



lyonia

a journal of ecology and application

Volume 7(2)

Indigenous knowledge of plants and their utilization among the Shuar of the lower tropical mountain forest in southern Ecuador.

Conocimiento indigena de plantas y su utilizacion entre los Shuar del bosque montano tropical en el Sur de Ecuador.

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December 2004

Download at: <http://www.lyonia.org/downloadPDF.php?pdfID=2.321.1>

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Abstract

Among the indigenous group of the Shuar of the Nangaritza valley, research was undertaken on traditionally used wild and cultivated plants, their utilization and preparation, and their economic and cultural significance. The first results of the ethno-ecological/ ethno-botanical investigation carried out in 2002 in two Shuar communities, Chumbias and Napints, may be summarized as follows: The Shuar communities have a comprehensive environmental knowledge. They practice a land use system based on slash and burn horticulture, animal husbandry, as well as hunting and gathering - a system well adapted to the ecological environment of the lower tropical mountain forest. Plant gathering is essential for the Shuar subsistence economy and plays an important role within their material and spiritual culture. The actual inventory of traditionally used wild plants include 120 plant species. The majority of these plants are used for food (27%), construction material (23%) and medicine (16%). Food security of the Shuar depends mainly on cultivation in the forest and home gardens (chacras, huertas). The huertas contain highly diverse plant species and breeds. A total of 185 wild and cultivated plant species and breeds, used mainly for food (58%) and medicine (22%), were identified.

Resumen

Entre los grupos indígenas Shuar del valle de Nangaritza, se investiga el uso tradicional de plantas nativas y cultivadas; su preparación, utilización y significado económico y cultural. El primer resultado de la investigación ethno-ecológica/ ethno-botánica, se cumplió en el 2002 en las comunidades Shuar de Chumbias y Napints, de las cuales se resume lo siguiente: Las comunidades Shuar tienen un conocimiento amplio del medio ambiente. Sus prácticas y sistemas de uso de la tierra, se basan en cortar y quemar la horticultura, la cría, caza y recolección de animales - un sistema bien adaptado con el medio ambiente ecológico del bosque tropical montano bajo. La recolección de plantas es esencial para la subsistencia económica de los Shuar y juega un papel importante dentro de su cultura material y espiritual. El inventario actual del uso tradicional de plantas nativas incluye 120 especies de plantas. La mayoría de estas plantas son usadas para la comida (27%), material de construcción (23%) y medicina (16%). La seguridad alimentaria de los Shuar depende principalmente del cultivo en el bosque y en las huertas familiares (chacras, huertas). Las huertas contienen una gran diversidad de especies y clases de plantas. Un total de 185 especies y clases de plantas nativas y cultivadas fueron identificadas. El uso principal es para comida (58%) y medicina (22%).

Introduction

Given their location between the Andean highlands and the lowlands of the Amazon, the tropical mountain forests of the eastern Andean foothills in southern Ecuador have a proportionally rich biodiversity. The area under study, the region of the Parque Nacional Podocarpus (see [Figure 1](#)), is especially noteworthy for its biodiversity and represents a so called "hotspot" (see Barthlott et al., 1996). The tropical mountain forests are most important as biological habitat, water reservoir and for the preservation of genetical resources. At the same time, these sensitive ecosystems are vulnerable because of the extraction of timber, mining activities, the extension of agricultural land and similar intrusions. According to Hamilton et al. (1995) 90% of the natural forest cover of the Andes are regarded as destroyed or at least modified by men.

Fig. 1: The Podocarpus National Park and the distribution of indigenous ethnic groups

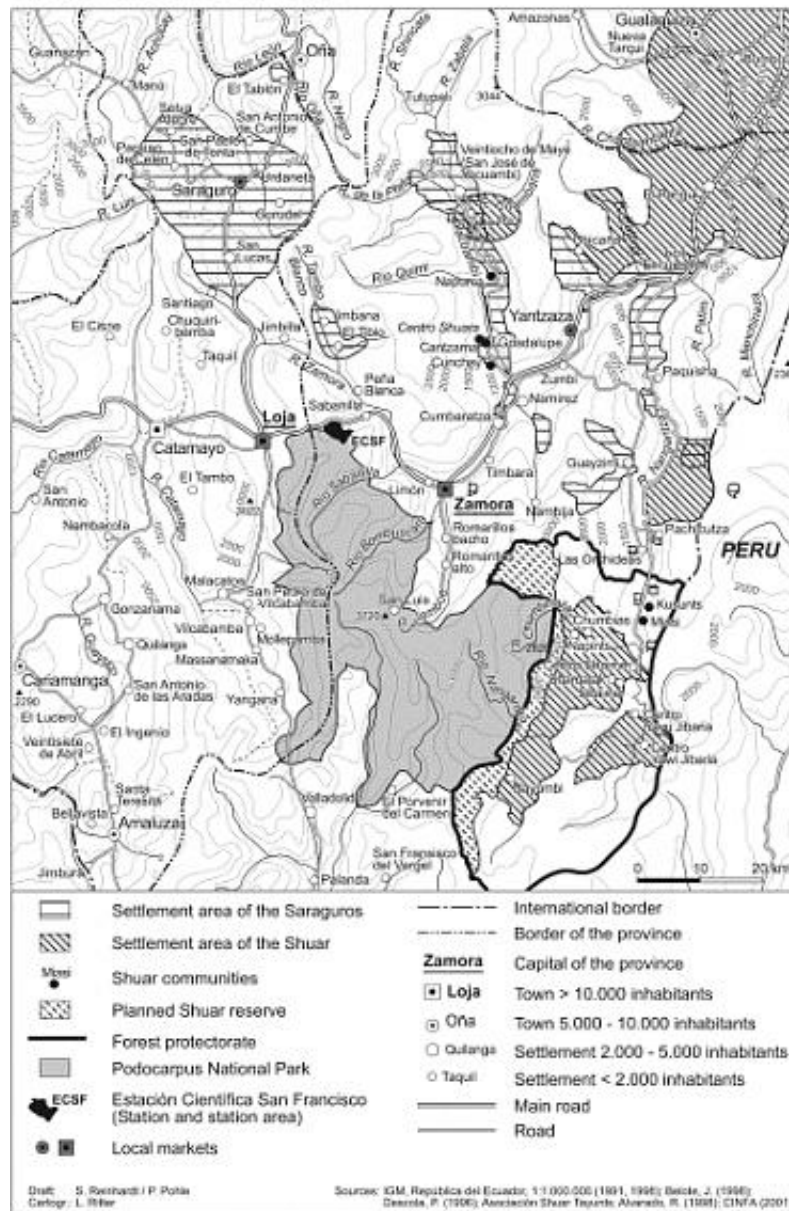


Figure 1. The Podocarpus National Park and the distribution of indigenous ethnic groups.
Figura 1. El Parque Nacional Podocarpus y la distribución de grupos indígenas.

The indigenous ethnic group of the Shuar

The settlement area of the indigenous group of the Shuar stretches from the lower reaches of the tropical mountain forests to the lowlands of the Amazon in the border area with Peru (see (Figure 1)). Besides the practice of slash and burn horticulture, the Shuar fish, hunt and gather forest products. Recently some Shuar families have also begun to raise livestock. Although the traditional way of life of the Shuar has changed because of external influences such as missionaries, settlers and mining activities, they were able to preserve, until recently, most of their traditional culture, including their extensive knowledge of plants and their utilization.

Results and Discussion

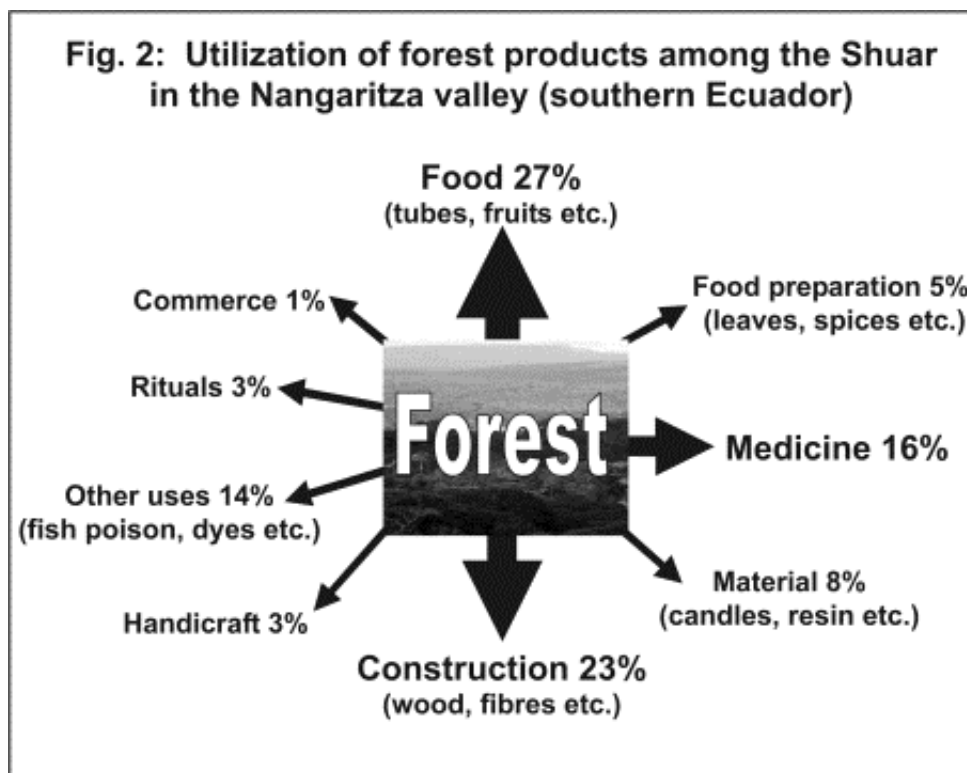
In July and August 2002 in two Shuar communities, Chumbias and Napints of the Nangaritza valley (see (Figure 1), research was undertaken on traditionally used wild and cultivated plants, their utilization and preparation, and their economic and cultural significance. Applying the ethno-ecological/ethno-botanical approach, the following work was carried out:

documentation of ethno-specific knowledge about the ecosystem "lower tropical mountain forest", especially of the natural forest resources, including the use of forest products such as food, fodder, medicine, dyeing agents, construction material and fire wood;

inventory of traditionally used plants (wild and cultivated), including their botanical, indigenous Shuar and Spanish names;

agro-geographical analysis of the land use system, with special consideration of traditional forest gardening;

evaluation of traditional environmental knowledge, practices of land use and forest resource management for the preservation of biological and cultural diversity.



**Figure 2 Use of forest products among the Shuar in the Nangaritza valley (southern Ecuador).
Figura 2. Uso de productos forestales entre los Shuar del Valle de Nangaritza (Sur de Ecuador).**

The importance of forest products for daily subsistence

The ethnoecological investigations, started in 2002 in the Nangaritza valley, have shown that the Shuar have a comprehensive knowledge of plants and their utilization. All 13 households of Chumbias and Napints make extensive use of forest products. According to first results of the ethnobotanical survey, the actual inventory of traditionally used wild plants includes 120 wild plant species. The majority of these plants are used for food (27%) and as construction material (23%, see (Figure 2), [[Table 1]]). Because there is no access to a formal health care system, medicinal plants (16%) are of great importance as well (see [[Table 1]]). Many forest plants also have a significant cultural and spiritual value, e.g. in myths and rituals. Nearly all forest products are used for daily subsistence - there is virtually no commercialisation. The absence of economic power to buy food or medicine and the lack of direct access

to markets because of very limited infrastructure are the main reasons that forests provide an important "safety net" for the livelihood of the Shuar in the Nangaritza valley.

Table. 1. Selected wild plants and their utilization among the Shuar in Chumbias and Napints (Nangaritza valley).

Tabla 1. Plantas silvestres seleccionadas y su uso entre los Shuar en Chumbias y Napints (Valle de Nangaritza).

Wild plant species for food						
Scientific name	Family	Shuar name	Spanish name	Life form	Part used	Utilization
<i>Anthurium breviscapum</i>	Araceae	Eép	Col del monte	Climber	Leaves	Leavy vegetable
<i>Anthurium giganteum</i> Engl.	Araceae	Chinumas	/	Climber	Leaves	Leavy vegetable
<i>Anthurium</i> section <i>xialophyllum</i>	Araceae	Wee eep	Col del monte	Climber	Leaves	Leavy vegetable
<i>Anthurium triphyllum</i>	Araceae	Eep guangat	Col de montaña	Climber	Leaves	Leavy vegetable
<i>Bactris</i> sp.	Arecaceae	Uwí yusa	Chonta duro	Palm	Palmhearts, fruit pulp	Vegetable, beverage (Chicha)
<i>Inga edulis</i> Mart.	Mimosaceae	Guampa, "Wampa"	Guaba	Tree	Fruit pulp	Raw fruit
<i>Inga nobilis</i> Willd.	Mimosaceae	Imiuk Sampi	Guabilla	Tree	Fruit pulp	Raw fruit
<i>Mauritia flexuosa</i>	Arecaceae	Achu	Morete	Palm	Palm hearts, fruit pulp	Vegetable
<i>Oenocarpus bataua</i>	Arecaceae	Kunkuk, Kunkuki	Palma real	Palm	Palm hearts	Vegetable
<i>Passiflora pergrandis</i> Holm-Niels. & Lawesson	Passifloraceae	Guashimunshi	Granadilla	Climber	Fruit pulp	Raw fruit
<i>Persea americana</i>	Lauraceae	Iniak	Avocado silvestre	Tree	Fruit pulp	Raw fruit

<i>Physalis peruviana</i> L.	Solanaceae	Yuranmis	Uva	Shrub	Fruit	Raw fruit
<i>Pourouma cecropiifolia</i> Mart.	Cecropiaceae	Shuinia	Uva de monte	Tree	Fruit	Raw fruit
<i>Pouteria durlandii</i> (standl.) Baehni	Sapotaceae	Yaas	Couje	Tree	Fruit	Raw fruit
<i>Pseudolmedia laevigata</i>	Moraceae	Chimi	Capuli	Tree	Fruit	Raw fruit
<i>Rhodospatha latifolia</i> Poeppig	Araceae	Kakirpas, Katirpas	Col del monte	Climber	Leaves	Leavy vegetable

Wild plant species for construction						
Scientific name	Family	Shuar name	Spanish name	Life form	Part used	Utilization
<i>Aegiphila sp.</i>	Verbenaceae	Yumpink	/	Tree	Trunk	House construction
<i>Casearia sp.</i>	Flacourtiaceae	Makaer, Makaet	Cedrilla, Cedrillo	Tree	Trunk	Furniture
<i>Cedrelinga sp.</i>	Fabaceae	Tseek	Shekui, Ceiki	Tree	Trunk	Furniture
<i>Erythrina peruviana Krukoff</i>	Fabaceae	Etse	Porotillo	Shrub	Branches	Fences
<i>Heliconia sp.</i>	Musaceae	Tumba	Platanillo	Shrub	Leaves	Roof construction
<i>Inga nobilis Willd.</i>	Mimosaceae	Samik	/	Tree	Trunk	House construction, furniture
<i>Mauritia flexuosa</i>	Arecaceae	Achu	Morete	Palm	Leaves	Roof construction
<i>Oenocarpus bataua</i>	Arecaceae	Kunkuk, Kunkuki	Palma real	Palm	Leaves	Roof construction, baskets
<i>Rhodospatha sp.</i>	Araceae	Tingishapnek	/	Climber	Stems	Baskets
<i>Rollinia sp.</i>	Annonaceae	Junkua, Yunkua, Yaisha	/	Tree	Bark	Cords
<i>Socratea exorrhiza</i>	Arecaceae	Kupat	Palma rallador	Palm	Trunk	House construction, furniture
<i>Trema micrantha (L.) Blume</i>	Ulmaceae	Kaaka	Sapan	Tree	Bark	Cords
<i>Wettinia maynensis</i>	Arecaceae	Teren	Chonta pambil	Palm	Trunk, leaves	House / roof construction, furniture

Wild plant species for medicine							
Scientific name	Family	Shuar name	Spanish name	Life form	Part used	Preparation	Use in traditional medicine
<i>Costus sp.</i>	Costaceae	Undundu, Churunch	Caña agria	Shrub	Sap of stem	Oral application	Diarrhoea, fever
<i>Croton lechleri</i> <i>Muell. Arg.</i>	Euphorbiaceae	Urushmas	Sangre de drago	Tree	Sap of bark	Tincture	Remedy for wounds
<i>Ficus cf. gomelleira</i> <i>Kunth</i>	Moraceae	Wampu	/	Tree	Sap of bark	Oral application	Diarrhoea, amoebiasis
<i>Hyptis pectinata</i> <i>(L.) Poit.</i>	Lamiaceae	Wishu	Corta sangre	Herb	Sap of plant	Tincture	Remedy for wounds
<i>Mansoa sp.</i>	Bignoniaceae	Kaip	Ajo silvestre	Climber	Leaves	Infusion	Strengthening of the immune systeme
<i>Physalis peruviana L.</i>	Solanaceae	Yuranmis	Uva	Shrub	Fruit	Consumption of the fruit	Influenza
<i>Picramnia sellowii</i> <i>Planch.</i>	Simaroubaceae	Yamakai	/	Tree	Leaves	Compress of stamped leaves	Remedy for wounds
<i>Piper cuspidiscum</i> <i>Trel.</i>	Piperaceae	Tintikip	/	Shrub	Leaves	Bath, nose douche	Fever, headaches
<i>Piper sp.</i>	Piperaceae	Uchi Ampara	/	Shrub	Sap of stem	Oral application	Diarrhoea of children
<i>Piper stileferum</i> <i>Yunck</i>	Piperaceae	Nampich ampar	/	Herb	Sap of roots	Oral application	Diarrhoea, intestine parasites, stomach-ache
<i>Solanum americanum</i> <i>Mill.</i>	Solanaceae	Shimpishi, Shimpiship	Mortin, Mortiño	Shrub	Leaves	Compress of stamped leaves, infusion	Influenza
<i>Uncaria tomentosa</i> <i>(Willd. Ex Roem. & Schult.) Dc.</i>	Rubiaceae		Una de gato	Climber	Bark, stem, roots	Infusion	Strengthening of the immune systeme, stomach-ache

Wild plant species for material						
Scientific name	Family	Shuar name	Spanish name	Life form	Part used	Utilization
<i>Ficus sp.</i>	Moraceae	Kamush	Matapalo	Tree	Sap of bark	Candle
<i>Hevea brasiliensis</i> (Willd. ex A. Juss.)	Euphorbiaceae		Caucho	Tree	Sap of bark	Candle
<i>Mauria sp.</i>	Anacardiaceae	Kupa	/	Tree	Resin	Candle
<i>Oenocarpus bataua</i>	Arecaceae	Kunkuk, Kunkuki	Palma real, Ungurahua	Palm	Fruit pulp	Oil

Wild plant species for food preparation						
Scientific name	Family	Shuar name	Spanish name	Life form	Part used	Utilization
<i>Anthurium breviscapum</i>	Araceae	Eép	Col del monte	Climber	Leaves	Spice
<i>Anthurium</i> section <i>xialophyllum</i>	Araceae	Wee eep	Col del monte	Climber	Leaves	Spice
<i>Piper umbellatum</i> L.	Piperaceae	Natsamar	Mariapanga, Santa Maria	Herb	Leaves	Spice, Maitos or Tonga (sh.) a done method
<i>Renealmia alpina</i>	Zingiberaceae	Kumpia	Tapioka	Shrub	Leaves	Maitos or Tonga (sh.) a done method

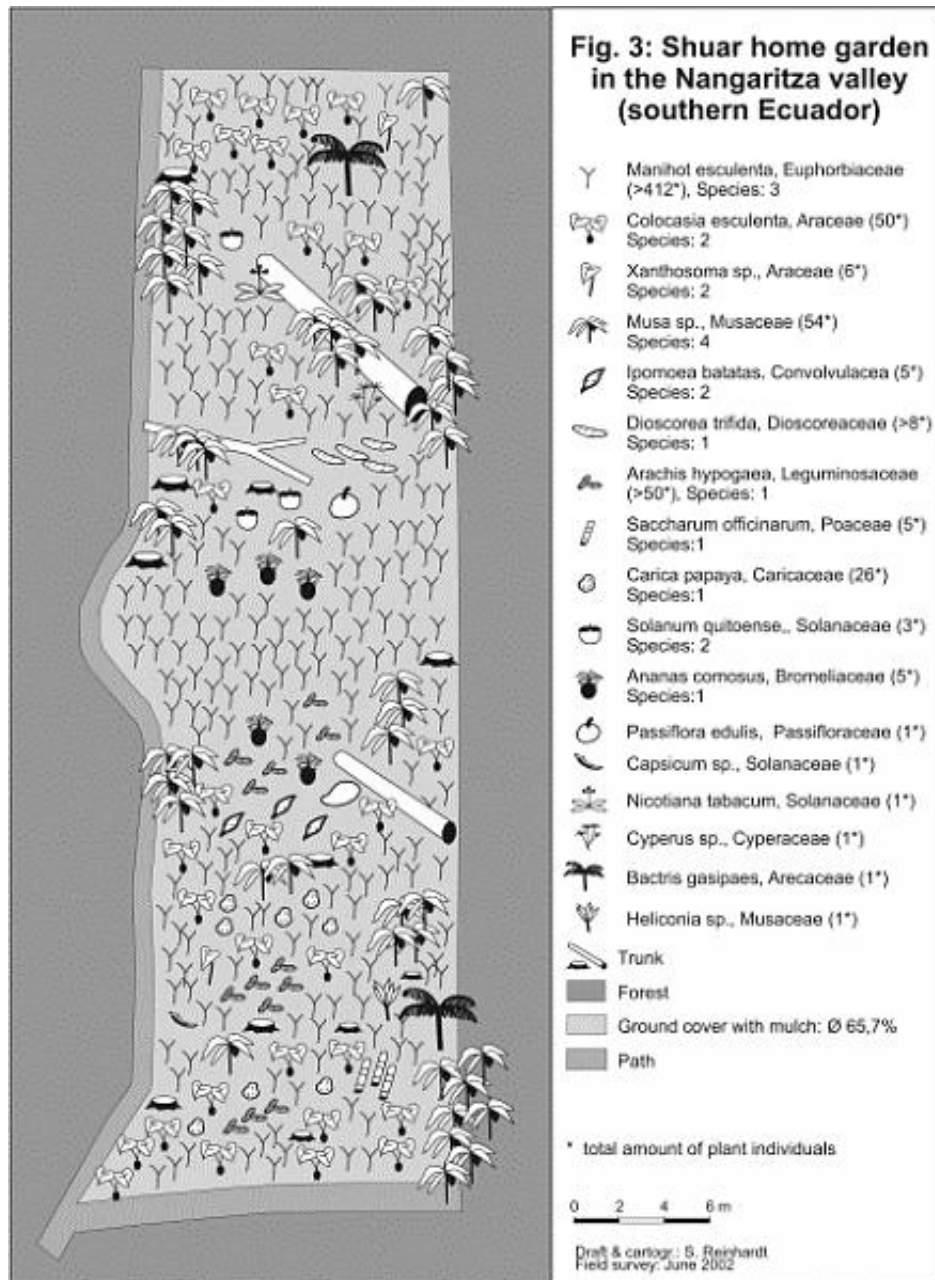
Wild plant species with cultural and religious significance							
Scientific name	Family	Shuar name	Spanish name	Life form	Part used	Preparation	Traditional use
<i>Banisteriopsis caapi</i>	Malphiaceae	Naatema	Ayahuasca	Climber	Woody stem parts	Infusion	Schamanistic cleaning ritual
<i>Brunfelsia grandiflora</i> D. Don	Solanaceae	Chirikiasa	/	Shrub	Stem	Additional plant for the Ayahuasca infusion	
<i>Dacryodes peruviana</i>	Burseraceae	Kunchai	Copal	Tree	Resin	Smoke through burning	Smoke against „mal aire“
<i>Inga nobilis</i> Willd.	Mimosaceae	Samik	/	Tree	Leaves	Fronde of leaves	Schamanistic cleaning ritual
<i>Piper umbellatum</i> L.	Piperaceae	Natsamar	Mariapanga, Santa Maria	Herb	Leaves	Fronde of leaves	Fragrance against „mal aire“

Wild plant species for handicraft						
Scientific name	Family	Shuar name	Spanish name	Life form	Part used	Utilization
<i>Canna edulis</i>	Cannaceae	Waimpiak	Achira	Shrub	Seeds	Necklaces
<i>Coix lacryma-jobi</i>	Poaceae	/	Kariokria, San Pedro, Pepas de rosario	Grass	Seeds	Necklaces
<i>Cayaponia capitata</i>	Cucurbitaceae	Waak	Maní cunian	Climber	Seeds	Necklaces
<i>Erythrina peruviana</i> Krukoff	Fabaceae	Etse	Porotillo	Tree	Seeds	Necklaces

Wild plant species for other uses						
Scientific name	Family	Shuar name	Spanish name	Life form	Part used	Utilization
<i>Albizia sp.</i>	Mimosaceae	Sekemur	/	Tree	Roots	Cleaning of hair and clothing
<i>Alchornea glandulosa</i> Poepp. & Endl.	Euphorbiaceae	Kantsa	/	Tree	Fruits	Birdseeds
<i>Anthurium rubinervium</i> (Link) G. Don	Araceae	Shiniumas eep	Col del monte	Climber	Leaves	Stimulant for dogs
<i>Caladium bicolor</i> (Aiton) Vent.	Araceae	Ushu	/	Shrub	Sap of roots	Veterinary medicine against skin parasites
<i>Clibadium sp.</i>	Asteraceae	Masu	Barbasco	Shrub	Leaves	Fish poison
<i>Cyclanthera sp.</i>	Cucurbitaceae	Takur	Lustre, Taco	Climber	Fruit	Sponge for cleaning
<i>Genipa americana</i> L.	Rubiaceae	Sua	Sula, Huituc (qu.)	Tree	Fruit	Dye for hair
<i>Lonchocarpus</i> CF. <i>araripensis</i> Benth.	Fabaceae	Inchitimo	Barbasco	Climber	Sap of roots	Fish poison
<i>Lonchocarpus nicou</i>	Fabaceae	Timiu	Barbasco	Climber	Sap of roots	Fish poison
<i>Miconia calvescens</i> Dc.	Melastomataceae	Chinchak	/	Tree	Fruits	Birdseeds
<i>Picramnia sellowii</i> Planch.	Simaroubaceae	Yamakai	/	Tree	Leaves	Stimulant for dogs

Agrobiodiversity of the traditional forest and home gardens (huertas)

Food security of the Shuar depends mainly on cultivation in the forest and home gardens (chacras, huertas), supplemented by the gathering of forest products. The huertas - mainly cultivated by women - contain highly diverse plant species and breeds. In five huertas that have been examined (each approximately 600-1000 m² large), a total of 185 wild and cultivated plant species and breeds, used mainly for food (58%) and medicine (22%), were identified. The main crops are starchy roots and tubers such as *Manihot esculenta* (Euphorbiaceae) and *Colocasia esculenta* (Araceae) as well as plantain breeds (*Musa sp.*, see [Figure 3](#)).



**Figure 3. Shuar home garden in the Nangaritza valley (southern Ecuador).
Figura 3. Jardín Shuara en el valle de Nangaritza (Sur de Ecuador).**

The huertas are of great significance for the in-situ conservation of genetic plant resources. A plurality of traditional breeds, for instance 29 breeds of *Manihot esculenta* and 21 breeds of *Musa* sp., can be found in the huertas of the Shuar. One has to bear in mind, though, that the diversity of species varies widely between individual family huertas. Huertas that are cultivated by young women who settled in the Nangaritza valley recently clearly show a lower diversity (less than 20 species) than those that are cultivated by older women whose families settled more than 20 years ago in the valley (ca. 60 species).

In spite of the wide spectrum of plants that are known to the Shuar, such as fruit or leafy green vegetables from the forest, the alimentation of the Shuar is relatively narrow and restricted to starchy roots and tubers in combination with albuminous animal products. Consequently, the comprehensive

plant knowledge of the Shuar is not reflected in their alimentation.

Conservation through utilization" - a new approach in sustainable forest management

The traditional land use system of the Shuar which serve to maintain biodiversity may be contrasted with the forms of land use employed in the wake of recent agrarian colonization which are destructive of mountain forests. Large tracts of such forests are being irreversibly damaged and destroyed by slash and burn activities followed by pasturing on a vast scale. Lumbering, mining, oil production and the development of infrastructure is increasing pressure on the sensitive forest ecosystems. One of the last remaining enclosed virgin forest areas of southern Ecuador was placed under strict protection with the establishment of Podocarpus National Park, containing almost 150,000 hectares. Additionally three protected forest areas (Bosque Protector Colambo-Yacuri, Corazón de Oro and Alto Nangaritza) have been established recently. Disparities between the economic claims of the local population and what is called for under the protective measures, however, often represent a serious problem, one which may hinder the successful management of the conservation area.

Experience shows that sustainable management of biodiversity must both fulfil the aims of nature conservation and satisfy claims of utilization by the local population. Therefore, in addition to strict protection of the forests, a concept for "conservation through utilization" is desirable. The scheduled three year research project presented here is based upon this idea. Specifically, the research project stems from the hypothesis that the many-sided economic and cultural interests indigenous and local communities have in the forest would be the most effective way to protect the forest from destruction. Thus the analysis and assessment of ethno-specific knowledge about the tropical mountain forest and its utilization play a key role in this study. On the basis of the documentation of autochthon knowledge about the use and processing of wild and cultivated plants, the ethnobotanical inventory, and analysis of traditional land use systems, we will survey the extent to which existing indigenous knowledge about natural forest resources can be made available for a sustainable resource management.

Acknowledgements

The article is based on information given by: Vicente Florencio Sanchim Antun, Maria Silvia Chiriap Inchit, Inchit Euselbia Sanchim Chiriap, Chinin Enrique Chuinda Tsukanka, Cruz Alfonso Sanchim Chiriap, Antonio Augustin Yankur Yanua, Kintianua Rosa Tiwiram, Angel Montilio Yankur, Rosa Esperanza Narankas, Rosa Maria Wilagomes, Alipio Tentets, Mario Chuinda, Juan Chuinda (communities of Chumbias and Napints).

The project is committed to abide by the "Code of Ethics". The intellectual property rights and traditional resource rights and thus the data collected by the project are property of the indigenous and local communities. A commercial use of the collected data is not intended.

References

- Barthlott, W.; W. Lauer; & A. Placke. 1996. Global distribution of species diversity in vascular plants: towards a world map of phytodiversity. *Erdkunde*, 50(4):317-327.
- Bejár, E.; R.W. Bussmann; C. Roa & D. Sharon. 2002. Medicinal Herbs of Southern Ecuador - Hierbas Medicinales del Sur Ecuatoriano. San Diego.
- Bennett, B.C.; M.A. Baker & P.G. Andrade. 2002. Ethnobotany of the Shuar of Eastern Ecuador. The New York Botanical Garden, New York.
- Eyden, van den, V.; E. Cueva & O. Cabrera. (in press). Of 'climbing peanuts' and 'dog's testicles', Mestizo and Shuar plant nomenclature in Ecuador. *Journal of Ethnobiology*.
- Hamiltin, L.; J. Juvik & F. Scatena. 1995. The Puerto Rico tropical cloud forest symposium: Introduction and workshop synthesis. *Ecological Studies*, 110:1-19.



**Photo 1. Shuar women in their home garden with *Xanthosoma* sp. (Araceae).
Foto 1. Mujeres Shuar en su jardín con *Xanthosoma* sp. (Araceae).**



Photo 2. Shuar woman showing the medicinal plant "Ajeje" (*Zingiber* sp.).
Foto 2. Mujeres Shuar mostrando la planta medicinal "Ajeje" (*Zingiber* sp.).



**Photo 3. Planting of *Manihot esculenta* (Euphorbiaceae).
Foto 3. Siembra de *Manihot esculenta* (Euphorbiaceae).**



Photo 4.:Utilization of *Lonchocarpus nicou* (Euphorbiaceae), a fish-poison.
Foto 4. Uso de *Lonchocarpus nicou* (Euphorbiaceae), veneno para pescar.