

Medicinal Plants

The annual world market value for medicines derived from plants discovered by indigenous peoples is 43 billion dollars. In the US alone, the value of medicines derived from compounds that plants synthesize for their own defense against herbivores and diseases.

In tropical rainforests, compounds of the alkaloid group are common. Their alkaline properties often give them a bitter taste, and this astringent tang has frequently served as a clue for people that a plant has therapeutic properties. Well known alkaloids include caffeine, cocaine, nicotine, morphine and cannabidiol. One alkaloid, quinine, which is derived from the bark of a sub-Andean tree, made the colonization of the tropics by Europeans possible with the first reliable anti-malarial drug.

The medicinal and spiritual properties of many forest plants are known to different indigenous groups throughout the Amazon basin. These communities all have a shaman, or "medicine man", who has undergone an arduous apprenticeship to learn and know to his ancestors. The study of how this knowledge is put into practice is termed ethnobotany. Pharmaceutical companies are increasingly looking to the rainforests, where ethnobotanists are translating the knowledge and practice of indigenous people into drugs and dollars. At present less than 2% of the 90,000 plant species in the Neotropics have been examined for pharmaceutical activity, and there is a race on to study the rest: A race between rival pharmaceutical companies, a race between the ethnobotanists and the erosion of traditional knowledge as indigenous groups are progressively acculturated, and a race against extinction. According to a recent IUCN (International Union for the Conservation of Nature) report, one plant out of eight is now in risk of extinction due to habitat loss, over-harvesting and pressure from non-native competitors.

Notes of the medicinal plants of the Amazon and of Sacha Lodge:

We have various medicinal plants and they are excellent cures for illnesses. These medicinal plants are used by many communities, such as the Quichuas in the Amazon and the Huaorani. The plants may be prepared and used in the same manner by each group. Each plant has and contains its own natural medicines. These medicinal plants help us to survive the diseases that exist in the Amazon.

Let us not destroy them; it is better to take care of them and not regret (our actions) in the future.

Bolívar Shiguango
NATIVE GUIDE

1. Cruz Caspi

The dark heartwood of this small forest tree is boiled to make a contraceptive tea. It is recognized and used by other indigenous groups in the Ecuadorian Amazon for the same purpose. It is so effective that it is reputed that drinking only two cups of tea a day for three days will render a woman incapable of conceiving for up to one year.

2. Aguacate, Avocado (figure 8)

The seed of an avocado combined with the wood of cruz caspi (see above) is used as a contraceptive by both the Quichuas and the Siona-Secoyas. Also, the crushed seed of an avocado is a well known abortive.

3. Ila, Oje, Higuaron

The white latex of this large forest tree is used to rid the body of intestinal parasites. The latex is collected from cuts made in the bark. It is mixed with water, sugar and alcohol and taken before meals three times a day for up to a week.

4. Yahuati Caspi, Palo de Tortuga (figure 9)

The roots of this small forest tree are used to cure diarrhea. The roots of four trees are boiled in 5 liters of water for two hours to concentrate the liquid. Half a glass full of the tea is drunk twice a day.



Figure 8: Aguacate, Avocado



Figure 9: Yahuati Caspi,
Palo de Tortuga

5. Yurac Chini, Ortiga Blanca, White Nettle

The roots of this secondary forest tree are prepared to cure vomiting. First of all the mashed roots are boiled. Later three heated stones are added along with lemon juice. Half a cup is drunk three times a day.

6. Guira Panga, Mal-Aire-Panga

The seed of an avocado combined with the wood of cruz caspi (see above) is used as a contraceptive by both the Quichuas and the Siona-Secoyas. Also, the crushed seed of an avocado is a well know abortive.

7. Sacha Ajo, Ajo del Monte, Garlic Vine

The leaves and the stem of this liana, which present a concentrated smell of garlic, are Meshed and boiled to cure symptoms of colds and the flu. Lemon juice is added to the tea and then it is taken as nose drops. A bark extract is used for the treatment of arthritis, and bathing in a leaf infusion reduces fevers.

8. Maria Panga, Hoja de Santa María, St. Mary's Leaf

Bronchitis is treated with a preparation of the systems and leaves of this secondary forest weed. The stems and leaves are mashed and the juice of mashed tobacco leaves is added. Half a cup full of the resulting juice is taken three times a day for three days. After this, an egg white is rubbed into the chest and then bandaged.

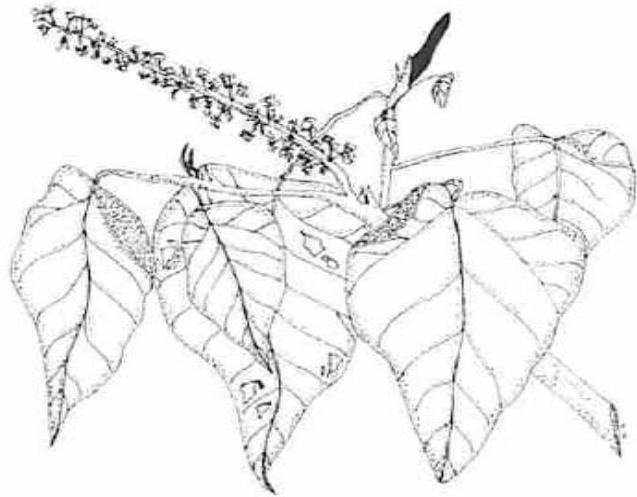


Figure 10: Laniqui, Sangre de Drago,
Dragon's Blood Tree

17. Güito (figure 6)

The fruit of this flooded forest tree yields a clear sap which turns a dark blue when it oxidizes. It is used throughout the Amazon as a semi-permanent body paint, which wears off after several weeks.

18. Pilche, Calabash (figure 7)

The large round fruit of this tree are inedible, but the outhur shin is dried and used as a bowl for carrying water or serving chicha.



Figure 6: Güito



Figure 7: Pilche, Calabash

14. Chicle, gum tree

The White latex has long been used as a masticary. It is reported to have been chewed Aztec prostitutes whose loud snapping noises advertised their trade. In the USA it was first reported to be used by General Santa Anna during a period of exile on Staten Island in 1860. Returning to his native Mexico, the bored General left his supply of Chicle to his host Thomas Adams. Adams, an amateur inventor, came up with two unsuccessful uses for chicle before accepting the General's idea.

He borrowed his wife's rolling pin, added sugar and placed the flattened strips in a Brooklyn candy store. Thus the culture of chewing gum was born (Plotkin, 1993).

15. Copal

Resin extracted from this tree was formerly widely used in the region as incense and a fuel for lamps or candles. Experiments in the late 1970s by Dr Melvin Calvin demonstrated that a single copal tree can produce up to ten gallons of oil each year. This oil, rich in hydrocarbons, can be poured directly into diesel engines, which run cleanly and smoothly on the rainforest fuel (Plotkin, 1993). However, yields are too low for commercial viability.

16. Rosa del Monte (figura 5) or sello del monte, "rainforest stamp"

The well-known latex of the rubber tree is extracted by cutting a groove into the bark, and has been used as glue, to waterproof clothing, shoes and canoes. One hundred years ago the Napo, like many other regions in the Amazon, was an important rubber producing area. Rubber exploitation, while bringing large profits for the rubber barons, translated to slavery conditions for many indigenous tribes.

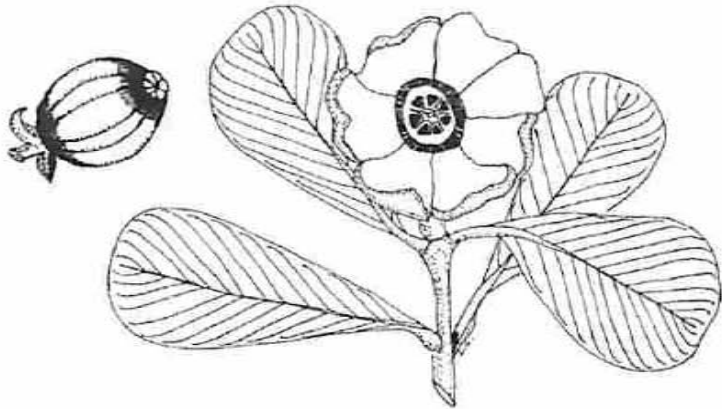


Figure 5: Rosa del Monte or sello de monte, Rainforest stamp

9. Laniqui, Sangre de Drago, Dragon's Blood Tree (figure 10)

The red latex from which this tree takes its name is used to treat a variety of skin conditions: cuts, burns, spots, fungal infections, ulcers, and bleeding gums. This has led to its over-exploitation in areas near towns and villages. It is available commercially in Quito. As sangre de drago is a secondary forest tree, however, it will easily be able to recolonize exploited areas.

10. Chiri caspi, Chiri Guayusa, Palo de Frio (Figura 11)

This shrub of the tobacco family has a number of medicinal and spiritual uses. A steam bath from the leaves eases post-natal pains. Crushed leaves are applied directly to aching muscles. Blood flow can be stemmed and cuts healed by applying strips of scraped and heated bark. Toothaches are treated by boiling the young leaves and drinking the tea. Finally, when a person is "worried" or anxious they should drink a cup of tea 10-20 minutes before retiring to bed. It is mildly hallucinogenic, making the body feel heavy and inducing nausea.

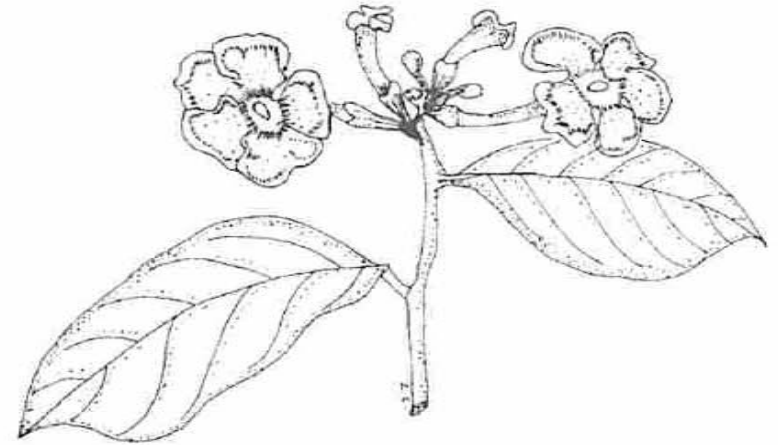


Figure 11: Chiri caspi, Chiri Guayusa, Palo de Frio

11. Balsamo

The bark of this tree is burned and mixed with tobacco juice, and then rubbed onto the skin to treat fungal infections. During treatment a diet avoiding both salt and chili must be followed.

12. Chuchuhuaso

The bark of this large forest tree is placed in strong alcohol, which extracts a deep red color. One glass of this potent cocktail is drunk each morning to ease arthritic pains. It also stops diarrhea.

13. Sicu Chupa, Rabo de Guatusa

Liquid from this black club fungus is squeezed into the ear as drops to cure earaches and ear infections.

14. Sacha Cacao, Cacao del Monte, Wild Cocoa

This one of several antidotes used against bites of the fer-de-lance, the commonest of the pit vipers of the area. Immediately after a bite the stems of this small tree is grated into water and the resulting juice is drunk. This remedy must be prepared fresh.

15. Caballo Caspi, Palo de Caballo, Horse Tree

A story is told that if a young man wants to grow up to be strong like his father, he must steal into the forest alone to seek out a caballo caspi seedling. This small plant is immensely strong and difficult to pull from the ground, although it only has one root. In order to be effective the plant must be wrenched from the soil in one movement, preferably in the early morning when the plant is "asleep". If successful, the boy must prepare a tea by boiling the ground up roots in water. Drinking this tea instills the strength and hardness of the plant into the drinker. It is also used to recover lost strength or to recuperate after an illness.

16. Guayusa

A steam bath prepared from guayusa leaves is used to relieve labor pains, rheumatic pain and to reduce fevers. The leaves are collected and boiled in a large pot, which is covered with banana leaves tied with a vine to seal in the vapor. Once the leaves are cooked, the covering is removed and the patient bathes in the steam under a blanket. It is also used as a stimulating tea, best drunk early in the morning before a day's work. The leaves can be added to ayahuasca (see below) to clarify visions and to prevent ayahuasca hangovers.

17. Lalo Verde

This herbaceous plant is used to treat insect bites, such as that of the fearsome conga ant, or painful rashes produced by the stinging hairs of certain caterpillar species. Juice from the green stem has anesthetic properties that block out the pain, and is applied directly to the bite. The stem is also boiled and used to wash cuts made with rusty metal to prevent tetanus infections.

10. Shalipo, Beraquillo

Fibers extracted from the bark of this secondary forest tree are used to lie the thatch onto the roofs of houses. Long unbroken strips of fibers are peeled off, starting at ground level and reaching the canopy.

11. Barbasco

A number of different species of barbasco exist, all of which are used as fish poison. The bark roots, or leaves are crushed in the water in an enclosed area. The chemicals released act as vasoconstrictors entering fishes gills and closing off the capillaries responsible for the intake of oxygen from the water. The suffocating fish come to the surface to gasp air where they are easily caught.

12. Balsa

Whole logs of balsa trees are used to make rafts. The light wood is also used to carve forest animals such as brightly painted parrots and toucans, which can be found in shops throughout Ecuador.

13. Samona, Ceibo, Kapok

These huge Amazonian trees produce enormous quantities of fine silky fibers to disperse their seeds. The fibers are collected and used to stuff pillows and mattresses. The 'kapok' is buoyant and it was used to stuff 'Mae West' life preservers in the Second World War. It is also flammable and it is used by people camping in the forest as tinder to light fires. It is also wound tightly around blowgun, allowing air pressure to be built up behind the dart so that it may be fired forcefully.

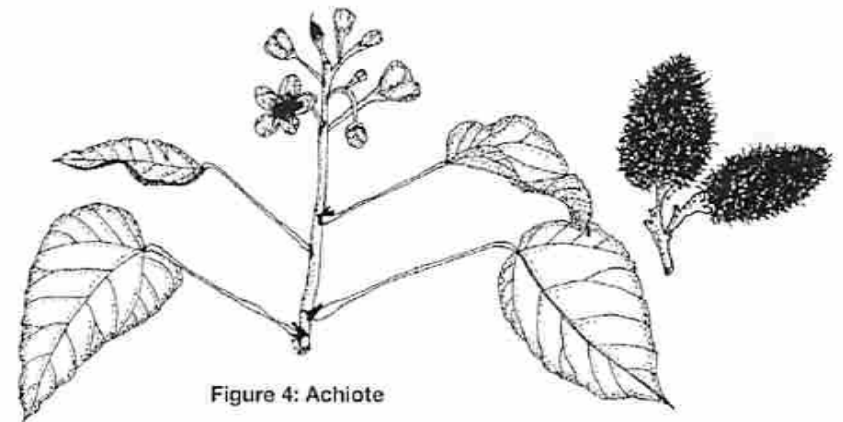


Figure 4: Achote

5. Chambira

Fibers extracted from the immature leaf of the chambira palm are used to weave a number of useful articles, such as fishing lines, hammocks and string bags called shigras. The leaf axis is used to make blow gun darts.

6. Rumi Panga, Platanillo

The large paddle shaped leaves are used to make 'malto's' to parcel food or even beer for transport. Food wrapped in three layers of leaves can be cooked directly on hot coals, and the leaves are also used to serve food at weddings or festivals.

7. Caucho, Rubber (figure 3)

The well-known latex of the rubber tree is extracted by cutting a groove into the bark, and has been used as glue, to waterproof clothing, shoes and canoes. One hundred years ago the Napo, like many other regions in the Amazon, was an important rubber producing area. Rubber exploitation, while bringing large profits for the rubber barons, translated to slavery conditions for many indigenous tribes.

8. Achiote (figure 4)

The seeds of this small native tree produce a red dye that has traditionally been used as face paint. The dye is water soluble, but it can be mixed with animal fat to make it insoluble. It is widely used in Latin America as a food coloring for cooking.

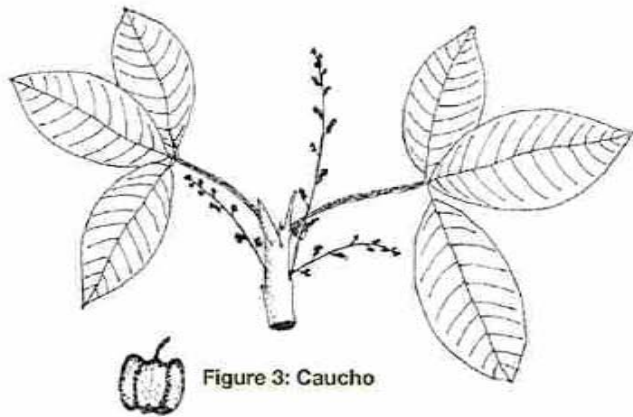


Figure 3: Caucho

9. Chingo, Palma Andante, Walking Palm

The spiny stilt roots of the walking palm are used as graters to prepare plantains, yucca (manioc) or palm fruit before cooking. The nuts have a variegated pattern and can be to make jewelry.

18. Zaragosa, Puma Huasca

This aromatic liana is used to treat insect bites such as spiders and ants. A section of the bark is boiled along with some leaves and the resulting infusion is drunk. The pain calms in ten or fifteen minutes.

19. Caña Agria, Costus (figure 12)

This relative of ginger is widely known to reduce internal fevers, but here it is used to treat bad stomachs. Five stems are collected and boiled in half a liter of water for fifteen minutes. One glass of the infusion is drunk every half-hour until the tea is finished. Chewing on the stem also cures coughs.

20. Uña de Gato, Cat's Claw

This small woody liana is used as a tonic to heal the blood. Tumor inhibiting properties were discovered in anti-cancer trials of the plant by the U.S. National Health Institute in the 1980s. Nicole Maxwell cites uses of this plant to treat cancer and diabetes in Peru (Maxwell, 1990). It is also used to treat arthritis due to its anti-inflammatory properties. It has been documented to increase phagocytosis (white blood cell activity), and provide a general immune stimulating effect. The active agents are oxindole alkaloids.



Figure 12: Caña Agria, Costus

21. Copal

Due to its pleasant menthol aroma, copal is widely used in Latin America as incense in Catholic churches. People suffering from mal viento, a fever, steam bathe in the vapors of copal resin while covered with a blanket, or are bathed. The resin is also rubbed onto musical instrument strings to preserve them.

22. Huandoc, Floripondio, Angel's Trumpet (figure 13)

This secondary shrub with large showy pink flowers is best seen in the gardens around Sacha's cabins. It is a powerful hallucinogen and overuse is reputed to cause blindness. It is thought to give a person the ability to discover the location of lost objects, or the identity of a thief in the community.

23. Hierba Luisa, Lemongrass

This grass is infused to make a pleasant lemon scented tea. It is used to treat headaches and stomach aches.

24. Guayaba

The thin bark of this fruit tree is used to treat diarrhea. It is boiled in combination with the roots of Yurac chini and Yahuati Caspi and drunk as an astringent tea.

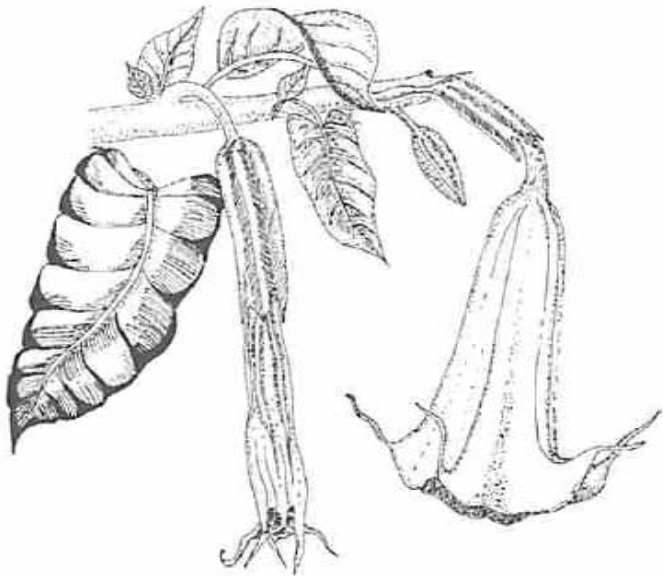


Figure 13: Haundoc, Floripondio,
Angel's Trumpet

2. Pambil

Pambil is the principal wood used for construction of traditional Quichua houses. The Huaorani use the hard black wood to make spears, bows and blow guns. The heart of palm is edible and leaves are sometimes used for thatching. The springy walkways around the lodge are made from pambil, as are the tables and benches in the dining room.

3. Yarina or Shipati, Tagua, Vegetable Ivory

The hard white nuts of this palm are used to carve necklace pendants, brooches and ornaments. The nuts are edible when they are young, and the leaves are used to weave 'maitos', palm leaf bags. Cross sections of the trunk can be found in the bar as ashtrays.

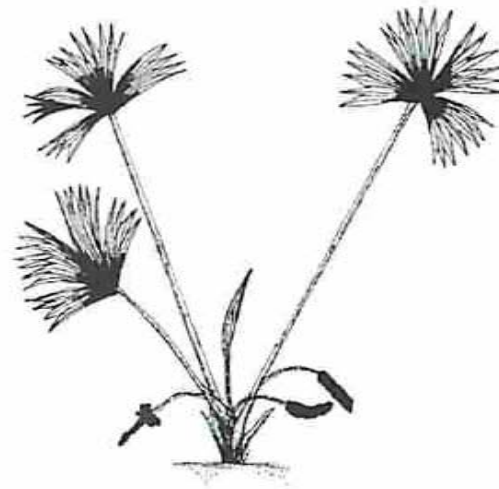


Figure 1: Lisan, Paja Toquilla,
Panama Hat Palm



Figure 2: Ungurahua

4. Ungurahua (figure 2)

The nuts of this palm tree are heated in water to make a juice that is mixed with local beer or chichi. Oil extracted from the nuts is used as a shampoo and hair conditioner, and the oil is also applied to the skin to treat burns.

Ethnobotany at Sacha Lodge

Non-timber forest products

Since they first colonized the Amazon basin, various indigenous groups have learned to recognize and make use of the myriad natural resources they find in their environment. In modern economic terms, these resources are termed non-timber forest products or minor forest products, and they include fibers, latex, fruits, oils, dyes, poisons, meat, honey and medicines. The top 150 non-wood forest products traded internationally are worth more than 11 billion U.S. dollars annually.

During your stay at Sacha Lodge you will be introduced to some of the products which are still used by the Quichua along the banks of the Rio Napo. Governments influenced by European or North American models of development have historically tended to overlook these products in favor of logging, ranching or plantations. These more tangible land uses are more likely to attract foreign investment and have ready markets. However, it was only one hundred years ago that one minor forest product, rubber, earned the Amazon a vast, if brutally extracted, fortune. An economic analysis conducted on a forest near Iquitos, Perú compared the potential revenues earned from one hectare of rainforest versus two alternative land uses in neighboring sites. The site had a tree diversity of 289 species per hectare, with 454 trees out of 858 individuals having actual or potential uses: fibers, fruit or rubber. Though sustainable extraction of forest resources it was estimated that one hectare of rainforest could earn US\$422 per year at prevailing market prices, compared to US\$1000 for clear-cut logging (Peters et al. 1989). In addition, the returns proved more profitable than conversion of the forest to either ranching or plantation crops. Such large returns do require a high labor input and access to local markets, conditions which are not always available in the Amazon. However, if international markets including ecotourism become more accessible then the returns could potentially be even higher.

Below are some of the useful plants you are likely to come across in the forest during your stay at Sacha. As some plants may have as many as three names, the first name given is in Quichua, the native language of the guides. Alternative names in Spanish and English follow in that order. Where a Spanish name is more commonly used, this is given in bold.

1. Lisan, Paja Toquilla, Panama Hat Palm (figure 1)

The immature leaf petioles of this palm-like plant are used to make Panama hats. In the Napo region they are also woven to make Panama hats. In the Napo region they are also woven to make grass skirts, bracelets, and crowns for traditional festivals. The mature leaves are widely used for thatching houses.

25. Ayahuasca

The translation of the Quichua word "ayahuasca" means vine of the soul. This liana is the source of the most important spiritual drug used by the Quichua and other indigenous cultures of the Amazon. The liana contains several alkaloids of the beta-carboline type that induce visual hallucinations without interfering with muscular activity. It is often cultivated in an herb garden by the Shaman, as it is rare in the wild. Sections of the liana are boiled down to produce a dark viscous tea. Under the influence of ayahuasca, a shaman is in contact with the spirit world and can divine the nature of illnesses and prescribe cures.

26. Cebolla del Monte, Amazon Lily (figure 14)

The bulb of this lily is mashed up with the stem of the garlic liana and boiled to make an infusion to treat colds and flues. On its own, the boiled bulb is taken as an emetic, a drug taken to induce vomiting. It is thought that emetics were widely used to build up the muscles of the diaphragm, in order to increase the forceful expulsion of air from the lungs to fire blowgun darts.

27. Machaqui Mandi Panga (figure 15)

This aroid with a divided leaf and variegated stem is used to treat snakebites. The pattern on the stem resembles that of the Fer-de-lance. Some people whip their feet and legs with the plant to repel snakes. The underground tuber is mashed and boiled and drunk after snakebites as a cure.



Figure 14: Cebolla del Monte, Amazon Lily

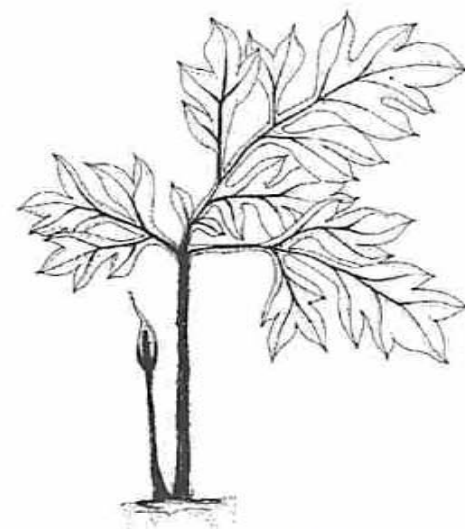


Figure 15: Machaqui Mandi Panga

28. Tsicta

The bark of this understory forest tree is used as female contraceptive. The inner surface of the bark is scraped and heated briefly in a fire. Liquid is then squeezed from the bark. This is then taken orally in small quantities over a two-week period. Menstruation is prevented and sterilization is possible by taking a more concentrated dose.

29. Pitón

The distinctive oval fruit borne on the trunk of this tree are used both as an anti-malarial and as a contraceptive or abortive. To treat malaria, the immature fruit are first washed and then grated. The pulp is squeezed into warm water and a little is drunk every day. A contraceptive tea is prepared from the seed.

30. Ajirinrin, Jinjibre del Monte, Wild Ginger

This aromatic forest herb is used to clean wounds and reduce fever. The leaves and stems are infused. Locally gargling with a root infusion is said to cure sore throats. In the Peruvian Napo the roots and flowers are used as dyes.

31. Cedro

The bark of this large tree has a distinctive onion or garlic-like odor. Tea prepared from the bark is used to treat stomach pains, muscular pains, diarrhea, vomiting, fever and cramps.

32. Araña Caspi

This common scrub is used to treat spider bites. The roots and stem are soaked in one liter of water then boiled for one hour and concentrated. One cup of the infusion is drunk, and the remainder is used to wash the bite.

33. Bagre Caspi

A decoction of the bark and fruit is recommended for diarrhea, vomiting and the cold. The fruit peel is eaten to reduce fevers. The leaves are used as a coagulant to stop the flow of blood from deep wounds.

34. Tubi abiyu

The leaf of this understory tree is used to treat fevers and to give a person more energy. A concentrated infusion is drunk morning and afternoon. The trees form unusual single species stands in the forest understory locally referred to as *supay chacras*, "devils fields". This may be due to root secretions or the activity of ants which reside in the swollen twigs.

However, the forest they gazed upon had been disturbed by clearance, to build the village and for firewood gathering. Therefore, it was actually secondary forest. A ten-minute walk away from the village would have revealed a totally different image: that of primary forest.

Flooded Forests

The Amazon basin is drained by a network of large rivers, and seventeen tributaries including the Napo are longer than 1000 kilometers. During the wet season, which in the Napo region is from April to August, local flooding of low lying areas near the Rio Napo tends to occur. During such seasonal floods, the forest are marked by inundations with moving, oxygenated water as it drains out of and back to the main river channel. Two distinct types of flooded forest are recognized:

- *Varzea*: This type of forest is affected by seasonal flooding with the silt rich 'white water' of the Napo River. White waters have a silty-brown coloration, due to their high content of silt which has been carried down from the Andes mountains. The soils along such rivers tend to be yellowish or grayish due to the reduction of iron compounds during periods of inundation and the poor drainage. However, they are more fertile soils than those in terra firme due to the influx of the rich Andean silt. *Varzea* forests tend to have a high proportion of grasses and herbaceous plants, and extensive tracts of *varzea* cover the lower Amazon basin.

- *Igapo*: Forest which is flooded by black water. Black water systems, including Pilchicocha and Lagartococha lakes, obtain their color as rainwater percolates through the organic matter on the forest floor. The rainwater leaches tannins, humic acids and organic acids out of decaying vegetation, which stain the water a deep black color. Black waters are acidic and nutrient poor, and the *igapo* forests that grow in them are less diverse due to difficult conditions for plant roots. Some typical *igapo* species include the huge morete fan palms and fresh water mangroves.

Primary Forest

This term refers to forest which has reached a state of maturity, where it is possible to distinguish canopy and sub canopy layers penetrated by occasional emergent forest giants such as the ceiba, or kapok tree. The forest floor is well shaded, with only 5-10% of the light reaching the ground, and as a result there is very little vegetation on the ground. This lack of sunlight has led to the evolution of many climbing plants and epiphytes, which try to reach the upper levels of the forest where more light penetrates. Large lianas are especially good indicators of old, mature primary forests.

Secondary Forest

In certain instances over time an extension of forest may become disturbed. Such disturbances may be natural, such as a landslide or a flood, or man-made, such as large-scale clearance for agriculture or forestry. After such a disturbance occurs, the initial stages of the forest's regrowth are often termed secondary forest. The canopy is open, permitting large quantities of light to reach the ground, which promotes the rapid growth of herbaceous plants, vines and tree saplings. Small, fast-growing, light demanding trees such as balsa and cecropia are specially abundant under such conditions, and the vegetation at ground level may be dense and impenetrable. Once the forest begins to mature, and the canopy is filled in by larger, slow-growing trees, the pioneer plants are replaced by species which survive better in shade. Depending on the size of the original disturbance, this process of recovery may often take over a hundred years. However, the forest surrounding the Mayan ruins of Central America have still not fully recovered even after over four hundred years of regeneration! This dynamic, natural cycle of growth and regrowth is termed "ecological succession", as a result of which a rainforest is normally composed of a mosaic of forest patches at differing states of maturity.

Jungle?

Jungle is a word commonly used to describe the tropical rainforest. However, it has no technical meaning and is not used in a biological or ecological sense. So, what is actually meant by "jungle"? The word Jungle comes to us from India, where in Sanskrit it translates as 'impenetrable'. During the colonial period, British surveyors ventured into the tropical forest of southern India in search of plant resources of potential commercial value. Their first view of the forest may have been from a verandah in a village, perhaps while sipping tea or a G&T.

Because of the large amount of light hitting the forest edge, the vegetation would have appeared dense and impenetrable from their vantage point. "This is the jungle", the village official told them. From that day on jungle has been used to mark the distinction between tropical forest and temperate forests.

35. Tzibiyu

The juice of the mashed leaves is drunk to alleviate dry coughs, inflammation of the throat and fever. To reduce the swelling and irritation of insect bites the crushed leaves are mixed with lemon juice and lemon tree bark. This mixture is wrapped in leaves, heated, and applied as a poultice. The leaves are also washed, boiled and applied to the site to treat the itching and infections of tick bites.

36. Curarina (figure 16)

The leaves of this primary forest understory tree have a very bitter taste. A tea prepared from the leaves is reputed to be the best treatment for snakebites.



Figure 16: Curarina

Summary

One of the abiding images of Sacha Lodge is the view from the canopy tower, where below your feet the forest stretches out limitlessly to the horizon. It gives one the impression of a timeless untouched wilderness. Indeed if you had looked out from the same vantage point 40 million years ago, the forest would have looked much as it does today! Like many other impressions of the Amazon, however, this impression of timelessness is illusionary. Although the destruction of the Amazon rainforest no longer claims the headlines and editorials it did in the late 1980's, deforestation is worse than ever before. The 1992 Rio Earth Summit, precipitated by this concern, did not magically solve the problems or stop the deforestation. The World Rainforest Report, (1999), reveals that in 1995 forest destruction in Brazil reached a single-year record of 11,200 square miles. Between 1995 and 1997 over 23,000 square miles of the Amazon were destroyed. The most recent figures available indicate that 6,500 square miles of the Amazon forest were destroyed by logging, cattle ranching and farming in 1998. And at present, Ecuador is losing its forest cover at a rate of 2.3% per year.

As the area of a rainforest declines, so does the number of species it can support. E.O. Wilson estimates that at present global rates of tropical rainforest clearance, 27,000 species are being lost every year. This equates to approximately 74 species becoming extinct each day, or 3 species every hour (Wilson, 1999). And as the forest goes, so does its people. Of the estimated 6 to 12 million natives who inhabited the Amazon in the year

1500, only 200,000 indigenous people remain today (Hecht and Cockburn, 1990). Death and dispersion of forest peoples caused by wholesale deforestation bring about cultural extinction and ethnocide... Ninety of the recorded 270 tribes of Brazil have become extinct since 1900! (Wilson, 1999).

The loss is potentially immense, because with the people go their knowledge and understanding of the forest, its resources and the best ways of using both.

Biodiversity

Sacha Lodge lies in the center of the most biodiverse region in the world, the western Amazon basin. A ribbon of rainforest skirting the foothills of the Andes from Southern Colombia to Northern Bolivia contains the highest levels of biodiversity so far documented in the world. A forest survey conducted in the Yasuni National Park, for example, has revealed a staggering 825 species of trees and lianas in a two hectare plot, (Romoleroux et al., 1995). To put this into perspective, the most diverse US forest in the Appalachian Mountains contain about 30 species per hectare. In England, one may come across ten to twelve species walking through a typical woodland. Surveys performed at the nearby Tiputini Biodiversity Station have counted nearly 3000 plant species along with 80 species of frogs, 80 species of bats and 12 species of monkeys, (Morell, 1999). The Sacha Lodge bird list alone includes 573 species that can be seen there! And perhaps the most difficult number to visualize is the estimate of 60,000 species of insect per hectare, proposed by Terry Erwin after his findings in the Napo region (Morell, 1999).

No single theory can explain how so many species evolved to occupy this relatively small area. However, evidence points to the Napo region as being one of several "refugia" where the rainforest persisted through the Pleistocene glaciations: The driver climate associated with glaciation led to the development of extensive grass savannas across the Amazon basin, which were only punctuated by "islands" of forest along the Andean foothills. These islands persisted for periods of 10,000 years, and species are thought to have evolved while in isolation within these refugia. During the inter-glacial periods, the rainforest recolonized the Amazon, and the isolated species were able to mix until the next glacial cycle began.

An overview of forest types at Sacha Lodge

During your stay at Sacha you will see a variety of different forest types. Each of these will be explained to you by your guides, but for easy reference here is a quick introduction to rainforest ecology. There are two different types of land at Sacha: Dry land, called terra firme, and flooded forest, of which several distinct types can be recognized.

Terra Firme

Terra firme forest occupy the "higher ground" which, thanks to its relative elevation, drains after rainstorms and is never flooded by rivers. Terra Firme soils are distinguished by strong red or brown colors due to the presence of oxidized iron compounds and are able support the tallest trees and most complex rainforest structure.

The Quichua are now the most numerous of the Oriente's indigenous nationalities, and it is possible to distinguish them in two distinct groups: the Canelos and the Quijos.

In Pastaza Province, the Canelos show cultural affinities of the Shuar and Achuar groups to the South, while the Quijos are distributed along the Rio Napo. The Quijo name comes from a pre-Inca Chibcha speaking tribe which formerly inhabited the region, but they long since been completely assimilated with the Quichuas. The Native guides of Sacha Lodge are drawn from two different Quijo dialects:

Those from the headwaters of the Napo River, who occupy the former territories of decimated tribes such as the Zaparo and the Cofan near the towns of Tena of Baeza, and the lower Napo Quichuas, who are settled around and to the east of Coca. The lower Napo Quichuas have many words in their dialect which are distinct from the former, including the common names for some of the medicinal plants. Their origins lie in the absorption of the now extinct Yumbo culture of the Napo when the quichuas migrated east from the Andes.

Undoubtedly the Quichua language and culture originated in the Andes, and arrived through migration into the region either pre-dating or precipitated by the Spanish conquest. Since then, missionary activity in the intervening centuries has contributed to the spread of the Quichua language and assimilation of previously existing groups.

Compared to the other large indigenous nations of the Shuar and Achuar, the Quichuas have sustained the longest and most direct contact with outside influences, including colonist, missionaries and commercial enterprises. Judging from outward appearances, it would be easy to assume that the Quichuas have been largely acculturated in the face of such pressures: Western clothing is universally worn, blowgun hunting has been replaced by shotguns, Spanish is widely used and Catholicism has been adopted. It is interesting to note that the Quichuas distinguish themselves as civilized, while they refer to the Huaorani as the "Aucas", or savages. Compared to other indigenous groups, the Quichuas are perhaps the most dependent on the new commercial economy of the region. However, the Quichuas have been able to retain their language and culture to a remarkable degree and have organized themselves politically in order to protect their territory and culture from the pressure of encroaching colonists and companies. They have also retained their profound knowledge of the identification and use of medicinal plants. Even today, Shamans are still weaving the spiritual fibers of the rainforest into their mystical healing practices. Those that may doubt the authenticity of the Quichua culture, those in search of "real Indians", need only participate in a Quichua shamanic ritual and be reminded of the existence of a spiritual word of which we understand very little.

Appendix

Botanical Names

The following is a list of the botanical names of the plants so far identified. They are given in the standard format or latin binomial, i.e. genus then species. The family is given in capitals. The list is not complete as some of the plants have not been identified, and others are only know to the genus. It is interesting that while botanical taxonomy is based on morphological differences, however small, to distinguish between plant species, the Quichua taxonomy is based on the similarity shared by plants and this often refers to the plant's use. For example 'Copal' covers several different species in two or three genera which share the same distinct smell. Eventually, we hope to have all the plants we have mentioned positively identified.

Unless otherwise indicated the scientific names given are taken from 'A Field Guide to Medicinal and Useful Plants of the Upper Amazon' by Castner et al. (1998). The research behind this book, and the "Amazonian Ethnobotanical Dictionary", (Duke and Vasquez, 1994), was conducted in the Napo providence of Peru. The other principal source of scientific names is an unpublished list of medicinal plants growing in the ethnobotanical garden at the Jatun Sacha Biological station located on Ecuador's upper Napo.

Non-Timber Forest Products

1.- Lisan	<i>Carludovica palmata</i>	CYCLANTHACEAE
2.- Pambil	<i>Iriartea deltoidea</i>	ARECACEAE
3.- Tagua	<i>Phytalephas macrocarpa</i>	ARECACEAE
4.- Ungurahua	<i>Jessenia (Oenocarpus) bataua</i>	ARECACEAE
5.- Chambira	<i>Astrocaryum chambira</i>	ARECACEAE
6.- Rumi Panga	<i>Calathea</i> sp.	MARANTACEAE
7.- Caucho	<i>Hevea brasiliensis</i>	EUPHORBIACEAE
8.- Achiote	<i>Bixa orellana</i>	BIXACEAE
9.- Chingo	<i>Socratea exorrhiza</i>	ARECACEAE
10.- Beraquillo	unidentified	
11.- Barbasco	various plants from different families, Inc: <i>Lonchocarpus</i>	FABACEAE
12.- Balsa	<i>Ochroma pyramidale</i>	BOMBACACEAE
13.- Kapok	<i>Ceiba pentandra</i>	BOMBACACEAE
14.- Chicle	<i>Lacmellea lactescens</i>	APOCYNACEAE
15.- Coral	<i>Dacryodes</i> or <i>Protium</i> spp.	BURSERACEAE
16.- Rosa del Monte	<i>Clusia</i> spp.	CLUSIACEAE
17.- Huito	<i>Genipa americana</i>	RUBIACEAE
18.- Pilche	<i>Crescentia cujete</i>	BIGNONIACEAE

Medicinal Plants

1.- Cruz Caspi	<i>Brownea macrophylla</i>	FABACEAE
2.- Aguacate	<i>Persea americana</i>	LAURACEAE
3.- Ila	<i>Ficus insipida</i>	MORACEAE
4.- Yahuati Caspi	<i>Abuta granifolia</i>	MENISPERMACEAE
5.- Yurac Chini	<i>Urena</i> sp.	URTICACEAE (Glesias, 1996)
6.- Mal-Aire Panga	<i>Siparuna guianensis</i>	MONIMACEAE
7.- Sacha Ajo	<i>Mansoa alliacea</i>	BIGNONIACEAE
8.- Maria Panga	<i>Lepianthes petata</i>	PIPERACEAE
9.- Sangre de Drago	<i>Ocotea lecheri</i>	EUPHORBIACEAE
10.- Chiri Caspi	<i>Brunfelsia grandiflora</i>	SOLANACEAE
11.- Balsamo	<i>Myroxylon balsamum</i>	FABACEAE (Duke and Vasquez, 1994)
12.- Chuchuhuaso	<i>Mysterus laevis</i> or <i>M. macrocarpa</i>	CELASTRACEAE (Gentry, 1993)
13.- Sicu Chupa	Unidentified	
14.- Sacha Cacao	<i>Theobroma Cacao</i>	STERCULIACEAE
15.- Caballo caspi	Unidentified fungus	
16.- Chiri Guayusa	<i>Ilex guayusa</i>	AQUIFOLIACEAE (Duke and Vasquez, 1994)
17.- Lalo Verde	<i>Arthrum clavigerum</i>	ARACEAE (Jatun Sacha)
18.- Zaragoza	<i>Aristolochia</i> spp.	ARISTOLOCHIACEAE (Gentry, 1993)
19.- Caña Agría	<i>Costus</i> spp.	COSTACEAE (Gentry, 1993)
20.- Uña de Gato	<i>Uncaria guianensis</i>	RUBIACEAE
21.- Copal	<i>Dacryodes</i> or <i>Protium</i> sp.	BURSERACEAE (Gentry, 1993)
22.- Huadoc	<i>Brugmensia suaveolans</i>	SOLANACEAE
23.- Hierba Luisa	<i>Cymbopogon citratos</i>	POACEAE
24.- Guayaba	<i>Psidium guayaba</i>	MYRTACEAE
25.- Ayahuasca	<i>Banisteriopsis caapi</i>	MALPIGHACEAE
26.- Cebolla del Monte	<i>Eucharis castaneaena</i>	AMARYLLIDACEAE
27.- Machaqui Mandi Panga	<i>Dracontium tortense</i>	ARACEAE
28.- Tsicta	<i>Tabernaemontana sananho</i>	APOCYNACEAE (Duke and Vasquez, 1994)
29.- Piton	<i>Grias neuberti</i>	LECYTHIDACEAE
30.- Ajirinin	<i>Renealmia alpha</i>	ZINGIBERACEAE
31.- Cedro	<i>Cedrela odorata</i>	MELIACEAE (Jatun Sacha)
32.- Araña Caspi	<i>Cordia nodosa</i>	BORAGINACEAE (Jatun Sacha)
33.- Bagre Caspi	<i>Pentagonia macrophylla</i>	RUBIACEAE (Jatun Sacha)
34.- Tubi abiyu	<i>Durota Hirsuta</i>	RUBIACEAE (Jatun Sacha)
35.- Tzimbiyu	<i>Witheringia solanacea</i>	SOLANACEAE (Jatun Sacha)
36.- Curarina	<i>Potalia amara</i>	LOGANIACEAE (Duke and Vasquez, 1994)

This may help explain the confusing juxtaposition of unrelated and closely related linguistic groups living in the Amazon, including the anomalous Huaorani of Ecuador.

Along the Napo River various groups lived in nomadic or semi-nomadic cultures. The first group to populate the Ecuadorian Napo region were the Omagua, who appeared in the chronicles of the early Spanish expedition and lived in the area since approximately the year 1,000 AD. Other people who later on arrived in the Napo region are the Quichua Quijos and Quichua Canelos.

In spite of their diverse origins and ethnicities, the pre-colombian indigenous groups were able to live in harmony with their Amazon environment without destroying it. Today, some of the same groups still live along the Napo River, thanks to their knowledge of edible plants and also the medicinal species collected by their Shaman or other knowledgeable people. However, different forms of contact with the outside world have changed and sometimes even destroyed the environment of many of these native cultures. By "contact" one may include the initial exploration of the Conquistadors, missionaries, of different religious groups, the oil and mining companies and their exploiting practices, new mestizo colonist and the severe local pressure to develop road and towns.

During this process of development, an important prerogative is to gather information and create written languages, which no Amazonian tribe originally had aside from petroglyphs. Thanks to outside intervention in the early 50's, many indigenous languages have been successfully transcribed.

We sincerely hope that this booklet will help to record a tiny part of one of the Napo cultures and their natural medicine. By learning more about our origins and the cultures of the people that exist in the territory we share, there still hope to protect the vast territories of the largest Tropical Rainforest on earth: the Amazon.

Norby Lopez
NATURALIST GUIDE

The Quichuas

About eighty years before the Spanish conquest in 1533, Ecuador was part of the Inca Empire. The Inca Empire was centered in the Andes mountains and valleys, and stretched from Northern Argentina all the way to Northern Ecuador. Even Though the Inca occupation was brief, it left behind the Quichua language, which is now spoken throughout the Ecuadorian Highlands and by the lowland Quichuas of Amazon basin.

Credits and acknowledgements

This booklet was researched and written by Barry Thomson, and the illustrations are by Lindsay Carswell. Additional contributions were made by Lee Schel, Norby Lopez, Ernesto Cerda and Bolivar Shiguango. This information would not have been available but for the knowledge and enthusiasm of the native guides of Sacha Lodge.

Jorge Rivandeneira
Ernesto Cerda
Cinilo Tapuy
Bolivar Shiguango
Adelmo Shiguango
Milton Shiguango
German Andi
Luis Andi
Eusebio Hualinga
Washington San Miguel

The discovery of the amazon and its people

The Amazon was regarded as terra incognita until the first expedition led by the Conquistadors, Pizarro and Orellana, in 1541. Spurred on by rumors of cinnamon clad valleys and rivers rich in gold and silver, they marched across the Andes from Quito until they arrived at the confluence of the Napo and Coca rivers, the site of Coca today. Coca also bears the name Puerto Francisco de Orellana to commemorate the departure point of this historic voyage of discovery. However, the expedition did not find the riches they imagined, but instead a tapestry of greenery largely uninhabited except for some very large and isolated native villages. Orellana, disappointed and hungry, then set out with a small group by boat to find food and obtain information about where gold could be found. During their voyage, which would ultimately take them along the entire Amazon river to the Atlantic the friar Gaspar de Carvajal recorded the numerous contacts the group had with the indigenous groups lining the river banks. This was the first anthropological record of the Amazon basin.

The precise origins of the indigenous Amazonian tribes remains unclear, and even the date of their arrival has not been agreed on by anthropologists. However, it is thought that the first immigrants reached the Amazon some 14,000 years ago, and there were probably numerous subsequent migrations afterwards. Some groups arrived over the Panama land bridge from North America, while other groups "island hopped" through the Caribbean and traveled up the Orinoco or Amazon river systems.

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Preface

Sacha Lodge began as a vision, a vision which today is still being realized. It all began to take shape with the purchase of land and primary construction in 1991. Currently Sacha Lodge protects some 2000 hectares of forest, and it is hope that this may be increased in the future by the purchase of neighboring farms from colonists.

Every day in the rainforest brings its own revelations: fresh tracks after the rain, a glimpse of a new butterfly, a tree walked past one thousand times suddenly bursting into flower. However, the primary source of our revelations is the wisdom of the native guides we work with.

This booklet represents a collection of some of the knowledge that has been passed down through generations of forest people who have lived in this region for centuries. As much as possible the works are those of the guides themselves. This knowledge is an inherent part of the Quichua culture, and also a resource without which it would not have been possible for them to live in the forest as they have. However, this knowledge is steadily being replaced by the new skills and technology of modern society, by commercially available alternatives, and by the new culture of progress and dependency. At Sacha Lodge we hope to create a database, from this initial collection, to preserve this knowledge and make it available to all.

Barry Thomson
NATURALIST GUIDE

Who are we??

We are indigenous Amazonian people and we call ourselves native guides that work for Sacha Lodge. Although we are indigenous people that speak Quichua, we are distinct from other indigenous (Quichua) groups. We have descended from ancient people that lived a long time ago in this region, generation after generation.
Yes, we can be promoters of the Ecuatorian Amazon.

Ernesto Cerda
NATIVE GUIDE

Contents

- Preface
- Who are we?
- Credits and Acknowledgements
- The Discovery of the Amazon and its People
- The Quichuas
- Biodiversity
- An Overview of Forest Types at Sacha Lodge
 - Terra firme
 - Primary Forest
 - Secondary Forest
 - Jungle?
 - Flooded Forest
 - Varzea
 - Igapo
- Ethnobotany at Sacha Lodge
 - Non-Timber Forest Products
- Medicinal Plants
- Summary
- Appendix
- References
- Further Information

Further Information

There are a great number of organizations, both national and international, working to protect the Amazon Rainforest. The following is a selection of websites which may be of use if you to pursue this subject further:

Amazonwach [http:// www.amazonwatch.org](http://www.amazonwatch.org)

Earth Island Institute [http://: www.earthisland.org](http://www.earthisland.org)

The Rainforest Action Network [http://:www.ran.org](http://www.ran.org)

Rainforest Alliance [http://: www.rainforest-alliance.org](http://www.rainforest-alliance.org)

Rainforest Information Center [http://:www.forests.org/ric](http://www.forests.org/ric)

World Rainforest Movement [http://:www.wrm.org.uy](http://www.wrm.org.uy)

The Worldwatch Institute [http://:www.worldwatch.org](http://www.worldwatch.org)

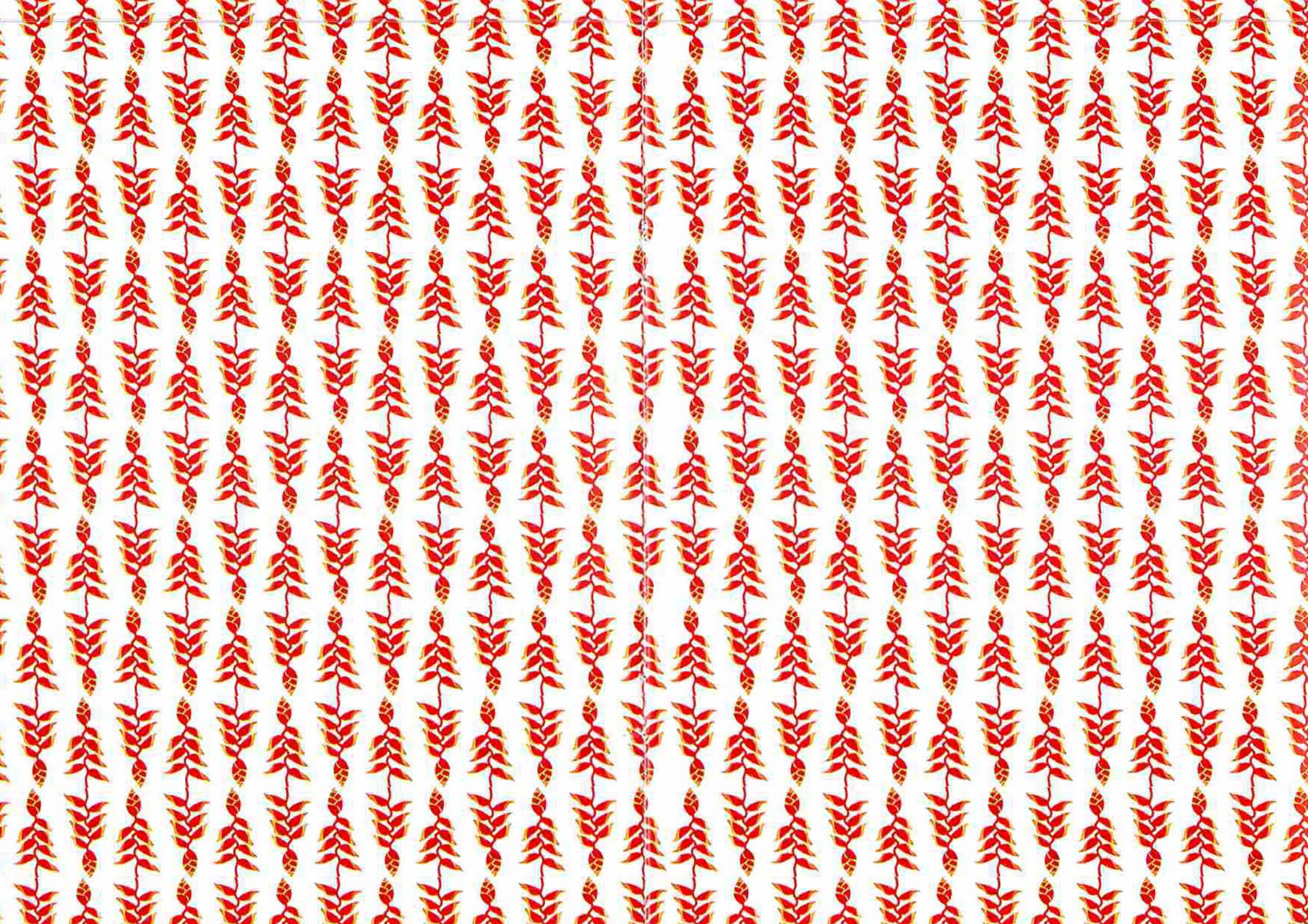
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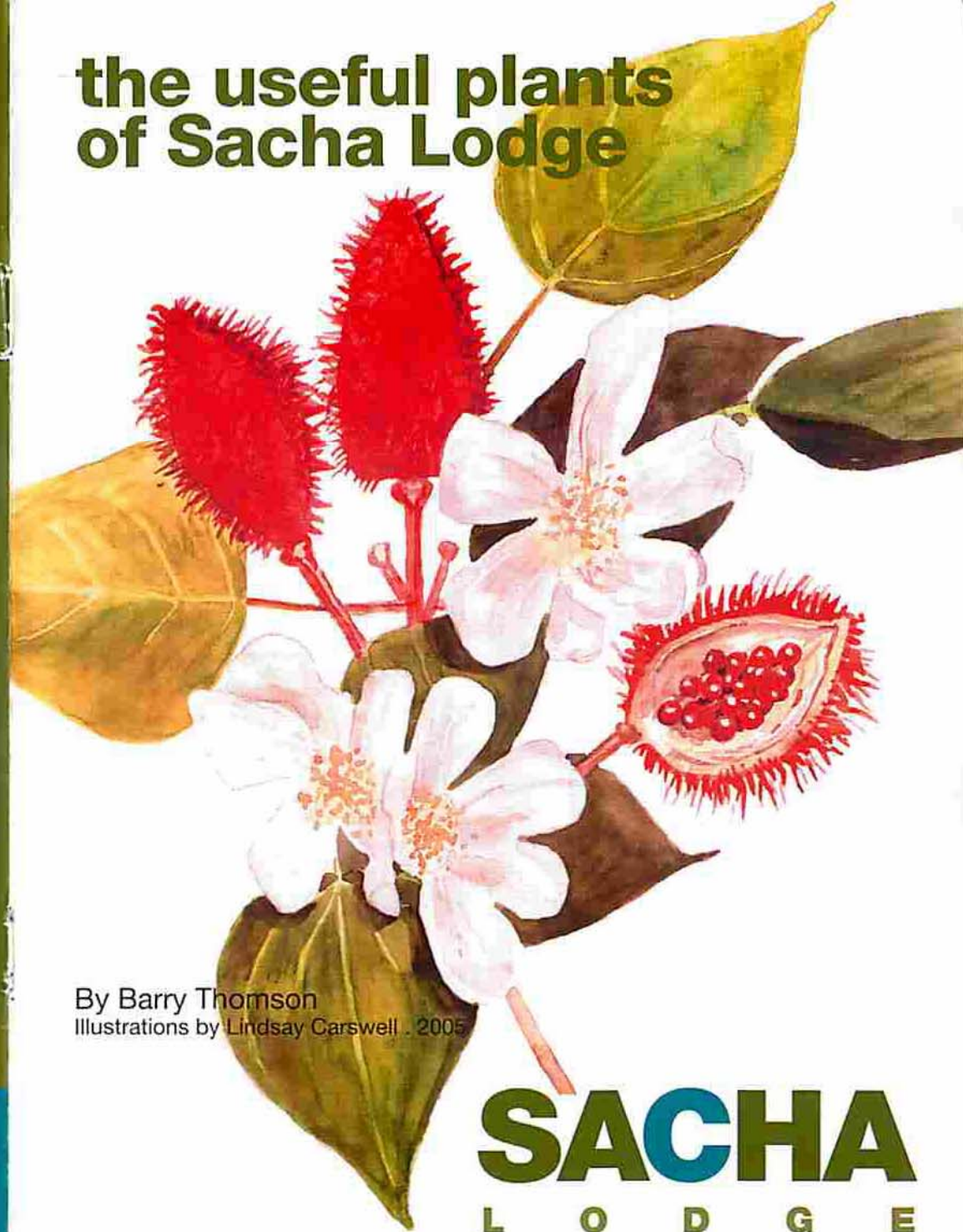
SACHA
L O D G E

The Useful Plants of Sacha Lodge

*By Barry Thomson
Illustrations by Lindsay Carswell, 2005*



the useful plants of Sacha Lodge



By Barry Thomson
Illustrations by Lindsay Carswell . 2005

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