rain forest bioregion

Product location: Canton of Quinindé, Esmeraldas province, Ecuador

Global distribution: Cacao has its origins in the Amazon region. Currently, Ecuador produces 67% of the global production of Criollo cacao, a fine aromatic cacao. Other countries, such as Colombia and Venezuela, are joining in the production of this rare cacao.

Production description: This product's importance to biodiversity cannot be understated. As a species, Theobroma cacao requires other tree species—or crops, in the case of an agroforestry system—to survive. As an ancient variety of cacao, its genetic stock is vital to the existence of the species at large. Last, Theobroma cacao contributes to creating significant organic matter for the rain forest soils.

CACOA UONCRE takes special care to protect the species and its surrounding environment. Criollo cacao has a low yield compared to other varieties. The growers work to produce an organic cacao that is competitive for its quality rather than for its quantity. The cacao is known for its aromatic flavors, unlike most traditional cacao on the market today. In addition, the growers are fulfilling a market demand for fine organic cacao for use in organic chocolates and desserts.

Fine aromatic cacao harvested from the Ecuadorian rain forest. Unión de Organizaciones Negras y Campesinas de las Riveras del Río Esmeraldas (CACOA UONCRE) produces this fine cacao in both powder and butter form (the butter is the chocolate "fat"). A rare cacao type from the Criollo group of cacao species, it is known as the most ancient cacao in the world.

Cacao

RAW CHOCOLATE

Name of species and ecosystem: *Theobroma cacao*

Product location: Limon, Costa Rica

Global distribution: Native to South America, the Orinoco River, and the Amazon River Basin. Now extends from Mexico to Brazil, in tropical areas, and is also cultivated in West Africa.

Production description: These chocolate products are produced in the heart of Costa Rica's Talamanca Biological Corridor, a section of the larger Caribbean and Mesoamerican Biological Corridor. Produced by indigenous women from the Indigenous Reserve of Talamanca, the chocolates contribute to a long-standing ancestral tradition of managing lands in a sustainable and integrated way. The Bribri indigenous people cultivate cacao in an agroforestry system that provides environmental services to this rich biological area. In addition to contributing to biodiversity, the products are a link to their ancestral past. Through this productive activity, the women are rescuing cultural practices for cacao cultivation techniques, improving their organizational capacities, and reviving their traditional knowledge of the forest. The women are leading the way as keepers of the Bribri heritage.

The women are part of the Association Commission on Indigenous Women of Talamanca, which has been working to improve the price of the product. Since 2003, when they first began marketing the chocolate the association has increased the sales of Tsiru by seven times. Their current markets include Costa Rica's capital city, San Jose, and tourist destinations including Puerto Viejo and Manzanillo.

100% pure chocolate products produced by the Bribri women under the brand Tsiru Full of Tradition and come in three forms: nougats, cocoa, and small chocolates. Chocolate is called "the food of the gods" by indigenous cultures for its highly nutritious and pleasurable effects. Scientific research has confirmed that chocolate can produce happiness and is good for the nervous and circulatory systems.

Cerro Biolley coffee is high-quality coffee sold in two forms, roasted beans and grounds, to the United States, Italy, and the domestic market. Cerro Biolley is one of the coffees most desired by buyers because it is full bodied, dark roasted, and strong flavored. Consumers receive its optimal benefits including as a stimulant, fatigue and headache reducer, and digestive aid.

BIOLLEY HILL ORGANIC COFFEE

Name of the species and ecosystem: *Coffea arabica*, or arabica coffee, is cultivated from the oldest coffee species and represents 75% of world production of coffee. The beans produce a fine aromatic coffee and need the cooler climate of high mountain areas between 900 and 2,000 m.

Product location: Buenos Aires province, Canton Puntarenas, Costa Rica

Global distribution: Grown at 900 to 1200 m elevation in tropical to dry forests. Originally from Ethiopia, *Coffea arabica* is produced in numerous countries around the world.

Production description: This organic shade-grown coffee is grown in the most magnificent mountain system of undisturbed tropical forest in Costa Rica, Cordillera de Talamanca. Located in the Southern Pacific area of Costa Rica bordering Panama to its South, the area is both a UNESCO Biosphere Reserve and a World Heritage site. The region is considered a biological bridge between South America and North America, as it connects important biodiversity habitats and ecosystems across continents. The park has an extraordinary range of habitats due to a high degree of ecological transition zones from differences in altitude, soil, climate, and topography.

In keeping with the natural area, Cerro Biolley coffee is grown sustainably with organic fertilizer and no chemical inputs. It is produced by the artisan producers for the women's group Asomobi. Processing, commercializing, and marketing the coffee represents a very important source of employment for the women, who can develop their leadership skills and improve their overall social standing in the region. Coffee production and ecotourism are foundational to the local economy and work hand in hand in conserving the region's biodiversity. Asomobi harvests 2,000 bushels of coffee on average per year. The group requires greater technological capacity for management and marketing, and is seeking advice on a national marketing strategy and how to manage processing byproducts.

Coffees

CAFÉ LA AMISTAD

Name of species and ecosystem: *Coffea arabica*

Product location: Buenos Aires province, Puntarenas, Costa Rica

Global distribution: Grown at 900 to 1200 m elevation in tropical to dry forests. Originally from Ethiopia, *Coffea arabica* is produced in numerous countries around the world.

Production description: Cultivating La Amistad coffee is an art. Grown organically among the trees of the most extensive mountain system in Costa Rica, La Amistad International Park (PILA), the coffee is hand sorted and dried by the producers of the Association of Friendship. PILA was created by executive decree in 1982 to protect the important role it plays in connecting important biodiversity habitats and ecosystems across North and South America. In addition, PILA protects middle and upper basins of the rivers Ceibo, Cabagra, Mosca, Guineal, and Singri, which are the main collectors of the Terra Grande River in the Pacific slope. In the Atlantic Coast, PILA protects the Banano Excel, Telire, Coen, Lari, and Uren rivers. The capacity of these basins to provide drinking water to surrounding populations is undeniable.

That it is handmade makes this organic, fair trade coffee special. The women of the communities sort and dry the beans in traditional drying patios using only the sun. Women and men manage the biological litter from the coffee trees for fertilizer. With the help of the Mother Earth Alliance, a marketing network of seven organizations, La Amistad coffee is exported to the United States and sold in the domestic market. The growers currently produce 400 bushels of coffee per year, and have the capacity to produce 2,000.

The growers of La Amistad coffee came to the area to have a better life. Many of them migrated from different parts of Costa Rica or Central America. Through coffee production, they are able to live an agricultural life that affords them economic security by protecting the environment. They've incorporated into their agricultural practices environmental technologies like biodigestors to create a clean energy source for cooking. In addition to coffee production, ecotourism has aided the communities in building their economic capacity and their integral role in conservation.

Handmade, organic coffee that is strong, dark roasted, and intense in flavor.

CAFÉ RIO PLATANO

Name of the species and ecosystem: *Coffea arabica*; moist tropical forest

Product location: Las Marias, Culmì, Olancho, Honduras

Global distribution: Grown at 900 to 1200 m elevation tropical to dry forests. Originally from Ethiopia, coffee is produced in numerous countries around the world.

Production description: This organic coffee is a testament to the benefits of aligning economic activities with conservation. When the communities of Las Marias first considered growing coffee, they found it very expensive because of the cost of pesticides and chemical fertilizers. In this isolated region, access to agricultural inputs is very limited. But by producing organically, they do not need to use chemicals, and they can make use of the natural environment to successfully grow coffee. Growing organic coffee is also important to protect the Rio Platano Biosphere, as it provides an alternative to the typical cattle ranching activities that threaten the forests of the biosphere.

Café Rio Platano is primarily an enterprise of the women of Las Marías. The women are most involved from roasting to packaging the coffee for market, providing them an opportunity to meet their economic needs and improve their social standing in the community. As a new enterprise, Café Rio Platano experienced a well-accepted entrée into the market. Now that there is a market demand for the coffee, the producers are improving the business to cover a larger market and to generate higher revenue. In particular, they are looking to install proper production infrastructure to ultimately bring to market a certified organic coffee brand (including registering a trademark and bar code). The producers recognize that maintaining an organic fair trade coffee contributes to the goals of sustainable development, particularly in lessening the impact on the environment, while generating higher revenues than conventionally producing coffee would.

Organic coffee grown the Rio Platano Biosphere of Honduras.

Coffees

LA GRANACHA ORGANIC COFFEE

Name of species and ecosystem: *Coffea canephora/robusta*; mountain ecosystem

Product location: Communities of La Garnacha, Tejera, and Jalacate, in the municipality of San Nicolás, department of Estelí, Nicaragua

Global distribution: Tropical to dry forests. Originally from Ethiopia, *coffea arabica* is produced in numerous countries around the world.

Production description: The communities of La Granacha, Teiera, and Jalacate are located near the nature reserve of Tesomoto/ Pataste. The reserve contains a major source of water that supplies several surrounding communities in a dry region. Unsustainable land-use practices in the area have damaged the ecosystem and contributed to dry soil conditions. With SGP support, La Garnacha coffee project's purpose is to encourage the villagers to develop sustainable production techniques and to aid in the recovery of the area's natural resources.

A pioneer in the field of organic products in Nicaragua, the community of La Granacha is famous for its organic crops. The community is comprised of 20 low-income families. The coffee is grown in association with the Programa Agrícola San Nicolás (ASOPASN).

Among the renowned coffees of Nicaragua, the coffee of La Garnacha receives high ranks in the national excellence competition for best coffee production each year.

Gourmet organic coffee with citrusy and bright flavors. Among the renowned coffee production of Nicaragua, the coffee of the Dilpilto region regularly wins the national excellence award for the best coffee.

ORGANIC COFFEE

Name of the species and ecosystem: *Coffea canephora* and *Coffea arabica*; mountain ecosystem

Product location: Dipilto Jalapa, Nueva Segovia, Nicaragua

Global distribution: Tropical to dry forests. Originally from Ethiopia, coffee is produced in numerous countries around the world.

Production description: The coffee is grown in the Dilpilto municipality, which is situated in a protected area. Dipilto soils are highly vulnerable, especially to landslides and forests fires. These natural threats have been exacerbated by land practices associated with unsustainable coffee production. The aim of this cooperative-led project is to encourage sustainable coffee cultivation practices, in an effort to provide economic and environmental benefits to the region.

The municipality of Dipilto, located in the department of Nueva Segovia at an altitude of 882 m above sea level, is the second poorest in Nicaragua. As its economy depends entirely on income generated by coffee, the small producers who depend on the market prices were severely affected by low coffee prices over the last few years. By encouraging the cultivation of organic coffee, Cooperativa de Servicios Múltiples, Unión de Cafetaleros Diversificados de Dipilto aims to secure the incomes of the growers while protecting their land from farming abuses for future generations. The cooperative is composed of small producers, 40% of whom are women, and is based in four small villages within the municipality.

Coffees

CERTIFIED ORGANIC ARABICA COFFEE

Name of species and ecosystem: *Coffea arabica*; agroforestry system

Product location: Manabi, Ecuador

Production description: CEPROCAFE is a conglomerate of 137 coffee producers and 220 partners, working in collaboration with COREMANABA S.A. on the entire supply chain for shade-grown organic coffee. CEPROCAFE has created multiple distribution channels and markets in Germany, England, and the United States. They harvest 226 tons from June through August of Arabica coffee for the organic—and soon for the fair trade—certification markets.

Certified organic coffee grown in an agroforestry system in the sub-humid tropics of Ecuador.

BLUE MOUNTAIN COFFEE

Name of the species and ecosystem: *Coffea arabica*, Blue Mountain Coffee variety; Blue Mountains Range

Product location: Woodford and Cascade, Jamaica

Global distribution: Endemic to the Blue Mountain range (2,300 m) in Jamaica

Production description: This Blue Mountain Coffee is from two different communities Woodford and Cascade. Woodford is a hillside community of about 1,800 persons in northern St. Andrew, just below the Holywell Recreation Area in the Blue and John Crow Mountains National Park (BJCMNP). The majority of the community members are farmers growing mainly cash crops, bananas and Blue Mountain coffee. Some have jobs in Kingston and others have small businesses (such as shops) in the community. This community, supported by the SGP, is located in the mid-reaches of the Wag-Water watershed which feeds the Hermitage Dam, an important water supply for Kingston. Cascade is a community of about 800 persons located in the upper Buff Bay Valley, just outside the BJCMNP. The majority of the community members are farmers growing cash crops, bananas, and Blue Mountain Coffee. Most of the small farmers work seasonally on the large coffee farms, e.g. harvesting the coffee berries.

This highly sought after Jamaican Blue Mountain Coffee is grown in agro-forestry systems in the highest mountains of the Caribbean. Blue Mountain Coffee is defined as coffee grown in the eastern Blue Mountains range in Jamaica (located between south of Kingston and Port Maria to the North).

Despite the fact that much of the land within the Blue Mountains is of poor agricultural quality, the area is important for the agricultural sector because of the high value of Blue Mountain Coffee, and in addition the cool, misty climate provides an unusual environment where other, exotic, high value crops may be grown. Project activities include organic farm training, technical assistance on farms, reforestation and planting of trees on farms. These activities are reducing risks from climate change as they are preventing further soil erosion, forest fire prevention and micro-climate stability.

Natural Fertilizer

ORGANIC FERTILIZER

Name of species and ecosystem: Dipilto Jalapa, Nueva Segovia, Nicaragua

Product location: Jalapa, Nueva Segovia, Nicaragua

Production description: The organic fertilizer project is based in the Dilpilto municipality, which is situated in a protected area of national interest. Dipilto soils are highly vulnerable, especially to landslides and forests fires. These natural threats have been exacerbated by unsustainable land practices associated with coffee production. The aim of the cooperative-led project is to transform organic waste into fertile compost for reincorporation into soil, in an effort to provide economic and environmental benefits to the region.

The municipality of Dipilto, located in the department of Nueva Segovia at an altitude of 882 m above sea level, is the second poorest of the country. As its economy depends entirely on income generated by coffee, the small producers who depend on the market prices were severely affected by low coffee prices. This organic fertilizer is produced by organic coffee growers who are members of the Cooperativa de Servicios Múltiples. By encouraging the cultivation of organic coffee, the cooperative aims secure the incomes of the growers while protecting their land from farming abuses for future generations. The cooperative is composed of small producers, 40% of whom are women, and is based in four small villages within the municipality. Twenty worm centers were built, one for each producer. The cooperative now produces 30 quintals of compost for marketing annually.

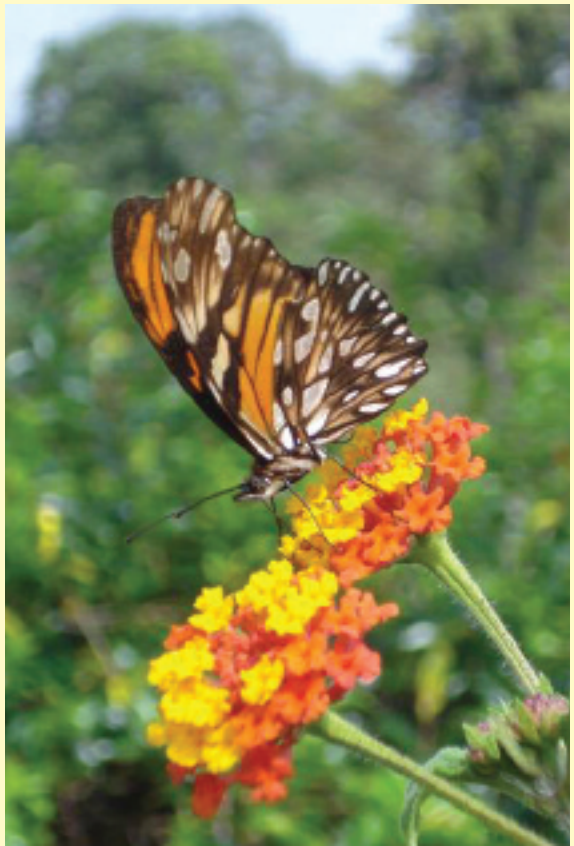
An organic fertilizer that is made by worms from coffee pulp into a rich compost.

BUTTERFLY PUPAE

Name of the species and ecosystem: Butterfly pupae (for sale) and butterflies (on exhibit), including the following species: *Agraulis vanillae*; *Anartia fatima*; *Archaeoprepona demophon centralis*; *Caliga atreus dionysos*; *Caliga eurilochus sulanus*; *Caliga illioneus heard*; *Catonephele numilia esite*; *Danaus* spp.; *Dione juno*; *Eueides isabella*; *Hamadryas feronia farinulenta*; *Heliconius* spp.; *Historis odius*; *Dryadula phaetusa*; *Morpho peleides* clear; *Myscelia cyaniris*; *Papilio thoas*; *Parides iphidamas iphidamas*; and *Philaethria dido*.

Product location: Santa Teresa de Cutris, San Carlos Alajuela, Costa Rica

Production description: Biodiversity restoration: that's the mark of this incredible project of breeding rare and endangered butterfly pupae. The Association of Producers of Butterfly Pupae (APRODUMA) breeds in captivity over 40 different species of endangered and lost butterflies. This activity lowers the pressure to capture of these species in the wild and increases the possibility of their reaching adult status. In addition to the direct conservation benefits of this product, the butterflies are put on exhibit where university and school students and tourists learn about the butterflies and their important role in preserving biodiversity. APRODUMA, home to the breeding and exhibit center, has also been active in the reforestation efforts for the margins of the San Carlos River, the main tributary of the San Juan River, which borders Costa Rica and neighboring Nicaragua.



Butterfly pupae for sale and butterflies on exhibit. One innovation particular to APRODUMA is the crossbreeding of white and yellow butterflies, hundreds of which are released as a special effect at weddings, birthdays, baptisms, first communions, and other events. Butterflies for these events range from US$1.50 to US$5.00, depending on the type of butterfly.

Fifteen breeders, mostly women, generate the butterfly pupae in a breeding laboratory. For the women, the work is a complement to pineapple production, the primary economic activity of area. APRODUMA's success has inspired other women's groups in Costa Rica seeking to develop sustainable development activities.

The export and sale of the butterfly pupae is done in coordination with the Ministry of Environment and Energy and Telecommunications. The peak of production is during the Costa Rican dry season, from December to May. Each season produces 6,000 pupae, which get exported to the United States, Canada, and Japan. Some of the pupae are marketed directly, but most, 60%, are sold through middlemen. Universities and resorts are particularly interested in the butterfly pupae.

APRODUMA is looking to build on their success with several improvements, including support for pupae packaging, Web site development, and working capital to purchase their own land for the butterfly exhibit (currently, the land is rented).

FOOD PROUDCTS

Jams and Jellies

OCA JAM

Name of species and ecosystem: *Oxalis tuberosa*; Andean and sub-Andean mountain zones

Product location: Qlruya, Salta province, Argentina

Global distribution: Oca is a perennial plant cultivated in Puna, in the central and southern Andes, between 3,000 and 3,900 m above sea level.

Production description: The oca's genetic plasticity makes it a highly adaptable plant that has survived for thousands of years despite economic, social, and environmental disruptions in its productive system. Due to its longevity and adaptability, there is a huge number of varieties of oca in the Andean and sub-Andean regions. The oca used to make this jam is from a very isolated region of Argentina. To arrive at the region, one must cross the province of Jujuy, passing Abra de Condor at 4,000 m above sea level, which borders the Salta and Jujuy provinces. A mountainous area with mild cold weather, steep valleys, and meadows, the environments create precise microclimates for agriculture, human settlement, and a rich biodiversity.

The community of Campo Carreras values and makes use of the region's agrobiodiversity. They believe that unless biodiversity is integrated into farming practices, it will not be saved. That's why oca is cultivated in the wild using native techniques (without agrochemicals) that do not deteriorate its natural productive system.

The small producers from the area, descendants of pre-Columbian nations, maintain their ancient beliefs, customs, and agricultural techniques. Just like oca's unique adaptability these ancient traditions have allowed the communities to survive under difficult weather conditions and in an isolated region. In particular, the communities work with the environment to make a living with little equipment and capital, and with only family labor. The community must often do business with unfavorable middlemen for their produce. However, oca jam is a favorable product, because it is easily produced and provides needed income for the communities.

Organic jam made from the native Andean oca, a tuber crop with similarities to the potato, and one of the main crops in the Andean region. Oca jam is sweet tasting like a sweet potato and rich in nutrients. The jam has a higher vitamin B and C content than potato and is rich in calcium and essential amino acids.

YACON JELLY

Name of the species and ecosystem: *Smallanthus sonchifolius*; Andean valleys and wet hillsides to the south of Quebrada de Humahuaca

Product location: Chorrillos, Barcena, Argentina; the transition zone between Selva de las Yungas in Jujuy and Quebrada de Humahuaca.

Global distribution: Andes mountains in Colombia, Ecuador, Peru, Bolivia, and Argentina. The best conditions for its development are between 1,000 and 2,500 m above sea level, with water contribution between 650 and 1,000 mm per year in loam or sandy loam soils.

Production description: An Andean crop that reaches two meters in height, yacon is an edible root long cultivated in Argentina for its sweet flavor and availability throughout the winter months (as a stored vegetable). Yacon jelly is made by Cooperativa Agricola Portal del Patrimonio Ltda. Founded in 2005, and made official through legal status in 2008; the cooperative is composed of 14 yacon small farmers from Chorrillos, Barcena. Chorrillos has about 150 inhabitants, most of whom are small farmers devoted to livestock and agriculture.

Yacon jelly is available between July and December. The average volume produced each year is 900 jars, in 100 g jars.

Handmade jelly from yacon root juice. Filtered and concentrated yacon juice is the main ingredient of this jelly. Yacon is a beneficial food for managing weight and diabetes, as it is low in calories and sugars. Free from additives and extra sugar, the jelly is great on breads and in desserts.

Jams and Jellies

UVILLA AND CHIGUALCAN JAM

Name of species and ecosystem: *Physalis peruviana* (uvilla) and *Cydonia oblonga* (chigualcan or quinces); high-altitude tropics and warm-temperate forests, respectively. In Ecuador, both are grown in the ecosystem of the Bosques Nublados.

Product location: Andean region of Ecuador

Global distribution: Uvilla is native to high-altitude tropical Colombia, Chile, Ecuador, and Peru. Chigualcan is native to southwest Asia and grown through Eastern Europe.

Production description: A group of women from the Yunguilla community make these jams that are a symbol of alternative development and sustainability. Behind every jam there is an effort by the community to adequately manage and restore their natural resources, particularly wild species, and to improve their quality of life.

Yunguilla farmers use organic farming. In the case of uvilla, the ground cherries grow in the wild, while the chigualcan are cultivated trees (related to the apple and pear). Yunguilla is one of the only communities making use of the native uvilla fruit to diversify their income.

As a farming community, Yunguilla is dedicated to the sustainable managment of natural resources. The community formed an enterprise called Corporación Microempresarial Yunguilla, which has made the development of this activity possible. The enterprise is small scale and artisanal, but is growing into a more sophisticated business. Their semi-industrial production system includes everything from processing the raw materials (the fruits) to packaging the jams. For both flavors, they are currently producing approximately 300 to 400 jars of 250 grams each per month

Production is based on demand. The products are available all year, and orders can be made with a 50% payment up front.

Jams made from uvilla (ground cherry or gooseberry) and chigualcan (quince) in the highlands of Ecuador.

SUMAK-DELICIA ANDINA MARMALADES MADE FROM ANDEAN TUBERS

Name of the species and ecosystem: *Coxalis tuberose* (oca), *Tropaeolum tuberosum* (mashua), and *Ullucus tuberosus* (melloco); Andes mountains

Product location: Communities of Lupaxi Convalecencia, Cintaguzo, and Pulucate Alto, in the Chimborazo province, located in the center of the Ecuadorian Andes.

Global distribution: Andean countries: Colombia, Ecuador, Peru, Bolivia, and Chile

Production description: Indigenous women from several Andean communities in the heart of the Ecuadorian Andes are restoring traditional customs and local knowledge about agriculture. Migration and harmful agricultural practices, namely onion cultivation, deeply affect community and environmental intergrity in this region. Through their work, the women are setting a new path. The community-based organization Vida Nueva produces jams (and chocolates) to diversify agricultural incomes so that the community need not rely solely on onions that are degrading on the soil. Also, the production of jams empowers the women, as they are earning additional income and educating their communities about important local foods. The Nueva Vida offices are located in Riobamba. While Teresa Pagalo heads the organization, all of the women put equal effort into this initiative.

Marmalade made from three Andean tubers locally called oca, mashua, and melloco. Marketed under the brand Sumak-Delicia Andina.

Jams and Jellies

ELDERBERRY JAM

Name of species and ecosystem: *Sambucus peruvianus* (elderberry); dry lower mountain forest

Product location: Chota, Cajamarca, Peru

Global distribution: Found in the Andes mountains of Peru, Ecuador, and Colombia

Production description: This product contributes to protecting biodiversity on various levels. For one, it promotes the use of genetically diverse fruits in an agroecological system. The community of Chuyabamba in Chota, Peru, is a cold-temperate climate in which cultivating agricultural products requires special care. The rural women's cooperative EPROMECH works with the natural elements to produce a product in keeping with the natural biodiversity and climate. Each year, between the months of December and April, the cooperative produces 1000 kg of elderberry jam.

Elderberry jam made with mature elderberries.

AGUAYMANTO JAM

Name of the species and ecosystem: *Physalis peruviana* (aguaymanto); dry lower mountain forest

Product location: Chota, Cajamarca, Peru

Global distribution: Found in the Andes mountains of Peru and Colombia

Production description: Native to Peru, aguaymanto has been grown since the time of the Incas. Today, the rural women's cooperative EPROMECH of Chuyabamba in Chota cultivates the fruit in agroecological systems. Each year, the cooperative produces 500 kg of aguaymanto jam during the harvest from February to November.

Aguaymanto jam made with the mature fruits. Rich in vitamins A (six times more than in tomatoes), B, and C, aguaymanto jam is known as a therapeutic aid for digestion and diabetes.

Jams and Jellies

Tomatillo jam, rich in vitamins A, B6, E, and C, is used as a jam and therapeutically to reduce cholesterol.

TOMATILLO JAM

Name of species and ecosystem: *Cyphomandra betacea* (tree tomato, tomatillo); dry lower mountain forest

Product location: Chota, Cajamarca, Peru

Global distribution: Found in the Andes mountains of Peru, Ecuador, and Colombia

Production description: Tomatillo jam made by the rural women's cooperative EPROMECH of Chuyabamba in Chota, Peru. The tomatillos are cultivated in agroecological systems. Each year, the cooperative produces 1000 kg of tomatillo jam during the harvest from April to July.

COQUINHO AZEDO PULP (SOUR COCONUT) FROZEN PULP

Name of species and ecosystem: *Butia capitata*, native of the Cerrado biome and the South of Brazil

Product location: North of Minas Gerais state, Brazil

Global distribution: Found throughout northeastern, central and southern Brazil

Production description: Coquinho azedo fruit grows in the Cerrado biome of Brazil, an extremely threatened ecosystem. Fifty-five percent of the Cerrado has been lost and with it, species like coquinho azedo are disappearing. In an effort to conserve the ecosystem and local eco-agricultural practices, the Grande Sertão Cooperative, created in 2003, brings together 1,500 people (around 700 families) from approximately 150 rural communities in more than 20 municipalities. The cooperative harvests and manages the fruits according to traditional standards, such as avoiding cattle farming and fires in the Cerrado fragments. As a result, the value of coquinho azedo has grown in the marketplace. Today, coquinho azedo is the most expensive of the commercialized native fruits north of Minas Gerais.

The cooperative processes the raw fruit to create a pulp, which is sold frozen in packages of 100 g or 1 kg. Production is increasing each year; between 2007 and 2008, the production increased from 4 tons to 6 tons.

The cooperative produces 15 other natural pulps. Six of them are from native Cerrado trees (panã, cagaita, native passion fruit, umbu, mangaba and araçá). The production is sold both regionally and nationwide to the main metropolitan areas of Brazil.

The coquinho azedo fruit pulp is nutritious and delicious. With its unique sweet and sour flavor and high vitamin A and C content, it is an ideal ingredient for juices, ice creams, liquors, and marmalades.

Drinks and Juices

CARAMBOLA JUICE (STAR FRUIT)

Name of the species and ecosystem: The carambola is a tropical evergreen shrub belonging the family *Oxalidaceae*.

Product location: Talamanca, Limón, Costa Rica

Global distribution: Carambola is native to Indonesia, India, and Sri Lanka.

Production description: What makes this carambola from Costa Rica so special is how it's produced and who is producing it. Part of Costa Rica's payment for its environmental services program, the carambola fruit is produced by small producers within the Talamanca Caribbean Biological Corridor in agroforestry systems. Rather than cutting down trees for income, the Association of Small Producers of Talamanca (APPTA) protects the primary and secondary forest to harvest fruits like carambola and to receive environmental payments from the government. The result has been a strong environmental awareness among the communities of the biological corridor and a thriving international fair trade and organic agricultural program.

APPTA was founded in 1987 to assist small producers to market their products in national and international markets. Today, more than 1,200 small producers participate in the association and over 80% of its members belong to the indigenous reservations of Bribri, Kekoldi Cabécar, and Tayni. APPTA provides an added value to the products the communities harvest. The carambola fruit is either crushed and frozen or processed into a pasteurized juice and mixed with other exotic fruits, and sold in fair trade and organic markets in Europe and the U.S.

Carambola, or starfruit, is increasingly known throughout the world for its sweet flavor in juices and tropical dishes. The fruit is juicy, slightly fibrous, and acidic and contains vitamins A and C, phosphorus, and potassium. This versatile fruit can be eaten both raw and cooked. In Costa Rica, carambola is used mainly for juices and in salads.

Carambola grows in clusters on the branches and along the trunk, making them relatively easy to harvest. APPTA produces 10,000 pounds of carambola every year. Despite the association's global market reach, they dream of reaching an even larger market through a defined marketing strategy.

LA RESERVE ORGANIC HOT COCOA

Name of species and ecosystem: *Theobroma cacao*; primary, dense rain forest

Product location: Northeast Dominican Republic

Production description: The Loma Guaconejo Scientific Reserve is home to a high degree of biodiversity, typical of primary rain forest. The community that produces the cocoa has harvested chocolate from the area for years. Now, as part of the management plan for the scientific reserve, the process of cocoa production is even more crucial to the lasting health of the reserve. The cacao grows in the traditional, natural way in the shade of the dense forest canopy. The entire production method from tree to product is organic and performed manually. A typical year of production results in 5.5 tons of cocoa. The cooperative of producers has an even greater capacity and could produce more than 20 tons per year.

This artisanal hot chocolate is sourced from hand-selected cacao (chocolate beans) in the buffer zone of the Loma Guaconejo Scientific Reserve in the Dominican Republic.

Drinks and Juices

Highly nutritious juices made from several Amazon palm species. The Amazon rain forest is known for some of the world's most nutritious super foods. Bio Madidi products are an example of these foods. All of the fruits are wild harvested and contain some of the richest health properties nature can offer.

Acai juice is rich in anthocyanins, antioxidants known to support the body's nervous and circulatory systems. Acai contains high caloric energy for endurance activities. Its mineral content, especially iron and thiamine, is superior to most tropical fruits.

Majillo juice is a valuable source of protein, comparable to cow's milk and meats.

Majo juice is also rich in protein and provides 100% of the essential amino acids the human body needs. When prepared without sugar, it is recommended to treat diabetes.

Palma real juice is high in vitamin A and beta-carotene (five times that of carrots). It can be used as a vitamin supplement to prevent vitamin A deficiency. A treatment of 20 days of palma real is sufficient to eliminate symptoms of hypo-vitaminosis A.

Chimichoc juice is high in vitamin A, calcium, and phosphorus.

Chontifrut juice is high in vitamin A, exceeding the vitamin A content of fruits such as guava and vegetables such as carrots and spinach.

Majo oil, produced from the fruits of majo palm, is recommended for treating asthma problems, and when mixed with honey, for the treatment of coughs and inflamed tonsils. With a similar quality of healthy fatty acids as olive oil, it is used for salad dressings.

BIO MIDIDI PALM FRUIT JUICES

Name of the species and ecosystem: *Oenocarpus bataua* (majo), *Euterpe precatoria* (acaí), *Oenocarpues manpora* (majillo), *Mauritia flexuosa* (palma real), *Astrocaryum murumuru* (chonta), and *Bactris gasipaes* (chima); Amazon tropical rain forest

Product location: Madidi National Park, San Buenaventura, Abel Iturralde province in the northern Amazon region of Bolivia

Global distribution: Amazon rain forest

Production description: Bio Madidi is an ecological initiative that aims to promote the sustainable use of forest resources in the Bolivian Amazon. Local communities in the Madidi National Park, also a biosphere reserve, collect palm fruits to create value-added products like juice. Through this alternative market for forest products, the communities earn additional income and implement a sustainable management plan for the palms and the forest ecosystem. The result is a 20-year plan for forest management that foresees the slowing of both forest clearing and species loss.

Currently the Bio Mididi products are sold in local markets and municipalities in the catchment area of the national park and in the markets of La Paz and Santa Cruz. Bio Mididi has a production capacity of 50 L per month of majo oil and 5,000 L Per month of juices. The products are available all year.

ALGARROBO POD SYRUP DRINK

Syrup used in drinks made from the fruit (or pod) of algarrobo in Ecuador. The syrup is extracted from the algarrobo pod for a high-protein drink (5.7% protein). Algarrobo is either drunk as a daily syrup or mixed with other ingredients for a special drink.

Name of species and ecosystem: *Prosopis juliflora*, known as algarrobo or carob; dry forest zones

Product location: Jipijapa, Manabí province, Ecuador

Global distribution: *Prosopis juliflora* as a species is distributed in the Tumbesina region of Ecuador. Native to Mexico, South America, and the Caribbean, it's also found today in Asia and Australia.

Production description: The algarrobo tree is a small tree that grows in the dry forest areas that are under threat from desertification. The Sandial community that produces the pod syrup is located in the Sancán Conservation Forest. The area has experienced a high degree of desertification due to agricultural practices like the monoculture of corn. The conversion of the landscape for industrial agriculture and the ensuing environmental impact makes this product that much more important for the world. Protection of the species is paramount for preserving the dry forest ecosystem in Ecuador and the livelihoods of the local communities.

This product is produced by the Asociación Campesina Recinto el Sandial as part of a unique initiative to take care the environment and the quality of life of the people who are in the association. Established in January 1991, the association has a microenterprise called Don-Alejo that produces the sub-products of algarrobo with acquired machinery.

Drinks and Juices

DRIED FRUITS FOR TEA, PRESERVES, AND JAMS

Name of the species and ecosystem: *Ugni molinae* (murta) fruit; Valdivian temperate rain forest

Product location: Corral, Los Ríos Region, southern Chile

Global distribution: The Valdivian rain forest is a unique type of forest of southern Chile, extending from the region of Maule to the Southern Ice Fields and covering 245,000 sq. km.

Production description: The Kutralhue Association of Indigenous Women is part of the indigenous community of Huiro. Kultralhue was created to revive ancient traditions such as dyeing wool with products from the forest; loom weaving; making handicrafts; and drying fruits from the forest, especially murta, for the production of tea. The indigenous community of Huiro and the women of Kultralhue, along with the World Wide Fund for Nature (WWF) and the UNDP/GEF Small Grants Programme in Chile, are the principal promoters of the conservation of biodiversity in the area. This community lives alongside the Valdivian Coastal Reserve, which is a privately protected wilderness area administered by The Nature Conservancy. The dried fruits and natural dyes using forest residue such as leaves and branches has generated a consciousness of the necessity to protect the area. The different species present in the forest, such as hazelnut, southern beech, luma, tineo, and murta, generate different materials for dyeing wool using ancestral indigenous techniques. Kultralhue maintains stock in fabric and dyes that are produced in winter and sold in summer. In summer, murta and other wild fruits are collected to produce jams and teas.

Dried fruits for tea, preserves and jams from the natural resources of the Valdivian Costal Reserve in southern Chile. The murta jams and preserves are very aromatic and have a unique flavor, while the murta tea has a pleasing strong taste and aids digestion.

Rare, exquisite, and precious to the health of the local environment, Natmel is Brazil's best honey—made from bees native to the endangered Cerrado biome. Natmel is different from the exotic honey in consistency, aroma, color, and flavor.

NATMEL—NATURAL HONEY FROM BRAZILIAN NATIVE BEES

Name of species and ecosystem: Many species from *Meliponinae* group: *Meliponina fasciculata* (tiúba), *Meliponina flavolineata* (uruçú), and *Meliponina subnitida* (jandaíra); Cerrado biome

Product location: Maranhão state, extreme north of the Cerrado biome, Brazil

Production description: The majority of the honey in Brazil is made from exotic bees that do not necessarily contribute to the overall biodiversity of Brazil's environment. The native bees, on the other hand, are crucial for pollination of native flora and maintaining the Cerrado as a healthy, functioning ecosystem.

Natmel can only be produced in small quantities because of the time-consuming production method of working with the natural environs. The honey producers earn necessary income from this high-value product; it is thus in their interest to protect the Cerrado, as their livelihoods depend on its continued existence. The organization AMAVIDA distributes this rare product and works with the honey producers to earn an income from it. The organization works closely with the Native Bee Project and the Federal University of Maranhão, covering an area of over 800,000 hectares of the Cerrado.

Honey

HONEY BEE CURUBANDE

Name of the species and ecosystem: *Meliponinae*

Product location: Guanacaste province, Costa Rica

Global distribution: Distributed throughout tropical and subtropical regions of the world, from 30 degrees latitude north to 30 degrees latitude south in Central and South America, Africa, Asia, and Australia.

Production description: The Guanacaste Conservation area is a unique environment of both forest and marine ecosystems that give way to a diverse landscape of wet and dry forest, cloud forest, dry savannah, and mangroves. Guanacaste is important for the protection of the Tempisque watershed, the most abundant water source in the country.

Honey Bee Curubandé is unique because the honeybees live in primary forests, where they can perform their natural role as pollinators. In keeping with the natural ways, the honey producers, many of whom are women, are about to obtain organic certification. The certification will benefit the producers by helping them to receive a higher price for their production. Harvesting honey is one of many agricultural activities that the communities rely on. The community of Curubandé is working with the ministry of agriculture on alternative sources of income that protect the Guanacaste Conservation Area and support the livelihoods of this border community (both Nicaraguans and Costa Ricans live in this area). With the ministry's help, they are seeking organic labeling and marketing. They hope to increase the number of apiaries in the buffer zone as their demand for organic production grows.

Honey Bee Curubandé is produced by hand in apiaries situated in the forested, buffer zone of the Guanacaste Conservation Area.

Produced in bulk in 55-gallon tanks for international export, this organic honey has far-reaching nutritional benefits and therapeutic properties that facilitate digestion and improve calcium uptake; honey is also an excellent antiseptic.

ORGANIC HONEY

Name of species and ecosystem: Mountain ecosystem

Product location: Granma province, Cuba

Global distribution: Sold internationally in 55-gallon tanks by Cuban export

Production description: This organic honey is a part of a reforestation effort in the mountain ecosystem of Sierra Maestra in the eastern Cuban province of Granma. The bee colonies are an important ingredient to restoring the native flora of the ecosystem, and the quality of the honey acts as an overall indicator of the forest's health. The community Vitorino produces the honey in this protected area with no chemical inputs so as not to jeopardize the health of both consumers and the forest ecosystem. Vitorino's annual production reaches 20 tons of organic honey that is certified by the German BSC company.

Honey

Native honey from the dry forest of Amboró National Park in Bolivia. Rich in vitamins, protein, trace minerals, and sugars, natural honey is a multipurpose product that contributes to overall human health. Research has shown that natural honey contains medicinal and healing properties to prevent respiratory and digestive diseases, rejuvenate the skin, and treat eye cataracts and blurry vision.

NATIVE BOLIVIAN HONEY

Name of the species and ecosystem: *Melipona obobosi*; native bee found in tropical and subtropical ecosystems

Product location: Amboró National Park, Bolivia

Production description: *Melipona obobosi* are native, stingless bees that have existed in Bolivia for thousands of years. They feed on the nectar of flowers, shrubs, and trees in lush forests. The native bees are instrumental to the pollination and production of fruits and seeds for Bolivia's Amazon rain forest. Sixty percent of pollination in the Amazon rain forest is bee pollinated. Deforestation, the use of agrochemicals, and mismanagement of forest resources are all contributing to the loss of native bee species around the world. As a source of food and medicine, native honey is an excellent ally for tropical-forest conservation.

The native honey is produced by the communities in the Integrated Management Natural Area of the Amboró National Park. Typically engaged in livestock and other agricultural activities, the communities are experimenting with native honey production. They developed the Association of Native Honey Producers (APROMIN) to commercialize the honey and its derivatives and to create a means for alternative development and forest restoration and protection. APROMIN has a honey collection center in the municipality of Santa Fe de Yapacani. The association produces a diversity of honey types, known locally as Honey of Obobosi, Honey Suro Choca, Honey Erereu Barcina, Honey Señorita, and Honey Suro Negro. The honey comes in 25 ml, 50 ml, and 100 ml ceramic and plastic bottles.

The association also commercializes products derived from bees, including bees wax, pollen, and propolis (a resinous mixture bees collect from tree buds and other botanical sources and use as a hive sealant; propolis can be used as a medicinal in many forms, from tinctures to throat lozenges).

The native honey products are marketed on a limited basis. The products are currently sold at the APROMIN collection center and at a small market stall in the municipality of Santa Fe. Some municipality orders are received as well from the city of Santa Cruz. Mostly, the products are sold to people who know of them for their medicinal and health properties. APROMIN believes there is greater potential for commercialization, because the native honey and derivative products are of much higher value than conventional honey.

DRY FOREST FLOWER HONEY

Name of species and ecosystem: Honey made from the nectars of the *Erythrina crista-galli* (ceibo) and *Ceratonia siliqua* (algarrobo) trees; Sancán dry forest

Product location: Jipijapa, Manabí province, Ecuador

Production description: Honey production is reducing the impact of agricultural expansion into the Sancán dry forest. With the income received for the honey and the recognition of the importance of the tree species for the long-term sustainability of the production, the Quimís community is working to protect the local forest. Such economic activity is particularly necessary in this region, where desertification (caused by land conversion for industrial agriculture) is an increasing environmental problem.

The honey products are marketed under the brand Ceibo & Honey. Several organizations are involved in the honey production, including the Asociación Campesina Recinto el Sandial, the microenterprise Don-Alejo, and the 25 de Julio Beekeepers Association.

Each organization is instrumental in getting the products to market. The mission of Asociación Campesina Recinto el Sandial is to promote the economic improvement and social progress of their members and their families and to encourage stronger community participation. Don-Alejo has the infrastructure to manufacture the honey products, as does the Beekeepers Association, which is in the business of honey storage and standardizing processing.

The 100% natural honey embodies the flavors of the ceibo (Erythrina crista-galli) and algarrobo (Ceratonia siliqua) tree flowers found in the dry forest of Ecuador.

Honey

NATIVE ECUADORIAN HONEY

Name of the species and ecosystem: *Melipona indescisa* (royal bee or wimal bee)

Product location: Afro-Ecuadorian, Awás, and Esperas communities in San Lorenzo, San Francisco, Esmeraldas province, Ecuador

Global distribution: Tropical America, tropical and subtropical rain forest, and the highlands (paramo) and high Andean forest. *Melipona indescisa* bee is endemic to northwest Ecuador and southwest Colombia.

Production description: This honey is the product of the Afro-Ecuadorian and Awás indigenous communities in the tropical rain forest. It was customary in these traditional communities to produce honey for human health and the health of the forest. The wimal bee is a stingless bee that plays an important role in pollinating 80% to 90% of the neotropical flora in the northern tropical rain forest of Ecuador. The interdependent relationship between the flora and the bees (and the humans who use it) maintains a harmonious ecosystem dynamic. Yet deforestation in the San Lorenzo area is affecting the habitat of the wimal bee and the survival of the forest.

The increased popularity of honey production for health and conservation is increasing the number of meliponicultores, or honey producers. Today, there are 40 producers in the Afro-Ecuadorian, Awás, and Esperas communities. Their work creates a productive and economically beneficial local honey system that benefits the greater forest environment. The communities produce 20 bottles of 180 cc of honey per month.

Honey from native "wimal" bees in the Ecuadorian tropics. The native Ecuadorian has a high percentage of vitamin A, vitamin B complex, minerals, and vitamin C. Honey can reinforce immune system and respiratory health when taken raw or mixed with pollen.

DRY FOREST ORGANIC HONEY FROM PERU

Organic honey from endangered bees found in the equatorial dry forest region of Peru. The honey varies in color from almost transparent to dark brown. Its consistency can be fluid, viscous, or partially crystallized, and its flavor and aroma vary according to the plant of origin.

Name of species and ecosystem: Honey derived from the following tree species: *Prosopis pallida, Capparis angulata*, *Bursera graveolens*, *Capparis ovalifolia*, and *Acacia macracantha*; Equatorial Dry Forest ecoregion.

Product location: Beekeeping production centers are located on the north coast of Peru, in Piura and Lambayeque.

Global distribution: The Equatorial Dry Forest ecoregion covers a coastal strip of 100 to 150 k wide, from the Santa Elena peninsula, the Gulf of Guayaquil, and Puna Island in Ecuador to Peru, covering large parts of Tumbes, Piura, Lambayeque, and La Libertad into the western catchment of the Andes to the valley of Marañón between Cajamarca and Amazonas.

Production description: Deforestation threatens the dry forest region, where 25,000 hectares are deforested every year. Forest regeneration relies on receiving moderate rainfall and a strong El Niño phenomenon. As a result, the Peruvian dry forest is a precarious ecoregion that requires special attention for its conservation. Beekeeping and honey production are key ingredients to the forest's survival. Upwards of 20,000 h of forest are managed for honey production. Throughout the area, beehives are managed away from sources of pollution, as is required for organic certification.

Seven community organizations sustainably manage the dry forest along the northern coast of Peru. The impact of honey production, the main source of income for the families living in the region, cannot be overstated. This economic activity has changed the community's perception of the forest from the cause of their poverty to the source of their income. Today, the community organizations are the primary monitors of the forest, and they promote forest conservation, which has reduced logging and slash-and -burn migrant agriculture.

Bio Latina, the body authorized to certify organic production in Peru, has certified this honey as organic for three years in a row. The Peruvian Association of Ecological Producers, made up of the seven community organizations, is responsible for marketing the organic honey. Annually, the association produces 10 tons of honey, which is sold at retail by the kilo and half kilo or in bulk at 20 k and 25 k.

Honey

HONEY FROM MELIPONA BEES

Name of the species and ecosystem: *Melipona* (over 40 species of this stingless bee exist); warm neotropical ecosystems

Product location: Dzula community, Felipe Carrillo Puerto, Quintana Roo state, Mexico

Global distribution: Warm neotropical ecosystems from Mexico to Argentina.

Production description: The stingless *Melipona* bee is native to Central America and was cultivated by the Maya for centuries. In addition to its value as a source of honey and traditional medicines, the Melipona bee was regarded as sacred. Unfortunately, the Melipona bee is endangered and the future of *Melipona* beekeeping uncertain. The bees are losing their natural habitat due to deforestation, and few people continue to practice the traditional craft of caring for Melipona beehives.

Members of the Dzula women's group are trained in the traditional art of *Melipona* beekeeping, as well as natural resource conservation. Beehives can be kept on backyard patios and are found naturally in tree trunks. The Dzula women use natural techniques to harvest honey and protect the bees. One technique is to use a natural insect repellent derived from the leaves of the local jabim tree to repel a fly that could destroy *Melipona's* natural beehives.

The project has grown from 15 original beehives initially to 38 currently in use. With SGP support, the Dzula women's group anticipates using existing funds to purchase 30 additional hives.

Natural honey made traditionally from Melipona bees in the Yucatan region of Mexico.

Rainforest Honey is collected from apiaries in the protected areas of the Mesoamerican Biological Corridor. This ecologically friendly honey has a rich golden color and a distinctive bittersweet aroma. The honey also contains the flavor of naturally occurring flora and the nectar of the Madre Cacao (Gliricidia sepium) plant. Rainforest Honey is ideal for breakfast when served with a variety of fruit or on bread, corn tortillas, pancakes, or waffles. Free of chemical contaminants, the honey also provides an array of sugars, vitamins, minerals, enzymes, amino acids, and antioxidants. Residents of Belize use honey and lime juice as a cure for coughs and throat ailments.

RAINFOREST HONEY

Name of species and ecosystem: African bees and *Gliricidia sepium*; tropical forests

Product location: Cayo District, Belize

Production description: The producers of Rainforest Honey, members of the Cayo Quality Honey Producers Cooperative Society (CQHPCS), maintain the ecological integrity of the Mountain Pine Ridge Forest Reserve and the El Pilar Archaeological Reserve. CQHPCS advocates for the protection of the forest and the reduction of un-sustainable land-use practices.

CQHPCS—with 25 members drawn from the villages of San Antonio, Bullet Tree, Branch Mouth, Seven Miles, Cristo Rey, and San Jose Succotz—produces 40,000 pounds of honey per year. The beekeepers learned how to sustainably manage African honeybees, which were previously responsible for the collapse of the honey industry in Belize. In an effort to increase their income, members of the CQHPCS also started producing pollen, royal jelly, and propolis for the local market.

Cooking Oils, Vinegars, and Syrups

BANANA VINEGAR

Banana vinegar is an artisanal product unique to a group of banana producers in Costa Rica. The banana vinegar is a versatile and healthy food. Certified 100% organic, it has zero calories and does not contain sugar, salt, or fat. With a flavor sweeter than other vinegars, banana vinegar is perfect as a dressing in salads or an ingredient for recipes with meat, pickles, ketchup, mustard, or mayonnaise. Vinegar also has medicinal qualities as a blood-sugar stabilizer, digestive aid, and natural septic.

Name of the species and ecosystem: *Musa acuminate* and *Musa balbisiana*, forest ecosystem

Product location: Limón, Costa Rica

Global distribution: Bananas are grown in over 130 countries, from Southeast Asia to Oceania and South America. The world's largest producer is India and the leading exporter is Ecuador.

Production description: The bananas used in banana vinegar are grown organically in agroforestry systems in the Talamanca Caribbean Biological Corridor, in an area that is also a biosphere reserve and world heritage site. The producers belong to ACAPRO, a nonprofit organization that has worked since 1996 to improve the social, economic, and environmental life of families and communities. ACAPRO offers environmental and economic education programs that teach the banana producers how to manage their production sustainably and to ensure food security for their families through crop diversification. ACAPRO has been a crucial participant in the government's program of payment for environmental services, leading to primary and secondary forest regrowth in this protected conservation area. ACAPRO bananas are sold to companies like Gerber for organic baby food. The surplus bananas are used to make the banana vinegar and sold in the domestic market under the brand Gromi.

YACON PICKLING BRINE

Pickling brine made from the Andean root yacon. Yacon is a beneficial food for managing weight and diabetes, as it is low in calories and sugars. The pickling brine is a probiotic that helps to multiply good bacteria, which are beneficial to the colon and overall health.

Name of species and ecosystem: *Smallanthus sonchifolius*; Andean valleys and wet hillsides to the south of Quebrada de Humahuaca.

Product location: Chorrillos, Barcena, Argentina; transition zone between Selva de las Yungas in Jujuy and Quebrada de Humahuaca.

Global distribution: Andes Mountains in Colombia, Ecuador, Peru, Bolivia, and Argentina. The best conditions for its development are between 1,000 and 2,500 m above sea level, with water contribution between 650 and 1,000 mm per year in loam or sandy soils.

Production description: An Andean crop that reaches two meters in height, yacon is an edible root long cultivated in Argentina for its sweet flavor and availability throughout the winter months (as a stored vegetable).

The brine is made by Cooperativa Agricola Portal del Patrimonio Ltda. Founded in 2005 and made official through legal status in 2008, the cooperative is composed of 14 yacon small farmers from Chorrillos, Barcena. Chorrillos has about 150 inhabitants, most of whom are small farmers devoted to livestock and agriculture.

Available between July and December, yacon pickling brine comes in 340 g jars, with an average of 400 jars available per year.

Cooking Oils, Vinegars, and Syrups

YACON SYRUP

Name of the species and ecosystem: *Smallanthus sonchifolius*; Andean valleys and wet hillsides to the south of Quebrada de Humahuaca.

Product location: Chorrillos, Barcena, Argentina; transition zone between Selva de las Yungas in Jujuy and Quebrada de Humahuaca.

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The syrup, which comes in a 340 g jar, is most available between July and December. The cooperative produces an average 400 jars per year.

Syrup made from the Andean root yacon. Yacon is a beneficial food for managing weight and diabetes, as it is low in calories and sugars.

Bees that Heal
Maya women in honey production in Quintana Roo, Mexico

Melipona honey production is an ancient tradition in Quintana Roo, Mexico. To further develop this traditional knowledge, seven communities in the center of Quintana Roo organized Flor de Tajonal, a society of beekeepers, in October 2004. The society had two main goals: (1) to attain organic honey certification and (2) to increase the participation of women in the honey tradition.

Organic honey certification is a multi-year process that requires a strong commitment to the environment and dedication to learning. Beginning in 2006, with the support of the Global Environmental Facility's COMPACT Small Grants Programme, the beekeepers designed a project to transition from conventional to organic production. The project involved training and studying new production techniques and acquiring the equipment and materials for organic production. After two years of work, the economic and conservation payoffs were worth it: apiculture fetches an average 25% higher price than conventional honey; and for every ton of organic honey produced, 30 hectares of tropical forest are conserved.

Reaching out to women also required a real commitment to change. Traditionally, women are involved in managing and utilizing traditional Melipona honey for domestic consumption and religious and medicinal purposes. But they did not participate in the income-generating side of honey production. Flor de Tajonal initiated trainings for women to use honey in a wide array of products such as cosmetics. The women exceeded all expectations: they created a line of apitherapy products, they participate in trade fairs and expositions throughout the region, and they opened their own apitherapy products store. In 2007, the women attained full member status in Flor de Tajonal, including voting rights.

Today, the women's participation in the regional honey market is very competitive. Their sales at trade fairs

outperform most vendors. In 2008, the United Nations Foundation granted them support to create retail relationships with organizations and hotels in the World Heritage Alliance. And since their store opened in 2009, they are now selling directly to the public.

Recently, the women decided to create a cooperative under their own administration. They will continue to work in close collaboration with Flor de Tajonal but will attain their own legal status. Their cooperative is called Melitza'ak, which means "Bees that Heal." The women feel they are only just beginning.

MARINE PRODUCTS

OYSTERS

Name of species and ecosystem: *Crassotrea gigas; saltwater*

Product location: Costa de Pajaros, Gulf of Nicoya, Puntarenas, Costa Rica

Global distribution: Originated in the Indo Pacific and known as the Pacific oyster, which is cultivated in, among other countries, Brazil, Chile, Mexico, the United States, France, Spain, Italy, Portugal, Japan, and Korea.

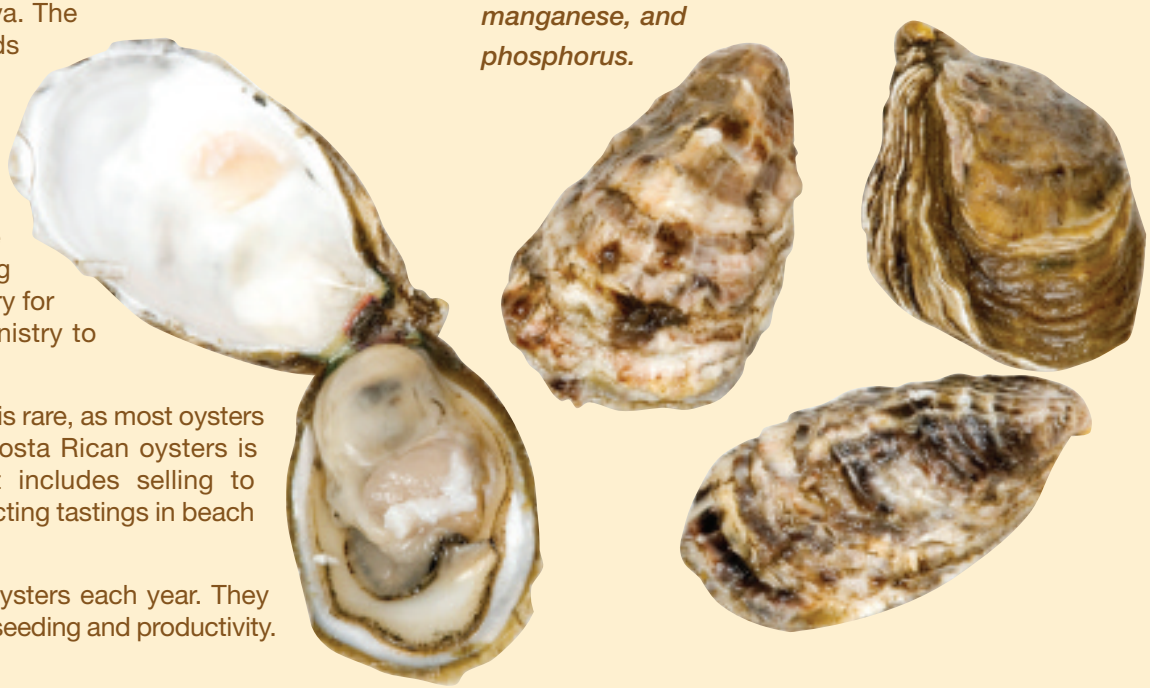
Production description: These oysters are cultivated in the Gulf of Nicoya, an overfished gulf on the Pacific coast of Costa Rica, to ameliorate the pressure on the fish stock. Overfishing in the gulf, in addition to sediment pollution, and an overall growing population have made the Gulf of Nicoya unproductive for fishermen to make a living. Against this backdrop, the Morales Women's Association (Asociación de Mujeres de Morales, AMM), together with the Fishing Projects Association (Asociación de Proyectos Pesqueros, APROPESA) and the National University, devised a way to sustainably cultivate and harvest oysters that could create alternative economic activity and reduce pressure on marine resources.

AMM and the National University developed an innovative, cost-effective method for growing oysters in the Gulf of Nicoya. The technology includes constructing marine ponds that create an ideal environment for oyster growth (e.g., protection from waves). The women seed the ponds with oyster seeds, or young oysters produced in a hatchery, and grow them in secured bags that have the capacity to hold 1,000 oyster seeds. The harvesters maintain the bags during the growing period. The oysters are certified by the laboratory for product safety and endorsed by the health ministry to ensure healthy consumption of the product.

For Costa Ricans, national production of oysters is rare, as most oysters are imported. However, the consumption of Costa Rican oysters is growing due to a marketing campaign that includes selling to delicatessens in the capital San Jose and conducting tastings in beach hotels and coastal towns.

AMM currently produces on average 100,000 oysters each year. They would like to receive additional training on oyster seeding and productivity.

The oyster, known for its aphrodisiac properties, is a mythical food in many cultures. For some, the oyster is an acquired taste, but there is no doubt that it is a nutritious food rich in vitamins A, B1 (thiamine), B2 (riboflavin), B3 (niacin), C (ascorbic acid), and D (calciferol). Four or five medium-size oysters provides the recommended daily allowance of iron, copper, iodine, magnesium, calcium, zinc, manganese, and phosphorus.



MANGROVE CLAMS

Name of the species and ecosystem: *Anadara tuberculosa*; mangrove

Product location: Isla de Chira, Golfo de Nicoya, Puntarenas, Costa Rica

Global distribution: The clam is common in most parts of the Pacific American coast, from the Gulf of California in Mexico to Tumbes, Peru.

Production description: The health and supply of mangrove clams is an indicator of a mangrove's health. Clams act as a water filter, combing through sediment, nutrients, and pollutants in the water. A mangrove with no clams means that the water is too polluted for them to survive. Mangroves are also vitally important to the birth and development of many commercial species such as snapper, snails, lobster, shrimp, and crab, as well as for other species that are ecologically important to the mangrove ecosystem, such as sea stars, clams, oysters, marlin, and barracuda. Moreover, mangroves are a natural, protective barrier against coastal storms and waves. Mangroves are threatened by pollution from the agricultural, mining, and shrimping industries, and by household waste. The destruction of mangroves for real estate development is another leading threat to this exquisite ecosystem.

By becoming aware of the delicate nature and importance of the mangroves, the women of Isla de Chira are learning how to create an economy out of a pristine environment. Economically, the area is pressed for jobs, as the fishing sector is limited by the overexploitation of the Gulf of Nicoya. Harvesting mangrove clams reduces the pressure on the fish stock and presents a form of employment based on the health of the natural environment. The quiet community of La Isla de Chira, where bicycling is the main mode of transportation, combines clamming and mangrove tours to boost the economy and promote conservation. As a result, the community has a vested interest in conserving the mangroves.

Clams harvested from mangroves in the Gulf of Nicoya in La Isla de Chira, Costa Rica. The clams, oval with a coarse shell, are known for their aphrodisiac qualities and versatility in many seafood recipes. Mangrove clams are sold in restaurants in dishes like ceviche, seafood rice, and clams with green plantains and bananas.

CULTURED MARINE BATH SPONGE

Name of species and ecosystem: *Hippospongia* sp.

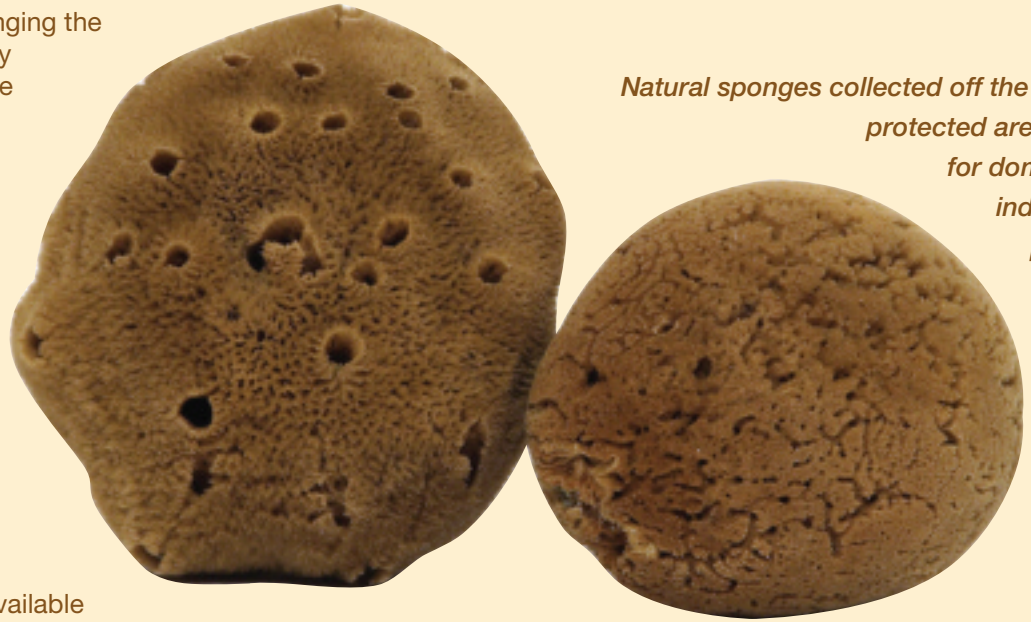
Product location: Carahatas community, Quemado de Güines, Villa Clara, Cuba

Global distribution: Caribbean

Production description: Traditionally reliant on fishing for commerce, the fishermen of the Carahatas fishing village are now turning to this niche product. Sponge collection is in keeping with the tradition of fishing yet reduces the pressure on the fish stock and uses environmentally friendly techniques. In the past, the area was fished using ecologically harmful techniques such as bottom trawling that damaged spawning areas for valuable fish species such as red snapper and grouper. Changing the techniques and economic base was ecologically important because the area is home to a notable variety of marine birds, manatees, large lizards, turtles, fish, and dolphins.

Today, sponges are now the most important source of income for Carahatas. The fishermen have learned to grow sponges through the traditional technique of "free propagules" rather than "suspended propagules." This allows for swifter growth and a more uniform morphology. As a result, the sponges from Carahats fetch a higher price in the marketplace.

Not only are natural sponges good for local conservation, they also reduce the use of fossil fuel–based sponges. The current production in Carahatas is one ton per year. Conditions are available for the creation of up to 10 tons a year.



Natural sponges collected off the coast of a protected area in Cuba for domestic and industrial purposes.

Rare, nutritious seamoss dried in the sun by local residents of fishing villages in Trinidad. Seamoss-based drinks are a tradition in Blanchissuese. Mixed with milk and local spices, the seamoss is drunk with Sunday meals and by new mothers to increase their nutrition for breastfeeding.

DRIED SEAMOSS

Name of the species and ecosystem: *Gelidium serrulatum* is found in Trinidad and has not been documented anywhere else in the English-speaking Caribbean.

Product location: Blanchisseuse, Trinidad

Global distribution: *Gelidium* is also known to occur on the coastlines of Venezuela and South Africa.

Production description: The species of seamoss featured here, from the Blanchisseuse area of Trinidad, has the highest quality of agar (a gelatinous extract of red alga) of any commercial species in the region. The species is found only on a limited stretch of coastline within the coastal communities on the north coast of Trinidad, between Las Cuevas in the northwest and Toco at the northeastern tip of the island. Its limited distribution and superior quality make it particularly vulnerable to overexploitation and so sustainable seamoss cultivation and management is critical.

In recent times, community members adopted sustainable harvesting techniques that involve cutting the seamoss stems rather than the roots (a practice that prevented the natural reproduction of the species). When harvested the dried seamoss appears dark red, and when cleaned, cream colored. The seamoss is washed to get all the foreign organisms and salt out. It is finally bleached with diluted lemon juice and dried in the sun.

Due to the rarity and importance of this species of seamoss, Blanchisseuse Environmental Art Trust, a small group of residents, primarily women, educates about and promotes sustainable harvesting of seamoss.

Blanchisseuse is a fishing and agricultural village that depends mainly on its natural resources for its livelihood. Fishing is the primary sources of income for local residents. Seamoss is harvested mainly during the dry season (January–May), when the sea is much calmer. Usually, the seamoss takes approximately five days to process and is stored for use in the rainy season (June–December), when the seas are rough and harvesting becomes difficult. Due to the high agar content of Blanchisseuse's seamoss, this product would benefit from further research about what products can be derived from it. There is potential for it to be used ice cream, medicinal products, and beauty products.

SHRIMP FROM THE NATURAL LAGOONS OF FONSECA GULF

Name of species and ecosystem: Natural salt lagoons

Product location: Puerto Morazán, Fonseca gulf, Chinandega, Nicaragua

Production description: The Gulf of Fonseca is the only place on the Pacific coast of Latin America, and one of the few in the world, that provides the conditions necessary for shrimp aquaculture. The shrimp are very popular in the nearby gulf communities and are an important component of the local diet. The shrimp are used in many local and international dishes, including cocktails, ceviche, and salads.

Shrimp farming in the temporary natural lagoons formed around the Fonseca gulf helps preserve the ecosystem and subsequently benefits the larger coastal marine ecosystem. Shrimp farming also ensures the survival and conservation of mangrove forests around the gulf. Eventually, it is hoped that the production in the lagoons will take place year round to provide a stable income to the artisan fishermen in Estero Real and to prevent large-scale emigration from the region.

Tasty shrimp grown via local aquaculture in natural lagoons.

The artisan fishermen of the area, who are members of communities that were severely affected by Hurricane Mitch in 1998, live almost exclusively on fishing, since they do not own farmland. The fishermen have thus in recent years organized themselves into an association, the Artisanal Fishermen of Morazán (ASOPESCAM). The organization now has 250 members and aims to promote sustainable fishing practices and the restoration of the natural lagoon. Artisanal production of shrimp in the Gulf of Fonseca guarantees a regular income for families associated with the cooperative.

BLACK CONCH

Name of the species and ecosystem: *Anadara similis* and *Anadara tuberculosa*; mangrove swamps and lagoons in the Tropcial Eastern Pacific region

Product location: Alemania Federal Community, El Realejo, Chinandega, Nicaragua

Global distribution: *Anadara* sp. live in coastal lagoons and mangrove swamps along the Pacific coast of Latin America. *Anadara similis* ranges from Peru to northern Nicaragua, while *A. turberculosa* ranges from Peru to Mexico.

Production description: In the community of Alemania, conch is the base of the daily diet. The locals consider conch a gift from the sea and are very creative in developing a variety of recipes with them, including soups, cocktails, and fried cockles.

Conch is traditionally collected in the mangroves of the Pacific coast of Nicaragua; however, due to their overexploitation, they are now in danger of extinction. In response to this threat, a group of 40 women and men joined the Association of Fishermen of the Federal German Community (ATMAF). This group organized in response to the socio-environmental problems in the region, in particular the environmental deterioration of the mangrove forest. As fishermen, they depend almost entirely on the lagoons and thus decided to react to prevent their destruction.

The community of Alemania, organized by the ATMAF cooperative, cultivates cockles in nurseries. The project is based on the production of natural seed, which settles in the corals, additionally providing a hard substrate for coral settlement and growth. As a result, the value of productivity per hectare of mangroves grows. And the sustainably integrated management of mangrove forest leads to the repopulation of other species that rely on the mangrove habitat. These include species harvested by the local community as a food source, which help provide alimentary security for the community as well as a source of revenue. Thanks to this production, the community meets its basic needs and generates additional income.

Conch, a bivalve saltwater shellfish native to the Pacific Coast of Latin America, is a local delicacy. In Nicaragua, conch are often used on fine dining occasions, from buying a dozen shells in the market for an elegant cocktail party to enjoying a dish at a fine restaurant.

MANGROVE CONCH

Name of the species and ecosystem: *Anadara similis* and *Anadara tuberculosa*; mangrove swamps and lagoons in the Tropcial Eastern Pacific region

Product location: Mangrove swamps in Esmeraldas, Guayas, and El Oro, in Ecuador

Global distribution: *Anadara* sp. live in coastal lagoons and mangrove swamps along the Pacific coast of Latin America. *Anadara similis* ranges from Peru to northern Nicaragua, while A. turberculosa ranges from Peru to Mexico.

Production description: Conch was once common in the region but are now seriously threatened since their only habitat, the mangrove swamps, have been systematically destroyed over the past 40 years in order to install pools for shrimp aquaculture. In Ecuador, more than 70% of the mangrove swamp ecosystem has been lost, which has resulted in a drastic reduction in conch abundance. Fifteen years ago, a shellfish-gathering group could collect more than 1,000 shellfish in a few of hours of work but today manages to collect only 70 to 100 shellfish in six to eight hours of work.

Shellfish are the main protein source for the coastal populations in the area, which have historically gathered this species from the root areas of the mangrove swamps. Conch is also an important part of the culture of the local communities. Lullabies, myths, and legends refer to the shellfish and the activity of conchar (which means to extract shellfish from between the roots of the mangroves). Additionally, the shellfish business constitutes the main source of income for many families.

A savory shellfish that is eaten either raw or cooked, and is considered a delicacy.

In Quito, the Ancestral Towns of the Mangrove Swamps Ecosystem manages a center for commercializing mangrove products and preserving the culture of the mangrove swamps ecosystem. Products gathered by local communities are brought in weekly. These products are subject to conservation management regulations, including a minimum-size requirement for capture. The products of Centro Martín Pescador promote the protection, conservation, and recovery of the mangrove swamp ecosystem, as well as fair trade and solidarity with the Ancestral Towns of the Mangrove Swamp Ecosystem. The shellfish are available year round; however, for large orders the center needs 15 days advance notice.

GUALAJO (WHITE SNOOK) AND SEA BASS (YELLOWFIN SNOOK)

Name of species and ecosystem: *Centropomus viridis*: gualajo, also known as white snook

Centropomus robalito: sea bass, also known as yellowfin snook

Coastal tropical and subtropical marine communities including mangrove swamps, coral reefs, and estuaries

Product location: Bays and rivers populated with mangrove swamps in Esmeraldas, Manabí, Santa Elena, Guayas, and El Oro, in Ecuador

Global distribution: *Centropomus robalito* and *C. viridis* live along the coast of the eastern Pacific, from the Gulf of California to Ecuador

Production description: In Ecuador, species such as snook that live in mangrove ecosystems are seriously threatened by the destruction of the mangrove habitat and by the contamination of the water. The water is polluted in some areas by mining waste, including mercury, arsenic, lead, cadmium, and cyanide, and by fertilizers and chemical pesticides used in shrimp aquaculture. Additionally, industrial fishing techniques have reduced fishing stocks and caused disruption to bottom-water sediments, causing the dispersion of solid contaminants.

Snook and seabass fish caught by artisan fishers using sustainable fishing techniques. These species are rich in vitamin B, lipid-soluble A and D, and a number of minerals (phosphate, potassium, sodium, calcium, magnesium, iron, and iodine).

These fish are caught using ecologically sensitive fishing methods that aim to protect larva and juveniles, as well as the natural dynamic of the ecosystem as a whole. Fish are caught by manually operated nets, a practice that limits the scale of the catch. The net's mesh is large enough to prevent the capture of small fish and to increase the selectivity of the catch. Fishing is only conducted in the surface waters, to avoid disruption of bottom communities and sediments.

See description of the Centro Martín Pescador in Mangrove Conch profile for more information about the community organization..

WILD KING PRAWN (WHITELEG SHRIMP)

Name of the species and ecosystem: *Litopenaeus vannamei*, formerly *Penaeus vannamei*, prefer relatively shallow coastal waters with muddy substrate, in coastal eastern Pacific.

Product location: Communities of Esmeraldas, Manabí, Guayas, Santa Elena and El Oro, on the Ecuadorian coast

Global distribution: Native to the eastern Pacific and ranging from Mexico to northern Peru

Production description: In contrast to farm-raised shrimp, these wild shrimp are not given hormones or nutrients to encourage growth. Consequently, wild caught shrimp are not as large as aquaculture-raised shrimp of the same species, which puts artisan fishermen at a competitive marketing disadvantage. Shrimp fishing is an important part of the cultural heritage of these communities and is threatened by the expansion of the shrimp aquaculture industry in this region.

Whiteleg shrimp utilize near-shore areas for a portion of their life cycle. Females deposit their eggs in the open sea, but once hatched the larvae move to the more protected habitats of marshes, mangrove swamps, and streams. Thus the wild population is affected by the widespread destruction of Ecuador's mangrove swamps. Such destruction has been exacerbated by the shrimp aquaculture industry, which has been responsible for much of the clearing of mangrove swamps.

See description of the Centro Martín Pescador in Mangrove Conch profile for more information about the community organization..

A native species of shrimp harvested using artisanal fishing practices.

FRESH CHILEAN BLUE MUSSEL

Name of species and ecosystem: *Mytilus chilensis*; intertidal marine coastal ecosystem

Product location: Corral, Los Rio region, Southern Chile

Global distribution: Southern coast of Chile

Production description: Harvested and respected by the men and women of the Chaihuín Fishermen's Union, these mussels are a high-demand ingredient for their distinct flavor in specialty dishes. The members of the union have a special perspective on the life cycles of the blue mussel. Since their youth, they have been connected to the coastal sector. As adults who have witnessed the changes in the sector over the years, they understand that if the coastal sector and management area are not protected they will not be able to rely on the products they market. The fishing community has worked hard to establish an adequate program for mussel harvest. They take into account the mussel's life cycle as well as the care of the coastal sector in order to protect the riverbanks and prevent misuse of the area. In this way, the union has changed its role from harvesters to conservers of the sector. Union members respect the mussel's life cycle and make improvements such as advanced temperature control for the mussel's commercialization. Blue mussels are available throughout the year.

Fresh blue mussels from southern Chile known for their distinct flavor in speciality dishes.

ARTISANALLY HARVESTED LOBSTERS

Product location: Punta Allen, Quintana Roo, Mexico

Production description: Members of the fishing cooperative benefit from this sustainable program of lobster fishing in a number of ways, including maintaining a trust fund that provides financial security for the fishermen during financial difficult times.

With support from the SGP and the United Nations Foundation (UNF), the cooperative uses key sustainable fishing techniques to secure the members' future livelihood and the conservation of the species. The fishermen construct refuges for lobsters that allow the young to grow and survive. They fish without nets so as to lessen their impact on the ocean environment (they use a tool called a "jamo" instead), and they fish far away from protected reefs. The cooperative's innovative management model resulted in recognition in an international competition for sustainable initiatives by the Equator Initiative. In 2006, the cooperative was a finalist and received recognition for the "remarkable work being undertaken by communities to reduce poverty through the conservation and sustainable use of biodiversity." The cooperative is now working with other fishing cooperatives across the Yucatan peninsula, and with fishing communities from other countries such as Belize and Panama, to standardize good management practices for lobster harvesting on a commercial level.

Sustainably harvested lobster caught and managed through artisanal techniques in the Sian Ka'an Biosphere Reserve, a UNESCO World Heritage site in Mexico.

St. Kitts Sea Turtle Monitoring Network

Conservation through community education and eco-jewelry

Earlston Warner, a former sea turtle harvester in St. Kitts, remembers being asked to volunteer to protect the sea turtles. “I was curious about the experience,” he recalled. Three years later, he is a senior sea turtle technician. He began with monitoring turtle eggs and placing them in safe areas so they would survive the odds against them. One in 150 turtle eggs survive. Their survival rate is hurt by two main threats in St. Kitts: the open harvest of turtle eggs, and habitat destruction both on the nesting beaches and in the water. Today, the St. Kitts Sea Turtle Monitoring Network (SKSTMN), a community-based organization that monitors and protects the St. Kitts sea turtle population, is changing those odds.

Founded in January 2003, SKSTMN has developed many projects to protect both sea turtle breeding areas on beaches and the marine ecosystem as a whole. The organization advocates strengthening sea turtle conservation laws and promotes community awareness about turtle conservation.

SKSTMN’s community education work is transformative for both the community and the turtle population. Each year, local fistherman collect a large number of endangered sea turtles, primarily hawksbills, in the legal harvest. Thus, in an effort to create alternative sources of income to replace the sea turtle harvest, SKSTMN focused a large portion of its efforts in the fishing communities. Local fishermen are offered positions as sea turtle technicians to work on the leatherback turtle project, in which they receive income for conservation as opposed to harvesting.

Additionally, in collaboration with the Global Environmental Facility’s Small Grants Programme (GEF SGP), the Wider

Caribbean Sea Turtle Conservation Network (WIDECAST), and Ross University School of Veterinary Medicine (RUSVM), a recycled-glass jewelry project developed that offers free training to communities in glass jewelry making. This product promotes recycling glass bottles rather than having them contribute to the refuse in the immediate ecosystem, such as the ocean. SKSTMN sponsors bimonthly beach cleanups on the main sea turtle nesting beaches, removing thousands of pounds of marine debris each year. Much of the glass products collected in the beach cleanups are now being incorporated into the project's glass jewelry.

Sandmining, vegetation removal, vehicular traffic, and trash place significant pressure on nesting beach habitats in St. Kitts and pose a serious threat to both adult nesting females and hatchlings. In 2009, with GEF SGP support and the development of leatherback ecotours on the main nesting beaches heightened awareness about these environmental issues island-wide.

SKSTMN's public outreach doesn't stop with fishermen and tourists. The organization offers a sea turtle camp that attracts over 100 participants from local schools every year. The camp educates youth about the sea turtle's life cycle and the need to protect their ecosystem. SKSTMN's other programs are targeted at educating businesses and developers on best practices regarding sea turtles.

SKSTMN's work is increasing the island's environmental awareness and making a big difference in the sea turtle population. Warner no longer harvests sea turtles. He finds pride in growing the numbers of turtles on the island and in making and wearing the jewelry that is helping bring the turtles back.

TIMBER PROUDCTS

NATIVE TREE NURSERY

Name of species and ecosystem: Cedar: *Cedrela odorata* L.
Teak: *Tectona grandis*
Oak savanna: *Tabebuia rosea*
Cypress: *Cupressus*

Product location: San Antonio de Pejibaye, Canton Perez Zeledon, Puntarenas province, Costa Rica

Production description: The Women of San Antonio de Pejibaye germinate and cultivate these timber and ornamental trees in nurseries using organic fertilizer made from chickens. The group's work is small scale yet economically and environmentally vital. The Women of San Antonio de Pejibaye play a fundamental role in educating children and keeping families united. San Antonio de Pejibaye is a small community populated by some 1,500 people. The main economic activities are the cultivation of agricultural products and livestock. The tree nursery work provides additional income to a community that is challenged by the loss of many men who have migrated to the United States for other employment.

The trees are bought by producers who participate in the national program of payment for environmental services, which generates incentives for the reforestation of degraded areas. Some tree customers use the trees to create the conditions for shade-grown coffee. In general, reforestation is carried out in pasture, important watersheds, and deforested areas to contribute to the connectivity of forest patches. Students often participate in the reforestation process to learn about the tree species and how to successfully grow trees.

The Women of San Antonio de Pejibaye grow 10,000 trees per year on average. The group is interested in identifying additional market niches and designing a marketing strategy to reach those markets.

Native and endemic trees grown in nurseries for a nationwide program to reforest the Costa Rican countryside. The species they grow are essential to the biological function of Costa Rica's varied habitats and include cedar, teak, oak savanna, jack horse, stool, cypress, pine bark, and amarillón.

CERTIFIED WOOD AND FOREST PRODUCTS FROM A COMMUNITY FOREST

Name of species and ecosystem: *Swietenia macrophylla* and *Hevea brasiliensis*; lowland tropical forest ecosystem

Product location: Noh Bec community, Quintana Roo state, Mexico

Production description: Noh Bec is a community of 216 residents who manage a communal forest territory (called an ejido) in the Sian Ka'an Biosphere Reserve. The territory measures 24,120 hectares, of which 18,000 h is lowland rain forest used for permanent forest production and 700 h is used as a reserve area. The Comisariado Ejidal (composed of a president, secretary, and treasurer) is in charge of forest management. Noh Bec relies on the forest management office, made up of technical staff from the community, to run the forestry production. Every year, Noh Bec harvests 1,545 cubic meters of mahogany and 4,500 cubic meters of other tropical species, taking advantage of more than 20 tree types for timber.

In August 2007, Hurricane Dean hit the community directly, destroying 40% of the forest trees and deeply affecting Noh Bec's productivity. Before then, Noh Bec was a shining example of the profitability of sustainability. Through sustainable forestry practices, the community's annual income from timber sales was on the order of $1 million, of which mahogany made up 50%. Noh Bec also produced rubber that brought in approximately $52,000 annually.

Since the hurricane, challenges in the direction of the enterprise have been resolved; and through new leadership, most of the debts have been rapidly repaid.

The community's wealth is shared through 150 permanent jobs and an annual distribution of profits of approximately $1,800 dollars per member. In addition, the community leads and participates in capacity building training so that the members, and the community at-large, drive all sides of the business.

Forest Stewardship Council (FSC)–certified wood and other forest products from the Noh Bec ejido in Mexico. The products coming out of the Noh Bec ejido include FSC–certified mahogany and up to 20 species of soft tropical woods; handicrafts such as toys marketed under a collective brand of products from the region of Kuxtal Sian Ka'an, a World Heritage site; and rubber, a which is currently traded with Great Britain.

PINE SEEDS

Name of the species and ecosystem: *Pinus oocarpa*, Mountain ecosystem

Product location: Municipality of Jalapa, Nueva Segovia, Nicaragua

Global distribution: Native to Central America; grows at high elevations in parts of Nicaragua, El Salvador, Honduras, Guatemala, and Mexico.

Production description: *Pinus oocarpa* is native to Central America and grows at high elevations. It is a major component of Jalapa forests but has suffered from plagues in the past. The CECOFOR cooperative is working to reduce the impact of harvesting on the environment and to protect the biodiversity of the Jalapa forests. One way that they are doing this is through the cultivation of Mexican yellow pine seeds. The cooperative produces and sells them for the natural reforestation of the Jalapa forests. In turn, a portion of the proceeds from the seed product fund further conservation efforts.

Jalapa is a municipality located 65 km from the city of Ocotal. The main sources of income are forestry and tobacco. Approximately 20 producers are associated with the CECOFOR cooperatives and for the past five years have been active in forestry development and socio-environmental projects that promote gender equality and sustainable farming techniques.

Pinus oocarpa, commonly known as Mexican yellow pine or hazelnut pine, seeds used for reforestation.

La Esperanza Cooperative
Indigenous women changing the response to environmental disasters

Educational tools for children, toys, and watches—all made with timber from Hurricane Felix's debris, and made with the love and care of the indigenous women from La Esperanza Cooperative. In 2007 Hurricane Felix destroyed nearly 100% of the Butku community's forest, where the cooperative is based. Through their inventiveness, the women of La Esperanza Cooperative are bringing the local economy back to health and ensuring the sustainability of the forest.

Since 2002, the Butku community has retained management and legal ownership over a hardwood forest area under the direction of the World Wildlife Federation and the local organization Masangni. Following Hurricane Felix, the community requested that the Forest Stewardship Council (FSC) begin the process of certifying the fallen timber as sustainable. FSC is currently conducting the pre-assessment for granting certification for the timber fallen during the hurricane. The certification will add value to the timber and open new national and international markets for the cooperative's products, which will bring direct environmental and economic benefits for the community.

With the help of the United Nations Development Programme's Small Grants Programme, La Esperanza Cooperative is increasing its production of sustainable toys. Attaining electricity was crucial to improving their productivity. In addition, the women learned from trainings how to best use the fallen timber for their craft and to enhance their organizational skills for business planning. Local markets are currently opening up as a result of these concentrated efforts.

The women feel empowered by this work. The process of working with FSC and integrating hurricane debris into their craft brought more women into the project and highlighted the importance of their work in the community. According to Mrs. Nazari, president of La Esperanza Cooperative, “The women of the cooperative and the community know the value of the forest, therefore, they are committed to it for its protection.” Through the cooperative’s efforts, the local perception is shifting about the importance of taking care of the forest for the long term.

ARTISANAL HANDICRAFTS

CAPIM DOURADO (GOLDEN GRASS) HANDICRAFTS

Name of species and ecosystem: *Syngonanthus nitens*; Cerrado biome

Product location: Jalapão region, Tocantins state, Brazil

Global distribution: Capim dourado is found only in the Cerrado biome of Brazil.

Production description: Capim dourado grows in the humid grasslands of the Cerrado biome. These grasslands are part of Brazil's Permanent Preservation Areas because of their role in maintaining a healthy watershed and as home to a global biodiversity hotspot of endemic flora and fauna. This delicate biome is under threat from land conversion for agriculture, especially along river ways where the soil is incredibly fertile. The sustainable management and harvesting of capim dourado for unique handicrafts helps to prevent the conversion of the Cerrado from its natural state.

In the Jalapão region of Tocantins state, this plant is the most important source of income for local communities. While many communities make capim dourado handicrafts today, it all started with a community of slave descendants, Mumbuca. A woman from Mumbuca learned how to use capim dourado for crafts from nearby indigenous people. Today, in cooperation with scientists, local communities have contributed in formulating a specific legislation that establishes the period and management procedures for the capim dourado harvest. This law guarantees that the harvest of the flowers stems takes place only after the maturation of the of the seeds, and that they are left in the field in order to help maintain the species' population.

Handicrafts made from the flower stems of capim dourado and sewn together with buriti palm (Mauritia flexuosa) silk. The capim dourado is naturally and extraordinarily golden and bright. The most common handicrafts are hats, baskets, boxes, bracelets, and earrings.

CATTAIL CRAFTS

Name of the species and ecosystem: *Typha domingensis*; endangered wetland

Product location: Settlement Bagatzi, Bagaces Guanacaste, Costa Rica

Global distribution: This plant is located throughout North America in swampy areas. In some regions, including Costa Rica, it is an introduced, invasive species.

Production description: Created by a group of inventive women, this product is made from cattails to contribute to the restoration of an endangered wetland in Palo Verde National Park in Costa Rica. The national park is comprised of seasonal wetlands, mangroves, freshwater, brackish lagoons, and tropical dry forest. The mosaic of habitats makes it home to the largest concentration of waterfowl, waders, and migratory and native Costa Rican birds in Central America. Palo Verde is registered as a site of international importance for water-bird conservation. Due to ecological deterioration, the area was listed at risk in 1993 by the Montreux Record. One threat to its ecological integrity is the large-scale invasion of cattails, which decrease the overall biological diversity of wetland species.

By creating paper handicrafts from the cattails, the women are directly removing this invasive species and contributing to the rehabilitation of the ecosystem. As the only nationwide group working with this natural resource, Association Typha Tour had to learn how to work with cattails for handicrafts. They developed their own harvesting and production techniques. The process involves crushing and combining the cattail pulp with newsprint and other paper products for a compact, fine paper suitable for various crafts.
For the women of Association Typha Tour, the cattail crafts are just as much an economic necessity as they are a conservation benefit. They live in a remote area between two protected areas, Reserva Biológica Lomas Barbudal and Palo Verde National Park, where making a living can be extremely difficult. Through Typha Tour, they are able to work from home and improve their family living conditions. Building on their success, the women have goals that include training younger women in the craft and scaling up their production.

Handicrafts made from cattails, include books, gift boxes, gift bags, canvas, notebooks, folders, and other office supplies.

YUCHAN MASKS

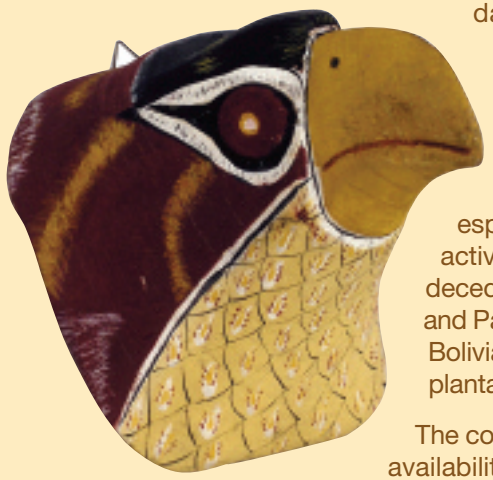
Name of species and ecosystem: *Ceiba insignis*, commonly known as yuchan and palo borracho, is a big tree present in forest systems in Yungas and Chaco, Argentina.

Product location: Palma Sola, Santa Barbara, Jujuy, Argentina

Global distribution: Found from Peru (Amazonian rain forest) to the Argentinean northwest (Jujuy, Salta, Tucuman, Catamarca, Santiago del Estero, Chaco, and Formosa)

Production description: The yuchan tree isan important tree within the Guarani and other indigenous communities. It is becoming endangered due to deforestation across its regional distribution area. An increased interest in the masks for decorative artwork is encouraging the replanting of this species in the Yacuy, Capiazutti, and Palma Sola communities of Argentina.

The masks are produced with traditional Guarani carving techniques and natural paints made from stones and plants. In Argentina, the masks play a fundamental role at Carnival time for the Arete Guazu celebration. During this multiple-day celebration, dancers perform using the masks to act out various characters.



The masks are made in the Comunidad Aborigen Penti Carandai, a Guarani community located in the town of Palma Sola, Jujuy, home to 72 families. Mask-making provides additional income, especially between June and October, when farming activities are slow. The members of the community are decedents of or direct immigrants from regions of Bolivia and Paraguay following the Chaco war (1932–1935) between Bolivia and Paraguay, who came to fulfill labor needs in sugar plantations and to escape the war.

The community produces 20 to 25 masks per month. The average availability is between 70 and 80 pieces at one time.

Masks made from the yuchan tree. Traditionally, the masks are used to bring to life forest animals and spirits. Each mask is unique and has high aesthetic value.

Traditionally knitted garments made from sheep wool and natural dyes.

SHEEP WOOL GARMENTS WITH NATURAL DYES

Name of the species and ecosystem: *Galium richardianum*, *G. hypocarpium* for dyes; the Yungas forest

Product location: Los Toldos, Santa Victoria Oeste, Salta, Argentina

Production description: The Yungas forest, a mountainous rain forest that stretches from Venezuela to the northwest of Argentina, is home to significant species of Argentinean flora and fauna. The main trees are cedar, walnut, oak, lapacho, tarco, yellow, and cevil. The rain forest is part of a biosphere reserve and encompasses two national parks, El Nogalar National Reserve and Baritu National Park. Agricultural use such as raising livestock threatens the ecological integrity of this pristine area.

Los Toldos is a rural community at the north of the Yungas biosphere reserve. With the help of the Cooperative Santa Ana, a handful of women from the area use a traditional indigenous loom to create knitted garments. They make the dyes from natural sources such as the stems, leaves, and roots of native plants (Galium richardianum, G. hypocarpium). To avoid the degradation of the native plants, they reproduce the plants in a greenhouse for replanting in the natural environment. (They also use some synthetic dyes.)

They can produce 30 to 35 large and medium garments per month and a greater amount of smaller garments. Garments are made to order.

RECYCLED GLASS JEWELRY AND KEY CHAINS FOR SEA TURTLE PRESERVATION

Product location: St. Kitts, Eastern Caribbean

Global distribution: North America, Caribbean region, and South America

Production description: Recycled glass bead products made by local fishermen provide an alternative source of income to sea turtle harvesting and egg poaching. Training in the art of recycled glass bead production is offered free of charge to fishermen and other community members. The Sea Turtle Bottle Bead project in St. Kitts is a collaboration of the St. Kitts Sea Turtle Monitoring Network (www.stkittsturtles.com) and the Wider Caribbean Sea Turtle Conservation Network (www.widecast.org). Trainees learn how to create unique, exquisite jewelry and key chains from sculpted recycled glass. This product has made it possible for fishermen and other community members to receive a salary, become trained in a trade, and support regional biodiversity conservation.

In addition to the primary aim of protecting sea turtles (by reducing poaching pressure), this product promotes the recycling of glass bottles rather than having them contribute to the refuse in the immediate ecosystem. In addition, community members and business owners get involved by donating their bottles.

The key chains and necklaces are sold in sets of 50 at US$300 per order. Customers may order any combination (e.g., 25 key chains and 25 necklaces), as long as the request is equivalent to 50 items. Customers should allow 10 to 14 business days from order placement to expected delivery date. Bead sizes, colors, and styles will vary based on the available materials and the individual artisans.

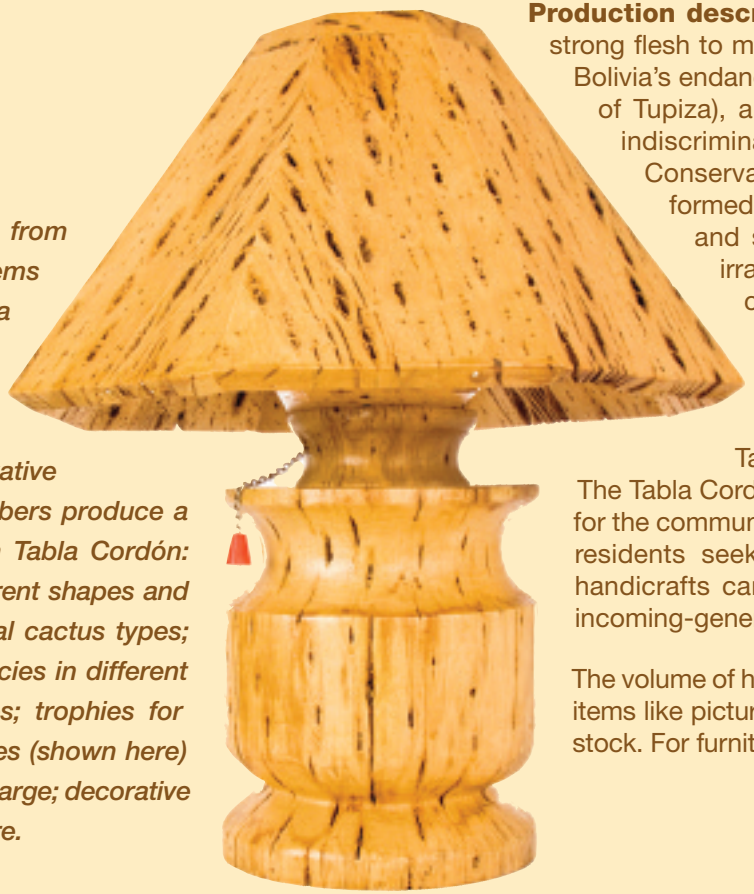
Recycled glass bead jewelry includes necklaces and key chains.

TABLA CORDÓN HANDICRAFTS

Name of the species and ecosystem: *Trichocereus werdermannianus Backeberg*, commonly known as Tabla Cordón; located in umbratica plains and hillsides at 3,000 to 3,500 m.

Product location: San Miguel del Municipio de Tupiza, Sud Chichas Province, Bolivia

Global distribution: Endemic to the southern region of Bolivia



A variety of handicrafts from furniture to decorative items made from the cactus Tabla Cordón in southern Bolivia. Tabla Cordón products are highly sought for their rarity, dramatic shapes, and innovative design. ECOCACTUS members produce a number of handicrafts from Tabla Cordón: Lamps (shown here) in different shapes and sizes, and made with several cactus types; figurines of several bird species in different sizes; signs of various sizes; trophies for sporting events; photo frames (shown here) made in small, medium, and large; decorative tables; and computer furniture.

Production description: Tabla Cordón is a stately cactus used for its strong flesh to make many items, but its utilitarian nature has put it on Bolivia's endangered species list. In just one small region (in the town of Tupiza), an estimated 5,000 Tabla Cordón cactus were felled indiscriminately. In 2006, the Environmental Association for Conservation and Sustainable Use of Cacti (ECOCACTUS) formed with the aim of promoting conservation, preservation, and sustainable use of cacti. They hoped to reduce the irrational felling of Tabla Cordón and the cutting of young cacti, as well as establish management guidelines for working with Tabla Cordón.

Today, ECOCACTUS replants the species and leads a repopulation campaign in the communities. The Tabla Cordón they work with is protected and fenced off. The Tabla Cordón handicrafts provide an additional source of income for the communities that rely on agriculture. In times of drought, when residents seek other means of income such as mining, cactus handicrafts can provide more secure and ecologically sustainable incoming-generating activity.

The volume of handicrafts available varies and depends on the type. For items like picture frames and bird figurines, there are about 20 to 30 in stock. For furniture items, 10 items may be in stock at one time.

SATCHELS MADE FROM *BROMELIA HIERONYMI*

Name of species and ecosystem: *Bromelia hieronymi*; grows in the Gran Chaco eco-region, a hot and semiarid lowland region covering eastern Bolivia, Paraguay, northern Argentina, and Mato Grosso, Brazil.

Product location: Ayorea Poza Verde, municipality of Pailón, department of Santa Cruz, Bolivia

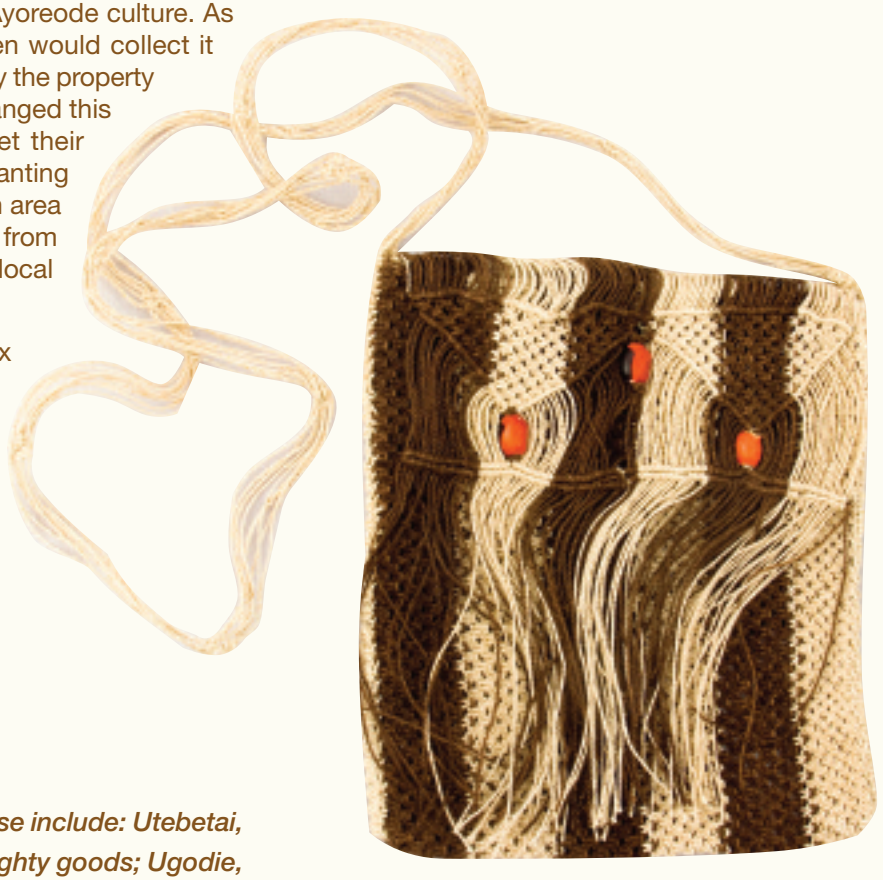
Global distribution: Bolivia, Paraguay, Argentina, and Brazil

Production description: These products are made by Ayoreode women, an indigenous group from the Gran Chaco region of Bolivia and Paraguay. Previous to large-scale agricultural development (in livestock and soybeans), *B. hieronymi*, a non-woody fibrous plant, was found in large numbers throughout the Gran Chaco eco-region. Today, the plant is found in the wild mostly in small patches on private property, not in or near Ayoreode territory.

Using the plant for hunting and food satchels is traditional in the Ayoreode culture. As the species disappeared from the natural environment, the women would collect it from private property when the opportunity arose (e.g., when hired by the property owner for work). In 2006, an Ayoreode community, Poza Verde, changed this collection pattern dramatically: they planted 1,500 plants to meet their demand for raw *B. hieronymi*. In 2008, they established a second planting of 1,300 plants. Their actions have led to a new forest conservation area and buffer zone for their economic activity. As a result, their income from *B. hieronymi* has grown, and the impact of desertification on the local environment has diminished.

To create a fine fiber from *B. hieronymi*, the women use a complex processing technique. The satchel designs employ the unique characteristics of the Ayoreode culture, including symbolism and colors of the seven clans.

Currently, Poza Verde's satchels are sold under an agreement with the Ichepe Usaka craft shop. The women produce approximately 37 bags per month.



Three types of satchels made from the rare Bromelia hieronymi plant. These include: Utebetai, a handmade rectangular mesh bag used for carrying game and other weighty goods; Ugodie, a macramé bag used for small personal items; and Peye, a bag made from a twining technique and naturally dyed decorative thread, used for shopping and storing items like yarn.

CHONTA PALM HANDICRAFTS

Name of the species and ecosystem: *Astrocaryum murumuru*, locally called chonta; Amazon rain forest ecosystem

Product location: Community of Bella Altura, municipality of San Buenaventura, Iturralde province, department of La Paz, in the catchment area of the Madidi National Park, Bolivia

Handicrafts made from chonta palm, a palm native to the Amazon rain forest.

Global distribution: The Amazon basin

Production description: The indigenous community of Bella Altura (from the Tacana indigenous origin) makes these handmade products. The raw material is wild-harvested from the northern Amazon. The beauty in their color and texture make them a unique, highly marketable product that is keeping the Tacana culture and customs alive.

The products are sold by the Association of Artisans Tacanas Madidi. The artisans create products based on demand and specific requests. It can take from 20 to 25 days to deliver products, depending on volume and quantity.

The association has developed 38 types of products; the most prominent include trays, bowls, utensils, and masks.

AMAZONIAN TREE RESIN INCENSE

Name of species and ecosystem: *Clussia cf. ramosa*. Tree species is located in the heights of sub-Andean Amazonian rain forest at an altitude of 1,900 to 2,200 m.

Product location: Within the Natural Area of Integrated Management of Madidi National Park, Community Pucasucho of Bolivia

Global distribution: Bolivia and Peru

Production description: This incense is made from the resin of a threatened Amazon tree species. The usable part of the plant is the crystallized tree resin, which is extracted by making slits in the bark of the tree. Until recently, the indiscriminate use of the Clussia cf. ramosa tree for its resin threatened its existence. Implementing a sustainable management plan for this tree within the Madidi Integrated Management Natural Area and National Park has resulted in the reforestation of its seedlings and sustainable and rational use of the plant.

The collection of incense is essential for the community. Incense is the only product that generates income to support families and enhance their quality of life, unlike crop production of beans, corn, sugarcane, peanuts, and bananas, which serves just household consumption. Rich in culture, the Pucasucho community mainly speaks Quechua-Castilian language, and some still practice the ancient Leco language.

The community formed the Association of Incense Producers Pucasucho Apolo to expedite the collection and marketing of the incense, which are sold in city markets such as Cochabamba, Potosi, Oruro, Santa Cruz, and El Alto La Paz. Ninety percent of Bolivia's production exists only in the Madidi National Park. The incense is used for religious ceremonies and is well known in Andean culture.

The incense is harvested throughout the year based on a management plan. Sales, based on market demand and the needs of regular buyers, are mostly made wholesale, by the hundredweight (1qq = 46 kg).

Incense made from Amazonian tree resin.

EDUCATIONAL WOODEN TOYS

Product location: Butku Community, North Atlantic Autonomous Region (RAAN), Nicaragua

Production description: The indigenous community of Buktu, in the northern municipality of Puerto Cabezas on Nicaragua's Caribbean coast, was gravely affected by Hurricane Felix in 2007, when numerous trees fell in the hardwood and pine forests. In the face of this adversity, the community took advantage of the fallen logs and initiated a workshop to produce educational wooden toys. The community hopes the toy production will aid in the area's economic development and improve the population's perception of the importance of taking care of the forests. The initiative also aims to reforest the area and work with community members to help manage and conserve the pine forests.

Since the hurricane's destruction, Cooperative La Esperanza, a group of indigenous women, has taken the lead in the community to develop sustainable, innovative projects to help the area to recover. So far they have demonstrated excellent project management skills and have gained the critical respect and approval of the community leaders.

Cooperative La Esperanza crafts the educational toys from pine harvested for timber. Experienced carpenters, the cooperative members have improved their techniques through workshops. The cooperative is currently working to develop a marketing plan and to target potential local markets. However, progress has been hampered by lack of electricity, which makes it difficult to use electric tools, and the lack of an oven to aid in wood drying. At present, the cooperative hopes to raise funds to provide wind energy to the community and to build an improved oven with solar panels.

Wooden toys made from pine. Products include children's study tables and carts with geometrical figures. Additional products are currently under development.

RECYCLED PAPER WITH NATURAL DYES

Name of species and ecosystem: *Pteridium* sp. (braken bracken)
Verbena
Chinese hibiscus
Bixa orellana (achiote)
Curcuma longa sp.
Tropical rain forest

Product location: Tena, Napo province, Ecuador

Global distribution: Ecuadorian Amazon

Production description: The indigenous and mestiza women of the small company Sol de Oriente collect the plants used in this paper from the wild and cultivate them in their own gardens. As a result, plant species that have no use as a food are still recognized as economically important. The company protects and cultivates the plants to maintain their population. Overall, Sol de Oriente's work with recycled paper is a reminder of the fight against deforestation and the need to work together to preserve the Amazon forest.

Aesthetically, their recycled paper products reflect the beauty of nature, especially the Amazon's natural world. The customer will appreciate the natural colors, shape, and creativity of these simple products, and the biodiversity preserved within its design. Each year, Sol de Oriente creates a new line of product designs for a fresh look.

Sol de Oriente produces 6,500 sheets of 70 x 43 cm paper every month, and 7,000 sheets of size A4 paper a month. Orders between 10 and 400 units can be processed in 7 to 10 days, depending on the complexity of the product. Orders above 400 require at least a month to process and could take up to two months to deliver. All orders are accepted with a 50% payment up front. A discount is available for orders over 100.

Recycled paper made with natural dyes and decorated with native Ecuadorian Amazon flower species. The paper is entirely handmade from biodegradable materials such as leaves, flowers, roots, seeds, and natural dyes. The dyes and paper materials come from over 50 plant species. Sol de Oriente offers several handmade recycled paper products: holiday cards, boxes, gift bags, folders, photo albums, notebooks of different sizes, and paper in various colors. For special occasions like Christmas, Holy Week, or Valentine's Day, they make an entire line of products. They also make custom-ordered products.

Native to the rain forests of Central and South America, the unique calabash tree, home to different species of orchids, is highly beneficial to biodiversity. The calabash tree is also one of the more utilitarian trees in the forest. Its large, jug-shaped fruit is perfect for making bowls and other containers. Featured here is a unique water bottle.

WATER BOTTLE MADE FROM TREE GOURD

Name of the species and ecosystem: *Crescentia cujete*, locally known as mate, pilche, or the calabash tree; found in tropical forests.

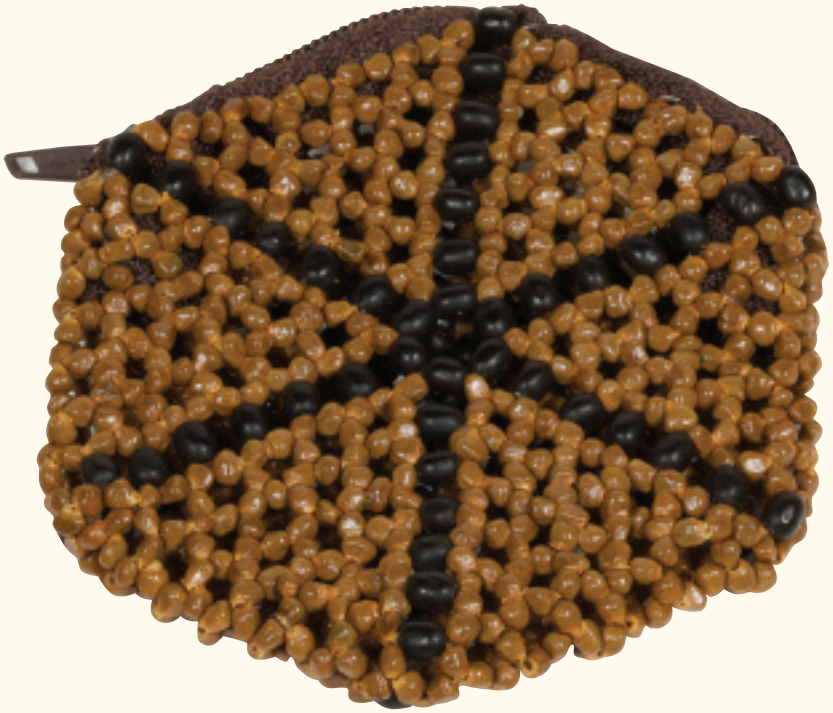
Product location: Talag, Napo province, Ecuador

Global distribution: Native to Central and South America

Production description: Native to the rain forests of Central and South America, the unique calabash tree, home to different species of orchids, is highly beneficial to biodiversity. The calabash tree is also one of the more utilitarian trees in the forest. Its large, jug-shaped fruit is perfect for making bowls and other containers. Featured here is a unique water bottle.

Sinchi Pura is a Kichwa community located along the Jatunyacu River in the buffer zone of Llanganates National Park in the Amazon. This water bottle is one of the most important products in the area, because many communities in the region work with it for local and commercial uses. Products are available all year in quantities of 100 to 1,000.

Purse made from endemic ornamental plants in Ecuador.



PURSE MADE FROM AMAZON ORNAMENTAL PLANTS (SHIGUANGO MUYU)

Name of species and ecosystem: *Renealmia genus*; there are many species. Locally it's called Shiguango muyu.

Product location: Amazonian provinces of Ecuador

Global distribution: Endemic to Ecuadorian Amazon

Production description: Shiguango muyu is known in the Ecuadorian Amazon as a typical ornamental plant found in home gardens. There are many plant species are referred to as Shiguango muyu (*Renealmia aurantifera* and *Renealmia nicolaides*, to name two). The plants are useful for making jewelry and bags.

Sinchi Pura, a Kichwa community located along the Jatunyacu River in the buffer zone of Llanganates National Park in the Amazon, uniquely designs Shiguango muyu purses to reflect individuality and the natural elements. Purses are available all year, as Shiguango muyu plants are not seasonal. In general, 50 to 100 purses are available at one time.

TRADITIONAL KICHUA WOODEN HANDICRAFTS

Name of the species and ecosystem: *Alnus acuminate* (alder) and *Buddleja incana* (quijuar); Andean forest ecosystem

Product location: Oyacachi community, Chaco city, Napo province, Ecuador

Global distribution: *Buddleja incana* is found in western South America, including Bolivia, Colombia, and Ecuador. *Alnus acuminate* is found throughout Central and South America.

Production description: These handicrafts are made from the tree trunks and dead wood of the alder and quijuar trees and painted with vibrant colors, bringing the pieces to life. The art of wood carving is a community affair; the youth and handicapped persons are two focus groups for the woodworking apprenticeship. The Oyachachi community has lived in what is today the Cayambe Coca Ecological Reserve (RECAY) for over 500 years. Their work maintains a tradition of woodworking that reflects their cultural cosmology and the biological richness of their territory. The entire production chain is sustainable, from the collection of the wood to the training of new artists. The environment and community cohesion are top priorities.

The Oyacachi community has 63,000 hectares of territory, 20,000 hectares of which are paramo, a neotropical ecosystem located between the upper forest line (about 3,800 m altitude) and the permanent snow line (about 5,000 m). The remaining 43,000 hectares lie at the forest level and make up the RECAY area. The territory is home to the Andean bear (Tremarctos ornatus), an endemic species and symbol of the community, and more than 100 endemic plant species, 106 mammal species, over 400 birds, 70 reptiles, and 116 amphibians.

The Oyacachi Craftsmen Association was constituted by an agreement of the ministry of foreign affairs in 2005. The goal of the organization is to create wooden handicrafts and enhance the social and economic development of the community. The organization has 53 members. The bowls and kitchen supplies are available year round; the sculptures and masks are available upon request by email. For more information, go to www.oyacachi.org.ec.

Original handcrafted bowls, sculptures, masks, and kitchen utensils inspired by nature and the indigenous culture of Kichua.

NATURALLY DYED FABRICS

Name of species and ecosystem: *Ugni molinae* (murta fruit); dyes made from branches, ferns, and bushes of the forest. Valdivian temperate rain forest, particularly coastal Olivillo forest.

Product location: Corral, Los Ríos region, southern Chile

Global distribution: The Valdivian rain forest is a unique forest type that extends from the region of Maule to the Southern Ice Fields and covers 245,000 sq. km.

Production description: The Residents Committee of Huape, which has its own brand and slogan, “Lafken Mapu: a long way towards the natural,” uses branches, leaves, ferns, and bushes from the rain forest to make natural dyes. The dyes are used to color sheep’s wool and then knitted into various textiles. The Residents Committee protects the adjacent forest, as it is the source of primary materials, and they know where to extract materials without damaging the ecosystem. The different species present in the forest give rise to an interesting variety of dye colors. The techniques and unique colors are well received by tourists. Stock is available throughout the year.

Natural dyes and textiles made with rainforest resources.

HANDICRAFTS MADE FROM PLANT FIBERS

Name of the species and ecosystem: *Eryngium paniculatum* (ñocha) and *Greigia sphacelata* (chupón); Valdivian temperate rain forest, particularly coastal Olivillo forest

Product location: Corral, Los Ríos region, Southern Chile

Global distribution: The Valdivian rain forest is a unique forest type that extends from the region of Maule to the Southern Ice Fields and covers 245,000 sq. km.

Production description: There are very few craftsmen who work with ñocha and chupón. The indigenous community of Huiro, the fishermen's union in particular, is reassessing this forgotten species and art form to make these functional handicrafts, using an ancient technique passed down through generations. Through working with the handicrafts, the Huiro fisherman's union is now exploring the forest sector, including its sustainable management. Ñocha and chupón were previously removed by small farmers who did not understand their utility or their importance in the Valdivian forest. However, the community is now putting value back into these species. Stock is available throughout the year.

Handicrafts made from the fibers of two recently revived plant species, ñocha and chupón, in southern Chile.

KUXTAL SIAN KA'AN ARTISANAL WOOD PRODUCTS

Product location: Sian Ka'an Biosphere's Reserve, Quintana Roo, Mexico

Production description: The Kuxtal Sian Ka'an brand of products is handcrafted in Mayan communities bordering the UNESCO World Heritage site of the Sian Ka'an Biosphere Reserve. An underlying goal of the Kuxtal Sian Ka'an brand is to produce ecological products while promoting social and economic sustainability within the local communities.

The enterprise's Community Business Links Program was created to establish environmentally and economically sustainable business models for these artisanal communities in the biosphere reserve. A further goal of the project is to create a larger market for Kuxtal Sian Ka'an products. The project aims to guarantee the consumer economic, ecological, and cultural benefits from the producers living in communities located near the World Heritage site.

The Community Business Links Program, which has received funding from the United Nations Foundation (UNF), is coordinated by the civil-society association Uyolché in collaboration with Friends of the Sian Ka'an Biosphere Reserve.

Handcrafted artisanal products from the communities of the Sian Ka'an Biosphere Reserve, Mexico under the Kuxtal Sian Ka'an brand Kuxtal Sian Ka'an makes bowls, kitchen utensils, decorative boxes, figurines, games, and more from sustainably harvested wood. They also make jewelry from forest seeds.

Clothes made from native Peruvian cotton. The women make several products from the native cotton, including Christmas ornaments, doll key rings, and bags. Each piece reflects the personal spirit of the women who made it as well as influences from the Moche culture.

PERUVIAN NATIVE COTTON CRAFTS WOVEN BY HAND

Name of the species and ecosystem: *Gossypium barbadense*; Equatorial Dry Forest ecoregion

Product location: Mórrope district, Lambayeque, Peru

Global distribution: The Equatorial Dry Forest ecoregion covers a coastal strip of 100 to 150 k wide, from the Santa Elena peninsula, the Gulf of Guayaquil, and Puna Island in Ecuador to Peru, covering large parts of Tumbes, Piura, Lambayeque, and La Libertad into the western catchment of the Andes to the valley of Marañón between Cajamarca and Amazonas.

Production description: The artisans of Mórrope district, Peru, joined together to restore the native cotton that grew in the fields of the ancient Peruvians. The native cotton exhibits the natural color palette found in traditional Peruvian clothing, blankets, fishing nets, and accessories. The artisans of Mórrope managed to rescue this species from extinction by collecting seeds from the few plants that remained in forgotten old crop fields. Today, the artisans grow native cotton with their other crops. They use agroecological techniques, preparing manure to fertilize their plants and using traditional knowledge to control pests and diseases.

In addition to preserving agro-biodiversity, the artisans are reviving the ancient weaving techniques that use a back-strap loom. Women today are using the cotton grown in their fields and teaching their daughters how to integrate both old and new weaving techniques. With the development and sale of native cotton products, the women are increasing their household income and supporting the human development of their families. The project for native cotton recovery allowed the women to learn a new way of economically providing for their families.

Thirty-five women weavers formed the Association of Artisans of Arbolsol and Huaca de Barro of the Mórrope District in 2003. Five years later, the association won the Equator Prize for Latin America in recognition of their recovery of native Peruvian cotton and the preservation of the art of back-strap loom weaving.

Mórrope is one of the towns and rural communities most representative of Moche, the pre-Incan culture. Mórrope is also one of the districts with the highest levels of poverty in the country. Families are engaged in agricultural activities (very limited by the scarcity of water) and household heads labor in fishing, agriculture, and salt extraction, while women and children often work as laborers in neighboring farms.

Handcrafted reed dolls by members of the artisan group Artejunco in Peru.

HANDCRAFTED REED DOLLS

Name of species and ecosystem: *Scirpus conglomeratus*; wetlands

Product location: Villa Maria and Tangay, Peru

Global distribution: The species of reed is endemic to coastal wetlands or Andean Peru, depending on the qualities unique to each area, latitude, water and soil.

Production description: The 250 weavers from Artejunco, in the province of Del Santa, Peru, use sustainable methods to harvest reeds from the fragile wetlands of northwest Peru. The crafting of these beautiful dolls by hand relies on ancient indigenous techniques wherein natural fibers are dried and woven with decorative dyes. Weavers use corduroy fabric and lace to finish these beautiful dolls, which are locally called paisanitas ("little country girls") or ancashinas (in the Ancash area of Peru).

These handmade reed dolls are sold in local, regional, national, and even foreign markets. The dolls range in length from 6.5 to 9 inches. Artejunco's craft techniques are passed from generation to generation, making the product a part of the local cultural identity.

JIPI JAPA HANDICRAFT

Name of the species and ecosystem: *Carludovica palmate*; tropical rainforest

Product location: Moho River Watershed near the Rio Blanco National Park (RBNP), Belize

Global distribution: The Jipi Japa palm is native to tropical rainforests of Central America and northern South America.

Production description: When harvested, Jipi Japa palm fibers are naturally processed to provide raw material of two colors: beige and dark brown. The Mayan women weave and finish all products by hand using colorful cotton thread to craft beautifully finished items.

Located on the border of the Rio Blanco National Park (RBNP), the 30 members of the Rio Blanco Women's Group work to support sustainable harvesting practices in the park. The RBNP is home to many endangered and important species, including the jaguar, ocelot margay, river otter, palm trees, and many species of orchids. Local villagers previously illegally harvested Jipi Japa palm trees from the RBNP. With the support of the UNDP/GEF SGP, community members established a two-acre Jipi Japa plot adjacent to the park to provide a source of raw material that reduces the pressure on the preserve's resources. Establishing a permanent crop of Jipi Japa in the buffer zone of the RBNP helps to conserve biodiversity in the park and combat land degradation. The rate of land degradation in the area around the RBNP is high due to slash-and-burn agriculture practiced by villagers. Further, the effects are severe due to the hilly terrain and the high levels of rainfall. Erosion and siltation contribute to deterioration of the entire Moho River Watershed.

There are very few employment opportunities in the communities of Santa Cruz and Santa Elena. The villages are not connected to the electrical grid, and the main activity is subsistence farming of corn, rice, and beans. There is a limited and seasonal flow of tourists to RBNP, and the income the women generate from selling crafts to visitors is very important for their families and communities. A percentage of income goes to supporting education and health activities in the villages. There is usually a surplus of Jipi Japa craft, which is difficult to sell on the local market as many other Mayan communities produce the same type of craft. The women of the Rio Blanco Women's Group are trying to identify new market opportunities outside their communities.

Jipi Japa handicraft consists of baskets, hair accessories, earrings, place mats and small souvenir items produced by the Mayan women of the Rio Blanco Women's Group.

ARTESANÍA DE YAREY

Name of species and ecosystem: *Copernicia gigas* (giant wax palm)

Product location: Endemic species of the sabanas arcillosas in the central area of Cuba.

Global distribution: Cuba Centro Oriental, Cuba

Production description: The giant wax palm is among the largest sizes within the *Copernicia* genus and plays an important ecological role as a pioneer in poor and saline soils. The tree's ability to grow in disturbed areas has several biodiversity implications. For one, it can grow where there might otherwise be invasive palm species that create groves of trees sapping the environment of needed nutrients and water for native species. Once established, the giant wax palm is a keystone species that creates breeding grounds and an important habitat for many of Cuba's endemic birds, including the tocororos (*Priotelus temnurus*), Cuba's national bird.

In the past, the giant wax palm has been overused for its fibers and timber for construction. Reforestation of the species and the sustainable use of the fiber for handicrafts lead to a more intentional management of the species. These craft products are created by women from a rural community located in the central zone of Las Tunas province. The women are rescuing the cultural tradition of craft making with giant wax palm fibers. In many cases, the tree fiber has replaced artificial materials like plastic for these daily household goods.

Handicrafts made from the giant wax palm, a tree species endemic to Cuba.

HAT, BASKETS, AND BROOMS MADE FROM COPERNICIA BAILEYANA

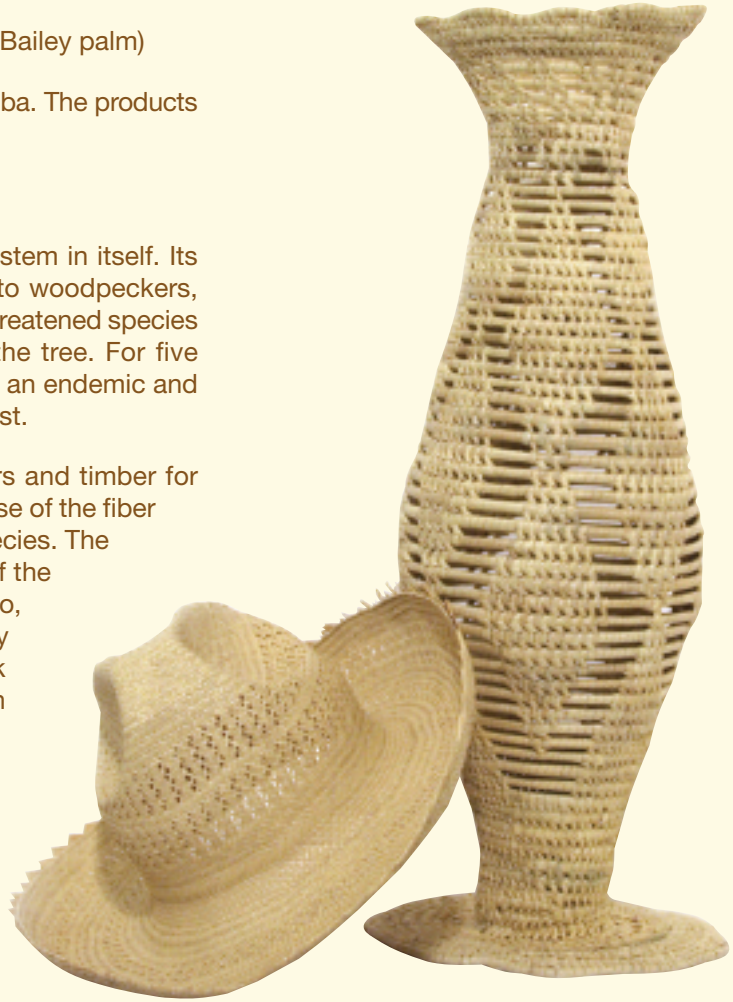
Name of the species and ecosystem: *Copernicia baileyana* (Bailey palm)

Product location: The palm is located in the central region of Cuba. The products are made in the Zabalo and Jobabo communities.

Global distribution: Cuba Centro Oriental, Cuba

Production description: The Bailey palm is a complex ecosystem in itself. Its fruits serve as food for birds and bats. The tree trunk is home to woodpeckers, including two endemic species, one of which is one of the most threatened species in the world, *Colaptes fernandinae*; they build their nests on the tree. For five species of birds, including the *Aratinga euops* (Cuban parakeet), an endemic and threatened species, the Bailey palm is the preferred perching post.

In the past, the giant wax palm has been overused for its fibers and timber for construction. Reforestation of the species and the sustainable use of the fiber for handicrafts lead to a more intentional management of the species. The rural communities of Zabalo and Jobabo, located to the south of the province Las Tunas in the Ramsar Site Humedal Delta del Cauto, make these hats, baskets, and brooms. The hats are used by Cuban farmers working in the agricultural fields and by park rangers in the Zabalo community; they are also typically worn in traditional dances. The baskets are used for transporting goods and storing food products. The brooms are a mainstay in Cuban homes and gardens for cleaning.



Hats, baskets, and brooms made from the Bailey palm, a species endemic to Cuba.

TAGUA NUT SCULPTURES

Name of species and ecosystem: *Phytelephas Macrocarpa*, Choco eco region

Product location: Capetuira, Darién Province, Panama

Global distribution: Darién region of Panama, Colombia & Ecuador.

Production description: The tagua palm tree grows in the humid tropical forests of Panama, Colombia and Ecuador. After harvesting the nut is dried for three months and becomes hard and white. Before the invention of plastic, tagua nuts were one of the main sources of raw material for making buttons.

Deforestation in tropical areas is wiping out natural sources of tagua nuts. They are harder to find since natural regeneration isn't keeping up with the demand for this fruit, which is used in sculpting animal figures. Indigenous communities are now starting to plant these palms trees and conserve where possible natural standing forest of tagua palms.

The Asociacion de Productores Wounaan de Capeti is located in the town of Capeti on the banks of the Tuira River in Darién Province of Panama, near the Colombian border. The Wounaan Indians of Panama are talented artisans that take great pride in sculpting animal figures in a variety of materials, especially tagua nuts and tree parts of the Coco Bolo species Dalbergia retusa. The sculpting work is almost always done by men. It is an important source of cash revenue for indigenous communities. They sell the sculptures to local visiting tourists or in Panamá City.

Sculptures made from the tagua nut.

COCO BOLO SCULPTURES

Sculptures made from the wood of Coco Bolo trees.

Name of the species and ecosystem: *Dalbergia retusa*; Chocó eco-region

Product location: Capetuira, Darién Province, Panama

Global distribution: Darién region of Panama; also found in Colombia.

Production description: The sculptures made from the Coco Bolo trees are outstanding examples of the fine artistry work by indigenous craftsmen. They use any part of the Coco Bolo tree (trunk, branches, roots, etc) and sculpt animals or zoomorphic figures that represent their cosmo-vision. The sculptures are made with precise details that replicate animals in their natural surroundings.

The artisans are invested in using sustainably managed forest resources for their work. Currently, there is an upswing in the reforestation of native forest species. Local awareness of the beauty and unique characteristics of these species is taking a stronger hold. In terms of conservation, promoting reforestation strategies that are rooted in natural forests and native species is ideal; it recuperate forest cover in degraded lands and supports sustainable vocations.

HANDWOVEN CHUNGA BASKETS

Name of species and ecosystem:
Astrocarium estandleyanum; Chocó eco-region

Product location: Capetuira, Darién Province, Panama

Global distribution: Darién region of Panama and Colombia.

Production description: The Wounaan and Embera Indians weave these extraordinary baskets using natural palm fibers found in Panama's Darien rainforest. The color pigments are derived from the earth and various plants. Motifs portray village life, local animals, or geometric patterns used in body painting and tattooing ceremonies. The baskets weaved by the Wounaan women are beautiful for their colorful designs and creativity.

Baskets made from natural palm fiber found in Panama's Darien rainforest.

This is an important source of income for women in these communities. It helps them to rely on themselves financially rather than only on their husbands. The cash revenue is often more wisely invested by women for family needs such as medicine, school utensils, etc.

Chunga fibers are a scarce resource. There is a history of unsustainable harvesting techniques that involves chopping down the chunga palm tree in order to get the youngest part of the palm found at the very top of the tree. The older portion of the tree is covered with sharp spines. As a result, people must travel farther into the forest to find chunga palms for the fiber that is used to weave the baskets. For the first time, they are now learning to manage the chunga palm sustainably. They are reforesting it and learning to harvest it in a sustainable manner so as to not exterminate the palms that are in their local vicinity.

The environmental component of this project is focused toward combating land degradation through stimulating reforestation with non-timber forest products such as chunga and tagua as a resource for artisan handicrafts.

INTERCULTURAL EDUCATIONAL TOYS

Product location: Vista Alegre, Darien Province, Panama

Production description: The toys are made from local natural resources such as wood, fibers, natural dyes and paints from the forest. These toys reflect the customs and community life of indigenous people of Darién, which can be seen in toys like the doll houses. These toys are culturally important and are beautiful in their fine craftsmanship—making them potentially viable in markets outside the Darien region. The artisans are now taking steps to assure the supply of raw materials from the forest surroundings remain plentiful with a sustainable management plan that includes planting and reforesting degraded areas with the same resources they extract for toy making.

Naturally made toys that are in the tradition of the indigenous people of the Darien province in Panama.

TRADITIONAL COTTON KUNA INDIAN HAMMOCKS

Product location: Paya, Darien Province, Panama

Production description: This product is contributing to the recovery of the traditional Kuna knowledge of weaving cotton hammocks with native varieties of cotton. Their work is carried out in the Tacarcuna Mountains of Panama very close to the Colombian border. The use of native varieties of cotton, some that even have tones of gray and brown are being lost because they are not planting them anymore. By working with elders in surrounding communities, they have reproduced the utensils to weave the hammocks and teach younger generations the art of this technique. The project includes using mixed cropping systems with cotton for generating better resilience and survival of crops. The mixed cropping system includes plants for domestic consumption such as plantains, cassava, otoe and guandu. The poly-cropping system helps reduce pest attacks, reduces the need for spending money on external inputs that they would otherwise have to buy.

The Kuna Indians Leaders' registered the traditional hammock making with the Collective Indigenous Property Rights at the Ministry of Industry and Commerce (MICI), which is a Panamanian law to prevent piracy of the indigenous cultural expressions for groups like the Kuna people.

Traditional cotton hammock made with Kuna Indian weaving techniques and native cotton in Paya, Darien, Panama.

Golden Grass Handicrafts

Improving the quality of life in the Brazilian Cerrado through conservation

In the early 1900's, inhabitants from the Afro-descendant community of Mumbuca in the Jalapão region of Brazil (Tocantins state) learned to produce handicrafts from flower stalks of golden grass (*Syngonanthus nitens*, *Eriocaulaceae* family) and silks of buriti palm (*Mauritia flexuosa*, *Arecaceae* family). These inhabitants learned this ancient technique from the Xerente indigenous people who traveled through the region. For decades, golden grass handicrafts were made for household uses and informal trading. In the mid-1990s, the Jalapão region became known as an adventure tourism destination. As a result, the golden grass handicrafts became known outside the region for the first time.

Today, golden grass handicrafts are sold in almost all Brazilian state capitals and exported to many countries in Europe, North America, and Asia.

With the increased popularity of golden grass handicrafts, the Mumbuca community became concerned about its future sustainability. In addition to the increasing demand for the raw materials, there were also a number of new artisans entering the market, increasing competition. Mumbuca community stakeholders contacted the Brazilian Institute for Environment and Renewable Natural Resources (IBAMA) to help them with research and to develop a sustainability plan for golden grass.

An excellent partnership developed between the local communities of Jalapão and the NGO PEQUI (Cerrado Research and Conservation), IBAMA, Tocantins State Environment Institute (Naturatins), and other collaborators in 2002–2003. Through the partnership, scientific articles, the *Manual of Good Practices for Golden Grass and Buriti Management*, and a catalog featuring the handicrafts developed. In addition, formal discussions ensued in the region to spread the scientific results and to educate new artisans about good management practices. Overall, the efforts resulted in an increased awareness about the sustainable harvest of golden grass and buriti palm.

Taking the research and education further, Naturatins worked with the legislature to regulate the harvest. The resulting regulation states that only harvesters from local associations can harvest golden grass. The law indicates a specific harvesting period and harvesting practices, such as leaving flowers in the field for the germination of seeds and reproduction of the species. In an effort to promote the local handicraft tradition and protect local livelihoods, the regulation also declares it unlawful to commercialize the raw materials outside the region.

Golden grass handicrafts are the main source of income for the majority of women in the Jalapão communities. To maintain the sustainability of their activity, most harvesters and artisans from the region have adopted good management practices and have organized into associations to enhance their selling capacity.

The harvest, if collected respecting the harvesting period, will continue to help the local Jalapão communities improve their livelihoods and conserve the Brazilian Cerrado, the most biodiverse savanna in the world.

HEALTH AND BODY CARE PRODUCTS

Medicinal Plants

CAT'S CLAW CANDY

Name of species and ecosystem: *Uncaria tomentosa* or *Uncaria guianensis*; tropical rain forest

Product location: Limón, Costa Rica

Global distribution: Originates from the Amazon rain forest (Peru, Colombia, Ecuador, Panama, and Venezuela)

Production description: Cat's Claw is grown in agroforestry systems that act as a buffer zone for several conservation areas, including the Tortuguero National Park and protected areas within the Tortuguero Conservation Area.

These extensive conservation areas on the Atlantic coast are extremely important for Costa Rica's biodiversity. Forty-six percent of all species of amphibians and reptiles (167 species) in Costa Rica can be found here; forty-eight percent of Lepidoptera (261 species), approximately 91 species of mammals, and fifty-one percent of Costa Rica's birds (405 species) also live here. In addition, the Atlantic coastline of Costa Rica is a notable main route for migratory birds.

While the area is rich in biodiversity, the local population struggles to find employment and improve their quality of life. By working with the natural richness of the area producing products like cat's claw, the organization ASIREA is helping to protect the regional biodiversity and foster local economic activity. Specifically, they collectively sell the cat's claw of individual producers to increase their market access.

The cat's claw candy comes in packets of six. The candies are made from cat's claw, sugar, butter, and natural flavorings. ASIREA producers have achieved relative success in marketing and distributing locally through the public bus service, but would like to improve their capacity to market. They require capital investment for equipment and standardized labeling to meet these marketing goals.

Cat's Claw is a spiny herb long used in South America for a variety of medicinal purposes, including to treat tumors, joint pain caused by rheumatic diseases, respiratory problems, ulcers, and degenerative and infectious diseases, and to strengthen immunity and inhibit the growth of cancer cells. This Costa Rican product makes a sweet candy out of the herb to make it easier to consume than the bitter herb.

PARTNERS OF NATURE MEDICINAL PLANTS

Name of the species and ecosystem: Juanilama: (Verbenaceae family) *Lippia alba*
Romero: (Lamiaceae family) *Rosmarinus officinalis*
Mint: (Lamiaceae) *Mentha piperita*
Salvia: (Lamiaceae) *Salvia* spp.
Tuna: *Opuntia ficus*
Chamomile: *Matricaria chamomilla* L., *Matricaria recutita* L., and *Matricaria chamomilla* L.
Rosemary: *Rosmarinus officinalis*

Product location: Limón, Costa Rica

Global distribution: Tropical Systems

Production description: Cultivating medicinal plants in small gardens makes sense in this conservation area, which is well protected for its water resource (it receives over 4,000 mm of rainfall each year) and biodiversity. Unlike with wild harvesting the medicinal plants, growing them in small plots reduces pressure on the local forest resources.

Sold under the Members of Nature brand, the medicinals are grown by 12 people in the ASOVIDA group as a source of income and way to preserve traditional forest knowledge. The products, handmade from recipes handed down from grandfathers and grandmothers, are processed with sustainable techniques such as using solar dryers. At present, ASOVIDA manufactures 26 products, including insect repellent, aloe gel, skin creams, and shampoos. The most commonly used medicinal plants in the manufacture of the products are chamomile, sage, virgin aloe, cactus, and rosemary. The producer organization are in the in the process of applying for intellectual property protection for their brand and innovations.

The value of using medicinal plants rather than synthetic compounds is that active components in the plants act directly on the human body. The great advantage of the “active principles” in natural medicine is that the active chemical compounds are not isolated but have a physiological balance that is more easily assimilated in the body.

The sale of these medicinal plant products is benefiting the community at large, providing employment in this remote area in both producing the raw materials and in processing the plants. In addition, kiosks have been set up to sell the products throughout the community.

Medicinal plants grown sustainably and organically in the buffer zone of the Pococí Aquifer, the second largest aquifer in Costa Rica.

Medicinal Plants

YACON TEA INFUSION

Name of species and ecosystem: *Smallanthus sonchifolius*; Andean valleys and wet hillsides to the south of Quebrada de Humahuaca

Product location: Chorrillos, Barcena, Argentina; transition zone between Selva de las Yungas in Jujuy and Quebrada de Humahuaca

Global distribution: Andes Mountains in Colombia, Ecuador, Peru, Bolivia, and Argentina. The best conditions for development are between 1,000 and 2,500 m above sea level, with water contribution between 650 and 1000 mm per year in loam or sandy loam soils.

Production description: An Andean crop that reaches two meters in height, yacon is an edible root rich long cultivated in Argentina for its sweet flavor and availability throughout the winter months (as a stored vegetable). Yacon tea is made either from dried leaves (half a teaspoon of yacon leaves) or from a yacon infusion (one teaspoon per cup). The product here is made from yacon infusion by the Cooperativa Agricola Portal del Patrimonio Ltda., which employs good manufacturing and agricultural practices learned from training workshops and ancient farming techniques.

Tea made from yacon infusion. Yacon tea aids digestion and contains beneficial antioxidants.

Cooperativa Agricola Portal del Patrimonio Ltda., founded in 2005 and made official through legal status in 2008, is composed of 14 small yacon farmers from Chorrillos, Barcena. Chorrillos, Barcena has about 150 inhabitants, most of whom are small farmers devoted agriculture and raising livestock.

Yacon tea leaves are available between January and September for the production of the infusion. The tea comes in 10 g bags. The average annual volume is 100 kg.

ESSENCE OF THE AROMATIC JAMAICA PEPPER PLANT

Name of the species and ecosystem: *Pimenta dioica*, Jamaica pepper plant, also known as allspice; forest ecosystem

Product location: Siuna, North Atlantic Autonomous Region, Nicaragua

Production description: The COOPESIUNA cooperative engages in the sustainable collection and cultivation of native and traditional plants of the region. The collection of Jamaica pepper plant, cinnamon, and other native plants in the region encourages the management of the forest by the local community. Siuna is located in the North Atlantic Autonomous Region of Nicaragua, in the buffer zone of the biosphere reserve Bosawas. Approximately 15% of the territory belongs to the Bosawas Biosphere Reserve, one of the last remnants of tropical rain forest in Central America, considered "the heart of the Mesoamerican Biological Corridor."

The municipality of Siuna is listed as an area of extreme poverty. Its population subsists mainly on agriculture, and poaching is common in the biosphere reserve as a result of scarce incomes. The COOPESIUNA cooperative has about 105 members who work mainly in agroforestry. The cooperative is trying to foster new sustainable agricultural practices through the production of aromatic plants, community management, training, and biodiversity monitoring, and via the sharing of traditional knowledge and experience. The community's production of oils and essences encourages sustainable management of the forest while simultaneously increasing local incomes.

At the present, COOPESIUNA has planted more than 40,000 pepper plants, 150 lemongrass seedlings, and 2,000 cinnamon plants in its nurseries, and is in the process of improving its infrastructure and capacity. The product can be sold on the local and national market.

The Jamaica pepper is a native plant species whose flavor and aroma are similar to that of the culin clove. Natural oils and extracts are collected from the fruit and flower of the plant through natural processes and are used in perfumes and candles.

Medicinal Plants

MEDICINAL TINCTURES

Name of species and ecosystem: *Valeriana officinalis*
Equisetum arvense L (Horsetail or Cola de Caballo)
Cymbopogon (Lemon grass or Hierba de Limon)

Product location: Santa Fe, Darién, Panamá

Production description: Drying plants for conserving its medicinal properties is one of the oldest techniques known to humankind. The tropical forests of Darien contain various plants that are known to be useful for a variety of ailments by local people. Rescuing this knowledge and making it available to many others is the objective of ECODIC that was founded by the Maryknoll Sisters Congregation over 20 years ago. ECODIC is a local organization of men and women with a commitment and belief that it is possible to have a different relationship between humans and nature.

Medicinal tinctures made from organically grown plants in the Darien region of Panama. Valeriana helps relieve insomnia and migraine headaches. It's a muscle relaxant and calms the nervous system. Cola de caballo helps clean and combat ailments in the kidneys. Hierba de Limon is very helpful for digestion and soothes spasmodic muscle contractions.

Body lotion made from gueroba, a palm found in the endangered ecosystem the Cerrado biome in Brazil. The oil extracted from the palm's nut is high quality and used as the main ingredient in the body lotion for a particularly moisturizing lotion.

PACARI GUEROBA BODY LOTION

Name of the species and ecosystem: Gueroba, *Syagrus oleracea*; native to the Cerrado biome

Product location: Goiás state, Brazil

Global distribution: Found in the Cerrado grasslands in the states of São Paulo, Minas Gerais, Mato Grosso, Goiás, Mato Grosso do Sul, and Bahia, and the Federal District.

Production description: Generating income from this common Cerrado palm demonstrates the value of the natural ecosystem while preventing deforestation.

The Pacari Cerrado Medicinal Plants Network (Rede Pacari) makes the gueroba lotion. This mostly women's network (90% of the membership is women), formed by 80 community groups in Minas Gerais, Goiás, Tocantins, and Maranhão states, was founded in 1999 (becoming an official organization in 2005) to value and make use of the traditional medicinal knowledge held by the women and Cerrado communities. All groups that are part of the Pacari network produce and collect therapeutic plants, prepare the medicine, and take care of the health of the community. Some of them attend to more than a thousand people a month.

The gueroba body lotion is a fairly new endeavor for the Pacari network. The first production occurred in 2008, using raw materials collected in 2007, from which 3,250 kg of the fruit generated 104 L of oil that was transformed into four hundred 200 mL bottles of lotion. For the next shipment, the group is planning to increase the productivity by 500%, engaging more than 100 people in collecting and breaking the fruit and processing the oil.

Bath and Hair Products

MACAÚBA SOAP

Name of species and ecosystem: Macaúba palm, *Acrocomia aculeata*, is abundant in Minas Gerais Cerrado, particularly at Riachão valley.

Product location: Riachão Valley in Mirabela and Montes Claros municipalities, Minas Gerais state, Brazil

Global distribution: This species is broadly distributed in all the American tropics, from Mexico to Argentina, Bolivia, and Paraguay, especially in the Cerrado Biome.

Production description: Riachão Valley in the state of Minas Gerais had serious environmental problems caused by the improper use of water resources by irrigated fruit farms. After suffering a lack of water in most of the 47 Riachão River tributary streams, the community organized into an association, creating the SOS Riachão movement, and managed to ban further irrigation projects. More recently, eucalyptus plantations caused other serious social and environmental problems in the valley, meaning there is still plenty of ground to cover for sustainable land management.

Despite the environmental challenges, products like macaúba soap are demonstrating that environmental stewardship is a means for economic productivity. In 1995, the Communitarian Association of Small Rural Producers of the Riachão Valley was formed to bring to light positive solutions that could unite the development of productive activities with biodiversity conservation and the protection of water resources. Production has been huge for Riachão Valley. With the support of 218 families from 40 communities, 25,000 kilos of macaúba per year are harvested. This figure increases every year as the number of collaborators increases. In addition to macaúba soap, the community also produces oil from the pulp and the seed, as well as detergent, hair oil, shampoo, and car wash soap.

Soap made from the macaúba, a palm from the endangered Cerrado ecosystem in Brazil. Macaúba soap is an ideal cleaning product because it's nontoxic and biodegradable.

PARTNERS OF NATURE SHAMPOO

Name of the species and ecosystem: Juanilama: (Verbenaceae family) *Lippia alba*
Romero: (Lamiaceae family) *Rosmarinus officinalis*
Mint: (Lamiaceae) *Mentha piperita*
Salvia: (Lamiaceae) *Salvia* spp.
Tuna: *Opuntia ficus*
Chamomile: *Matricaria chamomilla* L., *Matricaria recutita* L., and *Matricaria chamomilla* L.
Rosemary: *Rosmarinus officinalis*

Product location: Limón, Costa Rica

Global distribution: Tropical systems

Production description: Cultivating medicinal plants in small gardens makes sense in this conservation area, which is well protected for its water resource (it receives over 4,000 mm of rainfall each year) and biodiversity. Unlike with wild harvesting the medicinal plants, growing them in small plots reduces pressure on the local forest resources.

Sold under the Members of Nature brand, the medicinals are grown by 12 people in the ASOVIDA group as a source of income and way to preserve traditional forest knowledge. The products, handmade from recipes handed down from grandfathers and grandmothers, are processed with sustainable techniques such as using solar dryers. The current shampoos available are papaya, pineapple lemon sage, virgin, cactus and aloe, and rosemary and cypress.The contents are 75% natural and biodegradable, as certified by the University of Costa Rica.

The sale of these shampoos is benefiting the community at large, providing employment in this remote area in both producing the raw materials and in processing the products. In addition, kiosks have been set up to sell the products throughout the community.

Natural shampoo infused with botanicals grown sustainably and organically in the buffer zone of the Pococí Aquifer, the second largest aquifer in Costa Rica.

Bath and Hair Products

JATROPHA SOAP

Name of species and ecosystem: *Jatropha curcas* L. (*Euphorbiaceae* family)

Product location: Semiarid ecosystem in Guantanamo province, easternmost Cuba

Global distribution: This plant may be found in tropical areas of all continents. While jatropha grows naturally in Cuba, the first plantations were developed at El Oro and Macambo, in the semiarid area of Guantánamo province.

Production description: Jatropha, a species known for its ability to resist environmental stressors like drought and predation, is used throughout the world to combat desertification and restore biodiversity to semiarid ecosystems. The plant grows naturally in Cuba, and its distribution in semiarid areas is extensive. The jatropha plantations were first developed in areas seriously affected by deforestation, degraded soils, and shortage of wildlife.

Soap made from the jatropha plant, a hardy, drought-resistant plant grown in a plantation in the semiarid Guantánamo province.

The soap obtained from this plant helps abate any soap shortages in the El Oro community, which consists of 19 families, with a total of 82 residents. The soap is produced not for profit but rather as an added value to the plantation. Small quantities are produced for community consumption and distributed free of charge. The soap is produced in accordance with the NC83 national standard, and its neutral pH ranges from 6.9 to 7.

The community produces about one ton of jatropha oil per year for social and research purposes. While the community produces enough oil for profitable soap production, they currently lack basic ingredients for soap production because of an absence of sufficient financing and suppliers.

ALOE VERA SHAMPOO

Name of the species and ecosystem: *Aloe vera barbadensis Miller*; tropical and subtropical regions and desert and semidesert regions

Product location: Limon Pampa, Oropeza province, Chuquisaca department, Bolivia

Global distribution: Native to the Mediterranean region, particularly North Africa and the Upper Nile; introduced in America, where it is cultivated extensively in the Caribbean basin. Currently, aloe vera is cultivated in other countries on a smaller scale, including Spain, Colombia, Mexico, Argentina, Venezuela, Cuba, Chile, and Peru.

Production description: In addition to the health benefits, the aloe vera shampoo provides an alternative agricultural activity for the Limon Papa community, which grows more than 60,000 aloe vera plants through the natural propagation of "suckers." The agricultural effort is part of a restoration project, as many other crop species can no longer grow in the area due to pests, drought, and restrictive irrigation practices. Limon Papa's success in integrating a new crop into the environment that pays off economically and adapts well to the environment is generating additional aloe vera projects in the municipalities of the Chuquisaca department.

The Agricultural Producers Association of Limon Pampa (APALIPA) is the legal entity through which the aloe vera producers grow and equitably market their products under the brand NATURALOE. Compared to before they grew aloe vera, APALIPA members are receiving a more sustainable income from their production. This is due in large part to having a crop to grow during the six months when irrigation is not allowed, as the aloe vera plant thrives in the dry period.

APALIPA produces 1,000 bottles (500 cc) of aloe vera shampoo per month for the Sucre municipal market. Shampoo production is ongoing, as the aloe plants are available year round.

APALIPA has a small processing plant equipped with the infrastructure for higher production that could make them competitive in the domestic market. The current production is done manually and produces 200 bottles per day.

Organic aloe vera shampoo produced on the banks of the Rio Chico River in Bolivia. Aloe vera is a medicinal plant with several beneficial uses. As a shampoo, the aloe vera restores nutrients to hair and protects the scalp from fungal disease. Continuous use of the shampoo can help prevent hair loss through cell regeneration on the scalp. The shampoo consists of the following components:

- *Vitamins: beta-carotene, B1 (thiamine), B2 (riboflavin), B3 (niacin), B6 (pyridoxine), B12 (cyanocobalamin), C (ascorbic acid), and E (tocopherol)*
- *Minerals: calcium, phosphorus, potassium, iron, sodium, magnesium, manganese, copper, chromium, and zinc*
- *Fatty acids: in particular, caprylic acid, used to treat fungal infections*

Bath and Hair Products

ORGANIC HONEY SHAMPOO

Product location: Colonia Bananera, El Viejo, Chinandega, Nicaragua. The project is located in a protected area known as Cosigüina Volcano Natural Reserve, bordered on the northeast by the Gulf of Fonseca and on the northwest by the Pacific Ocean.

Production description: This shampoo is a product of a project designed to help alleviate both the economic and environmental vulnerability of the area. The region's biodiversity is threatened both by uncontrolled exploitation of the area's natural resources and by agriculture practices that lead to poor soil conditions and low soil productivity. A lack of economic alternatives for low-income rural families in the region and a lack of knowledge regarding sustainable agricultural techniques contribute to high rates of poaching in the protected area. The region is also threatened by recurrent forest fires, a high percentage of which are caused by illicit extraction of honey during the dry season. The project aims to help the local community protect the natural environment by establishing a group of permanent beekeepers who are committed to protecting the local environment. This project hopes to foster ecologically sound economic activity and to reduce the incidence of forest fires.

The region of the Cosigüina Volcano is considered an excellent location for the production of honey, according to studies conducted by the faculty of biology at the National Autonomous University of Nicaragua UNAN-León. The reserve, with its tropical climate and luxuriant natural vegetation, including pines, cedar, mahogany, quebracho, guayacanes, rubber trees, and about 50 varieties of fruit trees, produces rich and tasty honey. Organic honey shampoo is made in association with Fundación Luchadores Integrados al Desarrollo de la Región (LIDER) and is currently distributed locally in the municipality of El Viejo, in the extreme northwest of Nicaragua. El Viejo is the largest municipality of the area, with a population of more than 80,000 inhabitants.

A shampoo made from honey harvested in the protected area of Cosigüina. Honey has a number of cosmetic qualities and has long been used as a remedy for dry skin and hair due to its hydrating properties. Honey also enhances the body and shine of hair and has slight bleaching properties.

IKIAM ALMA AMAZÓNICA PERSONAL CARE PRODUCTS

Name of the species and ecosystem: *Citrus limon* (lemon), *Cymbopogon citrates* (lemon grass), *Oenocarpus bataua* (ungurahua palm), *Citrus maxima* (pomelo), *Citrus nobilis* (orange); *Zingiber officinale* (ginger), *Curicuma longa* (turmeric), and *Ocotea quixos* (American cinnamon); all grown in tropical ecosystems (though not in origin)

Product location: Macas, Morona Santiago province, Ecuador

Global distribution: *Citrus limon* (lemon), originally from Asia, is found all around the world today. *Cymbopogon citrates* (lemon grass), originally from Asia, is found all around the world today. *Oenocarpus bataua* (ungurahua palm) is found in the Amazon rain forest. *Citrus maxima* (pomelo), originally from Southeast Asia, is now found all over the world. *Citrus nobilis* (orange), originally from China, is now found all over the world. *Zingiber officinale* (ginger), originally from Asia, is grown in warm climates around the world. *Curicuma longa* (turmeric) is originally from tropical South Asia. *Ocotea quixos* (American cinnamon), native to Ecuador, is in the same family as common cinnamon, which is originally from Sri Lanka.

Production description: Chankuap, a nongovernmental organization, developed the Ikiam Alma Amazónica line of personal care products. At the heart of the products is the integration of a traditional knowledge of plants with a modern investigation into how to create useful products. Indigenous communities (from areas in southern Ecuador such as Shuar, Achuar, Colono, Morona, and Santiago) are involved in collecting and cultivating the raw materials. The product line recovers the well-being of the body and cares for the welfare of the Amazon rain forest.

Ikiam Alma Amazónica products are available all year.

Personal care products made with the natural resources of the Amazon and cultivated plants. Ikiam Alma Amazónica products include lemon liquid soap from two types of lemon, lemon beebrush multivitamin body cream, citrus body splash, lemon massage oil, and lemon grass insect repellent. The fragrant lemon trees grow vigorously in the Amazonian plain.

In the two liquid soaps offered by Chankuap, the essential oils extracted from the leaves of the citrus lemon tree and the lemon beebrush tree restore skin tone and create a fresh feeling that restores harmony, balance, and comfort to the body. The liquid soaps come in bottles of 300 ml and 500 ml.

In the body splash, the lemon essential oil is stimulating and carries complex fragrances of citrus and honey. Used generously, the body splash can connect you with your spirit, mind and body.

The lemon beebrush multivitamin body cream is a hydrating emollient containing vitamins B complex and E. Acting as an antioxidant, the body cream also carries regenerative properties that can counteract the aging process.

The 100% natural massage oil is made from the essential oils of orange and of ungurahua, a native palm in the Amazon that produces a rich vegetable oil.

Last, the lemon grass insect repellent makes use of the natural properties of lemon grass as a defense against insects. The nontoxic repellent refreshes and softens the skin.

Bath and Hair Products

ORGANIC HONEY PRODUCTS

Product location: Felipe Carrillo Puerto, Yucatan, Mexico

Production description: In an effort to protect the natural environment of the region, the women's cooperative Flor de Tajonal is transitioning from conventional to organic honey production. The goal of this agroforestry project is to decrease factors contributing to the deforestation of the surrounding areas while providing a sustainable livelihood for local women. Maintaining the flora cover supports the productivity of the beehives, benefiting both the organic beekeeping project as well as the surrounding environment.

Flor de Tajonal currently has 13 women creating apitherapy, or bee therapy, products, including honey and honey-based medicinal soaps. These women are full members of the organization with speaking and voting rights. Flor de Tajonal has already received funding from the United Nations Foundation (UNF) to improve their infrastructure and provide additional training for the project. The products are sold under the Kuxtal Sian Ka'an brand, a line of products supporting sustainable livelihoods and the conservation of the Kuxtal Sian Biosphere Reserve.

Organic honey products, including soaps and other bee therapy products, produced by women in the Yucatan, Mexico.

Natural soaps made with therapeutic plants. The ingredients used include: Lemon, which is an anti-bacterial and refreshes and restores skins natural beauty; Aloe vera for restoring moisture and softness to the skin; and Neem to act as a natural insect repellent and an antiseptic.

HERBAL SOAPS

Name of the species and ecosystem: *Citrus limón* (Lemon), Aloe *Vera*, *Azadirachta indica* (Neem)

Product location: Tropical Forests of Darién, Panamá.

Production description: Natural soaps made with therapeutic plants. The ingredients used include: Lemon, which is an antibacterial and refreshes and restores skins natural beauty; Aloe vera for restoring moisture and softness to the skin; and Neem to act as a natural insect repellent and an antiseptic.

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ABOUT GEF SMALL GRANTS PROGRAMME

Funded by the Global Environment Facility (GEF) as a corporate programme, the GEF Small Grants Programme (SGP) is implemented by the United Nations Development Programme (UNDP) on behalf of the GEF, and is executed by the United Nations Office for Project Services (UNOPS). Launched in 1992, the SGP supports activities of non-governmental and community-based organizations in developing countries towards biodiversity conservation, climate change, protection of international waters, reduction of the impact of persistent organic pollutants and prevention of land degradation, while generating sustainable livelihoods.

SGP is operational in 122 countries and provides funding up to $50,000 per project for community actions. To date, SGP has channeled more than $300 million to communities through more than 12,000 projects around the world, which have resulted in direct global environmental benefits and also influenced the formulation of national and local policies on sustainable environmental and development management.

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