WAYANA BASELINE STUDY

A sustainable livelihoods perspective on the Wayana Indigenous Peoples living in and around Puleowime (Apetina), Palumeu and Kawemhakan (Anapaike) in Southeast Suriname







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Opinions expressed in this report are those of the authors and do not necessarily reflect the views of ACT Suriname or of other institutions the authors are affiliated with. The authors are responsible for all errors in translation and interpretation.

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LIST OF ABBREVIATIONS

ABS	General Bureau of Statistics (Algemeen Bureau Statistiek)
ACT	Amazon Conservation Team
ADEK	Anton de Kom University
AIDS	Acquired Immune Deficiency Syndrome
CBL	Central Bureau Aerial Mapping (Centraal Bureau Luchtkartering)
CDFS	Community Development Fund Suriname
CITES	Convention on International Trade in Endangered Species
DFID	Department For International Development
EBS	Energie Bedrijven Suriname
EES	Ethno-Ecological Study
FOB	Fonds Ontwikkeling Binnenland
GIAHS	Globally Important Ingenious Agricultural Heritage System
FG	French Guiana
HIV	Human Immunodeficiency Virus
KITLV	Royal Institute for the Study of Language, Countries, and Peoples (Koninklijk Instituut voor Taal-, Land- en Volkenkunde)
METS	Movement for Eco-Tourism in Suriname
NARENA	National Resources and Environmental Assessment
NGO	Non Governmental Organization
NVB	National Women's Movement (Nationale Vrouwenbeweging)
OAS	Organisation of American States
PAHO	Pan American health Organisation
SRD	Suriname Dollar
SUR	Suriname
SURALCO	Suriname Aluminum Company
TALAWA	Tareno (Trio) and Wayana Foundation
UNDP	United Nations Development Program
USD	United States Dollars
WHO	World Health Organisation
WWF	World Wildlife Fund

SUMMARY

Study context

This report presents the results of an ethno-ecological survey (EES) among the Wayana Indigenous Peoples of Suriname, which was conducted between August 2004 and September 2006. The Wayana EES was commissioned by the Amazon Conservation Team-Suriname to provide baseline data for project planning and monitoring. This report will also serve as a reference point to track progress towards development goals for the communities concerned.

An interdisciplinary research team conducted fieldwork in the main Wayana communities of Puleowime (Apetina), Palumeu, and Kawemhakan (Anapaike), and in nearby smaller family-based settlements or *kampus*. Using the sustainable livelihoods approach, the researchers collected data on physical, natural, social, human, and financial capital. Primary data obtained through surveys, open interviews, and field observations were complemented by secondary data from reports, maps, publications, and other sources.

Back ground

Suriname is located on the northern tip of South America. Its small and ethnically diverse population lives primarily in the coastal zone. The forested interior, which covers 80% of the country, provides sustenance to Indigenous Peoples and Maroons. Education and health care in the urban areas are reasonable by Caribbean standards. The interior regions, however, are marginalized in their access to these and other public services such as clean water, electricity, and communication networks.

The Wayana occupy a large area in the northern Amazon Region, which now covers Suriname, French Guiana and Brazil. In Suriname, the Wayana live on the shores of the Lawa, Litani, Oelemari, and upper-Tapanahoni Rivers. They arrived here from Brazil around the mid 18th century and only settled in Apetina (Puleowime), Palumeu and Kawemhakan (Anapaike) at a time that the Ndyuka and Aluku Maroons had already settled along respectively the Tapanahoni and Lawa Rivers.

By the first half of the 20th century, introduced diseases led to rapid decreases in population numbers. In the 1960s the lives and culture of the Suriname Wayana were affected by governmental efforts to open up the interior and Baptist missionary activity. As the Wayana went to live in larger population centers, they experienced better health care, higher life expectancies, western education, and literacy. On the down-side, however, acculturation has caused dependency on outside manufactured goods, the loss of traditional cultural and ecological knowledge, and the over-extraction of selected natural resources.

Presentation of field data: Five capital types

Natural capital refers to natural resources, such as the forest, flora and fauna, sources of fresh water, and mineral resources. Other than most of Suriname, the Wayana area has a monsoon climate with one dry and one rainy season. The topography is characterized by low mountain ranges and isolated dome-shape inselbergs. The vegetation is dominated by lowland forest. Other vegetation types in the Wayana-area are floodable forest, secondary forest, and mountain forest. Researchers have registered 34 rare and 22 endemic plant species in the Wayana area, and one endemic animal.

The list of most-used plants among the Wayana is lead by palms, which are used for roofing thatch and their fruits. Second most valued are hardwood species for the construction of houses and shelters. Other trees and plants provide furniture, canoes, paddles, twining materials, hunting and fishing utensils, weapons, food, medicines, body care, and many other uses. Resins, rubber and non-cooking oils are used for a variety of purposes including illumination and glue. The Wayana do not make much commercial use of plants, though in all villages people sell jewelry made of plant- and animal parts.

Hunting and fishing occur year-round. The favorite hunting weapon is the shotgun, but hunters sometimes use other methods such as the bow and arrow, traps, or catching by hand (armadillo). Fishing occurs mostly with a long land line and nylon fishing nets. In the virtual absence of animal husbandry, bush meat and fish are the main sources of protein. In addition, animal parts are used for tools and utensils, initiation rituals, medicine, and musical instruments. Most hunters and fishers are to some extend involved in the sale of fresh fish and bush meat and live animal trade, but prices paid to the trappers are low.

The Wayana farming system is based on shifting cultivation with a high agricultural biodiversity and is considered a *Globally Important Ingenious Agricultural Heritage System (GIAHS).* The most important staple crop is cassava, which is planted alongside other staples, vegetables, and fruits. Fruits and utility crops are also grown around houses. Agricultural plots are selected for accessibility, drainage conditions, soil texture, and flatness. Most fields are 0.4 ha or smaller, and found within a distance of 2-3 km from the village. The majority of field crops are planted between November and January, and some crops are planted in May. Leaf-cutting ants and agouti are the most damaging agricultural pests, followed by other mammals and birds. While youngsters are learning about modern ecological principles, traditional ecological knowledge is at risk of being lost.

Human capital includes the skills, knowledge, ability to work and good health that enable people to pursue livelihood strategies. Suriname is the home of an estimated 523 people of Wayana descent (122 households), many of whom are mixed one of the at least 11 other – often related- Indigenous ethnic groups in the Wayana villages. The average Wayana woman in the sample has given birth to 3.7 children. Lawa households (av. 5.3 p) are significantly larger than those along the Tapanahoni River (av. 4.2 p).

There are elementary schools in Palumeu and Puleowime (Apetina). Most children from Kawemhakan (Anapaike) go to elementary school in French Guiana, but few of them are

allowed to attend high-school there. Wayana Children have virtually no options for continued education at a Suriname high-school or technical training center. Opportunities for adult education, skills training or alternative forms of educations are practically non-existent.

Children grow up in the Wayana language and may learn Dutch or French when and if they go to school. Few Wayana speak any Dutch, the national language, and men are more likely to do so than women. Also relatively more men speak the lingua franca Sranantongo. In addition some ceremonial and opportunistic languages are spoken. Even though educational achievement is generally low, the majority of Wayana men and women are literate. Wayana men and women from the Lawa region have, on average, received more years of formal education than Wayana from the Tapanahoni region.

Population health appears to be good and child mortality is low. The main health problems are poor nutrition; viral, bacterial, and parasitic infections; malaria; colds and flu; diarrhea; and mercury contamination. Threats to people's health include HIV/AIDS and diseases associated with high fat/sugar/salt diets. Shamans traditionally perform holistic healing ceremonies but their central role in society has withered since the arrival of the church. Since 2002, the ACT-Suriname has developed the shaman's apprentice program in the village of Puleowime (Apetina) to promote the preservation of traditional medicinal and other knowledge. In addition the Medical Mission Primary Health Care – Suriname (*Medische Zending- MZ*), a non-profit organization, operates clinics in the three main Wayana villages.

From a young age Wayana boys and girls are socialized for the gender roles they will fulfill later in life; marriage and having children for girls and hunting and fishing for boys. There is no evidence for parents' preference for either sex at birth or for the preferential treatment of boys or girls. Women are less likely to speak out than men at community meetings, but they do have a relevant voice in household decisions.

Financial capital represents (sources of) cash money and other valuables that are used as stock. Financial infrastructure in the form of banks and exchange offices is absent in the Wayana area. Also wage labor jobs are rare. Many Wayana rely on the natural environment for cash income. They make traditional handicrafts; sell birds, mammals, and reptiles; sell bush meat and fish; and earn from small-scale gold mining. The main non-resource related income is wage labor, with the government being the main employer. Other jobs include providing transport, sale and resale of consumer goods, vending meals, tourism, planting and selling marihuana, and a number of odd service jobs.

The Wayana have long maintained trade relations with neighboring Maroon groups. At present, however, most heads of household travel to the capital city of Paramaribo themselves to obtain manufactured products. Larger Wayana villages feature small shops but their prices are relatively high, particularly along the Lawa River. For selling handicrafts, Wayana rely on tourists visiting their villages. Like other citizens, the Wayana are entitled to social benefits such as old age wages and child benefits though the value of

these allocations is low. Social security payments for French Wayana may amount to several hundreds of Euros a month.

An analysis of asset ownership suggests that Suriname Wayana from the Lawa river basin are wealthier than their tribal relatives in the Tapanahoni watershed. They are more likely to possess expensive appliances, consumer electronics, and an outboard motor, and have more than double the amount of money available to spend on trips to the city. Overall most cash money earned is spent on food (rice, cans, sugar, salt), followed by batteries and fuel, among other items. Donor and development organizations active in the Wayana area include the ACT, CDFS, UNDP, Peace Corps, and WWF.

S*ocial* capital refers to social networks and norms, organizational and institutional structures, migratory networks, and formal and informal safety nets. Centralized leadership was only institutionalized among the Wayana when they went to live in larger villages in the 1960s. The tribal authorities are named granman, kapitein, and basja after the Maroon example and obtain their position through a combination of inheritance, election, and appointment. They receive a public honorarium and are accountable to the national government. However, their roles are not clearly defined or endorsed by law and they have no mandate to speak justice on behalf of the Suriname law. Other than these customary authorities, the Wayana have virtually no representation in the national government and little voice in political decision-making.

The Suriname government does not have a long-term policy strategy to cushion either household shocks or community- and region-wide disasters in the interior. In the absence of a strong public welfare system, the church provides a social safety net for the most vulnerable groups in society. Other community-based social support groups are rare but community members do organize support mechanisms in times of need. Nationally, the Wayana are represented by the regional foundation TALAWA and the national indigenous organization VIDS. Relations of the Wayana with their Indigenous and Maroon neighbors are generally friendly, though marriage with non-indigenous individuals remains rare.

Today, almost all Wayana are Baptist and this religion dominates social and cultural life. As a result, traditional dances, songs, stories, cosmology, and other cultural expressions are rarely practiced and unknown by Wayana children. Some shamans are still active as healers but no longer publicly perform rituals involving association with the spirit world. The French government subsidizes cultural preservation in the Wayana villages on the French side of the border.

Physical capital comprises physical infrastructure such as roads, railways, markets, clinics, schools and physical assets in the communities. None of the Wayana villages can be reached by road; access is provided by plane or by boat. Wayana families tend to live with their nuclear family unit in one-room houses. As compared to houses in the Tapanahoni watershed, Wayana houses along the Lawa are more likely to be built of imported construction materials. In addition to houses and kitchens, the larger villages have structures owned by outsiders such as a clinic, a government building (Puleowime/Apetina and Kawemhakan/Anapaike), and a tourist lodge (Palumeu). One settlement (Tutu Kampu)

and one village (Palumeu) in the Suriname Wayana region have a tukuspan, which is a traditional meeting and ceremonial space. There is a church in all larger villages, but few sports and recreational facilities for Wayana youth.

The public provision of electricity is poor throughout the Wayana area. In Kawemhakan (Anapaike), fuel donations by gold miners who work on tribal lands are keeping the community generators running. Wealthier households have personal generators. For drinking water the Wayana rely on a variety of sources, ranging from an engineered water system in Kawemhakan to rainwater basins (durotanks) and, in the dry seasons, rivers and creeks. Sanitary conditions are poor across regions, and waste management and recycling are virtually nonexistent. An exception is the village of Palumeu, where tour operator METS has organized bi-weekly garbage collection. None of the Suriname Wayana villages can connect to the Suriname telecommunication, radio, and television broadcasting networks. People in Apetina can receive the Maroon community radio station Pakati. Traditional clothing is seldom worn, but traditional jewelry remains popular.

Synthesis

Identified vulnerabilities, problems and risks include:
Natural capital:

- Poor preparedness for extreme weather events and other natural disasters
- With population growth, extraction levels may exceed the forest's carrying capacity.
- Dependency on decreasing wildlife resources; risk of over-extraction but lack of data
- Loss of ancient knowledge of ecosystem behavior and management
- The lack of land rights/titles for Indigenous individuals and communities

Human capital

- Poor access to primary education and virtually no access to continued education
- Health problems, including poor nutritional health; infections; malaria; common colds and flu; diarrhea; and mercury pollution
- The main health risks are HIV/AIDS and modern diet-related diseases
- Loss of traditional medicinal knowledge
- Traditional gender roles place women in a vulnerable position within the community

Financial capital

- Lack of banks and other institutions for financial management
- Lack of non-natural resource related (wage)labor opportunities
- Increased dependence on manufactured goods
- Lack of capacity to manage donor funding

Social capital

- Absence of strong Wayana leadership
- Traditional authorities lack an operational budget and legal recognition
- Limited functionality of state-wide and community-based social safety nets
- Decreasing transfer of cultural values and traditions from elders to youngsters
- Increasing use of marihuana among youngsters

- Loss of church power to control deviant behavior and provide a social safety net

Physical capital
- Physical and communicative isolation
- Poor access to national news and information
- Loss of knowledge of traditional construction
- Lack of reliable sources of electricity and drinking water
- Poor waste and sewage management

The researchers identified a variety of opportunities, capacities, and resources to overcome these negative forces and develop more sustainable livelihoods:

Natural capital:
- Abundance of forest resources such as Non Timber Forest Products
- Presence of mineral resources in and around the villages

Human capital
- Widespread literacy
- Presence of Wayana fluent in Dutch, who could serve as teachers
- Peace Corps worker in Puleowime (Apetina) with intention to teach basic business administration skills
- Generally good health; low HIV/AIDS zero-prevalence rates
- Knowledge of medicinal plants and traditional healing practices still present among shamans and elders

Financial capital
- Natural environment provides opportunities for sustainable income generation
- Tour operator METS can become a market opportunity for vegetables and other products
- Increased mobility can be used to bring handicrafts to the national market
- Presence of donor organizations willing to invest in the interior

Social capital
- Low rate of crime and other deviant behavior (e.g. drugs use, alcoholism)
- Strong influence of the church in maintaining social cohesion
- Establishment of TALAWA to represent the interests of the Trio and Wayana in national policy making and other national level affairs.
- ACT-led cultural preservation programs can stimulate the transfer of traditional knowledge from elders to children

Physical capital
- All villages host people who are skilled in traditional architecture
- Growing local interest in traditional indigenous structures
- Waste management program in Palumeu may serve as an example for other villages
- Many adults still have knowledge to make and wear the traditional dress

TABLE OF CONTENTS

CHAPTER I
INTRODUCTION

This opening chapter introduces the main actors in this report: the Wayana Indigenous Peoples of Suriname. It explains why this study was conducted and lays out the study aims and objectives. Next it outlines the research approach and identifies the target audience. The chapter ends with an overview of the report lay-out.

Indigenous Peoples are central to Suriname's national identity. The national seal, showing two indigenous persons holding an oval escutcheon, is depicted on the national currency and on virtually any product fabricated in Suriname. School children learn that Indigenous Peoples were the first inhabitants of this country, which prides itself in preserving vibrant Indigenous cultures. These cultures live in harmony with the many other populations in this small multi-ethnic country on the northern shores of South America.

Figure 1. Suriname's national seal

Despite appreciation of Indigenous Peoples in the national rhetoric, Surinamers know virtually nothing about their Indigenous fellow citizens; their ancient myths, their cultural expressions, their livelihood activities, and their living conditions. This is particularly truth for the Indigenous Peoples of South Suriname, the Wayana and Trio, who have remained largely isolated from the national society. Few Surinamers know that these people are named Wayana and Trio, can name their villages, or locate them on the national map. Less than one percent of non-Indigenous Surinamers have ever visited a Wayana or Trio village.

The lack of knowledge about the Southern Indigenous groups is not reserved to the general population. Initiatives by the Suriname government and Non-Governmental Organizations are hampered by the absence of basic information about these interior villages such as demographics (e.g. numbers of adults, elderly, school children, and households); literacy rates and language skills; and data on physical infrastructure (e.g. access to potable water, electricity). Also recent data about cultural expressions, income generating activities, and the use and status of natural resources are hard to get by.

The present report responds to this paucity by providing baseline data about the Wayana Indigenous Peoples, who live in South-Central and South-East Suriname along the Tapanahoni and Lawa Rivers.

1.1 Study aims and objectives

This report presents the results of the Ethno-Ecological Survey among the Wayana, a detailed baseline survey that was conducted among the Wayana Indigenous peoples in the general regions of Puleowime (Apetina), Palumeu, and Kawemhakan (Anapaike), between

August 2004 and September 2006. The main aim of the Wayana baseline study is to provide a database for non-governmental organizations and policy makers concerned with poverty alleviation in the southern indigenous communities. To improve policy initiatives aimed at reducing poverty, the data should reflect poor people's views and their own understanding of poverty– both its income and non-income dimensions.

The specific objectives are to:

1) Obtain demographic, socioeconomic, cultural, and ecological field data for the Wayana communities Puleowime (Apetina), Palumeu, and Kawemhakan (Anapaike), as well as for the smaller settlements near these villages.
2) Review and compile existing literature of the Wayana and their living territory
3) Train Wayana researchers in anthropological field data collection
4) Identify
    a. vulnerabilities, threats, and problems;
    b. constraints to sustainable community development; and
    c. capacities, resources, and opportunities to overcome these constraints in the target communities.

Why did ACT commission this study? In the first place, the organization needs baseline data for planning, monitoring, and evaluation of its field projects. The statistical figures and ethno-ecological information presented in subsequent chapters will serve as a reference point from where to track positive or negative changes in the community. A second contribution of the EES project has been the training of several local Wayanas in survey work. This capacity building exercise will facilitate the collection of similar data some years from now. Regular baseline data collection will allow ACT and the community to identify and adaptively respond to negative changes before they become problems; to measure the impact of development programs on community well-being; and to remain informed about changing needs and aspirations among the Wayana.

1.2 Study approach

This study uses the "sustainable livelihoods approach" to guide data collection. This method is useful for improving understanding of people's access to the resources, skills, and knowledge that may help alleviate poverty and achieve development goals. The Sustainable Livelihoods approach recognizes the multiple dimensions of poverty. It aims to develop an accurate and dynamic picture of people in their environment. This provides the basis for identifying vulnerabilities and other constraints to livelihood development and poverty reduction. Such constraints can lie at the local level or in the broader economic and policy environment. An important principle of the approach is the analysis of strengths and opportunities in the face of constraints. These positive forces can derive from strong social networks, access to natural resources (e.g. wildlife), specific skills and knowledge (e.g. traditional medicinal knowledge), or other factors that have poverty-reducing potential.

1.3 Beneficiaries

1.3.1 Amazon Conservation Team

This study was commissioned by the Amazon Conservation Team (ACT) Suriname. ACT is an independent NGO (Foundation) that works in partnership with indigenous peoples in conserving biodiversity, health and culture. This institution has established long term partnerships with the Trio and Wayana Indigenous groups and the Saramaca Maroons.

Since 1995, ACT- Suriname has facilitated several bio-cultural projects, working to integrate biological and cultural conservation with funding from the Organization of American States, World Wildlife Fund, World Bank, Moore Foundation, Rainforest concern and others. Projects focus specifically on: *Ethnoeducation: transfer of knowledge from elderly to the youth; Ethnomedicine: establishment of traditional health clinics;* and *Ethnocartography: mapping of indigenous territories in South Suriname.* These programs reflect ACT's mission and core value to reverse some of the major threats faced by Indigenous Peoples in the larger Amazon region: loss of Indigenous biological wisdom, limited access to public healthcare, and lack of economic opportunity.

1.3.2 Other beneficiaries

The data collected for the Wayana Ethno-Ecological survey will be of practical use to any national or international organization working in the Wayana area. By providing a detailed picture of the community, its needs, and its aspirations, the data allows for faster and more efficient project development, hence reducing expenses. We also anticipate that the data will be of use to scientists conducting social science or biophysical research in the Indigenous –particularly Wayana- territories of Suriname, French Guiana, or Brazil.

Furthermore, the present data will help policy makers to check the current status and monitor progress towards targeting the Millennium Development Goals in the Wayana territory. Beneficiary government agencies are the Ministry of Regional Development and its District Commissariat of Sipaliwini. Also the Organization of American States, which has recently expressed its commitment to supporting development among Southern Indigenous groups, may find the present data useful for project planning. Private companies such as (eco)tour operators may also be interested in learning more about the Wayana, among others to better inform tourists.

Finally, the report is a resource for the Wayana peoples of today and tomorrow. It presents a snapshot of their lives, environment, and livelihood activities in the early 21st century. The community can use the present data to lobby for support from NGO's or governmental organizations, for their own development and resource management planning, or simply read it for their own interest.

1.4 Lay-out

This report consists of ten chapters, which are preceded by an executive summary that presents in brief the most essential aspects and results. The introductory chapter is followed by three more general chapters that discuss the methodology (Ch. II), characterize the study location (Ch. III), and describe the history of human occupation in South Suriname, in particular arrival and settlement of the Wayana in Suriname (Ch. IV).

After this general section we will proceed with the data chapters V-IV on natural, human, physical, social, and financial capital. The report concludes with a synthesis, which includes the main findings in the five asset categories. In this section we discuss threats and problems to the sustainable development of Wayana lands, and identify priorities and aspirations of the local population. Sources of secondary data are listed in the references and all bulky data are put together in the appendices.

CHAPTER II
METHODOLOGY

This chapter describes the methods used for data collection and analysis. We first discuss the research strategy, explaining the concept and practical application of the sustainable livelihood approach. Next we list the members of the research team and the activities performed. Sections 2.4 and 2.5 provide detail on the methods used for primary and secondary data collection, respectively. The analysis of these data is the topic of section 2.6. Logistics are described in section 2.7, and the chapter concludes with a brief evaluation of challenges and problems encountered in the field.

2. 1 Research site

Research was conducted in the three main Wayana communities in Suriname: Puleowime (Apetina), Palumeu (mixed Wayana-Trio), and Kawemhakan (Anapaike) (Fig. 3.4-3.6). From these base research sites, the researchers traveled by boat to smaller settlements (*kampus*) in the surrounding area. Visits to these smaller settlements were important because life differs in these sites due to their lesser exposure to urban/public facilities and Western commodities such as schools, public health care, electricity, and church. Chapter III provides a more detailed site description.

2.2 Research Framework: Sustainable Livelihoods Approach

This study follows the Sustainable livelihoods framework. The Sustainable Livelihoods Approach was first developed by the UK Department For International Development (DFID)[1]. This institution defines sustainable livelihoods in the following way:

> "A livelihood comprises the capabilities (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base" (Scoones, 1988)

Livelihood is a broad concept that encompasses virtually all aspects of daily life. These aspects can be organized in five categories of physical, natural, social, human, and financial capital. These five capital types are organized in an asset pentagon (Figure 1)

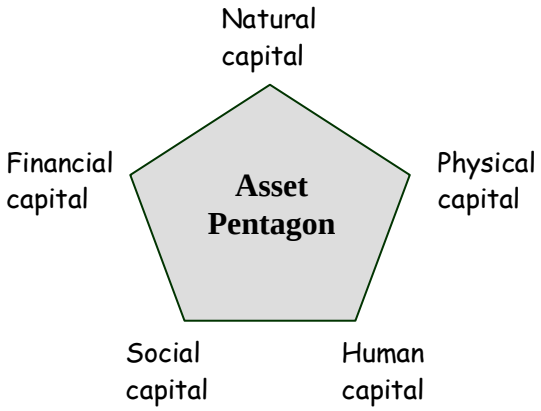
- *Financial* capital represents (sources of) cash money and other valuables that are used as stock. It includes issues such as employment, savings, income, the investment climate, and access to credit.
- *Natural* capital refers to natural resources, such as the forest, flora and fauna, sources of fresh water, and mineral resources. It includes both public goods such as

[1] http://www.livelihoods.org/info/info_guidancesheets.html

clean air and biodiversity and access to assets that people use for production such as arable land and fruit trees.

- *Human* capital includes the "skills, knowledge, ability to work and good health that enable people to pursue different livelihood strategies and achieve their livelihood objectives."[2] It includes education, access to information, good health, and social security
- S*ocial* capital refers to "connections among individuals; social networks and the norms of reciprocity and trustworthiness that arise from them"[2]. Data on social capital cover organizational and institutional structures, conflicts, migratory networks, and formal and informal social safety nets.
- *Physical* capital comprises mainly physical infrastructure such as roads, railways, markets, clinics, schools and physical assets in the communities

Figure 1. Asset Pentagon



We use the Sustainable Livelihoods approach because it places people rather than economic indicators at the center of development. The data collected will reveal vulnerabilities and obstacles to development, as well as the material and immaterial assets that may help the communities overcome these problems. In doing so, the Wayana Baseline Study will facilitate the identification of practical priorities for action that are based on the views and interests of those concerned.

Finally, as development organizations including the World Bank and the DFID are increasingly using the SLA approach, it will be easier to compare our data to those collected in other regions and countries. The IDS website (http://www.livelihoods.org/) explains the SLA in more detail and provides guidance sheets for its use.

[2] DFID, 2003: Sustainable Livelihoods Guidance Sheets.
http://www.livelihoods.org/info/guidance_sheets_rtfs/Sect2.rtf

2.3 Research Team

The research team was composed of four senior researchers, seven indigenous field assistants, and an ACT affiliate in Puleowime (Apetina). The senior researchers were:

Marieke Heemskerk	-	Anthropologist
Dirk Noordam	-	Landscape/Soil specialist
Katia Delvoye	-	Agro-ecologist
Pieter Teunissen	-	Biologist

The research assistants who conducted the household surveys in the various locations were Stunka (Laif) Ikinaidu, Leisa (Richard) Kawaidu, Mehelu Ukilli, and Nesta Nailipun from the village of Puleowime (Apetina); Frans and Salomon from Kawemhakan (Anapaike); and Kalijen Pakome, Denice Sapa, and Kina Madena from Palumeu. All research assistants are literate in Wayana. In addition, ACT field coordinator in Puleowime (Apetina) Eric Schelts supervised the survey team, collected additional field data, and provided logistical assistance. ACT staff members in Paramaribo helped with information, advice, logistic arrangements, and administration.

The Indigenous field assistants were trained in data collection by Heemskerk, Delvoye, and Scheltz. The senior researchers typically went one or two times through the survey forms with the field assistants before letting them practice on one another. During this exercise, the assistants who caught on fastest explained the questions and recording methods to their colleagues. Once the surveyors were comfortable with the questions, the senior researchers joined them to one or two households in the village. After these trials, the survey assistants were sufficiently skilled to continue by themselves. The completed survey forms were cross-checked by the ACT field coordinator and/or a senior researcher to fill in data gaps and clarify inconsistencies. The data were entered into an excel spread sheet and analyzed using the software program SPSS.

A list with names and contact information for the people and institutions involved in the EES is attached as Appendix A

2.4 Time table of activities

Data collection occurred in two main periods (Appendix B):

1. August 2004 - February 2005, by Teunissen and Noordam.
2. June 2006 – September 2006, by Heemskerk and Delvoye

Biophysical data for the Wayana area were collected from September 24-28, 2004 at Apetina and from November 29-December 1, 2004 at Kawemhakan. The Apetina field trip involved the biologist Pieter Teunissen and the landscape/soil specialist Dirk Noordam. The second trip was made by Dirk Noordam only. During both trips assistance was given by Eric Schelts, then working for the ministry of Regional Development. Literature research by Teunissen and Noordam was concentrated in the months of August and October, 2004 and January-February 2005.

The second period of data collection started in June 2006 with the development and translation of a socioeconomic household and village survey in the Wayana language. This process involved both literal translation as well as the conversion of queries into culturally relevant questions. June 23-26 Heemskerk trained a Wayana research team from Puleowime (Apetina) in basic survey skills. During this training period, most data for that village were collected. Upon departure of the anthropologist, the Wayana researchers completed household data collection at Apetina and in nearby settlements such as Tutu Kampu under supervision of Schelts.

During the field visits to Kawemhakan (Anapaike) and Palumeu, agro-ecologist Delvoye joined the team to collect data on agricultural practices, the use of wild plants and animals, hunting, and fishing. Data entry, cleaning, and analysis started in July 2006 and continued throughout the report writing phase.

A first draft of the biophysical part of the survey was completed on February 17, 2005. A second draft, which contained an analysis of Indigenous use of land and resources, socioeconomic conditions, and the cultural context, was completed by October 31st, 2006. The draft results to Wayana representatives in the three regions between December 2006 and February 2007. Finally, upon hearing about another Suriname Wayana community at the Lawa River, a reconnaissance visit was made to the Wayana village of Lensidede at the Lawa River in September 2007. Feedback from the studied communities and information about Lensidede were incorporated in this final report.

2.5 Methods used for primary data collection

Biophysical and environmental data collection was done through:

- In-depth interviews with knowledgeable persons (flora and fauna, crops, agricultural practices and resource use)
- Structured surveys with 15 Wayana hunters and 12 Wayana fishermen about their hunting and fishing habits, the species, the amount, the difference between the past and nowadays, the use of their catch and their hunting/fishing problems.
- Informal conversations with hunters, fishers, and cultivators
- Observations of agricultural activities and resource use in the villages, around camps and at agricultural fields
- Observations of vegetation, flora and fauna, soil, landscape and water resources during field trips (mainly along main rivers)
- Visit to a gold mining site southwest of Kawemhakan

No attempt has been made to produce complete lists of the flora and fauna of the Wayana area in the short period of time. An overview of vegetation study expeditions and collecting trips in Suriname is given in the Encyclopedia of Suriname (Bruijning & Voorhoeve, 1977). An overview of biological research in Suriname is presented by Teunissen (1979). Ek (1991) published an index of Suriname plant collectors. Many specimens (identified or unidentified) are not published and are only present in collections in Europe and in the USA.

The senior researcher worked with Wayana field assistants in the field to record local names for trees, plants, and animals known by the Wayana. During field trips in Kawemhakan and Palumeu (2006), an attempt was made to get a first impression of the ecological understanding of the Wayana by including some relevant ecological questions into the questionnaires. To overcome the language barrier during the fieldwork, clear illustrations on wild fauna approved for international trade and on rare and protected species in the Guianas (WWF 2003), on birds (Haverschmidt & Mees 1994), on snakes (Abuys 2003) and on fishes (Berrenstein 2005) were brought to Kawemhakan and Palumeu. This method proved to be of great assistance.

Two different survey templates were used for the collection of social science data from the various villages (Appendix C).

(A) Community survey, to characterize the community in terms of the five asset categories: natural, social, physical, human, and financial capital. Among others, the various sections ask about access to natural resources, clean drinking water, educational facilities, and health care provisions, as well as about political structures and social organization.

(B) Household survey, to be conducted with household head(s) and to provide social, demographic, economic, health, and other information about all household members.

Data for the community survey (A) were typically collected through a combination of village meetings and key informant interviews. Questions asking for numeric answers were verified by counting, such as the number of houses or generators.

For the household surveys (B), we considered as a household a cohabiting couple or a single woman with at least one child with the main responsibility over the household economy. If children of the couple were living and eating in another house, for example that of the grandparents, we considered that child part of the grandparent's household. Likewise, an elderly parent being cared for in the home of one of his children was counted as a member of that child's household.

Table 2.1. Household survey sample characteristics (only Suriname)

Village/ Settlement	**River**	**Inhabitants Number**	**House-holds N**	**Sample n**	**Sample % of Wayana households**
Apetina	Tapanahoni	262	63	33	52 %
Tutu kampu	Tapanahoni	22	5	2	40 %
Akane kampu	Tapanahoni	20	3	2	67 %
Palumeu	Tapanahoni	96	24	24	100 %
Kawemhakan	Lawa	82	16	15	94 %
Kumakapan	Lawa	21	4	4	100 %
Lensidede	Lawa	20	7	0	0%
Total		**523**	**122***	**80***	**70%**

* Only Suriname households where at least one of the heads of household is of (partial) Wayana descent.

A total of 104 households in the three Wayana communities responded to the survey; 90 in Suriname and 14 in French Guiana. In 80 among the 90 Suriname households, at least one of the household heads was of (partial) Wayana descent. Table 2.1 provides summary information for the sample. Unless mentioned otherwise, only these 80 Suriname Wayana households are considered in the statistical figures presented in Chapters V-IX.

In addition, to working with the survey templates, qualitative interviews were held with various key informants and stakeholders. These people included village authorities (granman; kapiteins), heads of formal community organizations (e.g. women's groups; rotating credit groups), health workers (shamans and public health), school teachers, and people belonging to specific occupational groups such as hunters and gold miners.

2.6 Methods used for secondary data collection

Study of secondary materials, took place in Paramaribo, before and after the various fieldwork periods. These data were collected from books, papers, reports, and internet documents about the Wayana and Suriname as a whole and included both written sources and maps and satellite images from:

- Personal collection of the researchers
- ACT documentation centre
- ADEK library
- General Bureau of Statistics (ABS)
- KITLV library
- Internet
- Email conversations with foreign experts

The bibliography contains a list of consulted literature and web sites.

Secondary biophysical data that were collected included:

- Climate data (Meteorological Service).
- Existing topographic maps – small scale (CBL, 1982, 1985, 1986).
- Other resource maps for the Wayana area (geology, mineral resources, hydrology, soils and concessions, etc.).\
- A vegetation map prepared by NARENA based on satellite imagery
- Books on fauna and flora in Suriname, among others to be used in the field to identify and name relevant species in the Wayana area.
- Other general surveys/ theses/ books and reports on natural resources and natural resource use in the Wayana area.
- Review of Plant collections in the Utrecht and Paramaribo herbaria.

Relevant social science data sources include:

- Publications by anthropologist Karin Boven and linguist Eithne Carlin
- Historic travel accounts, among others by De Goeie (1946), Geijskes (1939), Kayser (1937), and Smidt (1942).
- Other books, reports, and papers

2.7 Data analysis and report writing

The biophysical field data that were collected during the first research period were used to prepare extensive data lists and other tables. No statistical analyses were performed on these data. Additional biophysical and agro-ecological data that were collected during the second fieldwork period were used to verify and correct these data tables. Samples of hunters, fishers, and agriculturists that were interviewed during this period were too small to perform a meaningful statistical analysis, and qualitative analysis was performed on these data instead.

Socioeconomic data collected through household surveys were entered in an Excel spreadsheet and analyzed with the statistical software package SPSS. Other anthropological data was analyzed qualitatively.

2.8 Research logistics

The ACT-Suriname has been responsible for organizing charter flights to the interior. Its staff also helped with introductions to relevant people in the field and practical advice. During the research activities, activity reports and financial reports were submitted to respectively the ACT director and financial manager after the conclusion of each field trip.

The researchers used radio and personal communication to request research permission from the village heads of the three Wayana villages prior to starting data collection. After endorsement by the respective kapiteins, the research team traveled to the different villages. In each community, the fieldwork team began by calling a general village meeting with assistance of the local leaders (kapiteins and basjas) and/or the church. This meeting served to introduce the outside researchers and to inform the community about the study objectives and format. In subsequent days, the field research crew divided tasks to complete data collection.

2.9 Challenges

One of the main challenges in data collection in the Wayana communities was the language barrier between the outside researchers -who spoke Dutch and Sranantongo- and the Wayana people, not all of whom were fluent in either of these languages. The inability to communicate directly with some of the key informants complicated the collection of both social science and biological data (e.g. on hunting and fishing). The language barrier was reduced by delivering the standard survey forms in the Wayana language. In addition, richly illustrated books on trees and fruits (such as Rohwer (2002), Veer (2001, 2003) and Nowak and Schutz (1999) were brought to Kawemhakan and Palumeu to facilitate communication about flora and fauna in the area.

A second challenge was to collect truthful answers to our queries in a relatively short time that did not allow for the development of relationships of trust with the local population.

This problem was partly resolved by working with local survey assistants. In addition, the help of Scheltz, who has been living in the village of Puleowime (Apetina) for many years, proved invaluable.

Third, data on economic indicators such as income and expenditures are biased for various reasons. Firstly, people who earn irregular, variable and unpredictable incomes, such as women selling necklaces and bracelets made of seeds, are unlikely to accurately remember how much they earned over a certain time period. Secondly, people may purposely give false answers because they want to give desirable answers; want to hide things; or hope that certain answers will lead to benefits. For example, a hunter may understate his income in the hope to receive economic support, while a craftswoman may do the opposite in the hope to obtain elevated prices for her products. We tried to limit the margin of error in the answers by cross-checking typical and expected earnings.

Finally, travel to the Wayana villages is expensive. In the absence of a regular flight service one needs to charter a plane to get to these communities (Approx. US $1,200 and US$ 1,600 roundtrip to Apetina and Kawemhakan, respectively). For this reason only a few community visits could be made, which limited the opportunities for primary data collection, the establishment of relationships of trust, and double-checking of information.

CHAPTER III
STUDY LOCATION

This chapter geographically positions the Wayana and places them within a broader socioeconomic, cultural, and political context. It starts with a description of Suriname, paying attention to the five assets categories: natural, human, social, financial, and physical capital. Table 3.2 features country-wide basic indicators. Next we will zoom in to the vast interior of Suriname, which covers 80 percent of the country's land mass but only houses about 13 percent of its people – mainly Indigenous Peoples and Maroons. The analysis shows that the interior is in virtually every aspect marginalized within the national context. In the last part of this chapter we take a closer look at the Wayana area, the more precise location of the Wayana communities, and issues of demarcation.

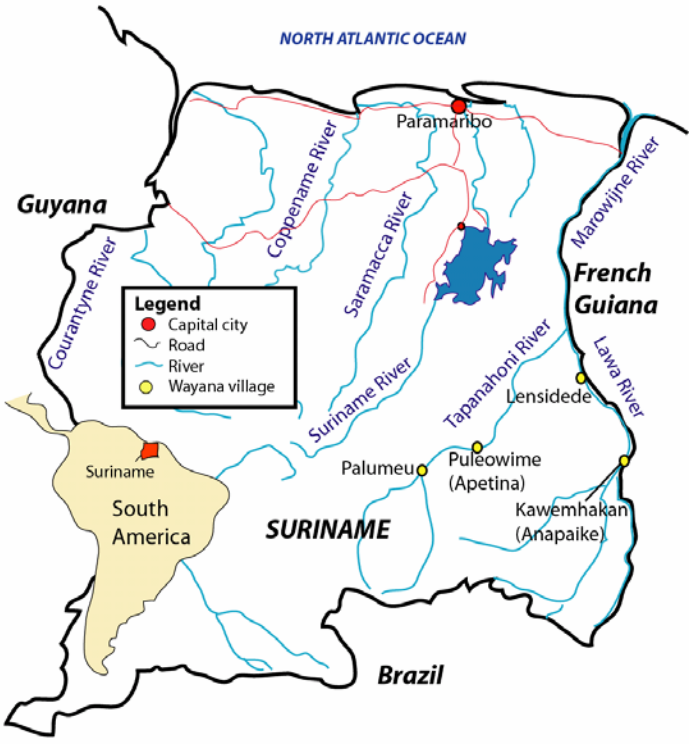
3.1 SURINAME

3.1.1 Natural capital

Geophysical conditions

The Republic of Suriname (land mass: 163,820 km^2) is located on the Northern tip of South America. The country has a 370 km long coastline on the Atlantic Ocean in the North, and borders the Republic of Guyana in the West, the Federative Republic of Brazil in the South, and French Guiana in the East. Suriname has border disputes with French Guiana (area between the Litani River and the Lawa River) and with Guyana (area between the two main head waters of the Corantijn/ Courantyne River and marine territory).

Figure 2.1 Suriname in South America with the main Wayana communities



Suriname's coastal zone is characterized by mud flats that are formed by currents in the Atlantic Ocean that carry silt from Amazon rivers. The typical vegetation in the coastal and riparian zones consists of woodland and mangrove forest on sandy beaches. Further land-inward one finds savanna, swamps, and lowland coastal forest. The southern 80 percent of the country is covered with dense tropical rainforest with numerous mountain ranges and complex river systems. Far in the South of Suriname there is a savanna area called the Sipaliwini Savanna.

Climate
Suriname's proximity to the equator (2-6° N; 54-58° W) gives it a humid tropical climate, characterized by consistently warm temperatures and high humidity. Daytime temperatures in Paramaribo range between 23°C and 31°C, with an annual average temperature of 27°C. The range in average temperatures between the warmest months, September/October, and the coldest, January/February, is only 2°C. Suriname weather is dictated mainly by the northeast and southeast trade wind system called the Inter-Tropical Convergence Zone ("ITC" zone also known as the "Equatorial Trough"). The ITC zone passes over Suriname two times per year and in the Coastal Plain this results in four seasons based upon rainfall distribution (Table 3.1). Rainfall is highest in the central and southeastern parts of the country and averages 2200 mm/yr. The relative humidity is high, ranging from 70 to 90 percent.

Table 3.1 The seasons of the Coastal Plain compared with those of the Wayana area

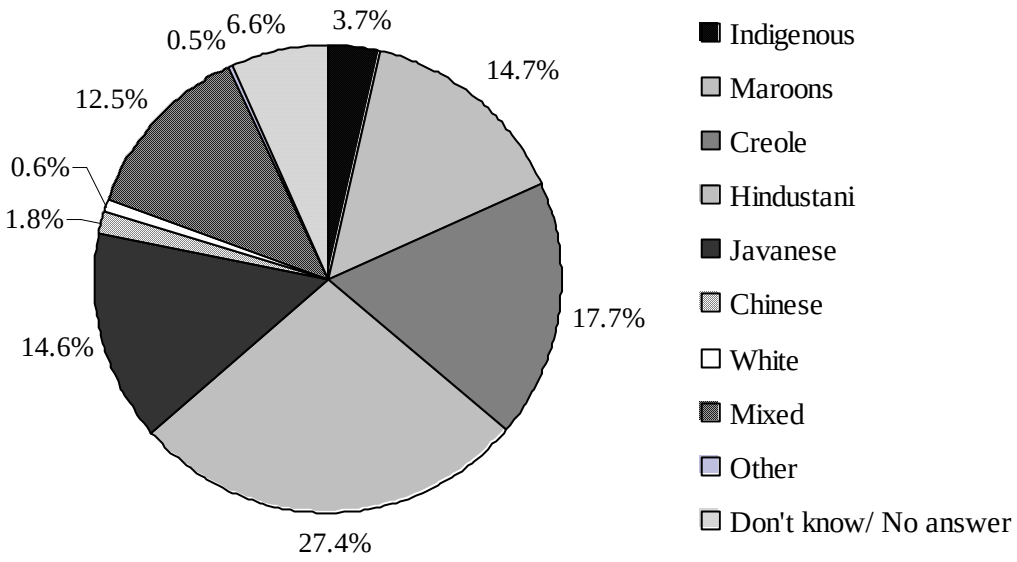
Season	Periods Coastal Plain (Scherpenzeel, 1977)	Periods South-East Suriname (Boiten, 1963)
Long Rainy Season (LRS)	End April-Mid August	Early March-Half July
Long Dry Season (LDS)	Mid August-Early December	Half July-Half December
Short Rainy Season(SRS)	Early December-Early February	Half December-Half February
Short Dry Season (SDS)	Early February-End April	Half February-Early March

3.1.2 Human capital

Population
With less than half a million people (492.829) and an average of 3 persons per square kilometer, Suriname is sparsely populated (Table 3.1)[3]. Approximately 85 percent of Surinamers live on the 30-km wide Atlantic coastal zone. The population is ethnically diverse, consisting of Hindustani (27.4%), Creoles (people of mixed African heritage, 17.7%), Javanese (14.6%), Maroons (tribal people of African descent, 14.7%), People of mixed descent (12.5%), Indigenous peoples (3.6 %), and smaller groups of Chinese, Lebanese, Whites, and others (Figure 3.1). The urban population (75.4% of total) mostly lives in the capital city of Paramaribo.

[3] ABS 2005. Zevende Algemene Volks- en Woningtelling in Suriname. Landelijke Resultaten. Vol. I. Demografische en Sociale karakteristieken

Figure 3.1. Ethnic groups in Suriname



Source: ABS 2005: Vol. I

Language

Suriname's national language is Dutch but more than 16 other languages are spoken, including Sranantongo (the national lingua franca) and languages specific to the various ethnic groups. In almost half of Suriname households Dutch is the most spoken language, followed by Sarnami (Suriname Hindi, 15.8%), the Maroon languages (15.2%) and Sranantongo (9.0 %). Only 0.3 percent of households counted in the national census reports primarily speaking an Indigenous language. This figure is curious given that the majority of Wayana and Trio Peoples, who together make up approximately 0.5-0.6 percent of the national population, speak almost exclusively their own language at home[4].

Education

Suriname's educational system, which was among the best in the Caribbean in the 1970's, has suffered severely under the economic recession of the past three decades. The Inter American Development Bank recently classified the performance of Suriname education as poor, suffering from the misallocation of resources, inefficiencies and waste, and weak teaching capacity. Suriname still scores well on educational achievement indicators. Adult literacy is high (89.6%) Almost 6 percent of men (5.9%) and 10.5 percent of women ages 15 and older has not followed any formal education. These figures are relatively lower among younger people. 2.3 Percent of the population in the ages 15 and up is academically educated.

[4] Possible explanations for the figure are that many indigenous households were left out of the 2005 census; that Indigenous families answered falsely; or that the census takers did not understand the answers and hence categorized them as 'unknown' – a group covering 2.5 percent of households.

Table 3.2 Suriname basic indicators

Land and natural resources	
Land area	163,820 km^2
Forest area in 2000 as a percent of total land area	86%
Protected areas (% of land area)	12 %
Population	
Population size (2005)	492.829
Population density (inhabitants/km2)	3.01
Annual population growth rate	1.37 %
% Indigenous Peoples (self definition at 7^{th} population census)	3.7
Economics	
National currency	Suriname dollar (1 USD ~ 2.75 SRD)
Per capita GNI, current US dollars	US$ 2230 (2004)
% People living below poverty line	64% (1999)
Main export products	Bauxite, shrimp
Minimum wage (not established by law)	300 SRD (110 US$)/month
Health	
Infant mortality (number deceased < 1yr. Per 1000 life born)	29.8 (2004)
Life expectancy at birth	69.5
HIV prevalence rate (% of population ages 15-49; 2003)	1.7 %
Human capital	
Literacy rate, adult total (% of people ages 15 and older)	89.6% (2004)
Unemployment (% of economically active age searching for work)	9.5%

Sources: ABS 2006; World Bank 2006, World Resources Institute 2006

Health

The Surinamese Ministry of Health is primarily occupied with monitoring and policy. The practical delivery of public health care is almost entirely in hands of two semi-autonomous institutions: Regional Health Service (RGD) and Primary Health Care, Suriname – better known as the Medical Mission (MZ). This latter organization delivers health care to the inhabitants of the interior (see Chapter VI).

In the capital city of Paramaribo and to some extend the coastal districts, access to health care is decent. Medical care is free for the lowest income groups; the annual vaccination program reaches most urban children; and there is an established foreign-trained population of medical doctors. In the forested interior, however, clinics are consistently short of beds, personnel, equipment, and medications. Moreover, for many people the nearest clinic may be several hours or days of travel away.

HIV/AIDS forms an ever growing threat to population health, especially among young people. In the 15-44 age group AIDS even has become the second most frequent cause of death. The main affected groups are Creoles (41% of infected people) and Maroons (17%). Indigenous Peoples constitute 4 percent of the group known to be infected with the HIV virus. It has been projected that by the year 2015 five percent of the sexually active population will be infected with HIV/AIDS.

3.1.3 Financial capital

Suriname's developing economy is dominated by the mining industry. Bauxite mining and oil extraction account for 98.7 percent of total foreign exchange earnings. The recent opening of a large-scale gold mine and projected mining activities by national and foreign companies will further stimulate the contribution of mining to the Suriname economy in years to come. Small-scale gold mining provides subsistence to several thousands Brazilians and Maroons. Typically performed informally and illegally, small-scale mining carries the economy in a large share of the forested interior. Additional industries include lumbering and plywood manufacturing (largely exploited by Asian companies) and the manufacture of molasses and rum. Industries contribute approximately one fifth of the Gross Domestic Product (22%).

Agriculture, forestry, and fisheries accounted for 7.5 percent of GDP in 2002. Another important source of national income is bi-lateral development aid. The government is the largest employer, accounting for some 60 percent of formal employment. Much employment in Suriname, however, is informal, meaning that it occurs outside of national regulations and is unrecorded in national statistics. According to the General Bureau of Statistics (ABS), the informal economy contributes about 20.2% to real GDP. In addition, many Suriname households receive remittances in the form of cash money and products (est. one fifth of formal imports) from family in the Netherlands.

Today, as compared to the citizens in other Caribbean countries, Surinamers are relatively well off with a per capita Gross National Income of US$ 2,230 and a real GDP growth of 4.6 percent (Table 3.2). This recorded value is likely an underestimate as it excludes earnings from informal gold mining and trade, informal trade, remittances, subsistence agriculture, drug money, and other unrecorded sources of income.

Yet incomes are not evenly distributed. A 2001 survey by the national bureau of statistics estimated that 66 percent of the (sub)urban population was living below the national poverty line. Nine and a half percent of the population is unemployed[5]. Unemployment is particularly high among youth (15-19 years of age), of whom more than a quarter (26.7%) is unemployed. The district of Sipaliwini, which covers the vast interior of the country, has with 20.7 the highest unemployment rate in the country. A fifth of Suriname households

[5] This figure incudes the people in the economically active age (between 15 and 64) who do not work and had actively sought for a job in the 4 weeks prior to the census. The total share of people in the economically active age who do not work amounts to 14.7 percent of the population (ABS 2005).

(20.1 %) are headed by single women – usually single mothers- who tend to be among the most vulnerable and poorest groups in society.

3.1.4 Social capital

The largest religion in Suriname is Christianity (40.7%) but significant groups of the population practice other religions including Hinduism (19.9%), Islam (13.5 %), and traditional religions such as Winti or animist religions practiced by indigenous and Maroon groups (3.3). 4.4 Percent of the population claims no faith.

The Republic of Suriname is a constitutional democracy, by the constitution of 1987. The different branches of the government (National Assembly, President, Vice-president, and Ministers) are simultaneously elected for a five-year term. A State Advisory Council with 15 representatives from the elected parties, the unions, and employers' organizations, advices the president in policy matters. Suriname knows universal suffrage for all citizens over the age of 18.

The nation is separated into 10 administrative districts: Brokopondo, Commewijne, Coronie, Marowijne, Nickerie, Para, Paramaribo, Saramacca, Sipaliwini, and Wanica. Each district –except for Sipaliwini- has a capital city and all districts are headed by a district commissioner appointed by the President.

After Suriname gained independence from the Netherlands in 1975, the country briefly experienced political instability. Military dictatorship (1980-1987 and 1990-1991) and six years of armed conflict in the interior (1986-1992) severely restricted political freedom. After return to democracy in 1992, Suriname has featured free and democratic elections, and freedom of press. Notwithstanding these positive trends, corruption and nepotism continue to affect political decision-making and spending.

3.1.5 Physical capital

Most of Suriname's infrastructure is concentrated in the coastal zone. The main national road is the East-West connection which, as the name suggests, runs from the border with French Guiana in the East to the border with Guyana in the West.

The most important source of electricity is the hydropower plant at Afobaka, owned and operated by the Suriname Aluminum Company (Suralco). In addition to using the energy for its bauxite production, Suralco sells a portion to the state electricity company Energie Bedrijven Suriname (EBS), accounting for 85 percent of the EBS' energy supply[6]. The second most important sources of electricity are two EBS-operated power generators, which deliver about 10 percent of national energy production. The remaining 5 percent of Suriname's energy production is through smaller power generators supplied by the Ministry of Natural Resources to villages in the interior. These village generators are –in

[6] Apura Networks Homepage. URL: www.apura.org

theory- supplied by the government with fuel. Public cash flow problems make that many interior communities are deprived from electricity for most of the year.

The quality of drinking water delivered by the Surinaamse Waterleiding Maatschappij (Suriname Waterworks Company) is generally good, though none of the interior villages is connected to this system. The telecommunication network consists of land lines and mobile phones, which primarily service the urban areas.

3.2 The interior of Suriname

3.2.1 Natural capital

The interior of Suriname is covered with dense tropical rainforest, which hosts an immense diversity of plant and animal species. These biological resources are described in greater detail in Chapter 5.

The study area is part of the Guiana Shield; an extensive Precambrian greenstone belt that encompasses 415,000 km² extending from Venezuela through Guyana, Suriname, and French Guiana into Brazil's Amazon basin. This geological formation, which covers South-Central and South-East Suriname, is built up by ancient rocks, dominated by granitites. Rocks of the Greenstone Belt cover areas in the east and north of the study area. The Guiana shield is rich in minerals such as bauxite and gold. The presence of minerals other than gold has been proven, but economically feasible quantities have not been found and the development of mining activities for such minerals is not to be expected. Within the study area, particularly the Benzdorp area is an area with important gold reserves. Other industrial minerals in the study area include sand and gravel.

The majority of the land has an elevation between 100 and 250 meter above sea level. In general the local relief is low, mostly 25-100 meters. The land is gradually rising toward the south where the Tumuk Humak Mountains form the watershed with the Amazon Basin. Most tops of this mountain range reach between 500 and 750 m and a smaller area has peaks over 750 m. Slightly north of the Tumuk Humak Mountains other mountain areas are found, of which the Oranje Mountains and the De Goeje Mountains are the highest.

3.2.2 Human capital

Population
Two large Indigenous groups live in the interior of Suriname: the Trio and Wayana (Table 3.3). In addition, several smaller Indigenous groups populate South Suriname including the Akurio, Apalai, Wai Wai, Okomayana, Tunayana, Aramayana, Sirewu, Maraso, Mawayana, Sikïiyana, and Pïrëuyana. Members of these minority groups mostly live in the larger villages dominated by Trio and Wayana. Some groups have only a few people left that identify with it, practice its culture, and speak its language. In other cases cultural elements from the smaller group have become part of the dominant culture. Several

Indigenous ethnic groups that inhabit Suriname today will have gone extinct within one decade.

Table 3.3 (a) Indigenous and (b) Maroon populations in the Suriname interior

(a) Indigenous groups			
Group (local name)	**Location**	**Size**	**Language**
Trio (Tirio)	South-West Suriname	1,500-2,000	Cariban
Wayana	South-East and Central Suriname (Highland)	500-600	Cariban
Akurio	South-Central Suriname	100	Cariban
Diverse smaller groups	Mostly highlands	400	Mostly Cariban
Total Interior Indigenous	*Peoples*	*2,500-3,000*	

(b) Maroons			
Group (local/alt. Name)	**Location**	**Size**	**Language**
Saramaka (Saramacca, Saamaka)	Central Suriname; Suriname River, Brokopondo	25,000	Portuguese-based Creole
Matawai (Matuari)	Central/West Suriname; Saramaka River	3,000	Portuguese-based Creole
Ndyuka (Djoeka, Aukaners Okanesi)	Eastern Suriname; Cottica, Tapanahoni River, Lower Lawa River, Marowijne River	20,000	English-based Creole
Paramaka (Paamaka)	East Suriname; Marowijne River	4,000	English-based Creole
Kwinti	Central/West Suriname	750	English-based Creole
Aluku (Boni)	East Suirname; Lawa River	2,000	English-based Creole
Total Maroons		*54,750*	

Source: IDB 2004 (with adjustments)

In addition to Indigenous Peoples, the interior houses six different groups of Maroons: Ndyuka, Saramaka, Aluku, Paramaka, Matawai, and Kwinti. The living areas of the Ndyuka and the Aluku border those of the Wayana in respectively the Tapanahoni and the Lawa River basins (Figure 3.1). Both the Indigenous Peoples and the Maroons claim that un-contacted forest peoples continue to live in the Southern Forests, referred to as *wild Indians* or *lowee-nengee* (Litt: Runaway Negroes). People regularly report traces of and/or encounters with these un-contacted tribes.

In addition to the traditional forest inhabitants, more recent arrivals have settled in the forested interior. Since the 1980s, Brazilian gold miners –called garimpeiros- have entered and settled in the forest, in many cases informally and illegally. The grand majority of these 13,000 Brazilian gold diggers are transient; following gold veins and stories of large hits anywhere in the Guianas. A small group has settled in the interior, particularly near Benzdorp along the Lawa. Here, Brazilian families have built more permanent houses and

carved out an existence for themselves in or near the gold fields. Other population groups who have (temporarily) settled in the interior include a handful of Chinese store owners, gold miners of varying nationalities, foreign missionaries, nurses and teachers from the city, US Peace Corps workers, and development workers.

Education

Educational facilities and achievements in the interior stay far behind with those in the coastal zone. Many interior villages, including Kawemhakan, do not have a Suriname school nearby. Existing elementary schools in the forest lack trained and motivated teachers as well as the most basic resources such as a decent building, tables and chairs, writing materials, sanitary facilities, and electricity. Children regularly miss classes due to illness with malaria, transportation problems, demands for their labor at home, and -for girls- early pregnancy. Frequent absences combined with language barriers cause pupils to double classes and ultimately drop out without completing primary education. Because there are no secondary education facilities in the interior, few children from the interior enjoy higher education. Among those who are able to go on to school in Paramaribo, few eventually graduate and most fall back to low-level jobs.

Health

Medical care in the interior is provided by the Medical Mission Primary Health Care – Suriname (*Medische Zending- MZ*); a multi-denominational non-profit organization which acts as an umbrella for three Christian Missionary Foundations. The MZ delivers free health care to the approximately 50,000 people living in the interior through 49 health clinics. Outsiders pay a small fee. MZ clinics are staffed by Community Health Assistants, who are trained health care providers who mostly originate from the communities they serve. Serious cases are transported to Paramaribo by plane or boat. Access to the private Diakonessen Hospital is part of the services delivered by the MZ. This hospital has reserved 100 beds to meet the medical needs of patients from the interior.

The Medical Mission's exploitation costs are fully funded by the Ministry of Health. Other expenses (Approx. 20 % of total costs) are covered by donors such as the European Union (STD prevention program), PAHO (Roll Back Malaria), Rotary International (Bed netting project), WHO, Dutch Treaty Funds, Stichting Lobi, and Family Health International (Reproductive health) among others. The cost of hospitalization is covered by the Ministry of Social Affairs, while the expenses of the health care in the interior are subsidized by the Ministry of Health. In practice, the government often fails to comply with its obligations to both the hospital and the rural clinics, which repetitively leads to severe cash flow problems and even near bankruptcy of these health care providers.

3.2.3 Financial capital

Traditional Indigenous and Maroon livelihood activities are hunting, fishing, gathering, and subsistence agriculture. The largest share of food commodities comes from shifting or

slash-and-burn agriculture. The main staple foods are cassava (manioc) and rice. In addition, forest gardens contain a wide variety of tubers, vegetables, and fruits, including: maize, sweet potatoes, yams, squashes, taro, arrowroot, peppers, beans, peanuts, bananas, plantains, and sugar cane. Game animals include a variety of birds, monkeys, deer, tapir, sloth, peccaries, armadillos, anteaters, rodents, and agoutis. Aquatic foods include fish, turtles, and caiman. Members from both groups collect fruits and nuts in the forest.

Most interior groups have come to rely to a greater or lesser extent on goods and services from the coast. Where possible Indigenous and Maroon children attend public schools; the ill visit Western clinics; families eat canned fish, sugar, salt, and other processed foods; and people rely on shotguns, tools, plastic ware, and other manufactured assets. On the other hand, traditional livelihood activities continue to provide a large share of the daily life necessities, particularly in the Indigenous communities. Children take part in traditional livelihood activities from a young age; forest medicine plays an important role in curing natural and spiritual diseases; families continue to produce, hunt, and fish a large share of their food; and many products continue to be fabricated from materials found in nature.

Forest resources are no longer coveted and used by the forest peoples alone. In recent years, international and national companies have increasingly entered the interior in search for timber, gold, bauxite, gravel and sand. In addition, growing numbers of tour operators – most of them located in Paramaribo – are claiming the most beautiful spots along the rivers to build lodges for tourists. Limited or none of the profits of these activities benefit the traditional inhabitants of the interior. Community members tend to find more economic gain where they themselves become involved in logging, mining, or tourism. Benefits and adverse impacts of forest exploitation, however, tend to be unevenly distributed within the communities.

Finally, many national and international organizations are developing projects in the interior. The main governmental organization is the *Fonds Ontwikkeling Binnenland* (FOB, Fund Development of the Interior), which operates under the Ministry of Regional Development. International donor organizations include the Organization of American States (OAS), the Interamerican Development Bank (IDB), and the United Nations Development Program (UNDP), as well as Non-Governmental Organizations (NGOs) such as the Amazon Conservation Team and the World Wildlife Fund. The large number of national NGOs involved in development work in the interior includes the National Women's Movement (*Nationale Vrouwenbeweging*, NVB), the Community Development Fund Suriname, and the umbrella organization Forum NGOs.

3.2.4 Social capital

The interior of Suriname primarily covers two districts: Brokopondo and Sipaliwini. The vast district of Sipaliwini, where the Wayana live, does not have a capital city or administrative center. The office of the local government representative, the District

Commissioner of Sipaliwini, is located in Paramaribo on the Zwartehovenbrugstraat, far removed from the people who depend on its services.

Indigenous and Maroon communities are governed by traditional authorities. Each larger population center has its paramount chief, named granman. Villages are headed by a *kapitein* (village or clan head) or *hoofdkapitein* (head of a larger cluster of villages or clans), who is usually assisted by *basjas*; administrative assistants. In both Maroon and Indigenous societies, decision-making about issues affecting the entire village is based on consent and may take days of gatherings or *krutus*[7]. Traditional authorities and elderly facilitate these meetings, but usually anyone may speak out.

3.2.5 Physical capital

Despite closer integration into the national society since the 1960s, the interior remains deprived of essential public services. There is no electricity, public transport, running water, telecommunication network, postal service, and access to national television and radio in the grand majority of forest communities. Communication with the outside world usually occurs by two-way radio. Only the larger communities have a transmitter and hence most kampus cannot be contacted or call out in case of emergency.

3.3 Wayana Territory

3.3.1 Wayana Peoples in the larger Amazon basin

Geographically, the Wayana live in a large area in the northern Amazon Region now divided over three countries: Suriname, French Guiana and Brazil (Figure 3.2). They live scattered over three drainage basins with a mountain range between the Suriname-French Guyana Wayana and the Brazil Wayana.

In Suriname:

- the Upper Tapanahoni-Palumeu basin with the majority of people along the Upper Tapanahoni River;

In Suriname and French Guyana:

- the Litani-Lawa basin, with villages and activities on both sides of these rivers, and along the Inini and Tampoc Creeks in French Guyana

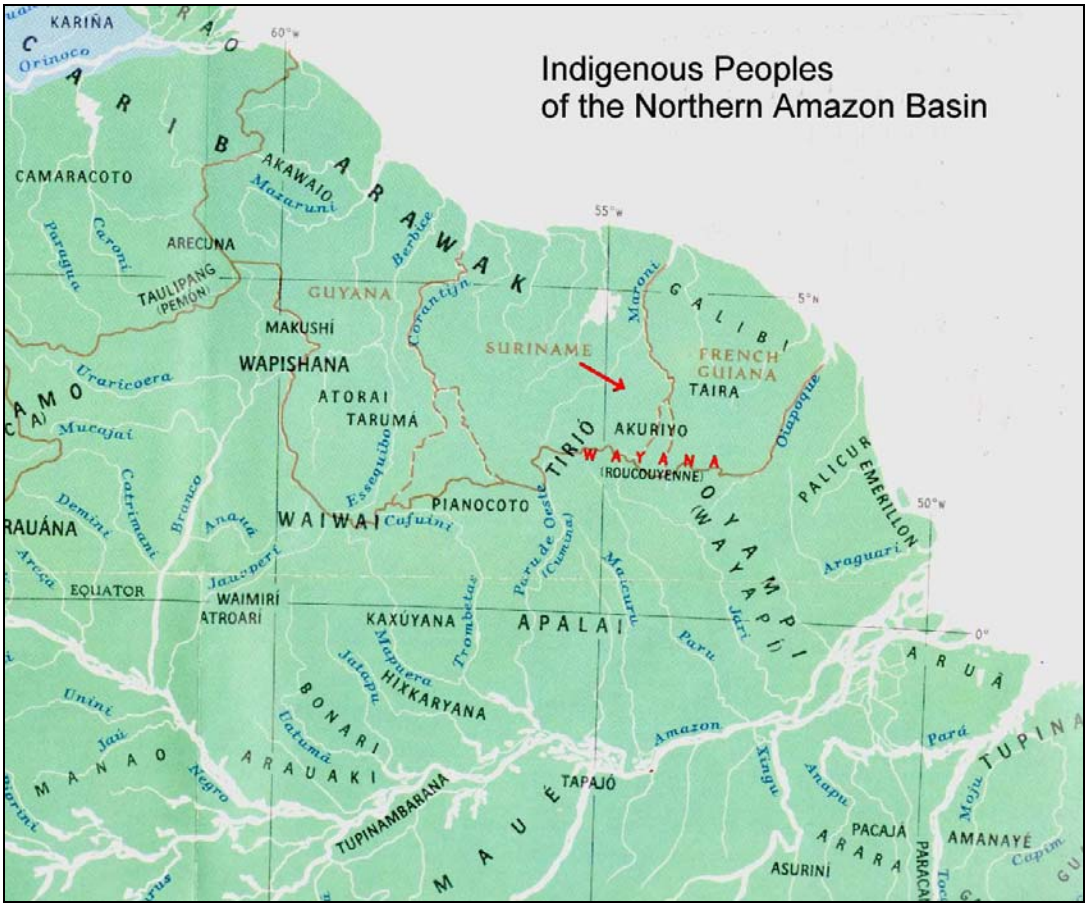
In Brazil:

- the Jaru basin in Brazil, separated by the Boundary Mountains and Tumuk Humak (W: Tjimi Tjimak) Mountains from the Tapanahoni-Palumeu and Litani-Lawa basins.

[7] IDB 2004

Figure 3.3 shows the area used by the Wayana people in Suriname (in green), the area shared with the Trio (in pink) and current villages in Suriname and French Guiana. Apart from these main villages many small camps are found up to 10-15 km from the main villages. Also shown in this figure are former villages found on the topographical maps of the CBL (1982, 1985, 1986).

Figure 3.2: Living area of the Wayana people

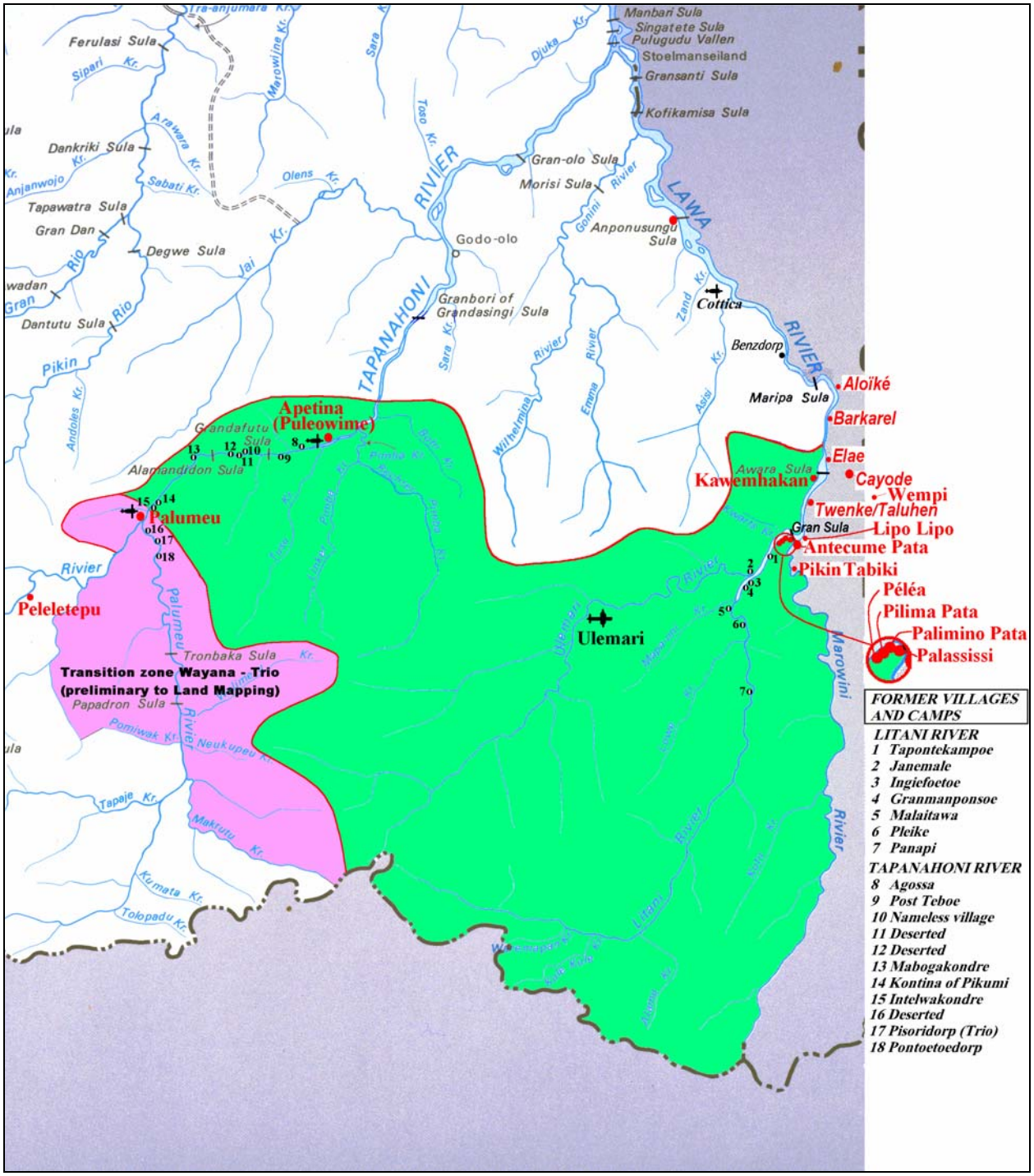


Source: National Geographic Society

3.3.2 Wayana communities in Suriname

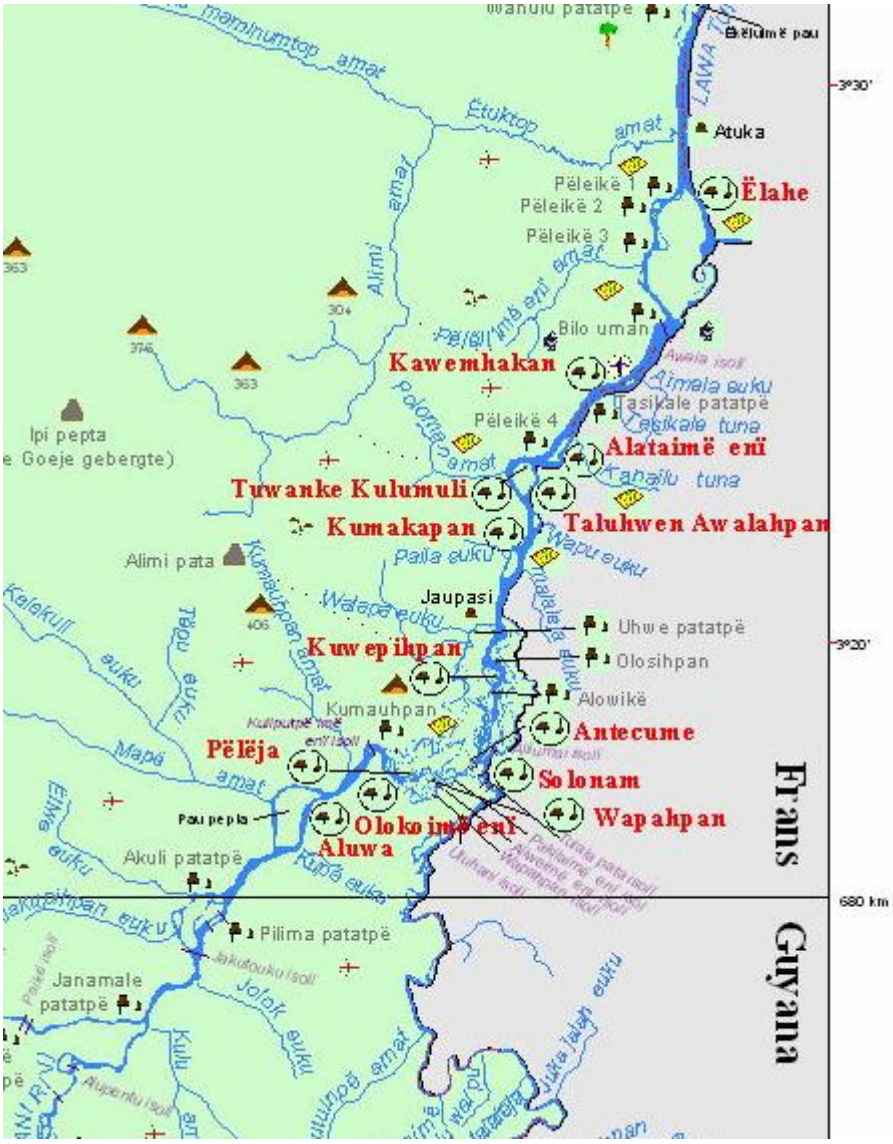
In Suriname, the Wayana inhabit the shores of the Lawa, Litani, the Oelemari, and the upper-Tapanahoni Rivers. While the majority of Wayana live in the larger settlements of Palumeu, Puleowime (Apetina), and Kawemhakan (Anapaike), some families have resisted missionaries-driven resettlement schemes and continue to live in smaller, semi-permanent villages along the Tapanahoni and Lawa Rivers.

*Figure 3.3: User area of the Wayana people in Suriname **



* Note: In the early 1990's the Wayana of Abunamasunga (Lawa) moved a little further upstream to the villages of Lensidede (SUR) and Kandai (FG), facing one another across the river, and to a Wayana section of the Aluku Maroon village of Papaiston (FG).

Figure 3.4. Wayana villages and kampus along the Lawa and Litany rivers



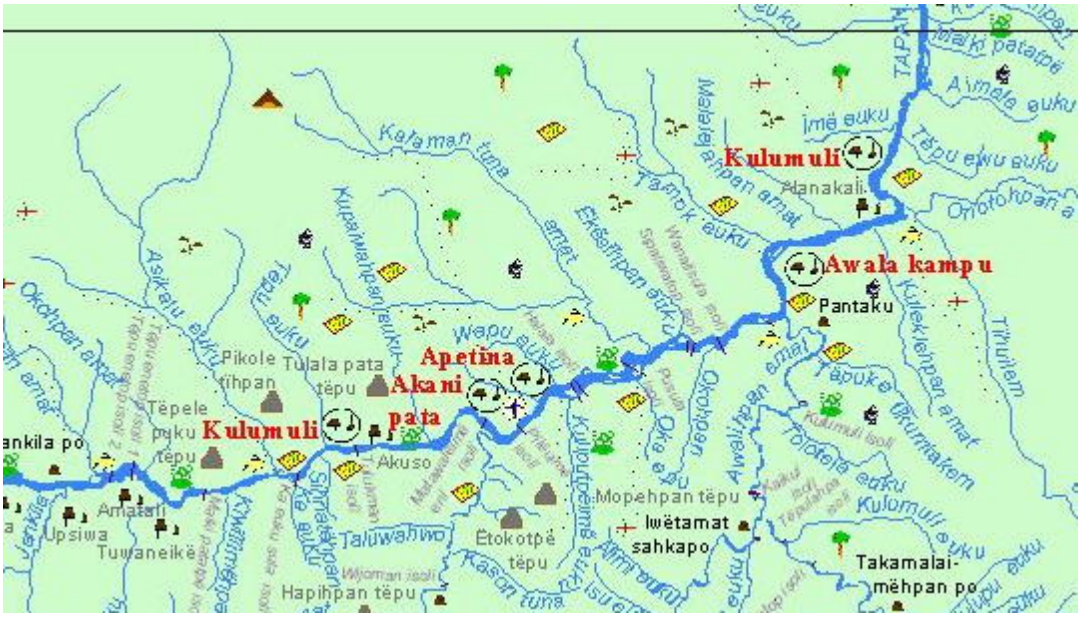
Source: Amazon Conservation Team 2005

On the Lawa River, the largest community is Kawemhakan, with 16 households (Fig. 3.4). In addition, there are various smaller family-based settlements referred to as *kampus* – which are temporary or permanently inhabited. Downstream from Kawemhakan we find Ëlahe -a small camp on the French shore, and several families living in Lensidede (SUR) and Kandai (FG), both situated along the Lensidede rapids about six hours by motorized canoe from Kawemhakan. In addition, a significant group of Wayanas who originate from the Lensidede/Kandai community live in a separate section of the French Guiana Aluku village Papaïston.

Going south up the Lawa River we find in the following order: Alataimë enï (FG), Taluhwen Awalahpan (FG), Tuwanke Kulumuli (SUR), Kumakapan (SUR), Kuwepihpan (SUR), Antecume (SUR), and Solonam (FG). More land inwards along the Litani River, Wayana have settled in Wapahpan, Pëlëja, Oloko ina enï, and Aluwa. These latter two *kampus* are located in the contested area between Suriname and French Guiana.

Along the Tapanahoni River there are two main population concentrations. With approximately 63 households, the village of Puleowime (Apetina) is the larges Wayana village in Suriname (Fig. 3.5). Just a few minutes upstream from Puleowime (Apetina) is the Akani Kampu, a small settlement with three households, and a little further a deserted settlement named Kulumuli. Going downstream, one first passes the abandoned Awala Kampu and a little further, the Northern-most Wayana settlement of Kulumuli, also known as Tutu Kampu. This place of about 5 households is the home of one of the shamans Samé and a border post between the Wayana and Ndyuka territories.

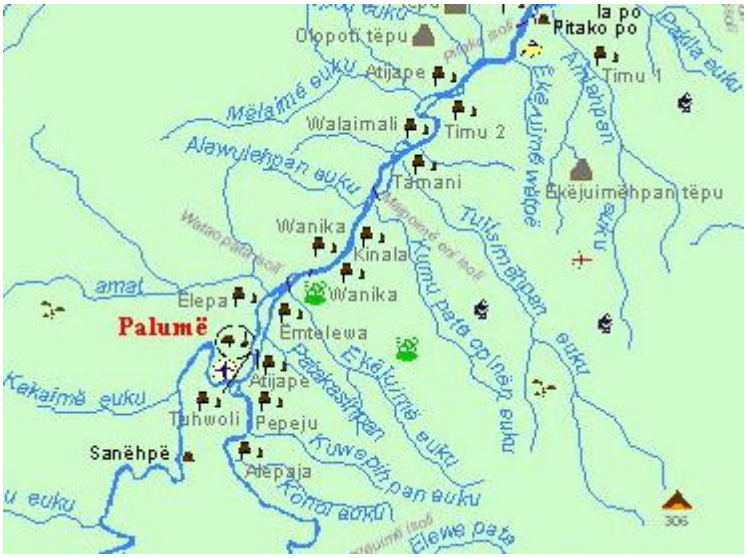
Figure 3.5. Wayana villages and kampus near Puleowime (Apetina) along the Tapanahoni River



Source: Amazon Conservation Team 2005

A second population concentration of Wayana along the Tapanahoni River is Palumeu, about one day travel by canoe from Apetina (Fig. 3.6). Palumeu is a mixed Trio-Wayana village; in about 24 of the 80-83 households at least one of the household heads is of (mixed) Wayana descent. There used to be many Wayana kampus around Palumeu but these people have moved either to Palumeu or to Puleowime (Apetina). Even though the majority of the population in Palumeu is now Trio, Palumeu is considered a settlement in Wayana territory.

Figure 3.6 The mixed Wayana-Trio village of Palumeu and surroundings



3.3.3 Territorial rights and frontiers

Even though the Wayana have lived on and used the lands they currently occupy for several centuries, they have neither private nor communal titles to these lands. Under the Suriname constitution, all land to which no-one can prove ownership is considered state-land. This includes all land in the interior where the Indigenous Peoples and Maroons live. Specific laws such as the Forestry Law of 1992 do demand that the customary rights of interior populations living in tribal communities are taken into account. However, the law does not provide measures for the protection of these rights nor define procedures for consultation, compensation, and appeal. Where these procedures have been commented upon, they either are vague or do not function in reality.

As Suriname's forest peoples have no formal land rights, the borders of their territories are not legally demarcated. Nevertheless, Indigenous Peoples and Maroons themselves have a fairly clear understanding of what area belongs to what group and these invisible borders are generally respected by the members of the various tribal groups.

National borders, on the other hand, are of little relevance to the Wayana. They cross the borders of Suriname, French Guiana, and Brazil freely to visit relatives, go on hunting expeditions, and collect forest products. The Wayana pay little attention to national authorities or required legal documents (passports or ID cards) during these trips across national borders. The latter is changing now, as more Wayana families are making an effort to obtain legal papers for French Guiana in order to obtain access to the services offered in French Wayana villages.

CHAPTER IV
HISTORY OF INDIGENOUS SETTLEMENT IN SOUTH SURINAME

This chapter describes the history of the Indigenous peoples in Suriname, focusing on the southern half of the country where currently the Trio, Wayana, Akurio, and several smaller Indigenous groups live. Archeological records (Versteeg 2003), travelers' reports, and history studies are used to develop a chronological account of South Suriname's Indigenous history. This history begins with the first traces of human activity, and continues through the colonial period and to post-independence developments. The focus is on the Wayana, who probably only arrived in Suriname around the 18th century. We do not know whether archeological evidence of earlier Indigenous presence in the study area can be traced back to ancestral relatives of the current Wayana.

4.1 The first Indigenous populations in Suriname, ± 8,000 – 4,000 BC.

People arrived in the Guianas approximately 10,000 years ago (Versteeg 2003). These earliest inhabitants lived primarily in the savannas, attracted by the presence of game animals and the stone materials they needed to make their spear and arrow heads, knives, and other tools. Large, continuous savannas existed during the relatively dry climate of the last ice-age (+ 100,000 – 10,000 B.C.). Increasing atmospheric humidity after the ice-age would have transformed all these open areas into tropical forest were it not for human intervention; people used the combustibility of the area to create a landscape that facilitated hunting and access. The current Sipaliwini savanna in South Suriname is evidence of this early human fire management.

The earliest Indigenous populations in South Suriname were probably hunters of extinct large game; the Pleistocene fauna such as mammoths and mastodons. Later populations hunted smaller game such as birds, monkeys, sloth, deer, tapir, peccaries, armadillos, ant eaters, rodents, and agoutis. The aquatic resources they used for subsistence included fish, turtles, turtle eggs, caiman, manatees and river dolphins. In addition, a variety of wild plants were collected. We do not know whether these prehistoric nomadic Indigenous Peoples were (related to) the ancestors of Indigenous groups currently living in South Suriname, such as the Trio and Wayana.

There are no archeological records from approximately 5,000 to 2,000 BC. Notwithstanding, archeologists believe that Suriname remained inhabited during this time given the preservation of the savanna landscape, which requires regular burning. Limited numbers and continuous movement minimized the impact of prehistoric Indigenous Peoples on the forest and local wild life populations.

4.2 Early tropical forest cultures, + 4000 BC – 1600 AD

Around 4,000 BC developed what Suriname archeologist Versteeg (2003) calls the 'typical South American Tropical Forest Culture' on the banks of the Amazon River. This culture organized around agriculture, and probably moved into Suriname from the Venezuelan Orinoco region, about 3,000 years ago. In addition to cassava (*Manihot utilissima*), the main staple crop, forest gardens contained a wide variety of tubers, vegetables, and fruits. Hunting, fishing, and gathering remained important sources of food, medicine, tools, and other materials. The agricultural, more sedentary lifestyle meant a radical change from the previous hunter-gatherer cultures in economic, cultural and material aspects. Important changes included:

1) A diet mainly composed of cultivated plants.
2) The fabrication of agricultural tools, such as a cassava grater and press (locally known as *matapi*) and the development of crafts such as ceramics and basket weaving.
3) The growth of more permanent villages with more complex houses.
4) Social relations that support collaborative labor on the fields and in the village.
5) A cosmological system that gives a central role to the shaman, who is the link between the spirit world and the human world.
6) The development of a more segregated gender division of labor, with agricultural food production and processing and crafts (e.g. pottery) becoming the primary responsibility of women.

Pottery remains suggest the existence of different ethnic groups or cultures in Central and South Suriname around this time. Petroglyphs also have been found in and near places currently populated by Wayanas, for example at Popkiston along the Tapanahoni River and in the South-West of French Guiana near the Suriname border. Archeologists neither know who made these petroglyphs in Suriname, nor how many different cultures drew them.

4.3 Early colonial period, 1600-1700 AD

When Europeans set foot on land in the Guianas by the end of the 16th century, an estimated 60,000 to 70,000 Indigenous people were living in the area that covers current Suriname. Warfare, slavery, and above all Western diseases decimated their populations soon after foreign occupation. Most lowland Indigenous groups eventually closed peace agreements with the colonial government and established communities at the river mouths and along the beaches.

Highland indigenous peoples were mostly ignored by the European invaders and had little contact with the coast. They only made occasional trips southward to trade bush meat, fish, and wood for tools and other Western products. An Englishman named Fisher may have been among the first Europeans to undertake an expedition to the upper regions of the Maroni River in 1608[8]. Fisher recorded 13 different Indigenous tribes, including Kari'na,

[8] Carlin and Boven. Unpub. doc.

Arowaks, Parakotos, and Yaos. In many villages he encountered Indigenous Peoples from different groups living peacefully together.

The success of the colonial plantation economy depended on African slave labor. In just over two centuries, an estimated 200,000 Africans arrived on slave ships. Strenuous work, brutal treatment, and miserable living conditions caused many slaves to flee. These run-away slaves or Maroons choose the forest as their hide-out and new living environment. Individual Maroons and small groups soon formed larger bands and by the 1700s, they had formed more structured societies with rulers, customary laws, and territories.

At some point on their path southward the various Maroon groups encountered Indigenous tribes. In most places friendly relations developed that benefited both groups. Due to their closer proximity to the coast and regular receipt of coastal goods conditioned by the peace treaties, Maroons had better access to iron tools and fabrics. Soon after trade relationships developed, with Maroons trading axes and machetes for hammocks and trained hunting dogs. The Maroons probably also learned from the Indigenous Peoples about local subsistence practices.

4.4 Arrival and settlement of the Wayana, 1700-1900 AD[9]

In the early 18th century the ancestors of the Wayana lived both along the Jaru and Paru Rivers in Northeast Brazil, and along the upper Oyapoc and its side branches. At this time the people we now know as 'Wayana' lived as separate nomadic groups[10]. Their social and cultural life was largely organized around warfare with neighboring tribes, and their chiefs performed a role as military warlords, the *japoto* (*yapoto*) [11]. War was waged to obtain resources and women, to take revenge, and to settle trade disputes.

In the 18th century, threatened by the Kari'na (named Tayra by the Wayana) and the Wayãpí (of the Tupian language family) Indigenous tribes, a subgroup of Wayana traveled north, led by the legendary yapoto Kailawa, who is still perceived as the father and founder of the Wayana nation. Kailawa led his multi-ethnic Wayana-group along the Jari and Paru Rivers in North-East Brazil and across the Tumucumaque mountains. After a series of wars the Wayana, decimated in numbers, settled in the area of the Litani and Lawa Rivers. The Wayana group emphasized its new identity with oral histories about a shared past and ritual fests to strengthen a shared present and future. They lived in small villages of about 40 to 50 people and practiced agriculture.

Around the mid 18th century the Wayana came in contact with Maroons; primarily the Aluku with whom they shared a living territory. Ultimately these groups established

[9] Boven (2006: 59-88) describes this period in great detail, based on historic records, oral histories, and ethnographic material

[10] Boven (2006) names as the main ethnic groups that later formed the Wayana: the Upului (Upurui, Poupouloui), the Opagwana(i), and the Kuku(i)yana.

[11] Carlin and Boven.

intensive and friendly trade relationships: *pawana iweitop* (Boven 2006: 78). In 1865 kapitein Arabe of the Ndyuka Maroons asked a group of Wayana from the Paru River to come live closer to them. This is how a group of Brazilian Wayanas came to live along the Tapanahoni and Palumeu Rivers. Boven (2006) argues that the historically intensive relationship between the Aluku and the Lawa Wayana is at the roots of the current cultural, linguistic, and behavioral differences between the Tapanahoni and Brazilian Wayana on the one hand, and the Lawa Wayana on the other hand.

4.5 The arrival of explorers, 1900-1958

In the first half of the 20th century the location of highland Indigenous groups became more or less permanent. The group we now know as the Wayana, consisting of the remaining Roucouyenne, Upurui, and some Apalai, lived at the headwaters of the Paru, Jari, and Maroni Rivers.

In these years several expeditions were made to the southern Indigenous Peoples[12]. Among these early explorers was maritime officer and anthropologist De Goeje, who traveled along the Tapanahoni and Palumeu Rivers. Another active explorer, Ahlbrinck, led several expeditions to the upper Corantijn River and the Oeloemari in the 1930s. In 1940, Lodewijk Schmidt, a creole who had accompanied previous expeditions, began to conduct a survey, over a period of three years, of the Trio and Wayana numbers and villages. He visited some 25 Trio and 20 Wayana villages, recording demographic facts across the entire breadth of Suriname from the Lawa River almost to the Corentyne and extending into the Parú area of Brazil. Apart from these occasional encounters, the highland Indigenous groups continued to have little contact with Westerners. For products from the coast they relied on the Maroons, with whom lively trade relations were maintained.

Even the limited contacts with outsiders proved to fatal to the Indigenous inhabitants of South Suriname. Wayana population numbers decreased rapidly in the early 20th century. By the 1940's diseases such as measles and tuberculosis had reduced the Wayana to between 500 and 600 individual in Suriname, Brazil, and French Guiana together. They lived in small communities along the upper tributaries of the Marowijne River: the Tapanahoni, the Palumeu, the Litani and Ulemari, and across the southern border of Suriname along the Brazilian Jari and Eastern Paru Rivers, both tributaries of the Amazon River.

4.6 Organization grasshopper and missionary activity

In the 1960s the lives and culture of the Suriname Wayana changed due to two simultaneous forces. In 1959 the Dutch colonial government initiated Operation Grasshopper. The purpose of this program was to make the interior more accessible by cutting seven airstrips at strategic points. In that same year the first airstrips in South

[12] Buddingh' 1995

Suriname were prepared in the Sipaliwini savanna and on the shores of the Tapanahoni river, facing the mouth of the Palumeu River.

Yet more impact than these government-steered developments had the arrival of the West-Indies Mission, a US-based missionary group in 1962. In Suriname, the West Indies Mission operated under the name Suriname Interior Fellowship and (since 1978) the Worldteam. They worked closely together with the US-based 'Door to Life Gospel Ministries', which had since 1960 been evangelizing in the Trio area. They persuaded Indigenous groups to abandon their semi-nomadic lifestyle and concentrate in a few larger population enclaves with mission posts in order to facilitate baptism, as well as access to health care and education.

Box 1: Community history of Puleowime

In the early 20th century, Apetina had come as a young man from Brazil and settled in the Palumeu area. Around the early 1930s, Apetina was among the first Wayana to travel further down the Tapanahoni River in search of trade relations with the Ndyuka. Apetina, who had just lost two wives, continued traveling up-river to find a place that would be better for him. When he reached Stoelmanseiland, his son asked him to turn around and he gave in. The journey came to a halt at the location of the current village of Puleowime[13]. Apetina and his younger brother Jahusa probably settled here with their families in 1956. Other members of their extended family remained in the Kasikasima-Palumeu region. The original settlement (*kampu*) Puleowime was small, only about 8 houses. At that time there were 13 other Wayana villages located along the Tapanahoni River. Around 1960 Baptist missionaries arrived and in 1968 Apetina became the first granman (chief) of the village. After his dead, the current Granman Nowahe took over.

At that time, the small Wayana settlement of Palumeu already existed on an island in the Tapanahoni River, near the mouth of the Palumeu River. After the construction of an airstrip –the Vincent Fajks airport- the Life Mission build a church opposite the river from the old settlement, and moved Trios, Wayanas, and Akurios from the Palumeu River to this place. Due to internal conflicts, many of the Indigenous families soon left this place; the Wayanas to Apetina and the Trios to Tëpu. The place remained virtually abandoned until the interior war. A significant group of Wayanas were moved near the Kamalua rapids along the Lawa River. Here the village of Kawemhakan (Anapaike) was created, just upriver from the current location of the village with that name. This village is also known as Anapaike, after its first chief.

[13] Indigenous villages are commonly known by two names. One of the names refers to the original village head, the second name to a natural or geographic characteristic of the place. Puleowime (also spelled as: Pïlëwime) is the Wayana name for the reed used to make arrows.

The missionary groups cut airstrips and established a clinic, a school, and a church in their main mission posts in the Wayana area. These services soon attracted Wayana living in dispersed smaller villages to settle nearby. The increased integration into the national economy also led to an increasing flow of outside products into the Wayana communities.

The interior war (1986-1992), a civil conflict fought between the military government and a group of Maroon insurgents, stopped virtually all development in the interior. Missionary activity, including educational and health services came to a halt, as well as the transportation of goods and people to and from the Wayana communities. Like many Maroons, many Wayana, living on the eastern border fled to French Guiana.

After the return to peace and democracy in 1992, private companies and NGOs intensified their presence in the interior. Restoration of public services has been slow, however. To date, the village of Puleowime (Apetina) and Kawemhakan (Anapaike) have been left without an elementary school, while the elementary school at Palumeu was rebuilt with NGO investments (See Chapter 6). In the larger villages electricity, transportation services, and health care are functioning–though imperfectly- at the mercy of NGOs and private enterprises. The smaller settlements do not have access to any of the above. Government presence and investment in the Wayana areas are negligible. Only in election time and during other strategic events (e.g. the flooding disaster of May 2006) when public appearance is expected to pay off, public officials appear to distribute favors and presents.

4.7 Acculturation and change

The radical transitions of the past four decades have had many advantages: improved health care, a substantial increase in life expectancy, western education and literacy. As a result, the population of highland indigenous peoples began to recover and has grown ever since.

Acculturation also has taken its toll on the local culture, environment, and household economy. As traditional cultural expressions were renounced, young generation of Wayana children is left with very little traditional knowledge of its (mythical) history, spiritual stories, medical plants and healing practices, and forest management. Secondly, traditional subsistence activities are sustainable for small family groups that relocate every so-many years when local resources begin to give diminishing returns. The carrying capacity of the rainforest, however, cannot absorb the impacts of hunting, gathering, and planting by the current large population concentrations. Wayana families now travel much larger distances to find suitable agricultural land and wild life. The related necessity for outboard motors and gasoline has increased the costs of life.

A growing local dependency on western manufactured goods is further accelerating the need to earn cash money. Income generation activities are rare, however, and many families are struggling to maintain a desirable standard of living. To earn money the Wayana mostly rely on forest resources and limited wage labor opportunities (See Chapter

V). The over-extraction of wildlife, particularly birds, has further elevated pressure on the natural environment.

Another recent development in the Wayana area is tourism. As a result of the development of Palumeu as a tourist spot by national tour operator Mets, many Wayana who originally left the village returned attracted by the possibility of full-time and temporary jobs. In the village of Apetina, tourism is just developing on a smaller scale. In addition, legal and illegal gold mining activities have brought stimulated economic growth and caused environmental problems in the Lawa area. The impacts of these developments are described in more detail in subsequent chapters.

CHAPTER V
NATURAL CAPITAL

This chapter describes the natural environment and resources that provide the home and subsistence base for the Suriname Wayana. It begins with a brief bio-physical and ecological characterization of Wayana lands, looking at climate, landscape, and vegetation. The following sections discuss subsistence and commercial use of wild plants (sect. 5.4) and animals (sect. 5.5). In these sections we also pay attention to rare, threatened and endemic species. Next, we assess various aspects of Wayana agriculture including field and garden crops; field site selection, size and distance; cultivation and fallow periods; and pests. The chapter concludes with an evaluation of ecological understanding in contemporary Wayana communities.

5.1 Climate

The climate of the Wayana area is different from that of the majority of Suriname. The study area has a Monsoon Climate (Am), with one rainy and one dry season. The rainy season starts in December and ends in July-August with a slightly dryer period around February. The dry season covers the remaining months. The average annual rainfall is between 2,300 and 2,500 mm. Some years are dryer than others and during these years prolonged dry periods may occur, which may have negative consequences for the navigability of rivers, including consequences for ecotourism. Although not visible in rainfall data, periods of extreme high rainfall may result in flooding of some shifting cultivation areas, camps and lower parts of villages.

Average daily air temperatures range between 26.4 and 27.0 ºC, with an annual difference of about 2-3 ºC. Daily temperature fluctuations are much larger – on an annual basis the average daily minimum temperature is between 21 and 22 ºC and the average maximum is around 31 ºC.

5.2 Topography and landscape

Within the Wayana area laterite and/or bauxite plateaus are only found on the De Goeje Mountains. Scattered over the area some so-called “domed inselbergs” or “bornhardts” are found, of which the Tëpu Mountain (374 m), the Kale Rots Peak (493 m), the Rosevelt Peak (710 m) and the Kasikasima Mountain (718 m) are some well-known examples. These mountains and peaks form isolated dome-shape inselbergs (“bornhardts”) - consisting of scarcely vegetated rock surfaces - that clearly stand out above the surrounding hill land. Also the so-called boulder inselbergs (“tors”) are present, forming piles of larger and smaller boulders, but these are hidden in the forest. Both bornhardts and tors are usually associated with the presence of rock plateaus (“ruwares”).

5.3 Vegetation

The map presented in figure 5.1 (NARENA 1996) shows the four main vegetation types for the Wayana-area and is mainly based on interpretation of satellite images. Savanna forest is included on the map but this type of vegetation is not used or inhabited by Wayana people in Suriname. The four main vegetation types are:

1. *Lowland forest* dominates the vegetation in the Wayana-area
2. *Floodable forest* along existing rivers and creeks
3. *Secondary forest*, due to the shifting cultivation or in some places open mining, is found in the proximity of the Wayana villages situated on riversides;
4. *Mountain forest* is present at the southern border of Suriname on the Oranje and the Tumucumaque mountains and to the west of Kawemhakan on the Goeje Mountains.

These four vegetation types are described below.

5.3.1 Lowland forest

The majority of the study area is covered with lowland forest. This high forest is found on the well-drained soils of mountains, plateaus and hills lower than 500 m, and on the imperfectly drained soils of colluvial foot slopes and river levees. In all cases, soils do not desiccate during dry seasons (Teunissen, 2003). The lowland forest is characterized by the presence of a high biodiversity and intense production of biomass, providing the nutrients for new vegetation. The total biomass of a lowland forest varies between 300 and 750 tons of dry matter/ha (Plouvier, 1992).

The Wayana obtain a range of NTFPs (non timber forest products) in this type of forest. The various uses of these products are described in section 5.2.1 (Non commercial use of wild plants). In the undergrowth palms such as “paramaka” (*Astrocaryum paramaka*) and “bugrumaka” (*Astrocaryum sciophilum*) are common. Palms (*Palmea sp.*) provide the Wayana food and warm drinks, construction material (floors, walls and roofing thatch), brooms and brushes, fibers, hair oil, and many other items for daily live use. In the Tapanahoni region favorite kinds of construction hardwood are “bruinhart” (*Vouacapoua Americana*) and “basralokus” (*Dicorynia guianensis*), which are still present in sufficient amounts according to the people living in the area.

In past and presently inhabited areas lowland forests have been cleared for shifting cultivation. Tree species that are typically left during clearing include “Wanakwari” (*Vochysia tomentosa*), “boskasjoe” (*Anacardium giganteum* or *A. spruceanum*) and “maripa” (*Attalea maripa*). These, among other trees, were spotted in the cultivated fields around Palumeu.

5.3.2 Floodable forest

Along most rivers and creeks in the Wayana-area, a part of the forest will be under water during rainy season (March-July). The period of full inundation will determine the richness of plant species; the longer the soil is under water, the less different plant kinds are found and the vegetation will be more homogeneous. Trees observed in floodable forests in the Tapanahoni-Palumeu area include: “redi-loksi” (*Hymenea courbaril*), “tonka” (*Dipteryx odorata*), "zwamptamarinde" (*Elisabetha sp.*),“tapuripa” (*Genipa Americana*) and a lot of “walaba” (*Eperua falcata*)

Rapids and falls are the characteristic habitat for members of the *Podostemaceae*, half underwater tropical water plants found in streaming fresh water. In the dry season, they will be partly above-water and flourish abundantly. “Mokomoko" (*Montrichardia linifera*) occurs on the bank side of most rivers and creeks and is often accompanied by “brantimaka” (*Machaerium lunatum*). In May of 2006 Suriname had an extremely wet season. The flood reached up to 2-5 m, but for only short periods (up to one week). Apparently all trees withstand such short inundations.

5.3.3 Secondary forest

After a few years, when the original vegetation (the primary forest) is removed and the cleared place is abandoned, the forest will recover and secondary forest can appear. Light loving plants such as “boesi papaja” (*Cecropia sp.*), will appear quickly and the first vegetation suits the soil for the development of further plant species. Nevertheless, the secondary forest usually remains poorer in plant species than the original primary forest. It is not unusual that one specimen dominates.

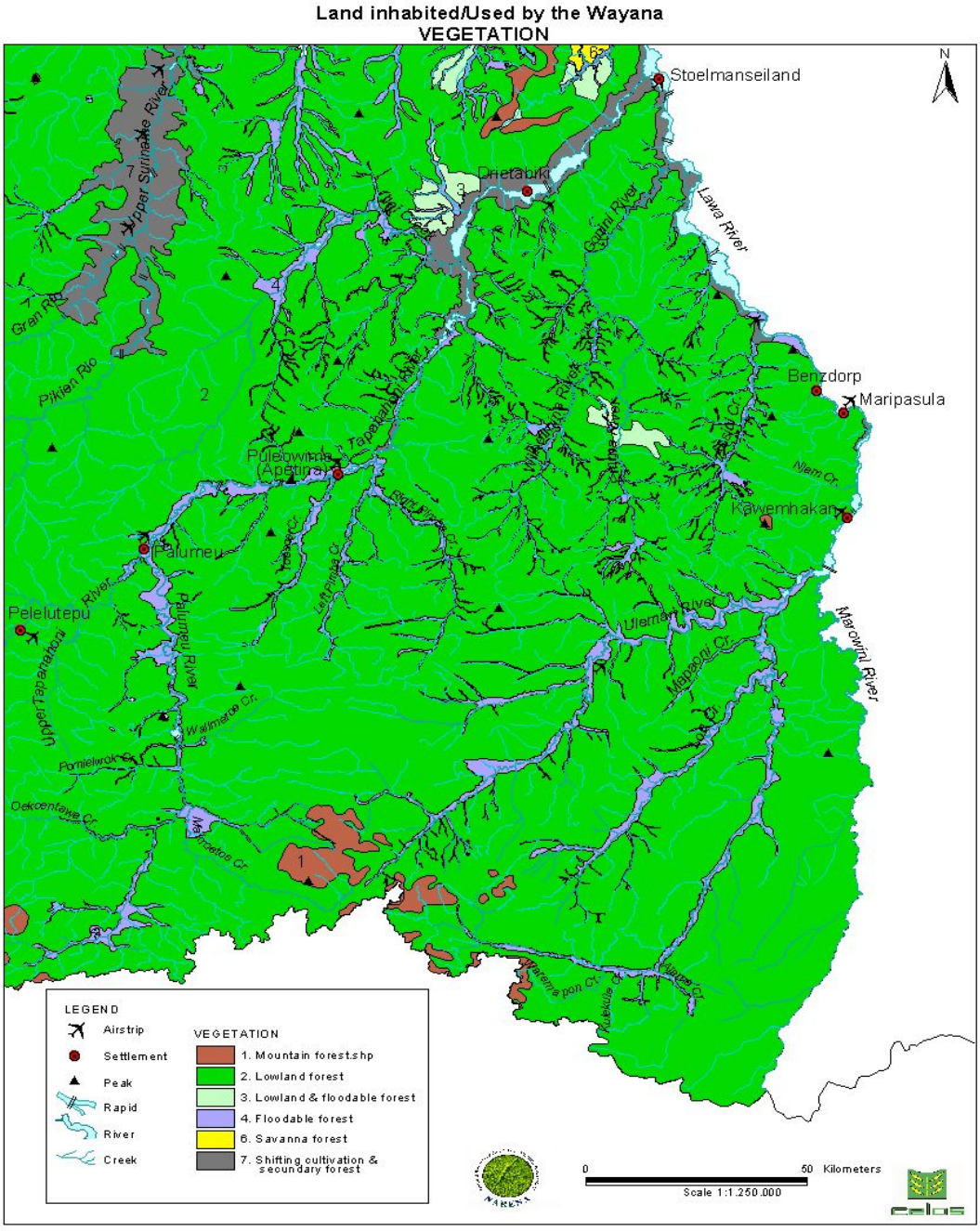
In Wayana area this kind of forest is found along the rivers and creeks near past and presently inhabited villages. Around Palumeu “bolomaka” (*Solanum stramonifolium*) and Swiet’bonki” (*Inga sp*.) were found abundantly. Left over cassava (*Manihot esculenta*) and “knopowiri” (*Borreria verticillata*) covered the undergrowth.

5.3.4 Mountain forest

Mountain forest is found at altitudes over 500 m above sea level (Teunissen, 1988). Except from lower temperatures it is the higher humidity and the distribution of a higher rainfall throughout the year that determines this plant formation. The high humidity is favorable for the development of a large range of ferns and epiphytes such as bromeliads and orchids that cover the mossy trees. The mountain forests cover about 3-4% of the Wayana area and prosper at the southern border of Suriname on the Oranje and the Tumucumaque Mountains and to the west of Kawemhakan on the Goeje Mountain.

The Tëpu Mountain (374 m) and the Rosevelt Peak (710 m) have specific vegetation but those higher parts are seldom visited.

Figure 5.1: main vegetation types for the Wayana-area



5.4 Wild flora

Appendix D gives an overview of wild plants used by the Wayana and the Trio, based a table composed by Teunissen in 2004. In addition to scientific names, the list provides English, Dutch, Sranantongo and, where available, Wayana and Trio names. Cultivated and introduced plants are presented in Appendix I and will be discussed in section 5.6.

5.4.1 Non commercial use of wild flora

In the modern world we use forest products every day without noticing it. Chocolate, spices, medicines, perfumes, Rotan-furniture etc. all have their source in forests similar to those used by the Wayana. Wayanas use the wild plants in the surrounding forest for the construction of their houses and canoes, for the production of woven utensils, to prepare medicines and pesticides, to collect natural jars, brooms, fibers, arrow poison, firewood, body care products and to gather food supplements.

In the field ten Wayana adults were asked about their 5 most important wild plants and their uses. Seventy-eight percent of the data was filled in completely and correctly (not all questioned filled in 5 names and some filled in cultivated names). We describe different utilizations of the most important wild plants in the paragraphs below.

Palmae spp. such as “tasi“ (*Geonoma baculifera*), “kumbu” (*Oenocarpus bacaba*) and “podosiri” (*Euterpe oleracca*) are the most named plants (56% of all named used wild plants are palms). These are followed by hard wood such as “pisi” (*Nectandra and Ocotea spp.*), “wanakwari” (*Vochysia tomentosa*), “ingipipa” (*Couratari spp.*) and “bruinhart” (*Vouacapoua Americana*) (28% of all named plants). More research is necessary for a more precise result.

In the list of wild plants used by the Wayana (Appendix D) plants are grouped by use category: (a) construction materials for shelters, camps and houses, (b) furniture and household utensils, (c) fibers and twining materials, (d) resins, rubber and non-cooking oils, (e) construction wood for canoes, (f) hunting and fishing utensils and weapons, (g) food and goodies, (h) fire wood, (i) Medicines, poisons and repellants and (j) body care, clothing, adornments and music instruments. The different utilizations are described below.

a. The use of wild plants as construction materials for shelters, camps and houses.

Hardwood species such as “pisi” (*Nectandra and Ocotea spp.*), “wanakwari” (*Vochysia tomentosa*), “ingipipa” (*Couratari spp.*) and “bruinhart” (*Vouacapoua Americana*) are named as preferred wood for house posts. Soft wood species are applied as roof supports and palm stems are favorable to fabricate floors. Softer bamboo and "warimbo" (*Ischnosiphon spp.*) are applied in walls. Palm leaves are used as roofing thatch: “Tasi” (*Geonoma baculifera*) is preferred but is not sufficiently available in the immediate surrounding so “bugrumaka” (*Astrocaryum sciophylum*) is used instead.

Figure 5.2 Dried palm leaves ready for the use as roofing thatch

b. The use of wild plants for furniture and household utensils

None specific wood is designated for the making of furniture. In Kawemhakan some wooden chairs are made from trunk pieces of a mango tree that was cut for the construction of a community place. Woven household utensils such as manioc presses (matapi), sieves (manari), fans, storage boxes (pagara), baskets and carrier baskets (katari) are mainly made from "warimbo" and of palm slips and tree bark (Figure 5.3), while wood is used to construct frames. Hammocks are conventionally made from rope made of "morisi" palms slips or of (cultivated) cotton. Pottery is still made with vegetal additives. The (cultivated) calabash and gourd are used as kitchen ware. Brooms and brushes are made of palms and bamboo (Teunissen, 2003).

c. The use of wild plants as fibers and twining materials

Lianas and aerial roots lend themselves as good tie material. Cotton trees (*Gossypium barbadense*) are often cultivated and are seen as the most frequent plant in the village of Kumakaphan near Kawemhakan.

d. Resins, rubber and non-cooking oils

Excretions of tree trunks and lianas are used. Their use varies from illumination, rope and wood conservation, filling material and glue (Teunissen, 2003). The aromatic resin from “tingimoni” (*Protium spp*.) is used for lightening after it dried up.

Figure 5.3 Woven household utensils made out of palm slips

e. Construction wood for canoes

In table e from Appendix D, six tree names are listed for the making of canoes. “Wanakwari” (*Vochysia tomentosa*) was saved during clearing of the cultivation grounds in Palumeu for boat construction. Paddles are preferably made out of the light and strong "pari-udu" (*Aspidosperma sp*).

f. Hunting & fishing utensils and weapons

In both the Kawemhakan region and the Palumeu region hunting is mostly done by shotgun. Fifteen interviewed hunters mentioned 29 different animals that are hunted if they have the opportunity. All named the gun as their preferred weapon to hunt those 29 animals. An exception is the kapasi (*Priodontes*), which would be caught by three hunters with a trap while one hunter would use his dog to catch wild animals.

For fishing, a fishing line and a net are the most common methods. Exception is the warawara (*Hypostomus*), which is caught with a small bow and arrow under water. Arrow poison is made from different plant species of which curare is the active ingredient. Vegetal fish bates (flowers, fruits and seeds) are listed in Appendix D. More details on hunting and fishing is found in section 5.5.

g. The use of wild plants as food

Forty-one wild plant and four semi-wild plant species for foods are listed in table g of Appendix D. Fruits from various plant families are seasonally collected from the forest, mainly during hunting and fishing trips. Wild palm species, very common in the surrounding forest of their villages, have a large use-range. Cooking oils and fats are

extracted from the fruits; warm drinks can be made from palm fruits. The famous Brazil nut (*Bertholletia exelsa*) is not found in the Wayana area (Teunissen 2003).

h. Medicines, pesticides and repellants

Indigenous peoples in the Amazon region use approximately 2000 different plants for their traditional medicines (Richardson 1991). For an overview and description of different species of medicinal plants (including trees, palms, lianas, shrubs, herbs incl. ferns, mosses and fungi) used by the Wayana people see Plotkin's (1986) *Ethno botany And Conservation of the Tropical Forest*, which includes special reference to the Indians of Southern Suriname.

Most Wayanas plant some useful medicinal plants in the proximity of their houses, the remaining medicinal plants are taken from the forest. Medicinal herbs that are planted near the houses in Kawemhakan village include redi katoen (*Coddypium peruvianum*) and sneki wiwirie (*Erynqium Toetidum L.*). Around the houses in Palumeu "sangrafu" (*Costus arabicus*), "knopowiri" (*Borreria verticillata*) and "sneki marcusa" (*Passiflora toetida*) were identified.

Six plants species are listed as insecticides or insect repellants. "Annoto" (a semi-wild plant) is also applied as an insect repellant for hunting dogs.

Figure 5.4 Musical instrument made of cotton and jorojoro

i. Body care, clothing, adornments and musical instruments

Soap and shampoo are mostly bought in the capital city or nearby villages. Four plant species are listed but hardly used anymore. During festivities two species are used as body paints: the red "annoto" (*Bixa orellana*) and black "tapuripa" (*Genipa Americana*).

A variety of seeds is used for ornaments. Some of them such as “maramara” (*Didimopanax morototoni*) are painted with different vegetal colors and applied to decorate necklaces, hair tubes and marakas. Musical instruments are made from bamboo (pan flutes), gourds (marakas), wood (drums) and “jorojoro” seeds (*Thevetia peruviana*, Figure 5.4).

5.4.2 Commercial use of wild plants

Because of the long distance to public markets for most Wayana villages and because of the high costs of air or boat transportation, some Wayana households in south east Surinam depend for their income on the trade of a low volume high value non-timber forest products (NTFP's). In Palumeu, a small amount of woven crafts and ornaments is sold to the tourists of the adjoining tourist establishment from the Movement for Eco-Tourism in Suriname (METS). Wayana from Kawemhakan occasionally sell such souvenirs on the French side of the Lawa River.

5.4.3 Rare, threatened and endemic flora of the Wayana-area

Rare and endemic plant species

According to Werkhoven in “Rare, threatened and endemic Flora of Suriname” published in the Conservation Action Plan for Suriname (Mittermeier et al. 1990) the Wayana-area shows high plant diversity and contains several endemic, rare and internationally endangered species. The Wayana area may be subdivided in 11 collecting areas mentioned in column 1 of Table 5.1, which shows the numbers of endemic and/or rare plant species collected in the Wayana-area.

Table 5.1 Rare and endemic flora of Suriname (source: conservation action plan for Suriname (Mittermeier et al. 1990))

Location	rare	endemic
Kasikasima (transition zone Wayana/Trio)	1	2
Lawa river	5	3
Litani river	5	4
Upper Litani river	4	1
Oelemari river	3	2
Palumeu river (transition zone Wayana/Trio)	4	1
Upper Palumeu river(transition zone Wayana/Trio)	1	0
Tapanahoni river	7	8
Upper Tapanahoni river (transition zone Wayana/Trio)	3	1
Tëpu mountain	1	0
Tumucumaque Mts.	0	0
Total Wayana area	34	22

Most endemic and rare plant species are found in the Tapanahoni River area. This is also the area where most of the research has taken place. Hence we suspect that the number of endemic and rare plants found is positively related to research effort. The Tumucumaque

Mountains were described by Ouboter and Werkhoven (1998) as one of the areas that are least known in Suriname. That could explain why Werkhoven's list does not contain rare or endemic species are found for the Tumucumaque area.

Internationally endangered and vulnerable plants in Suriname

Since February 15, 1981, Suriname has been a party to the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). The objective of this convention is to protect endangered species of wild flora and fauna by regulating the trade of these species. Species under the threat of extinction are not allowed to be traded, exported, or imported by the countries that have ratified the convention, unless for scientific purposes. Endangered species are listed under the appendices of the convention. APPENDIX I of CITES lists species that are under the threat of extinction, and APPENDIX II lists vulnerable species. Trade, export, and import of these plants and animals is only possible with a special CITES permit[14].

There are no CITES Appendix I Flora species in Suriname, and two types of CITES Appendix II Flora species, namely: all cactuses (*Cactaceae*) and all orchids (*Orchids*). None of the plants on the CITES list seems to be important for use by the Wayanas.

5.5 Wild animals

Apendix E presents a list of the most important animal species used by the Wayana. The list distinguishes game species, cage species, harmful species, protected and unprotected species[15]. The export quota (2002) is presented in the last column. In addition to scientific names, English, Dutch, Sranantongo, Wayana and Trio names were added as much as possible.

5.5.1 Hunting and fishing habits

Age
The age where men start hunting varies between 15 and 20 years old. Fishing is done from the age of 7-9.

[14] In Suriname, the Nature Conservation Commission (NBC) is the Scientific Authority for CITES. The Head of the Suriname Forest Service (LBB) is the Management Authority. Head LBB has to seek advice from the NBC of which he is a member.
[15] game species: allowed to *hunt* during open seasons (incl. bag limit)
cage species: allowed to *catch* during open seasons (incl. catch limit), to keep as pets and to use as food
harmful species: allowed to *kill* year around such as house rats and mice and house and blood-sucking bats.

Hunting season
Year-round all questioned people eat bush meat or fish daily, mostly boiled in pepper soup (peprewatra) and eaten with manioc bread. Some days during field clearing for shifting cultivation (Aug-Sept) and plant season (peek in Oct –Nov) only manioc bread is eaten due to a lack of time for fishing and hunting. In the long dry season (mid July – mid Dec.) creeks are nearly dry and wild animals are forced to track the rivers for their drinking. That's the period Wayanas catch the most bush meat. This is also the period that *neku* (fish poison) is used.

Place
Most hunting takes place on the forest floor.

Tools
a. hunting tools
- The favorite weapon of all the 15 questioned hunters is the gun, but 7 named the expensive bullets (and guns) as their mayor problem.
- Bow and arrow are more used during poor economic periods. Of the 15 hunters 3 mentioned to use bow and arrow for the armadillo, a delicacy for Wayanas. Plotkin (1984) discusses the plants used to manufacture arrow head poison. The plants of his list are included in Appendix D.
- Iguanas are often caught by hand, which is especially easy when they are laying their eggs.
- 2 questioned hunters were making traps for, again, the armadillo.
- None of the 15 hunters used a spear or a blow-pipe.
- Sometimes hunting dogs are used to assist the hunter.

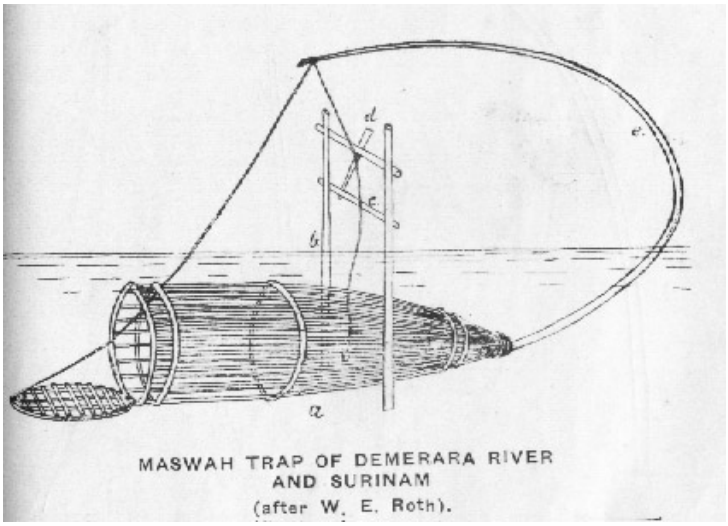
b. fishing tools
- Nowadays, most fishing is done with a long hand line. All 12 questioned fishermen used a nylon line and iron hooks. In the past, ropes were used as line and hardwood pins or palm spines as hooks. Depending on the desired species of fish following types of bait may be used: flowers, fruits and seeds (Appendix D), earth worms, spiders, ants, silver bait fishes and raw meat.
- A second common method is the use of nylon fishing nets (1-1½ inch mesh). These nets are used in creeks and rivers.
- In the dried up creeks fish are sometimes caught by hand.
- Fish poisons are made from wood, roots or leaves (Appendix D) and thrown into a shallow part of the stream to suffocate the fish. Neku is the most common fish poison.
- For the warawara (*Hypostomus sp*.) a small bow and arrow is used under water.
- A fish trap (Figure 5.5) is still popular in the Tapanahoni-Palumeu region.

5.5.2 Non commercial use of wild animals

In Appendix E wild animals used for subsistence (over 700 species) are grouped by use category: animals used as (a) food, (b) tools, (c) to manufacture hunting and fishing utensils, (d) animals used as medicines, (e) animals used during initiation rituals and (f) to

produce adornments and music instruments. The different uses are described below. We note that historically the described applications under b-f were more common than nowadays.

Figure 5.5: Fish trap



Source: Roth 1943

a. The use of wild animals as food.

As animal husbandry is almost non-existent, wild-caught animals and fishes are very important for the Wayana diet. Appendix E lists 40 names of wild animals that are consumed. Larger mammals such as tapir (100%), peccaries (100%), deer species (100%), armadillos (100%), spider monkey (87%), howler monkey (93%), capuchin monkeys (100%), paca agouti (100%) and agouti (100%)[16] are preferred.

Larger birds (such as tinamus, black curassow, trumpeter birds, macaws and toucans) and larger fishes such as anyumara (*Hoplias aimara*, with a maximum weight of 40 kg) are also preferred over small ones. Dry season is known as iguana season, a delicacy. Toucans are also considered as a delicacy. Capybara (*Hydrochaeris hydrochaeris*) is not eaten by the interviewed hunters but sometimes caught as dog-food. Appendix G (Teunissen 2003) discusses the impact of Game Resolution 2002 on the traditional diet of Trio and Wayana

b. The use of wild animals for tools

Jaws with tusks of both species of peccaries are used as planes to shape bows. Yaws with incisors of the agouti paca are used as a chisel.

c. Hunting and fishing utensils

The skin of the three-toed sloth is used to produce lids to close containers for poisonous arrows. Feathers of harpy eagles, vultures, black curassows and parrots are used as shafts

[16] The percentages between brackets give the percentage of questioned persons that like to eat the animal. The small red-handed tamarin for instance was only eaten by 13%

of arrows. Feathers of parrots and toucans are applied as ornaments for bows, arrows and arrow-head containers.

d. Medicines

According to Baal & Held (1995), the larynx of the howler monkey and toucan soup and beak are used against stuttering and the grated antlers of deer are used against convulsion (Teunissen 2003).

e. Initiation rituals

Wayanas use poison of stinging ants during initiation rituals. According to local informants, these rituals have not been performed for over a decade.

f. Adornments and music instruments

Animals are primarily hunted for food. Their teeth, skins, bones are re-used. Monkey, peccary and jaguar teeth are applied in necklaces. Spider monkey bones are used in combs and as flutes, deer bones are used as flutes, sloth skins to produce lids and drums, and tortoise and kapasi shells are used as music instruments.

5.5.3 Commercial use of wild animals

Wildlife can be legally exported from Suriname. The mean annual wildlife export value (CITES and non-CITES-listed species) from 1997 to 2000 was around US$ 1 million (Teunissen 2003). The main commercial animal groups in Suriname are: macaws, parrots and parakeets, songbirds, reptiles and amphibians. All plants and animals leaving Suriname require a permit, whether or not it appears on the CITES list. Permits are also required for dead specimens and plant or animal parts (such as in crafts) and are granted by the Nature Conservation Division (NB) of the Suriname Forest Service (LBB).

Figure 5.6: White-eyed Parakeet as a pet

All questioned hunters and fishermen in the field mentioned hunting and fishing for sale every now and then. Animal trade is a source of income to Wayanas although the price paid to the animal trappers is generally low. Trappers in Palumeu reportedly received between 75-100 SRD (USD 27-36) for a frog or snake. The reptile that generates the highest income overall is the emerald tree boa (*Corallus caninus*). The reptile traded in the highest quantities is the common iguana with 5,574 individuals being exported in 2000.

An important wildlife collection area for Wayanas in the Tapanahoni-Palumeu region is Tëpu. Commercial exploitation is hampered due to the remoteness of the area, and the absence of access roads. Sometimes young animals are kept as a pet (Figure 5.6) or to breed with, but they mostly receive improper care and die early. A list of animals used for trade purposes or for pets is found in Appendix H, an export quota is added in the right column. Chapter VII on financial capital provides more information on the animal trade as source of income.

5.5.4 Rare, endangered and endemic species of wild fauna

Trade, export, and import of the listed species are only possible by special CITES permit. In this study, attention will be given to internationally endangered species (APPENDIX I) that are known to occur in the Wayana area.

a. Mammals

Table 5.2 lists the mammals mentioned in CITES Appendix I as far as occurring in the Wayana area. Dutch, Surinamese and Wayana names are referred to in Appendix E. All three Appendix I mammals are still rather common in Suriname. Nevertheless, they are protected and no export is allowed.

Table 5.2. Internationally endangered mammal species

Scientific name	**English**	**Dutch**	**Surinamese**	**Wayana**
Priodontes giganteus	giant armadillo	reuzengordeldier	granman kapasi	molaime
Pteronura brasiliensis	giant otter	reuzenotter	bigi watradagu	
Panthera onca	jaguar	jaguar	peni-tigri	kakui

Giant Armadillo: a delicacy to the Wayana.
Giant Otter: not eaten by the Wayana but threatening exists by the competition for fish and camp places
Jaguar: hunters indicate only to shoot it when attacked by the animal

Other mammals occurring in the studied area for which export is not allowed are Black Saki, Pale-headed saki, Tufted Capuchin, Howler Monkey , Spider Monkey , Giant Anteater, Bush Dog, Guiana Otter, Ocelot, Ocelot-cat, Margay, Puma, Jaguarundi, Tapir and White-lipped Peccary. Although hunting of the larger ape species can be quite heavy in the vicinity of the villages in the interior (Wayana and others) none of the 8 species (Appendix E) can yet be considered endangered in Suriname.

For the entire Surinamese land area the only *endemic* specie is a bat: *Molossops neglectus*. We could not find any data on *rare* mammals

b. Birds

Ribot's Website[17] on the birds of Suriname lists 192 birds for Palumeu. The estimated number of bird species in the entire Wayana-area will certainly be higher. Ornithologist O. Ottema counted a total number of 700 birds in Suriname (personal communication, 2006). Table 5.3 below shows all birds that occur in the Wayana area and are mentioned in CITES Appendix I.

Table 5.3. Birds under the threat of extinction

Scientific name	**English**	**Dutch**	**Surinamese**	**Wayana**
Harpia harpyja	harpy eagle	harpij-arend	gonini	pija
Ara macao	scarlet macaw	geelvleugelara	bokrafru	ararawa

Harpy Eagle: protected and no trade allowed, not eaten, still hunted for feathers used for headdresses and arrow shafts
Scarlet Macaw: food species, now protected nationwide, only a limited number (100) is allowed for trade (CITES exemption for Suriname).

No trade is allowed for all falconiformes, all owls, Caica Parrot, Sun Parakeet, Lilac-tailed, Sapphire-rumped Parrotlet and the Cock-of-the-rock, all present in CITES Appendix II. Mittermeier et al (1990) does not mention endemic birds for Suriname. We also were unable to find data on locally rare birds

c. Reptiles

None of the Surinamese reptiles occurring in the Wayana area are mentioned in the CITES Appendix I. No export is allowed for both *Paleosuchus* species (Dwarf caiman and Smooth-fronted caiman) present in CITES Appendix II. Mittermeier et al (1990) mention no endemic reptile in the Wayana area. Concerning rare animals, Hoogmoed (1973) mentions *Amphisbaena vanzolini*: a rare amphisbaena, in Suriname only known from the Palumeu (border Wayana area) and Sipaliwini (no Wayana area) areas.

d. Amphibians

No internationally endangered species from the Wayana area are mentioned in Appendix I of CITES. Mittermeier et al (1990) mentions four endemic frogs (*Centrolenella geijskesii, Dendrobates azureus, Hyla fuenti* and *Eleutherodactylus grandoculis)* and two Caecilians (*Caecilia albiventris* and *Microcaecilia taylori)* as endemic Amphibia for Suriname. No data found to conclude their presence in Wayana area. Insufficient data were available about rare amphibians.

[17] www.tem.nhl/~ribot/ned/index.htm

e. Fishes

In the Tapanahoni river system, Ouboter and Mol (1993) recorded 76 species of which 27 (35%) were endemic and exclusively found in that area. In the Ulemari river Ouboter and de Dijn (1998) recorded 116 species of which 88 were new for the Ulemari, 22 new for the Marowijne river system, 13 new for Suriname and probably between 2 and 7 new for science.

f. Invertebrates

On the species diversity and distribution and the occurrences of endemics and rare species, insufficient data are available to characterize the Wayana-area. None of the Surinamese invertebrates are mentioned in the CITES Appendices I and II.

5.6 Agriculture

Literature sources on agriculture in the study area are limited. Agricultural experts who for some time worked among the indigenous people in Southern Suriname during the 1970s and early 80s have written some reports, but only one report was available to the authors. In addition, three reports of visiting agriculturists have been studied. All the above reports refer to the Trio area.

The information below is obtained from these limited sources, supplemented with information collected during the field visits of Apetina (Noordam & Teunissen, 2004), Kawemhakan (Noordam, 2004 and Delvoye, 2006) and Palumeu (Delvoye, 2006). Surrounding gardens and fields were visited, plants were listed and a questionnaire was filled in by 8 planters (2006).

5.6.1 The traditional system and crops

The farming system of Wayana is based on shifting cultivation with a high agricultural biodiversity. Many crops and multiple varieties of each crop are cultivated on a field, supporting both intra-specific and inter-specific diversity. This strategy of minimizing risk by cultivating a diversity of crops and varieties in space and time enhances harvest security and promotes diet diversity.

According to FAO (2002), the agrarian system of the Wayana is to be considered as one of the *Globally Important Ingenious Agricultural Heritage Systems (GIAHS)*, which **are** defined as: *Remarkable Land Use Systems and landscapes which are rich in biological diversity evolving from the ingenious and dynamic adaptation of a community/population to its environment and the needs and aspirations for sustainable development.* The system's strategy and concept are explained in Box 2.

Box 2: Globally Important Ingenious Agricultural Heritage Systems (GIAHS)

The GIAHS concept recognizes and is centered on the profound inter-relatedness of biodiversity, agriculture, ecology, culture and social organization and institutions, ethics, local livelihoods and food security. The program aims to safeguard the continued co-evolution of these elements. This integrated ecosystem approach builds on existing indigenous knowledge, practices, customs and institutions for the management of agricultural systems, in ways that are socially, economically and culturally appropriate to the identity, needs and aspirations of farming communities.

The underlying strategy of the program is to avoid or reverse the loss or degradation of the resilience and the essential features and attributes of these systems-especially their biodiversity-while allowing their necessary evolution and at the same time enhancing the socio-economic development of resource users, as well as national and global benefits. The program firstly attempts to mitigate threats to the resilience of GIAHS, by supporting farmers' and their communities' capacities to continue to sustainable manage these systems, with the involvement of national governments, scientists and other stakeholders. It also seeks to support these communities and their governments in developing appropriate legal and policy environments and instruments, conducive to their continued existence, and which allow for their evolution and development. The program offers an opportunity to build, in a step-by-step way, cooperation amongst communities that effectively manage their rich in situ heritages, in a sustainable development context, including through the exchange of experience, knowledge and technologies.

The central crop of the farming system is cassava (*Manihot esculenta*). Complementary to the daily cassava, accompanied by bush meat and fish if available, some vegetables are sometimes added (an overview of the crops is presented in Appendix E). Cassava is further processed in various food products.

In addition to cassava, other important staple food plants are sweet potato *(Ipomoea batatas)*, yams (*Dioscorea alata*) and plantains (*Musaceae* sp.). During household surveys in French Guyana, respectively 70 and 13 different cultivars were named for cassava and sweet potato (FAO, 2002). Besides the above-mentioned crops, Wayanas also favor certain weeds in or around their fields that are used as food, medicines, ceremonial items, etc (see 5.4.1 Non commercial use of wild flora).

Traditionally the Wayana also grow some fruit crops and utility crops around their houses. These are not planted in a separate plot, but kept in some free space outside the normal walking places. Some plants have established accidentally when seeds or other propagation parts of a plant are dropped near the house. Refusal dumps with organic kitchen waste also facilitate the growth of the some plants. The gardens are important as supplier of some

essential elements of the diet but most important crops for subsistence are grown on the shifting cultivation fields that will be describe in following paragraphs.

5.6.2 Site selection for shifting cultivation fields

When a location for a new shifting cultivation field is to be selected, the first criteria are that the field can be reached relatively quick and easy with a preference for fields along the waterways (Figure 5.7); another essential criterion is the absence of leaf cutting ants on or near the chosen field. A long-term planning is made for a series of fields in a certain area so that a field is often cleared close to the fields of the previous years.

Within this accessible and nearby zone other selection criteria are:

- Drainage conditions (it should never flood or have high groundwater levels);
- Texture of the topsoil (preferably light-textured soils (loamy sands to sandy loams)). This criterion is related to the soil workability and the ease with which the cassava can be removed from the soil;
- Flatness. Flatter land is preferred but fields may be opened up on slopes, in case flat areas are limited. Extensive flats are avoided because in such terrain shallow groundwater levels may occur during the rainy season.

Near Puleowime (Apetina) the majority of fields is found on the left bank (north) of the Tapanahoni River, because the risk of infestation with leaf cutting ants is said to be much higher on the right bank. However, around Palumeu fields are found on both banks of the Tapanahoni River.

Figure 5.7: shifting cultivation fields along the waterways

Most vegetation types are considered suitable for agricultural use. In the Wayana area most fields are opened up in primary (preferable) or old secondary forest. The density of fields is highest in the area north of Apetina. In the remaining Tapanahoni area small permanent

family camps have been established along the river and larger creeks with the objective to open up fields in suitable and easily accessible forest. Another reason for the establishment of camps is that fish and game are more abundant in these less populated areas.

5.6.3 Distance to the fields

Most fields are found within a distance of 2 to 3 km from the village (Palumeu, Puleowime and Kawemhakan), but some are farther away, usually located along the river or the main creeks. These more distant fields may be found near permanent family camps that have been established along the water. The older the village or camp, the more far the fields are found but staying within a radius of 5 km.

5.6.4 Field preparation

Shifting cultivation fields are cut in the forest. First the under-growth is cleared, followed by the larger trees. The time of clearing and burning will depend upon the weather conditions. Clearing is usually done in the September-October period. After a period of drying, the debris are burned in October-November. The planting of staple food plants is then done as quickly as possible (November-December-January).

5.6.5 Size of the fields

Nearly all observed fields are small, with an area of 0.4 ha or less. Overall the fields of the Wayana People are much smaller than those of the Trio (Teunissen & Noordam, 2003). This is probably related to the higher per-area production of the Wayana fields, which have been established in primary forest or in old secondary forest with a sufficiently long fallow period so that the soil fertility had time to restore. Usually a family clears only one field per year.

5.6.6 Cultivation period

During the first year of cultivation many crops are planted on a new field. Plant material is mainly collected from old fields. In May 2006, due to the heavy rains, a lot of plant material was washed away or spoilt.

In November-December-January most field crops (see annex 7), but certainly staple food such as cassava and yam, are planted. This is the high season for planting and working on the cultivated fields is then a daily activity. Around May is another planting season for sugarcane, pineapple, watermelon and vegetables. Cassava generally dominates all fields.

Second year fields have fewer different crops and also are dominated by cassava, which is replanted after harvesting. In addition, bananas and plantains, sugarcane and occasionally cotton, pepper and pineapple can be observed along paths through the older fields. A third year field is usually largely overtaken by secondary forest growth, wherein some cassava is found. Hardly any production is obtained from these fields. However, these older fields are important for delivering plant material (*in situ* conservation of cassava genetic resources).

5.6.7 Fallow period

As indicated above, many fields are cleared in primary or old secondary forest. In case secondary forest is used, a fallow period of at least 10 years is applied before using a certain location again.

5.6.8 Required area

No data on this subject have been gathered for the Wayana area. A rough calculation with the limited available information indicates that about 0.1 ha per person is cleared every year. Within a complete rotation cycle of 13 years, this results in a total area of 1.3 ha per person used for agriculture, of which about 0.25 ha is under cultivation and 1.05 ha is under fallow.

The person-area under cultivation is about half that of the Trio People at Kwamalasamutu, which can be attributed to the higher soil productivity of the Wayana fields. Also the area under fallow is slightly lower. The situation in Kwamalasamutu with respect to long-term soil productivity is considered non-sustainable (Teunissen & Noordam, 2003).

Table 5.4 Comparison between the agricultural land areas of the Wayana and the Trio in Suriname

	Annual clearing (ha/person)	Area used for agriculture (ha/person)		
		Cultivation	Fallow	Total
Wayana area	0.10	0.25	1.05	1.30
Trio area	0.25	0.50	1.50	2.00

Source: data of the Trio are from Kwamalasamutu; Teunissen & Noordam 2003

5.6.9 Field crops

Appendix I presents an overview of scientific, English, Dutch, Surinamese, Trio and Wayana names of field crops. This table contains some blanks, because in some cases one or more of the names could not be found. The most important staple crop, cassava, is grown on nearly all fields. Different varieties of cassava are planted for different purposes. The data suggest that sweet cassava is grown a little less frequent than bitter cassava.

Cassava is harvested gradually, each time a certain amount. The growing period varies, depending on the cultivar and on the location. Cassava planted on a field opened up in primary forest is reportedly harvested after one year, while that on a secondary forest field

is harvested after a shorter period of about nine months. Apparently no further yield increase is obtained after those nine months, probably due to the low fertility. Production will therefore be considerably lower on these soils. But no yield data could be obtained.

No differentiation has been made between bananas and plantains. Bananas appear to be more frequent. Also from this crop different varieties have been observed. In addition to cassava and bananas/plantains other important crops are sweet potatoes, sugarcane and cotton, which all occur in more than half of the fields. Crops with a moderate frequency are pineapple and Cayenne pepper, which are found on 15-25% of the fields. The majority of field crops are food crops, except for cotton (*Gossypium barbadense*) and singrasi (*Bromelia alta*), which are used as a source of fibers.

Kawemhakan (Anapaike) residents buy many vegetables for consumption in Maripasula, a French village at approximately 25 km from Kawemhakan (Anapaike). Mango trees (*Magnifera indica L.*) are common in the village. Mango juice is used to make a mix with kasiri, a low percentage alcoholic drink. Pommerac (*Syzygium malaccensis*), cashew (*Anacardium occidentale*) and avocado (*Persea Americana*) are present and appreciated but none of the questioned Wayanas in Kawemhakan (Anapaike) and environment reported to plant those fruit trees. These fruit trees were introduced by the missioners in earlier days (see chapter IV)

5.6.10 Garden crops

The crops in the village and camps are rather different from those in the fields. Those in the fields are mostly traditional crops, while in the living areas also many introduced species are found. The crops have been listed during all field trips.

The camps comprise separate living quarters outside the actual village. Records have been made in 8 camps (5 in the Apetina area (Noordam 2004) and 3 in the Kawemhakan area (Delvoye 2006)). The ages of these camps may vary considerably. Some of the camps are recently established while others may already be as old as the village itself. No differentiation has been made however. The crops in the village have been listed separately in Puleowime (Apetina), Kawemhakan (Anapaike) (Noordam 2004) and in Palumeu (Delvoye 2006).

Overall the crop diversity is higher in the villages than in the camps. In the gardens, two species are cultivated for the use of their fibers as twining material: cotton trees (*Gossypium barbadense*) and "singrasi" (*Bromelia alta,* Figure 5.8). Many of the crops found in the living areas are fruits, of which many have been introduced. Fruit crops represent approximately 50% of all crops found in villages and camps. Differences between locations are generally small. The non-food plants represent on average 22% of the total crop assortment, but in the villages the number of crops is much more diverse than in the camps, where predominantly cotton is found within this group. For the uses of non-food plants is referred to Appendix D

The group of sweets & spices is dominated by the Cayenne pepper, which is common in the camps as well as in the villages. Apart from this pepper, some plants have been saved during clearing because some part is appreciated as a sweet. The pulp around the seed of "switbonki" (*Inga spec.*) is eaten, while the berry of "pina" (*Euterpe oleracea*) is mashed and boiled to produce "podosiri", a thick juice, which is consumed as an energy drink.

Nut trees include the coconut palm and the breadnut, in addition to local nut palms (pina, kumbu and maripa palm). The latter have been saved during clearing. Hardly any vegetables and staple crops (except for a few plantains) have been observed in the villages and camps.

Figure 5.8: Singrasi ready to be harvested

5.6.11 Pests

Eight Wayana individuals were questioned about their problems with pests on the cultivation fields. Leaf-cutting ants and agouti posed the most serious problems. Deer, monkeys, peccary, birds, caterpillars and tayra were the other named pests. Table 5 gives an overview of those pests, the plant attacked, and the quantity of loss based on available data.

Leaf-cutting ants pose a problem especially for the most important crop, cassava (Figure 5.9). Van Brussel & Brands (1968) mention that next to cassava also damage is done to citrus, while according to Monorath (2002) even mango trees may be stripped of their leaves. Van Brussel & Brands (1968) and Segeren (1979) indicate that *Atta sexdens* is the main ant species involved, but Monorath (2002) describes also nests of *Atta cephalotus*.

The first one is specifically active on cassava plants, while the second one uses the leaves of citrus species. Currently the establishment of an integrated leaf-cutting ants program is one of the main agricultural objectives of ACT. Workshops are being held in three different regions, and have started in Kwamalasamutu (Rachelle Bong A Jan, personal conversation).

Table 5.5. pests, the plant attacks and the quantity of loss.

Pest	attacked crop	% of losses
leaf cutting ants	cassava, citrus	10-100
agouti	yam	10
dears	pumpkin	50
apes	corn, banana	25-50
peccary	cassava	25-50
birds	banana	25-50
caterpillars	sweet cassava	50-100
tayra	watermelon, pumpkin	50

Figure 5.9 Cassava root eaten by ants

5.7 Animal husbandry

No real breeding has been observed during the field trips to Kawemhakan and Palumeu (Delvoye 2006). People reported some breeding efforts with black curassow but without success. Sometimes a few chickens are kept but their meat is not favored.

5.8 Ecological understanding

Suriname's policy makers are more and more aware of the ecological principles and the benefits of a rational and sustainable use of natural resources. The last decade, several programs have been effectuated on this subject, often in cooperation with international agencies. Due to different factors (the remoteness of the area being an important one), those programs mostly do not reach the people in Southern part of the country, where the Wayana study live.

The way of life and the production system of the Wayana (section 5.6) represent the accumulated experiences of people interacting with their natural environment over centuries. Indigenous peoples have a broad practical knowledge about nature, and have used this environment sustainably for centuries. However, during the second half of the 20th century some important changes took place, which had a severe impact on the traditional way of living of the Wayana within their environment.

5.8.1 Changing relations with the natural environment

In the last half of the 20th century some radical changes took place that affected the Wayanas relation with and uses of their natural environment. These changes included:

- In the 1960's, US missionaries founded several mission posts and concentrated Indigenous peoples around those newly created facilities with airstrips, clinics, schools and churches (Chapter IV). This concentration has led to an increased pressure on cultivation land, and wild plants and wildlife required for sustenance and other uses. In addition, the traditional sustainable hunting and fishing calendar had to be abandoned to ensure that all families would find some meat or fish during meager seasons.
- The missionaries not only concentrated the Wayana in larger population conglomerates, they also persuaded them to abandon their traditional religion and adopt the Baptist religion. As the traditional belief system was discredited, traditional knowledge of the plant and animal worlds, which is inextricably related to the traditional Indigenous cosmology, has been rapidly lost.
- Fuel-fed generators and outboard motors have become more and more common in order to obtain distant food and forest resources, and buy consumer goods in the capital city. Fuel from these machines frequently leaks from the barrels or the machines into the soil or the river water. Engine oil is disposed in the environment, which can contaminate a large amount of potable water. Used parts from the engines and outboard motors are usually thrown into the river, which is also an environmental hazard.
- Western products such as synthetic shoes and clothes, tin cans, plastic chairs and buckets, batteries, PET bottles and sink roof materials are increasingly replacing the natural (vegetative) degradable materials.

- Field observations showed large waste piles and dump sites in Kawemhakan. In former days, dumps were composed of organic materials only, which were used on the cultivated land as a fertilizer, in order to facilitate the growth of some plants.
- Shotguns and nylon fishing nets are substituting wooden spears, ropes and hard wood pins. These changing hunting and fishing methods have promoted over-hunting and over-fishing.

The above processes have led to localized unsustainable us of land and resources, increased environmental pollution, and a loss of ethno-ecological knowledge.

5.8.2 Cultivated land and the surrounding ecosystems

Cultivation techniques, by contrast, have changed little apart from the use of introduced tools such as a shovel and a - 72 -machete. A higher soil productivity makes that the required person-area under cultivation for Wayanas is about half of the Trio (Table 5.4). It seems that sufficient land for new agricultural fields will remain available in the decades to come.

Because of the highly diversified and temporary crop arrangements, a number of ecological interactions and ecosystems are found. By keeping the plant diversity in the cultivated area, the system provides alternative habitats and food sources for many organisms that perform various beneficial ecological functions. Many plants within or around traditional cropping systems are wild or weedy relatives of crops (Verwilgen 1998). In fact, farmers often favor certain weeds in or around their fields that have positive effects on soil and crops (pest repellents), or they serve as food, medicines, ceremonial items, etc.

5.8.3 Human/environmental interactions in contemporary communities

A rapid assessment of ecological understanding among the Wayana provided the following indicative results:

- The Wayana community of Kawemhakan is presently surrounded by mining activities. These mining activities have disrupted the environmental and ecological balance of the area.
- The youth of Kawemhakan who have the opportunity to enjoy education in French Guyana are educated about basic environmental principles. They can for example indicate what wild animal may be hunted or not and what to do with environmentally hazardous waste such as motor oil and parts. However, they could not tell the rationales that underlay these principles. Field observation suggested that these youngsters themselves do not adhere to all learned environmental principles.
- Due to a greater cash flow, people in Kawemhakan, who have 2-3 times more to spend than people from Apetina (Ch. VII) have created garbage piles and heaps of debris of considerable proportions.

- In Kawemhakan, non-natural pesticides (such as Blitz) were used to control the problematic leaf cutting ants.
- Palumeu people still use more organic materials. However, when they were asked how they disposed of their used engine oil, they all indicated to throw it into the river.

With regard to traditional ecological knowledge, we can conclude that:

- The Wayana were always highly integrated in their surrounding environment of which they feel they are a part of. There is a very close relationship between human and nature.

- It would take a more extensive study to assess the present ecological awareness of the Wayana, but it can be said that radical changes had a severe impact on their traditional way of living within their new environmental surroundings. These changes have led to localized unsustainable use of land and resources, increased environmental pollution, and a loss of ethno-ecological knowledge.

- Villagers fail to see the various functions and interrelationships of their *new* surrounding ecosystems, which results in a low understanding of environmental issues. For nature-conservation to be effective, all people should have a basic understanding of ecological processes and environmental problems adapted to the *actual* situation. It must be said that in the field some of the villagers are very interested in the receiving of information about their environment, the fauna and the flora.

- For traditional land cultivation the changes were limited. Agriculture still includes the multiple use of both natural and artificial ecosystems.

CHAPTER VI
HUMAN CAPITAL

Human capital refers to skills, abilities, and (wo)menpower available in the population. We begin with a presentation of demographic characteristics, focusing on population numbers, age group representation, and ethnic make-up. As we turn to education we assess access to basic education and vocational training, educational achievement, literacy, and language skills in the different communities. The following section on health lists the main health problems and health threats, and alternative sources of treatment used by the Wayana. The concluding discussion on gender relations exposes differences in life-cycle, activities, and power of decision making between women and men.

6.1 Demographics

The population of Wayana decreased rapidly after contact with outsiders, a trend that exhilarated in the first half of the 20th century (see Chapter II). When De Goeje met the Suriname Wayana in 1907, he estimated their numbers at approximately a thousand. Three decades later there were about 600 Wayanas left.[18] At the first official population count among the highland Indigenous peoples in 1941, Lodewijk Schmidt counted only 358 Wayanas in Suriname and French Guiana together. Even though he missed two larger Wayana villages, the data indicate a general downward population trend in the first half of the 20th century.

Estimates from various sources suggest that Wayana population numbers in Suriname and French Guiana have grown in more recent years. Figure 6.1 displays the estimated numbers of Wayans in Suriname and in total reported by different sources. These figures may not count the smaller settlements and more transitory families. Moreover, the Wayana have mingled with the Apalai, an Indigenous group that culturally resembles the Wayana, in all three countries. Hence observed growth may in part be due to the blending of the two groups, with the dominant group (Wayana) taking over.

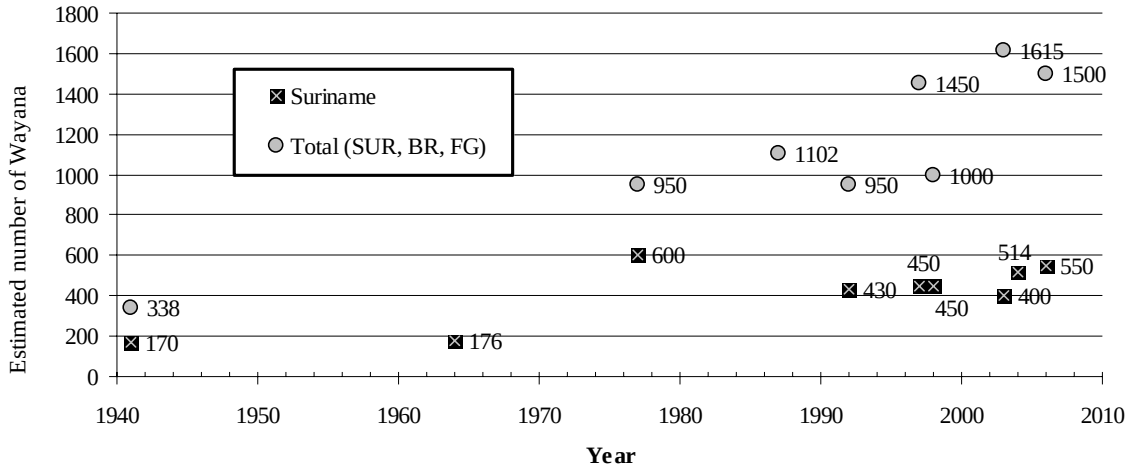
The current total number of Wayanas is around 1,500 people. Because the Wayana have mixed with other Indigenous groups, it is impossible to state an absolute population number. For example, one may find in one household a wife of mixed Wayana-Apalai descent, married to an Okomejana husband, who have two children together plus one child from the woman's previous relationship with an Akurio man. In this study, we considered each household with at least one (partly) Wayana head of household as a Wayana household, and all children with at least one Wayana parent to be of Wayana descent.

Counts and extrapolations give us a total of 122 Suriname households of which at least one of the household heads is of (mixed-)Wayana descent in the general areas of Puleowime (Apetina; including Tutu Kampu and Akane Kampu), Palumeu, and Kawemhakan (Anapaike; including Kumekapan). Approximately 523 Wayana and mixed-Wayana

[18] Carlin and Boven, unpubl.

descent people inhabit these places, which probably host at least 95 percent of Suriname Wayana. Not included in the survey were Wayana living scattered in family kampus we may have missed and those living in Paramaribo.

Figure 6.1 Development of the number of the Wayana People since 1941



Sources: APFT 1996; Boven 1997; Grimes 1996; Instituto socioambiental 2003; Kloos n.d.; Medische Zending 2004; Schmidt 1942.

The Medical mission patient record contains higher population numbers, namely 265 adults (ages 16 and older) and 62 children (ages 15 and younger) in the Apetina area and 175 adults and 34 children in and around Kawemhakan. These figures probably overestimate the population because they also count people who in reality no longer reside in the villages. Particularly along the Lawa, many families have moved to the French banks of the river. The patient records for Palumeu (183 adults and 54 children) are less relevant for this study because they do not distinguish between Trio and Wayana.

The average Wayana woman in the sample has given life to 3.7 children, and the average man to 4.1 children. These figures are consistent across villages, suggesting that the French child benefit payments are not (yet) motivating women to have more children. Households range in size from one person in the smallest to nine persons in the largest household. With an average of 5.3 members, Lawa households are significantly larger than those along the Tapanahoni River, which count on average 4.2 members ($p<0.01$). Both figures exceed the mean household sizes in the district of Sipaliwini (mean 3.44 people per household) and Suriname as a whole (mean 3.94 people per household).

Our sample data suggest that 50.5 percent of the population consists of women and girls, which is consistent with the national population statistics. Sixteen percent of the population consists of young children under the age of six. School aged children (ages 6 through 15) account for almost a third (29.2 %) of the population. Nineteen percent of the population are young adults ages 16 through 24. Girls in this age will find a partner and have their first child, while boys begin to take on the responsibility to supply their homes with bush meat, fish, and cash money. Nevertheless, these youngsters may still live with one of the parents

and (partly) rely on them for food. Elderly (>60 years of age) represent 4.6 percent of the general Wayana population.

Table 6.1. Population in the Suriname Wayana villages in the EES

Village/ Kampu	**House-holds**	**People**	**Children (ages 0-15)**		**Adults**	**Elderly**
		N	**Young ages 0-5**	**School-aged ages 6-15**	**Ages 16-59**	**Ages 60+**
Tapanahoni						
Apetina*	63	262	36	74	144	8
Tutu Kampu	5	22	3	8	11	0
Akane Kampu	3	20	2	9	7	2
Palumeu**	24	96	21	34	36	5
Lawa						
Kawemhakan	16	82	18	19	40	5
Kumakapan	4	21	1	3	14	3
Lensidede	7	20				
Total in Suriname	**122**	**523**	**81**	**147**	**252**	**23**
Percentages			16%	29%	50%	5%

* extrapolated from a random sample of 50 percent of households

** counted number of households with at least one (mixed) Wayana member.

6.2 Ethnicity

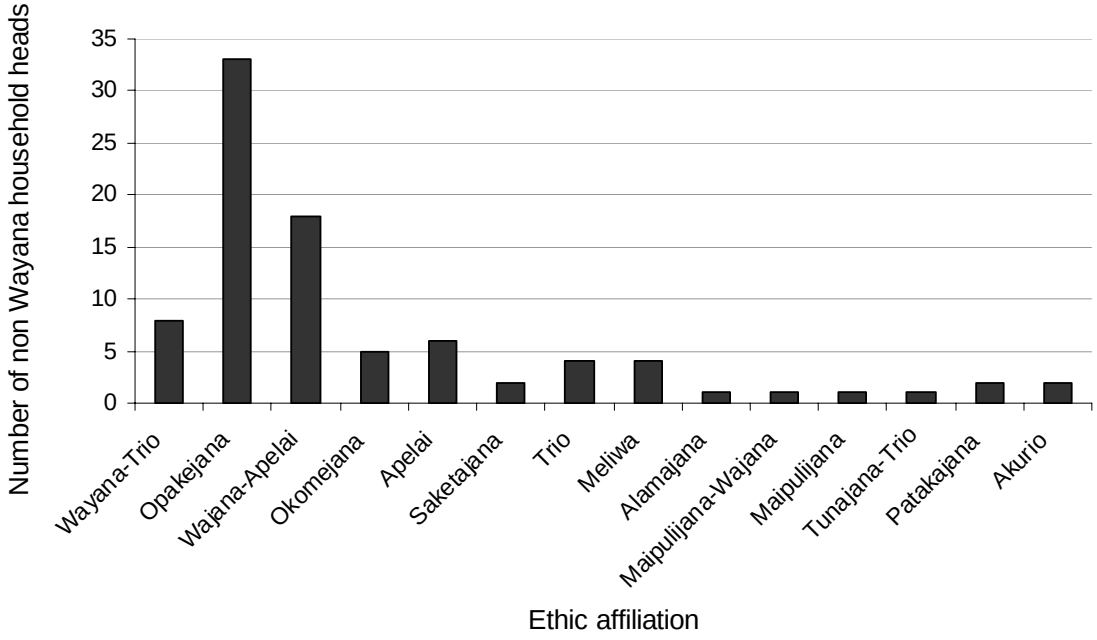
The people we know as "Wayana" became one people through the merging of different Indigenous ethnic groups, probably in the 18th century (Boven 2006). The main groups among them were the Upului, the Opagwana, and the Kuku(i)yana. Particularly the Kukuyana (litt: fireflies people), named for its fierce warriers, are often considered the 'real' Wayana (idem). Through the years, the Wayana have mingled with and absorbed other –often related- Indigenous ethnic groups. The Roucouyenne and Apalai became part of the Wayana long ago, while the Emerillion and members of many other tribal groups more recently (Fig. 6.2). Even though there has traditionally been little intermarriage between the Wayana and their Maroon neighbors, the presence of mixed children suggests that occasional sexual relationships do occur. Where Wayana families live in Maroon villages (i.e. Maripasoela, Papaiston) inter-ethnic (Wayana-Aluku and Wayana-mainland French) couples and children are more common.

Just over 50 percent of male (53.6 %) and female (56.5 %) heads of the sampled households in Puleowime (Apetina), Palumeu, and Kawemhakan (Anapaike) are Wayana born out of two Wayana parents. The remaining people reported tribal affiliations with 11 different ethnic groups (Fig. 6.2). In addition to the listed groups, some individuals living in the Wayana communities along the Lawa said that they also had Emerillion among their ancestors.

One can expect more mingling with non-Indigenous peoples in the East of Suriname in coming years as a steady number of mainland French is (temporarily) living in the French

Wayana villages as teachers, doctors, military, and other French service providers. Meanwhile Kawemhakan is frequently visited by small-scale gold miners of Brazilian, Maroon, Haitian and other origins who are spending the night or a few days. Moreover, Wayana youngsters who attend boarding school in the French Aluku village of Maripasula are increasingly integrating in both the Aluku community and mainstream French society. In the village of Palumeu, more mingling with Trio may be expected as these two populations share one village.

Figure 6.2 Ethnic background of non-Wayana household heads in the communities of Puleowime (Apetina), Palumeu, and Kawemhakan (Anapaike), among households counting at least one (part) Wayana member.



6.3 Educational facilities

6.3.1 Public schools

Starting in the 1960's and continuing to the 1980s, the only schools operating in the Wayana villages were missionary schools. The mostly US-based missionaries who operated these schools had virtually an exclusive say over the curriculum. Classes were held in the Wayana language and focused on the bible. Only a few hours per week the school children were exposed to Dutch and general education. During the military dictatorship, all education had to be in Dutch. Baptist learning books were abandoned and missionary education was prohibited. All schools were taken over by the government and became public schools with teachers that were paid by the government.

The village of Puleowime (Apetina) did have a public primary school until 2002, when the last teacher left. Currently the school building and teachers houses are in a deplorable state and there is no teacher. During the four years that followed, the children of this village have had no access to formal education. The school and teacher houses were recently

(2007) rebuilt with assistance from the Community Development Fund Suriname (CDFS), an Inter-American Development Bank (IDB) sponsored initiative. At present (2007-8 school year), one head-master, three qualified teachers, and one Wayana teaching assistant are teaching close to 100 children in the ages 4 to 15. ACT-Suriname has been supporting the Apetina school with school supplies and the funding of cultural/educational outings and events.

The school in Kawemhakan closed in 1995 due to a lack of teachers motivated to work in the area, and a lack of funding to maintain and stock the school. At present the Ministry of Education does not want to send teachers due to the low population numbers. Many Wayana have left Kawemhakan to live in one of the French Wayana villages with a school, with the result that there are even less people left on the Suriname side. The French kinder garden and elementary school admit Suriname children as long as there is sufficient place in the classrooms. Children start Wayana-spoken pre-school from the age of three. As children attend higher classes the French language increasingly dominates and by the time they start grade one, they are sufficiently fluent to follow all-French education.

Figure 6.3 Educational facilities in the Wayana villages of Palumeu and Puleowime (Apetina)

Classroom in Palumeu elementary school

Dilapidated school building in Puleowime (Apetina)

The educational situation is better in the mixed Trio/Wayana village of Palumeu. In 1999, the Margreet Kauffman Foundation (MKF)[19], which works closely with the Ministry of Education, completed the construction of a primary school building in this village. Four teachers from Paramaribo and one from Palumeu are teaching in five well supplied classrooms: pre-school, 1st grade, 2nd & 3rd grades, 4th grade, and 5th & 6th grades. Eighty-nine children in this village attend school. Their parents do not need to pay school fees as the Ministry of Education (*Ministerie van Onderwijs en Volksontwikkelin*g - MINOV) is considering their financial limits. Notebooks and writing materials are sponsored by MINOV and MKF. The most pressing current problem is a lack of teacher housing; until the 2005-6 school year teachers could stay at the facilities of tour operator METS. Since October 2006 METS' facilities are no longer at the disposal of the teachers.

[19] More information about this foundation may be found at their web site: http://www.mkfoundation.nl/content.php?pid=8&t=mkf

As the first cohort of school children only graduated past year, it is too early to have drop-out rates. Informal observations suggest that most children continue school – though many double one or two classes. Boys are more likely than girls to drop out; they need to help their fathers with hunting or are distracted by larger boys in the village.

Wayana children have virtually no options for continued education at a Suriname high-school or technical training center. Logically secondary education is no option for the children from Apetina, who have not been to elementary school and speak little or no Dutch. Children from Palumeu who do speak sufficient Dutch could in practice attend high school in Albina or Paramaribo. However, few parents want to send their child away at such a young age. They fear their children may not receive the same care and attention from relatives in town, and that they may be lured by bad city habits such as alcohol and drugs. At 22 US$ per child per month (60 SRD), sending children to boarding school is much too expensive for most families. Nevertheless, five girls who completed the Palumeu elementary school in 2005 have gone for continued education at boarding high schools (MULO and LBGO) in Paramaribo.

Children from the Suriname Wayana villages along the Lawa River who have completed the French primary school are not automatically allowed to go on to the French *Lycee* (high school) and boarding school in Maripasula (FG). Only Wayana children with a French *Carte de Séjours* (residency papers) and very talented students are admitted at no costs. Other children fall into a lacuna; they are not allowed to continue their education in French Guiana but neither speak sufficient Dutch to go to school or work in Suriname.

6.3.2 Skills training

The opportunities for attending skills training or alternative forms of educations are extremely limited in the study villages. The Medische Zending has trained one or two people per village as primary health care providers, which occurs in the capital city. In the village of Puleowime (Apetina), about 15 children are regularly visiting the ACT clinic to learn about medicinal plants and other elements of traditional knowledge. ACT has trained its clinic personnel in wound treatment and bandage application, and has delivered a community wide hygiene workshop in 2005.

WWF-Guianas has held several trainings related to its project entitled “Promotion of Sustainable Use of Wildlife Resources in Puleowime (Apetina), Suriname”. Trainings covered:

- Sustainable fisheries technologies; including the construction of fish nets (2004-5)
- Suriname Game Law (2004-5)
- Eco-tourism and tour guiding (2005-6) including: eco-tourism planning and management, account management, the use of traditional knowledge and non-extractive exploitation of natural resources for eco-tourism, to care for guests, and the development of cultural and traditional forms of entertainment and education.

Approximately 20 Wayanas followed these workshops, with slightly more men than women attending.

An independent entrepreneur is currently teaching Dutch to adults and children in Puleowime (Apetina) in the afternoons. A Peace Corps worker in this community is teaching English to interested people. Once he has learned some Wayana he will probably dedicate himself to providing training in small business development.

In Palumeu, tour operator METS trains its Indigenous cooks, boatmen, home keepers, and bar and kitchen operators. These trainings last between 14 to 30 mornings (8-12 am), and skills are being upgraded each year. In addition to basic skills related to their task, people learn how to respond to tourists and their preferences. The organization also started to train Indigenous tour guides but none of the trainees completed the training. In Kawemhakan (Anapaike) there are no opportunities for skills training. In 2006, METS organized a training in the fabrication of silk screens (*zeefdrukken*), which was apparently very successful.

ACT-Suriname's capacity building workshops for the directorate of TALAWA, a Trio and Wayana umbrella organization, have covered foundation management, business administration, and land rights.

6.4 Knowledge and skills

6.4.1 Language[20]

The Wayana language belongs to the Carob language family. As the Wayana mingled with various other ethnic groups, their language adopted elements of these languages. In some cases, smaller languages, such as Upului, have ceased to exist. The Apalai language, on the other hand, is still actively spoken in Wayana villages. This language is much respected by Wayana and often the language of choice during traditional ceremonies.

Children grow up in the Wayana language. In Palumeu, the only Wayana (mix-Trio) village with an elementary school, children start learning Dutch –the national language- as they enter pre-school. In the Puleowime (Apetina) and Kawemhakan (Anapaike) general regions, few children learn to speak Dutch. Suriname Wayana children from the Lawa River who have been admitted to the French elementary school in Twenké (FG) are learning to speak French. Youngsters who are attending the French boarding school in Maripasula are fluent in French.

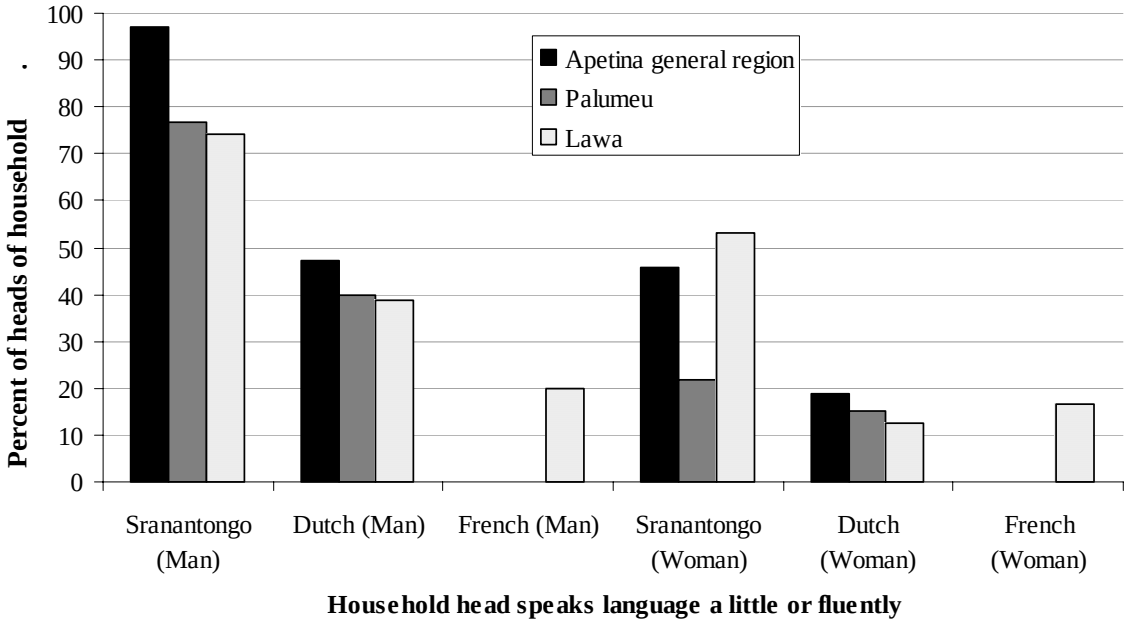
Among adults, men are more likely than women to speak the national language Dutch or the lingua franca Sranantongo. These differences are probably due to the greater mobility of men, who are within the households the ones to travel to town and deal with outsiders for trade or other reasons. Few Wayanas speak any Dutch; more than half of male heads of household (57.1 %) and 85.5 percent of females do not speak the national language at all.

[20] Much background information in this section was adapted from Boven 1997

When dealing with outsiders, the Wayana are more likely to use Sranantongo. In the Tapanahoni river basin, a third of male household heads (34.8 %) and 18.3 percent of females says they understand a bit of Sranantongo, while more than half of these men (53 %) and 13.6 percent of women are fluent in this language. Furthermore, 43.9 percent of men and 17.9 percent of female heads of household in this region speak a little or fluently Dutch (Fig. 6.3).

Along the Lawa, a third of male household heads (33.5 %) and 15.6 % of females speak Sranantongo well, and respectively 38.7 percent and 37.5 percent speak this language a little bit. In addition, 12.5 percent of male household heads and 9.7 percent of females speak some French, and two men and three women speak this language fluently. Relatively fewer people speak Dutch (Figure 6.3)

Figure 6.3 Language skills in the three village areas



In addition to these national languages, older Wayana may speak a variety of ceremonial and opportunistic languages. The 18th century Maroons, Trio, Wayana, and Caribs, for example, developed a pidgin language that was based on Ndyuka and elements from (at least these) three Indigenous languages. This trade language is no longer spoken today as Wayana tend to speak Sranantongo with their Maroon neighbors.

Furthermore, during important traditional cultural events, parts of the ceremony are sung in other indigenous languages. An example is the *elëmi* or magic song, which is used among others for curing, poisoning, and charming. *Elëmi* are sung in a special way; with a whispering voice and very fast[21]. Both men and women can sing these songs. Another special ceremonial chant is the *Kalau*, which acounts the history of the Wayana and the origin of traditions. The man who sings the Kalua, which may continue for several hours,

[21] Boven 1997

is always someone who is much respected for his knowledge. A choir responds to him. The audience cannot understand most of what is sung, as a secret language is used.

Finally, a shaman or pïjai man –in his trance- uses special songs and language during their healing sessions. These languages are used to speak with the spirits, primarily the shaman's head-guardian spirit, who will speak in name of the shaman with all other spirits that are needed during a particular séance. The pïjai language is probably composed of (an) ancient Indigenous language(s), possibly mixed with self-made words.

6.4.2 Educational achievement

Given the poor access to educational facilities in the Wayana territory, it is not surprising that educational achievement is low. Table 6.2 sums up the educational achievement in the various Wayana communities.

Table 6.2. Highest class attended by heads of household in the three Wayana communities

	Puleowime (Apetina)	Palumeu	Kawemhakan (Anapaike)
Highest grade obtained by male head (Mean)	2.3	1.2	2.6
Highest grade obtained by female head (Mean)	1.2	0.9	1.4
Highest grade obtained by any household member	2.9	3.7	4.5
Percentage of male heads of household who have never attended school	16.7 %	69.7 %	15.6 %
Percentage of female heads of household who have never attended school	42.9 %	60.6 %	34.4 %

Wayana from the Lawa villages score better on educational indicators than those from the Puleowime (Apetina) and Palumeu communities along the Tapanahoni. This observation may be a spin-off effect of the presence of French schools nearby. Particularly the Palumeu population has hardly been to school at all, with male and female household heads having obtained, on average, just about one year of education.

Educational achievement of adults may say more about past access to education that about the current situation. Several educational indicators suggest that present access to education in Palumeu and the Lawa communities is better than in Apetina. For example, only three adults in the interviewed households in Apetina (4.1 %), and 19 young adults from the Lawa communities (18.8 %) have completed elementary school, with men being more likely to women to do so. Among the 40 children from the Lawa communities between the ages of 6 and 15, seven (17.5 %) have completed six years of elementary education, and most others are still enrolled in school. The same is true for Palumeu where since 1999/2000, most children are entering school from age 4 on. Of the 37 children of the same cohort in Apetina, by contrast, the grand majority (83.7%) has never been to school. The two highest educated children in this village have reached grade two. Virtually no-one in any of the study villages has followed vocational training.

6.4.3 Literacy

The missionaries who established the modern Wayana population centers translated the bible into Wayana and taught the Wayana to read it. By ensuring that the bible was – and largely still is- the only literature in Wayana, the missionaries gained much influence on the Wayana worldview and a virtual monopoly over their access to (written) information. Efforts by outsiders to translate other documents into Wayana were not heartily welcomed by the old-guard evangelizers.

Regardless of the missionaries' motives, the results of their efforts are admirable. As compared to the Maroons, for example, the Southern Indigenous groups have much better reading and writing skills – even though their access to education is worse. Almost all male household heads from Puleowime (Apetina) (73.3 %), Palumeu (75.0 %) and Kawemhakan Anapaike) (93.3 %), and respectively 51.7 %, 60 %, and 68.6 % of women can read and write in Wayana without any problems. Fifteen percent of household heads in Puleowime (Apetina), 14.0 % in Palumeu, and 9.8 percent in Kawemhakan (Anapaike) say they handle this skill a little bit. Fewer male (39.2 %) and female (18.2 %) heads of household are literate in Dutch. These figures are consistent across villages.

6.5 Health

6.5.1 Current health problems

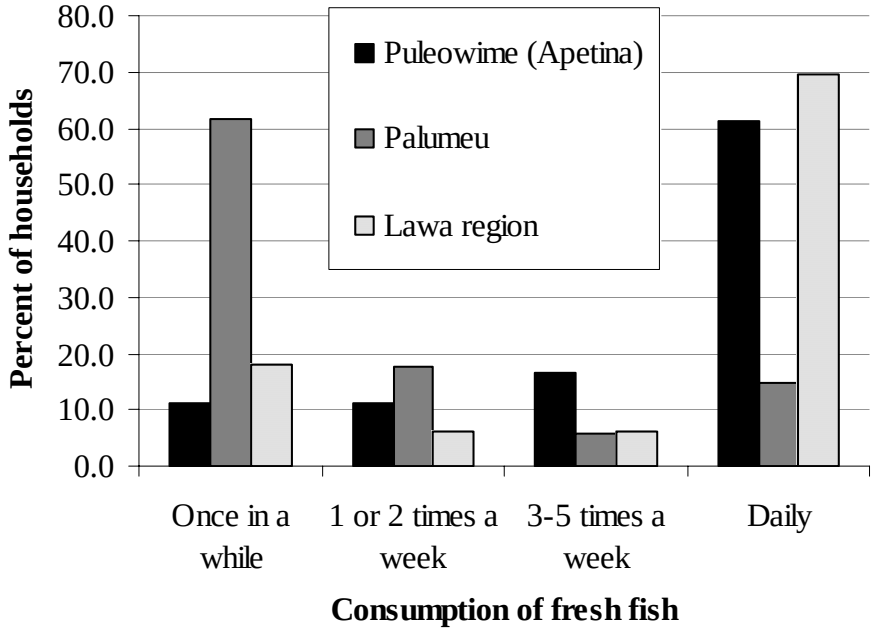
Generally the Wayana population health appears to be good and child mortality rates are low. The Medische Zending has recorded three cases of infant or child mortality in 2004-2005 in the entire Wayana area. Two of these cases were in Palumeu and may not have been Wayanas but Trio children. Conversations with local health workers and villages and the available literature suggest that the main health problems among the Wayana are – not necessarily in this order: poor nutritional health (e.g. vitamin deficiency); viral, bacterial, and parasitic infections; malaria; common colds and flue; diarrhea; and mercury contamination. Health threats that have not yet manifested themselves on a large scale but warrant attention are HIV/AIDS and diseases associated with high fat/sugar/salt diets such as diabetes, heart disease, and high blood pressure. Finally, a non-disease related cause of death that is worth monitoring is suicide. We discuss each of these conditions below.

Nutritional health

The Wayana diet is protein rich due to the high consumption of fish (see figure 6.4). Yet the daily food intake may not meet the daily requirements for several important vitamins and minerals. Many Wayana –particularly women- suffer from iron and hemoglobin deficiency, which is most likely a result of the lack of iron-rich meats (red meat, poultry), beans, whole grains, and leafy greens in the Wayana diet. Only 12 percent of Wayana families, for example, reports eating bush meat at least once a week. Iron deficiency and its aggravated condition, anemia; particularly affect women due to their greater iron needs during menstruation, pregnancy, and breastfeeding. Another manifestation of vitamin and mineral deficiencies may be retarded growth in children. A detailed 1999 nutritional study among the French Guiana Wayana by the *Réseau National de Santé Publique* (National

Bureau of Public Health) suggests a causal relation between low food quality and stunting in Wayana children.

Figure 6.4. Frequency of fish consumption by the Wayana population



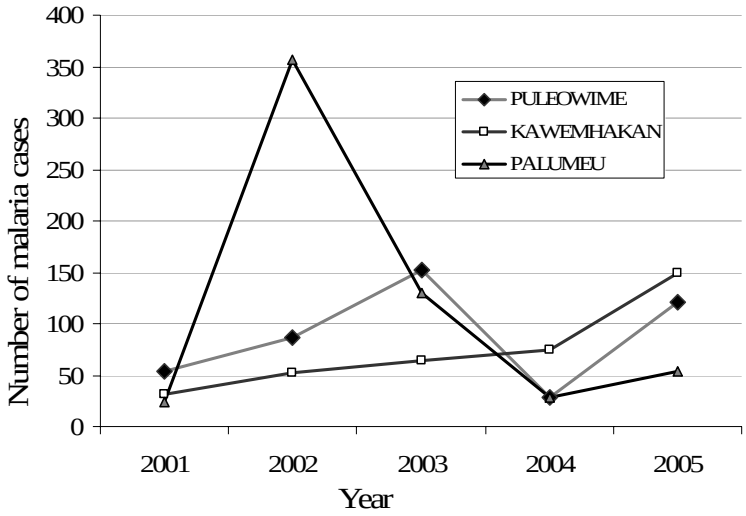
Viral, bacterial, and parasitic infections.
Low body height also may be an outcome of multiple and repetitive viral, bacterial, and parasitic infections. Many Wayanas are suffering from various types of intestinal worms. In addition, infection-related skin problems, such as white spots and sours, are common in the study population.

A particularly serious and common group of parasitic diseases are the leishmaniases. Leishmaniases is transmitted by female sand-flies that feed on the blood of a host; wild (e.g rodents) and domestic animals (e.g dogs). The sand-fly vector is usually infected with one species of flagellate protozoa belonging to the genus *Leishmania*. Leishmaniasis presents itself in humans in different forms with a broad range of clinical manifestations. Virtually all infections appearing in Suriname are cutaneous, meaning they affect the skin. Cutaneous leishmaniasis usually produces skin ulcers on the exposed parts of the body, such as the face, arms and legs, causing serious disability and leaving the patient permanently scarred. Diffuse cutaneous leishmaniasis never heals spontaneously and tends to relapse after treatment.

Malaria
Malaria is one of the main causes of illness in the study villages. The clinics in Puleowime (Apetina), Kawemhakan (Anapaike), and Palumeu registered respectively 121, 149, and 53 cases of malaria in 2005, which is an increase from the previous year (Figure 6.4). The per person malaria risk is highest in the village of Kawemhakan, probably due to the proximity of small-scale gold mining activities within a 10-km radius of the village. Malaria typically is abundant in and near small-scale gold mining sites because abandoned mining pits forms

a breeding ground for insects including the malaria mosquito (*Anopheles gambiae*). In the 4th quarter 2006 malaria had decreased by approximately 75% as compared to the previous year due to an intensive antimalaria campaign by the Suriname Ministry of Health.

Figure 6.5 Malaria cases reported in the Medische Zending clinics of Puleowime (Apetina), Kawemhakan (Anapaike), and Palumeu (mixed Wayana-Trio)



Source: Medische Zending 2006

Upper respiratory tract infections

Upper airway infections are the most common health problems observed in the clinics of the villages of Puleowime, Kawemhakan, and Palumeu. Over the past five year (2001-2005), the three Medische Zending clinics combined treated on average 234 young children (ages 5 and younger) and 253 older children and adults per year with this condition (Medische Zending 2006). These figures concur with people's regular complains of having the flu or a cold. Wayana patients registered at the Palumeu clinic were suffering more from this condition than the inhabitant from the other regions, both in absolute numbers and relatively to the number of inhabitants.

Lower respiratory tract infections

Lower airway infections are the second most common disease treated in the Medische Zending clinics, with an average of 101 young children and 92 other patients per year in the three clinics combined over the past five years(Medische Zending 2006).

Diarrhea and dysentery

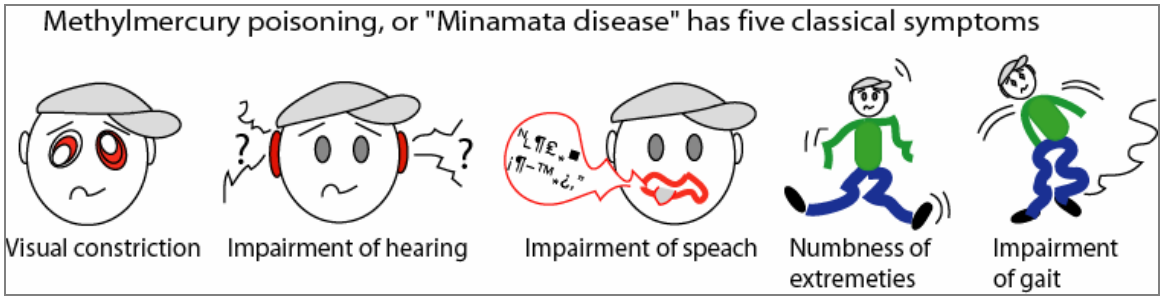
Many children regularly suffer from dysentery and diarrhea. This condition is more common in the dry season when people have less access to rain water. In the village of Puleowime (Apetina), for example, families rely on the river for drinking water in these months. Over the past five years, the three MZ clinics together have treated an average of 210 young children (ages five and younger) per year for diarrhea, and another 47 young children for dysentery (Medische Zending 2006).

Mercury pollution

In the past two decades, the mineral-rich Lawa and Tapanahoni watersheds have attracted large numbers of informal –and often illegal- small-scale gold miners. These gold miners use mercury, which amalgamates with gold, to separate gold particles from the soil and waste materials. The process is effective, simple and cheap (1kg of Hg costs ~1g of Au). A considerable amount of mercury ends up in creeks and rivers as it is spilled or, indirectly, after evaporation with rainfall. Here inorganic mercury (as one buys it in the store) is being taken in by micro-organisms and transformed into the very toxic organic or methyl-mercury. Small fish eat the micro-organisms and in turn are eaten by larger fish. Mercury moves up the food chain until it ultimately may end up in the highest trophic level: humans. In this process mercury bio-accumulates, which means that it build up in one's body. The Wayana are vulnerable to mercury contamination due to their high levels of fish consumption; 86.2 percent of Wayana families consume fish at least once a week, and 64 percent even eats fresh fish daily (Figure 6.4)

People risk chronic mercury poisoning when they absorb the toxic through the skin and mucous membranes by inhalation and ingestion over a longer period of time. A recent study among the French Guiana Wayana found worrisome mercury levels in the inhabitants of four Wayana villages along the Lawa (RNSP 1999)[22]. The average levels of mercury in hair were 11.4 (± 4.2) µg/g; well above the cut-off level of 10 µg/g established by the World Health Organization (WHO). More than half of the tested people showed mercury accumulation above this standard. Mercury values were relatively lower in infants, but even in this group 20 percent showed mercury contamination levels of more than the recommended 10 µg/g. Three breast milk samples of nursing women that were tested also showed much higher values than in a reference population. As expected, the researchers found that mercury intake was particularly high in the dry season, when fish is easier to catch.

Figure 6.6. Minamata disease[23]



Chronic mercury poisoning affects the central nerve system and can cause Minamata disease (Figure 6.6). Mercury contamination is particularly worrisome in infants and young children because it may disturb their brain and neurological development. Noticeable effects include delays in learning to speak, poor motoric skills development, and slow

[22] The village of Taluhen, which also was included in the EES, was part of this mercury survey
[23] Source: Heemskerk & Oliviera, 2003.

cognitive development. We know of no regional studies that have conducted neurological or physiological tests among fish consumers living in or near small-scale gold mining sites to assess mercury induced health effects. Such tests are important because they can help public health officials evaluate mercury-related health risks and develop policy initiatives to decrease these risks. In addition, health tests may help medical personal better recognize and treat the symptoms associated with different stages of mercury contamination in people.

6.5.2 Main health threats

HIV/AIDS
HIV/AIDS is a severe threat to public health in entire Suriname, including the interior. Between 1993 and 2000, the number of new infections quadrupled on a national level. The MZ has listed one case of HIV infection in the Puleowime (Apetina) general area. In Maripasula along the Lawa River, where several French Guiana Wayana families live, three HIV/AIDS cases have been reported. Yet this does not mean that the other Wayana communities are HIV-free. As testing only occurs among pregnant women who visit the health clinic and among people with clinical indicators, the real number of regional HIV-positive cases is probably higher.

Increasing contact with outsiders, especially in the border-zone with French Guiana, increases the chances of infection. The relatively high rate of occasional extramarital sexual relations, poor HIV/AIDS awareness, and low condom use elevate infection risks in this population.

Diabetes, heart disease, and high blood pressure
Increased contact with the urban area has changed dietary patterns. Forty percent of interviewed families eats canned fish or meat at least once a week and one fifth (21.5%) even daily. In addition, the modern Wayana diet contains more fat, sugar, and salty snacks than the traditional diet. Diseases related to the changed eating patterns – such as diabetes, heart disease, high blood pressure, and bulimia- are on the rise and can be expected to become severe in due time.

Suicide
Suicide used to be rather common among the Wayana but has become less so under influence of the church, which perceives suicide as a major sin. Still, there have been three suicide attempts in Puleowime (Apetina) over the past five years, one of which was successful. The attempts are usually related to relationships and acceptation. There are no reported suicide attempts in Kawemhakan en Palumeu. Suicide remains an important problem among French Wayanas, with annual victims being reported – usually related to excessive alcohol consumption.

6.5.3 Traditional healing

The pïjai and other traditional healers
Shamans and their traditional healing practices have been central to the lives of Suriname's Indigenous peoples since pre-Columbian times. The *pïjai* or shaman uses a variety of methods to treat the ill. In addition to making medicine from curative herbs and plants, the healing process may include shamanic dreams in which the *joloks* (forest spirits) advice the pïjai; smoking to communicate with the spirits; the transformation of the shaman into different appearances (e.g. a jaguar) to visit accompanying spirits villages; and massage. The shaman also may suck arrows, bones or fragments from one's body. These items have been shot into the body by malevolent *joloks*. Pïjai typically work within their family group, but usually are willing to help others against a fee- which only should be paid after the patient is cured (Boven 1998).

With the arrival of US missionaries and the conversion of the Wayana to Baptism, holistic healing practices were considered pagan rituals and unacceptable. The pïjai men lost their central role in society and even were seen as undesirable elements of society. Some pïjai stopped their practices, while others went to live in separate family-based kampus at some distance from the missionary village. Tutu Kampu and Kumakapan, for example, are the homes of two active pïjai and their extended families. Today *pïjai* are still consulted for certain illnesses, but this tends to occur more or less covertly and only sporadically. Of all people who had fallen ill in the week prior to the household surveys, no-one had sought help from the *pïjai*.

In addition, several specific healing practices may be practiced by specialists other than the *pïjai*, such as the application of medicinal plants by an *ëpiman* (natural healer), the singing of a *yepi ëlemi* [24](charm, magic song), and the use of the magic plant *hemït*. This plant can be used for curing but also for other purposes: you can make a man fall in love with you with *hemït*, or make your dog a good hunting dog by giving him *hemït*. An *ëlemi* also may be used for seduction or, for example, to make the rain pass. Usually each *ëlemi* singer has his or her own specialty area. Hemït and ëlemi continue to be used sporadically to solve personal health or other problems.

The shaman's apprentice program
In 2002, the Amazon Conservation Team-Suriname (ACT) with the Wayana initiated the shaman's apprentice program in the village of Puleowime (Apetina) to promote the preservation of traditional medicinal and other knowledge. Through this program young apprentices are encouraged to learn from the elder pïjai and ëpiman about plant-based medicine. These people are trained to be ëpiman rather than pïjai do, due to negative association with the latter. Today Puleowime (Apetina)'s traditional health clinic is operated by two local shamans, one senior apprentice, and three junior apprentices, who are diagnosing and treating patients on a daily basis. Operational costs and salaries of the clinic workers are covered by ACT. Over the past year, approximately 30 percent of

[24] The yepi or helping ëlemi differs from the 'normal' song ëlemi, which is part of a traditional dancing fest. In the village of Apetina, the song ëlemi is usually practiced in December, when – as was explained- people are drunk from *kasiri*, a traditional alcoholic fermented cassava drink

patients from the community chose to be treated by the shaman's and their apprentices, while the remaining 70 percent went to the western clinic operated by Primary Health Care Suriname – better known as MZ (see below).

Upon request from the village, ACT will also begin the set up of a traditional health clinic in the village of Palumeu, in early 2007. In July 2006 ACT staff visited the village of Kawemhakan on the request of the village kapitein to talk about the possible opening of a medicinal health clinic in this village. At this occasion the villagers emphasized they did not want anything to do with *pïjai* practices. They were, however, interested in the preservation of knowledge about *ëpi* (medicinal plants). The possibilities for creating of a clinic are still being evaluated by ACT's Health coordinator.

Treatment results suggest that ancient medicinal knowledge transferred through the traditional health clinic has great potential to benefit the health of Wayana families. For example, forest medicine has proven particularly effective against leishmaniases.

6.5.4 Public health care: MZ

In the Wayana territory there are three MZ health posts; in the villages of Puleowime (Apetina), Kawemhakan (Anapaike), and Palumeu. The clinic in Puleowime (Apetina) is run by a registered nurse who is assisted by two local health workers. The clinic in Kawemhakan (Anapaike) is operated by the village kapitein alone. This situation is not ideal; when the kapitein travels to the city for his public duties, the clinic is closed. Wayana in this village may also visit the French clinic (*dispensaire*) in Maripasula or –for more serious cases- in St. Laurent. These clinics treat all Wayana patients free of costs, regardless of nationality. A quarter of people from the Lawa households who had fallen ill in the week prior to the interview (N=16) had received medical care in French Guiana. The clinic of the village of Palumeu is operated by two local health assistants.

Recently malaria has been reduced due to an anti-malaria campaign initiated by MZ and funded by the Global Fund (Global Fund Project SUR-404-G02-M). This program has, among other, given impregnated mosquito nettings to communities throughout the interior, including Palumeu, Puleowime (Apetina), and Kawemhakan (Anapaike).

6.6 Gender relations

6.6.1 Life cycle

From a young age on Wayana boys and girls are socialized for the roles they will fulfill later in life. For girls this is being a mother, wife, and farmer. By the time they have reached an age of 6, young girls are babysitting their even younger siblings and helping their mothers do household chores (e.g. washing clothes and dishes), work on the agricultural plot, and process food. Similarly, young boys are fishing and playing with self-

made bows and arrows. Where there is a school, parents place much importance on sending both boys and girls to obtain formal education.

We did not observe or hear about parents' preference for either sex at birth or about the preferential treatment of boys or girls. Informal conversations do suggest that in the Lawa region, sons are more likely to be sent on to continuing education than daughters. This disparity probably has little to do with a wish to limit the girl's education and more with fear for unplanned pregnancy, which becomes more likely as the girl moves away from her parent's guarding eyes to go to boarding school or stay with a host family. Pregnancy out of a casual relationship damages a girl's reputation and diminishes her chances to find a good husband.

Marriage fulfills a central role in the life cycle of a Wayana woman. Women reach the marital age when they have had their first menstruation and are around 13 to 15 years of age. Youngsters have a choice of partner, though parents may make a pre-selection. Parents prefer children to marry within the extended family; preferably the children of a brother and a sister, or the children of a nephew and niece. Yet marriages outside this structure are common. In the early days men were allowed to take multiple wives but the arrival of the Baptist church has abandoned this practice. We only encountered one man with more than one wife; a traditional healer living outside the village of Puleowime (Apetina) in a family-based settlement.

Like marriage, having children is essential to womanhood. Soon after she is married a woman will have her first child. Despite the generally young age of first child delivery, we find that the average female head of household above the age of 45 had given birth to no more than 4.6 children in the course of her reproductive life. The average male household head in this age cohort had fathered 5.6 children, indicating that it is not uncommon for men to have children with more than one woman. Birth spacing is in part helped by prolonged breastfeeding, which works as a natural inhibitor of fertility. Women also mark their fertile periods on their personal calendars to decrease the chances of getting pregnant In addition, women use aborting plants if they become pregnant too soon. Very few women use regular contraceptives.

As women grow older, they usually take on the care for grandchildren. They will be gradually more supported by their children as they age. At a community level, the traditional respect for older men and women has eroded under influence of acculturation and the church, which have weakened the elders' central role in the transmission of cultural life values and skills to the next generations. ACT's novices program in Apetina aims to re-strengthen the elders' roles as the community's culture bearers by promoting the transfer of traditional knowledge contained in traditional stories and direct teachings.

6.6.2 Activities

Gender roles are clearly defined within the Wayana community, though there also are jobs that are done by the husband and wife in cooperation. Women are responsible for

housekeeping, rearing the children, and subsistence agriculture. As such they also maintain the stocks of cassava, the main component of the daily meal. Women also spin cotton to make hammocks and slings to carry their babies. In addition, many women make traditional crafts for sale to tourists, such as necklaces and bracelets fabricated of beads and seeds and cotton baby-hammocks. These activities generate some cash income, but earnings tend to be low and hence women rely on men to buy household necessities

Men are responsible for completion of the meal with fresh fish or bush meat. They also cut and burn new agricultural grounds, collect building materials and construct the family home, make boats, and fabricate items from non-timber forest products such as baskets. Men also are expected to earn the main share of the family income and to buy all necessities that are not home-made, such as sugar and salt, batteries, fuel, clothing and shoes, kitchenware, canned food, and much more. Both men and women collect wild plants, nuts, and fruits on their trips to the forest; on their way to a subsistence plot or while hunting

Domestic violence does not seem to be a severe problem but it does occur, particularly in the aftermath of *kasiri*-drinking parties, which typically end in drunkenness of the man (and occasionally the woman).

6.6.3 Power of decision-making

Even though there may not be any formal customary regulations limiting women's influence on decisions about the community, in practice women have less power than men to voice their opinion during village meetings. Firstly, women are not admitted to the highest authority positions of head-kapitein or kapitein (see chapter VIII). These functionaries usually lead the meetings and their opinion carries relatively more weight. Secondly, as women are less likely than men to understand and speak the national language Dutch or the national lingua franca Sranantongo. This places women at a disadvantaged position in communications with outsiders such as government officials and NGOs. In the third place, women tend to be shyer and less likely to speak out.

And fourth, women travel to the city less frequently, on average 1.6 times per year as compared to 2.3 times for the average man. People who travel frequently to the city are more cosmopolitan – a trait that is generally admired- and have better access to national-level information. Hence their judgment tends to be taken more seriously than the opinion of someone who does not know the outside world.

Within the family, women and men tend to make decisions about spending of the household budget together. In addition, both may spend part of their own income on themselves. A woman can discuss openly with her partner and show agreement or disagreement with him. She also may decide to leave her husband if she is discontent with their marriage. In that case, however, she will need to move to another village. Because of their economic dependency on men, women will not easily take this step – unless they have met another partner.

CHAPTER VII
FINANCIAL CAPITAL

The following pages analyze financial resources in the Wayana area. We begin this chapter with a description of community level economic structures. Next, in section 7.2, we describe economic activities. In chapter 5 we already discussed the various subsistence activities that Wayanas perform to obtain food and assets. In this chapter we will focus on cash generating activities, distinguishing activities involving natural resources extraction and other jobs.

Differences in access to financial resources between the Lawa Wayanas and their tribal relatives in the Tapanahoni watershed become apparent in subsequent sections on markets (7.3), social security payments (7.4), and asset ownership (7.5.1). The impression that the Lawa population is relatively wealthier is reinforced by a rudimentary analysis of cash flows – proxied by shopping money. The chapter concludes with a description of donor assistance in the Wayana communities.

7.1 Financial infrastructure

Physical financial infrastructure in the form of banks, tellers, exchange offices, and gold buying centers, all of which are common in the coastal area, are absent in the Wayana area. Also stores and restaurants are rare in the Suriname Wayana villages. The latter are more common in the Wayana villages located on the French banks of the Lawa River, due to the greater cash flows in these communities. In the French Wayana villages we also observed a traveling Chinese merchant, which is a rarity in the Suriname interior (Fig. 7.2).

Due to the limited presence of government and large industry, which employ the largest share of coastal Surinamers, wage labor jobs are rare in South Suriname. The few small businesses and NGOs working in the area can only employ a handful of Wayanas, and government functions are sparse. Nevertheless, all families earn at least some cash money one way or the other. Most Wayana heads of household –including those formally employed- earn cash through the informal sale and resale of goods and services (see 7.2). In addition, some Wayana families receive public social support (see 7.4).

Because of the low number of people that earn regular wages and the absence of banks in the near surroundings, very few Wayanas have a bank account. Among those few who do have a checking account are public officials and Wayanas with French papers, who receive their allocations on a bank in St. Laurent.

One consequence of the lack of integration in the formal money economy is that the grand majority of Wayanas cannot obtain credit, for example to start up a small business. This condition is reinforced by the absence of personal land titles, which means that people cannot use their land as collateral for a bank loan. We did not hear about activities of private money lenders in the Wayana living territories.

7.2 Income generating activities

Natural resources not only help people meet their daily dietary need, they also are a source of cash income. Activities involving natural resources extraction are:

1) *Traditional handicrafts*

Fig. 7.1 Wayana handicraft workshop in Kawemhakan (Anapaike), Lawa

By far the most common income generating activity for men and women in all three study areas is the sale of traditional handicrafts. In most (71.0 %) Wayana households there was at least one person selling *tïhamo* (women's crafts) or *tëkamhamo* (men's crafts), and more than a quarter of households (27.4 %) listed even two or three members who practiced this trade. Handicrafts are usually made out of non timber forest products such as seeds, feathers, animals tooth, and so forth. Women usually make necklaces and bracelets from *mara mara* (*Didimopanax morototoni*) and other seeds – though they also may use tiny beads. Men weave baskets and fabricate ancient tools and weapons, such as the club with peccary teeth that in the early days was used in warfare. Especially along the Lawa traditional handicrafts may fetch good prices. The above mentioned warfare bat, for example, sells for € 20,-.

2) *Birds*

In all three villages, Wayana hunters catch singing birds, which they usually sell to middlemen who in turn will sell the birds to national and international clients. Most popular are the large-billed seed-finch (*Oryzoborus crassirostris*, local: TwaTwa) and the lesser seed-finch (*Orizoborus angolensis*, local: Pikolet). In Paramaribo these birds may fetch between US$ 100 and US $400 a piece depending on their vocal skills, though Wayana animal trappers will receive much less. As it is believed that birds bred in captivity will never learn to sing well, there is an established market for singing birds caught in the wild. Both popular species are threatened with local extinction in Southern Suriname. With the arrival of alternative sources of income such as tourism and –in Apetina- the ACT clinic, this activity seems to have decreased in the Wayana area.

Wayanas also catch and sell ornamental birds such as the parakeet and different types of parrots (see section 5.5.3). The market for these birds is smaller than for the singing birds, in part because ornamental birds are also bred by bird sellers in the city.

3) *Mammals*

In addition to birds, Wayanas catch and sell mammals, particularly monkeys. Hunters will take a young animal home when they have shot the mother. Juvenile animals are either

kept in the village as pets or transported to town where they will be sold to local buyers or animal exporters. In other occasions, specific orders are placed from Paramaribo.

4) *Reptiles*
The trade in reptiles is very lucrative as collectors are willing to pay large sums of money for rare specimens. Reptile traders specifically search for green tree boa, other snakes, and the brightly colored tree frogs (See section 5.5.3). In 2005, 400 small tree frogs from the Apetina general area were sold to one buyer for 2,500 SRD (909 USD). These kinds of transactions are not one-time events. On occasional visits to Apetina over the past years transportations of the popular blue poison-arrow frogs, tree frogs, and toads have been observed.

5) *Bush meat and fish*
Wayana hunters mostly hunt and fish for subsistence use in their extensive families. Surplus may be either parted or sold within the village or smoked and sold elsewhere in the region. Few Wayana hunters sell bush meat or fish at the Paramaribo market.

6) *Small-scale gold mining*
Even though the Wayana communities are situated in a gold rich environment, few Wayanas are directly involved in small-scale gold mining. Only the Lawa villages seem to reap economic benefits from mining. Two young Wayana man from households interviewed along the Lawa work as a gold miner, and one woman reported cooking in the mining area. In addition, the village of Kawemhakan (Anapaike) receives 10 percent of the earnings of the teams of small-scale gold miners working within a 15 km radius from the village. These customary concession fees are paid to the village kapitein, who uses (part of) the money for community projects, such as the construction of a central meeting space. In addition, gold miners regularly drop a barrel of gasoline on shore for the villagers when they pass by. The villagers of Kawemhakan (Anapaike) also have asked mine director Naarendorp, whose concession lays just behind the village, to pay 10 percent of earnings from the mining pits located on Wayana customary lands. He has declined.

Non resources-related money generating activities that the Wayana are involved in include:

1) Wage labor
Reflective of the country as a whole, the government is the largest formal employer in the Apetina and Kawemhakan. Traditional authorities who are recognized by the government do receive an honorarium, which amounts to USD 67 (185 SRD)/month for basjas; USD 118 (325 SRD)/month for kapiteins; and USD 182 (500 SRD)/month for head-kapiteins. For recipients under the age of 60, taxes and old-age pension payments totaling USD 7.27 (20 SRD) are deducted.

In the village of Puleowime (Apetina) ten public officials (basjas and kapiteins) receive an honorarium and three people working for the aviation service (*Luchtvaart Dienst* – LVD) receive a government salary. The only other formal employers, the MZ and ACT, have hired respectively two and nine Wayana full/part time. Kawemhakan (Anapaike) also has three public officials but no aviation workers. The kapitein of this village is employed by

the MZ. In addition, due to the greater presence of the French government in French Guiana Wayana villages, there are relatively more wage labor opportunities in the Lawa general area. In Palumeu, tour operator METS is the main employer (see below). In addition, several Wayanas are employed by the government as basjas (public officials) and three as aviation personnel.

2) Transport

Virtually every Wayana family travels to town once or twice a year to buy food, clothing and other household necessities, as well as –occasionally- consumer electronics or larger purchases such as an outboard motor. Families or individuals without their own means of transport and those preferring to share travel expenses will pay a boat owner for the trip. In addition to passengers, boat owners also may transport fuel or other products for others. We did not hear of Wayanas involved in the transport of gold miners, which is a lucrative business for Maroon boatmen.

3) Sale and resale

As travel to the city is very expensive, it only makes sense to go if one needs to buy large amounts. A family running out of sugar, salt, or fuel will try to buy these items from others in the village. The villages of Kawemhakan (Anapaike) and Puleowime (Apetina) do not have formal stores, though Stichting Kuluwajak in Puleowime (Apetina) tends to have items for sale. The one store in the village of Palumeu is owned by the village kapitein. In all villages, people who travel to town may buy extras for resale in the village, hence financing part of their own trip.

4) Food /meals

Wayanas living along the Lawa River, who have access to the profitable French market, also are selling meals. One woman in the village of Kumakapan (Lawa, SUR) owns a restaurant. In addition, several others opportunistically sell food (e.g. bami), for example at times of French festivities such as *La Fête* or the *Quatorze Juillet* (July 14th). We did not observe or hear similar businesses along the Tapanahoni River, though women in Puleowime (Apetina) occasionally earned something cooking for tourists and other village guests. In Palumeu, cooks employed by METS earn a regular wage. In addition, one person in the village bakes bread for sale.

5) Tourism

Both Puleowime (Apetina) and Palumeu have tourist facilities. In Palumeu, the tours are organized and carried out by national tour operator METS. This organization employs 27 villagers as boatmen, kula-men (the person in the front of the boat with a long stick to push off), maintenance personnel, housekeepers, and bar and kitchen personnel. Thirteen of them are employed on a contractual basis and the remaining 14 are hired on a daily basis when they are needed. Salaries start at USD 3.64/day, and may rise to 5-7 USD/day as workers get more experienced.

In Puleowime (Apetina), most tourism activities are managed by Stichting Kuluwajak. Several times per year a French tour operator visits Puleowime (Apetina), bringing groups with approximately 10 tourists per trip. In addition the village received sporadic visits from

Paramaribo tour operators, who brought a total of 85 tourists in the year 2005. Three Wayanas work as tour guides with Kuluwajak. The total number of villagers involved in support activities (e.g. cleaning, cooking etc) may number about ten. The village also receives visits from tour operators who do not work through Kuluwajak but rather make their own arrangements.

6) Marihuana

Key persons in Apetina informed us that marihuana production and sale are practiced in this Tapanahoni community but we do not know how many people are involved. Also two Wayana individuals from the Lawa River general area reported earnings from marihuana cultivation and subsequent sale; even though the kapitein of Kawemhakan assured that this activity is forbidden and not practiced in his village. It is possible that villagers cross the border to buy and/or sell drugs.

7) Other services

Wayanas may earn payment in cash or kind for a variety of services. A pïyai or ëpiman, for example, may be paid a voluntary or fixed contribution for treating a patient. A handyman may assist with house construction or someone may place his house at the disposal of village guests against some fee. Not surprisingly, services that used to be performed against a voluntary contribution –e.g. some *kasiri* or a reciprocal favor- have become commercialized along the Lawa River, where many Wayana families obtain French social support. A renown pïyai in this area, for example, charges a patient € 300 (~ USD 390) per successful treatment.

7.3 Markets

Barter between the Wayanas and the Maroons dates back to the arrival of the Wayana in Suriname in the 18th century. The Maroons had better access to urban goods due to their closer proximity to Paramaribo and a tradition of contact with the coastal zone. The Wayana mostly traded hunting dogs and hammocks for axes, machetes, and other assets that facilitated their productive life. Trade relations with nearby Maroon groups still exist. Wayana from the Tapanahoni River, for example, visit the Ndyuka down stream to sell smoked fish and bush meat.

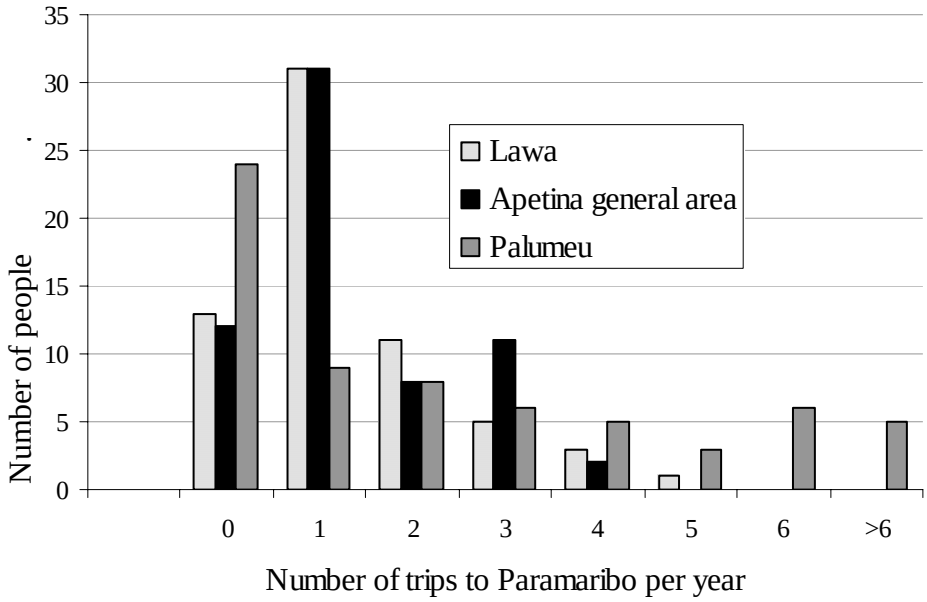
Fig. 7.2 Small business thrives in the in the Wayana village of Twainke, French Guiana (Lawa)

Chinese merchant selling items ranging from baby clothing to house-ware

Fuel shop, selling at various times the coastal price

Modern-day Wayanas no longer rely on the Maroons for the bulk of their needs from town as the largest share of Wayana heads of household goes to the city annually (Figure 7.3). Men tend to travel more frequently to the coast than women; on average 1.7 times as compared to an average of one time for women. In addition, Wayana living along the Lawa River go to Maripasula and other Aluku Maroon and Wayana villages on the French banks of the Lawa River for shopping. These villages have shops and restaurants, and are regularly frequented by traveling merchants (Figure 7.2). There also are small shops in Palumeu and Puleowime (Apetina). Local prices are high though, and for larger quantities people prefer to travel to Paramaribo.

Figure 7.3 Number of times Wayana heads of household travel to the city.



For selling handicrafts, Wayana rely on tourists visiting their villages. French tourists visit the Lawa area regularly, with peak seasons coinciding with the French summer and Christmas holidays. The village of Puleowime (Apetina), where tourism is just starting, is visited around five times a year by groups of French tourists, numbering about 10 persons per group. In addition, Dutch and other tourists visit the village sporadically; in 2005 about 85 people. Palumeu receives bi-weekly visits from mostly Dutch tourists due to the established presence of tour operator METS in this village. We did not hear about Wayanas proactively selling their handicrafts to tourist shops in Paramaribo or Cayenne. Neither do Wayanas take much advantage of tourists as an outlet for products other than handicrafts such as fresh fruits and vegetables, forest toiletries (e.g. shampoo), traditional medicine, or performances such as traditional dances.

7.4 Social security payments

Elderly above the age of 60 receive public old-age support (*Algemene Ouderdoms Voorziening*; AOV), which amounts to 225 SRD (USD 81.82)/month and is being disbursed in cash in the village twice a year. Suriname women may receive child benefits of 3 SRD (USD 1.09)/month for each child under the age of 12, with a maximum of four allowances per month. The Ministry of Social Affairs pays child benefits once a year to 35 households in Apetina (78 children), 41 households in Kawemhakan (101 children), and 24 households in Palumeu (63 children). In addition, specifically needy groups such as handicapped, mentally ill, and the visually impaired receive small allowances. Suriname does not extend unemployment wages, and very few people qualify for social welfare.

Wayana who have the French nationality or residency status are entitled to French social assistance in the form of *allocations familiales*, which include child benefits, welfare, aids in school expenses, and various forms of support to the most vulnerable groups in society such as single mothers and handicapped people. These allocations can add up to several hundreds of Euros per family.

For example; the French government pays a household with three children US$347 (267,21 €) per month in child benefits and extra disbursements as children age (CAF 2006). The same household is eligible for less than four US dollar in Suriname. A single mother without regular income and with at least one child under the age of three under her care may receive approximately US$ 956 (735,75 €; 2006) in monthly welfare benefits. The same person would receive about US$15 per month in Suriname. The Allocations For a Young Child (*prestation d'accueil du jeune enfant (Paje)*) may be obtained from the 5th month of pregnancy (USD 219 /€168,20; 2006)[25]. In addition, low income families may qualify for public support for school expenses (*allocation de rentrée scolaire*), which amounts to USD 348 (€ 268.01; 2006) per child.

In five out of 17 households interviewed on the Suriname side of the Lawa river, and in 11 out of 13 households in French Wayana villages, both heads of household had a French *carte de séjours* (residency permit), which opens the doors to the French social welfare system. Many other families have entered the application process.

7.5 Income and wealth

Wayanas typically earn incomes that are unrecorded, that is, they are not written down. They tend to be variable, or changing from day to day. They also come from various different sources in different currencies. And money from most informal jobs arrives intermittently, meaning that there are undefined periods with and without, income. In order to obtain some idea of peoples general financial resources we used assets, transportation, and shopping money as indicators. These indicators mostly measure consumption, which

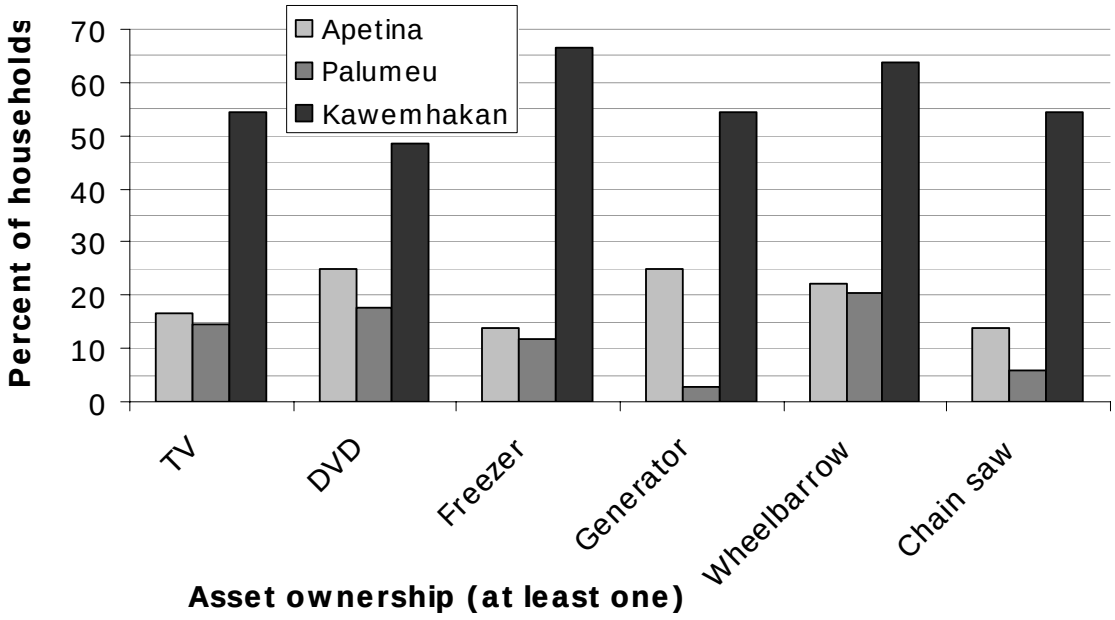
[25] Only one per family at a time unless there are twins, triplets, or other multiple births, in which case the full fee is paid for each child

usually is better remembered by interviewees than income and more closely related to their ability to meet basic needs.

7.5.1 Ownership of assets

Most Wayana families possess at least some goods to facilitate their productive life –such as machetes, knives, outboard motors, and hunting guns- or are considered fashionable, such as transistor radios and modern clothing. Wealthier families typically have more and more expensive assets.

Figure 7.4 Asset ownership among Wayana households living in Suriname, in the general areas of Kawemhakan (incl. Kumakapan), Apetina (incl. Tutu Kampu and Akane Kampu), and Palumeu



Suriname Wayana households living along the Lawa River are more likely to possess expensive appliances and consumer electronics than their tribal relatives in the Tapanahoni watershed (Figure 7.4). Half (52.6 %) of Lawa households on the Suriname banks of the Lawa river own a freezer and another quarter (26.3 %) even two (excl. households in Lensidede). Those without a freezer mostly live in the family camp of Kumakapan; only one household in the village of Kawemhakan (Anapaike) does not own a freezer[26]. In comparison, only 12.9 percent of Wayana households living in communities along the Tapanahoni River owns a freezer.

Similar patterns characterize the ownership of consumer electronics. More than half of Suriname Lawa households versus 15.7 percent of Tapanahoni families own a TV, and 47.4 percent versus 21.4 percent of Wayana homes in the respective regions has a DVD

[26] Also no-one in the small Lawa settlement of Lensidede owned a freezer, data for this village are not included in the statistics beause n household interviews wee conducted here.

player. When we look at popular assets that are not energy operated we find again that Wayana families from the Lawa watershed (considering the Suriname villages only) are in an advantaged position. Almost half of households from this area own a chainsaw, as compared to only 10 percent of Tapanahoni Wayana homes. Furthermore three-quarters (73.7 %) versus one fifth (21.4 %) of Suriname Wayana families from respectively the Lawa and Tapanahoni river basins own a wheelbarrow. Families from the village of Apetina and surrounding kampus are slightly but consistently more likely to possess the mentioned assets than those living in Palumeu.

The observed disparity in assets ownership between the Lawa and Tapanahoni households may in part reflect community-wide access to electricity in the village of Kawemhakan (Anapaike), where the village generator works daily from the early evening until 1 or 2 o' clock in the morning. Gold miners working near this village guarantee the regular supply of fuel for the generator. In Puleowime (Apetina), by contrast, only households that own a private generator have use for electricity driven apparatus. The availability of electricity cannot explain the differences in ownership of other assets though, suggesting that the Wayana families living on the Suriname banks of the Lawa River are richer than families from the Tapanahoni region. This conclusion is limited to Kawemhakan though, as the inhabitants of Lawa communities of Lensidede (not in the statistics) and Kumakapan possess virtually none of the listed consumer goods. We cannot explain the observed differences in asset ownership between the Apetina general area and Palumeu.

7.5.2 Transportation

One of the main assets determining people's ability to meet basic needs is their access to transport. Indeed, one of the things people buy first when they have accumulated some money is an outboard motor. There was no significant difference between Suriname Wayana living in the two watersheds in terms of canoe ownership. The large majority of households (80.4 %) owned at least one canoe, 6 families owned two canoes, and one household even three. Lawa families were more likely to posses an outboard motor though: 68.4 percent of Lawa households as compared to 40.9 Wayana households living along the Tapanahoni River owned an outboard motor.

7.6 Shopping money

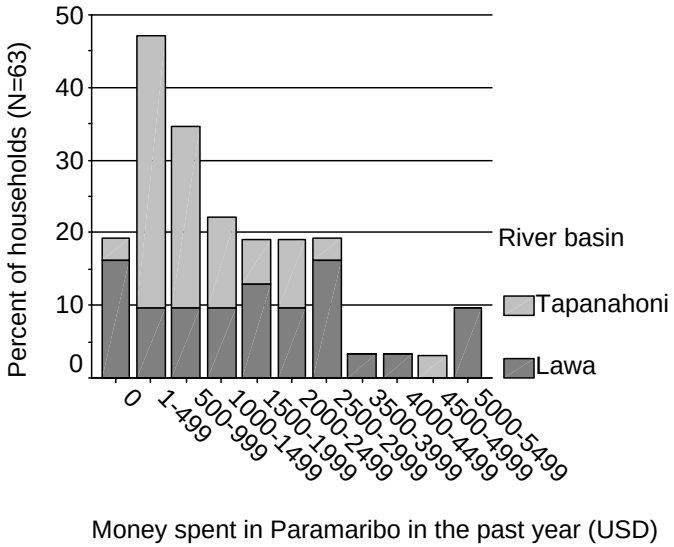
Wayana families tend to buy all their household needs during one or two annual trips to Paramaribo. The amount of money people take with them on these trips is a good indication of their purchasing power. We asked both heads of household how many times in the past year they had traveled to Paramaribo and how much money they had taken with them. Usually women and men take their own money to town. Most couples consult with one another about the items needed most, to which both will allocate a share of their money –reflecting their capacities. In addition, husbands and wives will spend a part of their capital to their own discretion. In the case of women, this money is often spent on

children's clothes and other household needs, while men are more likely to buy tools and appliances.

The average couple reported spending USD 1441 per year in town, ranging from nothing at all among the families who had not traveled to Paramaribo (N=6) to USD 5200 by the Lawa family that had spent most. On average, men have more money to spend than women: 869 USD versus 575 USD, respectively.

Families living along the Lawa are relatively more likely to not travel to Paramaribo. This observation may be explained by the proximity of Maripasula, where many items may be bought, which decreases the need to make the tiring and expensive trip to the capital city. If we only consider the couples where at least one person went to town, we see that households from the Lawa River had, on average, more than double the amount of money to spend on their shopping expeditions as compared to Tapanahoni households: USD 2222 versus USD 1066, respectively ($p < 0.005$). Consistent with this finding, Figure 7.5 shows that Lawa Wayana couples dominate the large spending categories. The real difference in purchasing power will be even larger, as most families from the Lawa region shop a few times a year in Maripasula in addition to traveling to Paramaribo.

Figure 7.5 Reported amount of money taken to the city to buy household necessities and other assets over the past year



7.7 Expenditures

The daily use items people spend most of their money on are: rice, canned food (e.g. sardines), other food (e.g. sugar, salt, flour, sweets), batteries, and fuel. Lesser but consistent amounts of money are used to buy clothing/shoes, toiletries and detergents (e.g. toothpaste, soap), and kitchen and household utensils (e.g. plastic bins, pots and pans). In addition, if there is some surplus, households may save money for larger investments. Most popular capital goods include an outboard motor, a generator, a chainsaw, a large bin to

collect rainwater (durotank), sink roof plates, a wheelbarrow, consumer electronics (e.g. TV, DVD-player), and a freezer.

7.8 Donor assistance

Donor assistance has focused on the villages of Apetina and Palumeu. In 2002, ACT has funded the construction of a traditional health clinic in Apetina (see section 6.5.3). ACT also has supported Stichting Kuluwajak through the donation of a personal computer. In addition, ACT is helping in the start-up of elementary education in this village by providing school supplies such as pens and pencils, notebooks, drawing materials, school bags, and other items for the school children and the village teacher (October 2006).

In 2004 United Nations Development Program (UNDP) and World Wildlife Fund (WWF) initiated a sustainable wildlife management project. Components of this project included the construction of a tourist lodge, training of local people in tourism and management, the promotion of ecotourism in Apetina, and the introduction of more sustainable fishing techniques. This project will be terminated in 2006. Not all planned project components could be materialized due to financial mismanagement by Stichting Kuluwajak, which was the keeper of the funds provided by the UNDP (USD 48,000).

The IDB-funded Community Development Fund Suriname has started the construction of a primary school and teachers' housing in Puleowime (Apetina). This school is expected to be completed by January 2007. In 2006 Peace Corps stationed a volunteer in the village of Apetina to help initiate community-driven development projects.

In the village of Palumeu, the Margreet Kauffman Foundation has been the main funder of the elementary school. Complementary contributions were obtained from tour operator METS and other donors. SKaN Fonds, a Dutch Catholic foundation, has financed the construction and furnishing of the clinic of Palumeu. SKaN Fonds obtains its funding from two Dutch lotteries: the BankGiro Loterij and the Krasloterij. METS co-finances the clinic at Palumeu, is contributing to the construction of new teacher housing, and transports the school teachers for free to and from Paramaribo at times of school holidays.

The EU-funded program Microprojecten has financed a sun-generated freezer for Palumeu village. At present, this freezer is not operating. The UNDP has funded a hydro-electricity project in cooperation with, Media Vision (Ted Jantz), Anton de Kom University of Suriname, and Mr. Arnoud van de Werken. At present the hydropower station has been built, but there is no more funding to transfer the electricity to the village.

Wayana villages on the Suriname banks of the Lawa River have not received any donor assistance in the past couple of years.

CHAPTER VIII
SOCIAL CAPITAL

In this chapter we describe the social resources available to the Wayanas. We start with a description of the roles, status, and election of traditional authorities. These leaders maintain relations with the nation state, which has among its tasks to secure the welfare to its citizens. Where formal safety nets fail, the church, CBOs, and informal relationships of reciprocity provide the informal safety nets – which are described in section 8.2.

Social capital also is generated through relationships among people of the tribe and interactions between Wayanas and outsiders. Sections 8.3 to 8.5 describe these inner and intertribal relations. The chapter concludes with an evaluation of rituals, ceremonies, and traditions -which are essential elements of the social fabric that keeps families and communities together.

8.1 Community governance

8.1.1 Historic community leadership[27]

Traditionally the Wayana lived in rather autonomous family groups and had no strong centralized leadership. Among the most important persons was the *tamusi*, the family elder and social leader, who was usually the person who created the village. A second person of standing was the *pïyai*, the shaman and spiritual leader. In the further past there was a third important person in the Wayana social organization; the *yapoto* or military leader. These three figure heads did not form a central village government; they were rather loosely connected and only collaborated if necessary.

In these days -until the mid 20th century- the Wayana lived a semi-nomadic life. The family group moved on as the hunting area was exhausted or when family members died. If there were problems between the members, family groups would split and continue as two autonomous groups to avoid conflict and disputes.

8.1.2 Leadership in the Wayana community today

More formal leadership appeared after contact with the colonial government. The installation of a paramount chief or *Granman*, village chiefs or *Kapiteins*, and administrative aids or *Basjas* was modeled after the Maroon leadership structure.

In practice, this superficially imposed form of tribal governance fits poorly with the traditional Wayana way of life. Wayana families are neither used to nor willing to accept much interference in their livelihood decisions by members of other families. Moreover, many Wayana feel that these new leaders use their position to benefit themselves and their

[27] Information in this section was derived from Boven 1992.

close family rather than for the common good[28]. For example, *kapiteins* invited to meetings in the city have used these trips to buy items for resale in the village, while they report little of what they learned back to their communities. Given limited popular support, formal Wayana authorities have less say over tribal matters than their Maroon colleagues. Granman Nowahé of Puleowime (Apetina), for example, has little authority over the Lawa Wayana.

Notwithstanding, Wayana leaders do have some important roles to play. The granman and kapiteins supervise customary rules, endorse customary institutions, and preside over community meetings. They also help settle disputes, may sanction community members who violate customary rules, and call in national law enforcement where necessary. Among their most important functions is the maintenance of relations with the national government.

8.1.3 Leadership election

Due to the artificially imposed leadership structure, there is no formal and consistent procedure for the selection of Wayana village leaders. Generally new leaders are chosen through a combination of inheritance, election, and appointment. Leaders preferably are chosen from the families in the direct ancestral line of the original creator of a village. Kapitein Aines of Puleowime (Apetina), for example, who is the grandson of the late chief Apetina, is one of three candidates for the succession of paramount chief Nowahé. The current kapitein of Kawemhakan (Anapaike) is Apetina's nephew once removed.

The inheritance of leadership positions is not straightforward and is complemented by appointment. Before a leader dies or steps down, he may propose his successor to the village. If he has died before he had a chance to suggest a successor, his family may do so. Through community meetings, the opinion of the other villagers is heard. If the proposed candidate is unacceptable to a large share of the people, another person may be proposed. The church used to play a dominant role in leadership selection. The current Wayana paramount chief Nowahé, for example, was a church minister, who was appointed granman by the missionaries. Even though the church today remains formally distant from leadership election procedures, its strong power in the Wayana communities makes it unlikely that a candidate who is not endorsed by the church will be elected as a leader.

Parties other than the church also have had their influence in the election of customary leadership. Kapitein Pesiphe of the village of Palumeu, for example, is a Trio from Kwamalasamutu who came to Palumeu to work as a tour guide for tour operator METS. Because METS needed to establish relations with a formal village head, it promoted this man's appointment as kapitein of the village. That kapitein Pesiphe lives with a cousin of Wayana granman Nowahé makes him more acceptable to the Wayana.

Leadership is male dominated; Wayana women are not admitted to the functions of Kapitein and Granman. Women may become basjas, but their tasks tend to be limited to

[28] Boven, 1992. De Wayana

the traditional women's domain, such as organizing the village women to clean the village. Female basjas seldom attend important meetings, unless it concerns a specific woman's issue, and are shy to speak out when they do attend.

8.1.4 Relations between traditional rulers and the nation state

Until the late 1990s, the Wayana were officially represented in national affairs by the Trio. Today they have their own representation, though not all people locally admitted in the function of granman, kapitein, or basja are recognized as such by the central government. The Wayana paramount chief Nowahé, for example, is officially given the title of hoofdkapitein. Kapitein Aines of Puleowime (Apetina) does not occur at all on the government listing of local authorities in the Wayana area (Table 8.1)

Table 8.1 Wayana authorities acknowledged by the central government

Village	**Function**	**Name**
Kawemhakan	Kapitein	Apoetoe
Kawemhakan	Kapitein	Kanaidoe
Apetina	Hoofdkapitein	Nowahé
Tutu Kampu	Only basjas	
Palumeu	Only basjas	
Kumakapan	Only basjas	

Source: District commissariat Sipaliwini, July 7, 2006

Traditional authorities receive a public honorarium and are accountable to the national government, which is represented by district and resort councils. The form of this accountability, however, is not defined by law and it remains unclear who is responsible for the administration of day-to-day community affairs. The resort council is authorized by law but in practice the customary authorities exert leadership and have virtually no contact with the council. The immobility of the resort council members is reinforced by their limited travel allowances, which makes it impossible for them to travel for meetings the hundreds of kilometers to Paramaribo, where the District Commissioner's office is located.

Government officials tend to respect local leaders when operating in the area and traditional authorities have some say in local matters. Without operational budget or legal recognition of their position, however, the power of customary authorities to govern their people within national political structures is limited.

Apart from the customary authorities, whose power is very limited, the Wayana have no representation in the national government and, as a consequence, have virtually no voice in political decision-making. No single Wayana individual has obtained a high political function during the 2005 elections, such as minister or member of the National Assembly (51 members) or State Advisory Council (15 representatives), let alone president or vice-president. The district commissioner for the vast district of Sipaliwini and most people working in his office are of Maroon descent. None of the *Bestuurs Opzichters*

(Governmental supervisor-BO) for the interior is of Wayana origin; the villages of Puleowime (Apetina) and Kawemhakan (Anapaike) have no BO, and the BO for Palumeu is a Trio man. National political representation is limited to one resort council member who houses in the remote settlement of Tutu Kampu. In a country like Suriname, where personal alliances and ethnicity-based favoritism continue to play an important role in political strategizing, groups without direct representation in the national government are likely to be forgotten.

8.1.5 Law enforcement

Customary authorities have no mandate to speak law and justice. They may not impose laws other than national laws, and they are not allowed to arrest offenders or impose punishment. In practice, local authorities will make an effort to promote adherence to customary laws. They also will resolve small offenses such as theft and village fights through consultations in village meetings.

Wayana authorities depend on national law enforcement agents to deal with serious crime, but the nearest Suriname police post (in travel time) is in Paramaribo. The nearest military post is somewhat closer at Stoelmanseiland, but for the militaries stationed here to reach the Wayana villages will take at least one full day of boat-travel, that is, if there is fuel, a boat, and a working outboard motor to their disposal. The kapitein of Kawemhakan (Anapaike) has previously relied on the French *gendarmerie* to arrest a Wayana man who had committed a serious crime in his village.

8.2 Youth development

There are few opportunities for Suriname Wayana youngsters to develop their capacities. Few Wayana in their late teens and early twenties have sufficient formal education to attend high school, develop a local business, or obtain a regular job in town. Furthermore the villages lack venues for practical skills training, sports, and leisure for youngsters. From trips to the city and DVD-movies they have formed an image of a world they want to belong too, where traditional knowledge and skills are not valued. As they cannot enter that world, many hang around bored.

The lack of opportunities for youth development is an important cause behind the increased use of drugs and imported alcohol in the Wayana community. Marihuana and cheap hard liquor from the city are now consumed more regularly. Examples from other countries suggest that these trends may lead to severe social problems such as alcoholism, drug addiction, suicidal behavior, and (domestic) violence.

8.3 Safety nets

8.3.1 Public and other formal safety nets

The Suriname government does not have a long-term policy strategy to cushion either household shocks or community- and region-wide disasters in the interior. Public safety nets are limited to minimal social welfare payments and sporadic responses to current events.

The most valuable form of insurance the Suriname government provides for its interior inhabitants is free access to health care in forest clinics. The government also expends social security payments including old-age pensions (AOV), child benefits, welfare, and allocations to particularly needy groups, such as handicapped people. These social benefits, however, are too low to provide the safety nets they are supposed to present (see Chapter 7). Households confronted with temporary shocks such as insect plagues or harvest failure, have no-one to turn to.

In April-May 2006, the government and various NGOs provided disaster relief to all interior villages to help them cope with the impacts of severe flooding. While assistance came rapidly and did help many families overcome immediate food shortages, most relief efforts lacked a long-term vision. The grand share of aid money has been spent on food and bottled water droppings, and virtually none on increasing people's resilience to future shocks. Also, as the President declared the entire interior a disaster region (*rampgebied*), foreign tour operators cancelled their trips to the interior – thus hurting the communities' capacity to earn money for reconstruction of destroyed properties.

8.3.2 Informal safety nets

In the absence of a strong public welfare system, the church plays an important role in providing a social safety net for the most vulnerable groups in society. Elderly without children, recovering drug addicts, handicapped, and other less capable members of society find social and some economic support in the church, which obtains its resources from weekly offertories. Other social support structures tend to be family-based, with extended families typically sharing food and other resources.

Formal community-based organizations for socio-economic support are rare. There are no rotating credit groups or occupation-based groups, for example, in the Wayana villages. Villages do take care of their needy members through informal relations of reciprocity. In addition, community members typically provide in kind support to a household that experiences incidental misfortune, for example when a house burns down.

8.4 Organizational capacity

Through social organization people can both build internal capacity and have a stronger representation in their dealings with outsiders, including the national government and Non Governmental Organizations. The Wayana are members – by choice or by default – of a variety of national, regional, and local organizations.

Two organizations represent Suriname's Indigenous Peoples at the national level: The Organization of Indigenous Village Heads in Suriname (VIDS) and the Organization of Indigenous Peoples Suriname (OIS). Only the VIDS includes a Wayana representative. The Wayana (and Trio) are often excluded from activities organized by these national organizations due to the high costs of bringing them to the city.

In 2006, Trio and Wayana representatives established the joint Trio and Wayana Foundation TALAWA to represent the interests of Southern Indigenous groups. The main reasons to start this group were, as dictated in a letter directed to the President of the Republic of Suriname requesting endorsement of the organization, that the Southern Indigenous Peoples "feel insufficiently represented by existing Indigenous organizations in Suriname" and "feel insufficiently involved in the execution of projects initiated by current Indigenous organizations in Suriname" (28 June 2006).

The main Wayana villages have Community-Based Organizations, but not many people are members. Stichting Kuluwajak in Puleowime (Apetina) is administrated by seven Wayana. This organization is the main liaison between the village and national and international donor organizations such as the World Wildlife Fund and the Community Development Fund Suriname. In addition, the female members of the Kuluwajak administration occasionally mobilize women and take care of local women's affairs. Stichting Kuluwajak owns and manages the local tourist lodge and owns the village store.

Stichting Tukui in Palumeu, which counts six members, has been the main facilitator for the UNDP small-grants hydropower project, and for the Margreet Kauffman educational foundation. Kawemhakan (Anapaike) has a woman's organization and one of the villagers is a member of a cultural organization named Tokosi on the French side of the Lawa River. There are no women's groups in Puleowime (Apetina) and Palumeu, nor any youth clubs in any of the Wayana villages.

8.5 Relations of the Wayana with neighboring ethnic groups

8.5.1 Relations with the Trio

Even though the Wayana and Trio know a history of warfare, in modern days the groups have developed harmonious relations. In the mixed village of Palumeu, the two ethnic groups live peacefully together. Also intermarriage and mixed Trio-Wayana children are not uncommon in South Suriname. In recent years collaboration between the Trio and Wayana has intensified, in part with the assistance of the Amazon Conservation Team.

Representatives of the two groups have been involved in several land rights and land management workshops together, and worked together in the mapping of their lands.

8.5.2 Relations with coastal Indigenous groups

Relations between the coastal and the Southern Indigenous groups are ambivalent. On the one hand, they have a special bond as the original inhabitants of the continent. The groups share the struggle for rights to land and natural resources, for political representation, and for the provision of basic services such as electricity, clean water, and education. There also are cultural similarities, among others in the language.

Yet the comparison stops about here. Coastal Indigenous groups are more likely than the Trio and Wayana to speak Sranantongo and/or Dutch, to have enjoyed formal education, to be formally employed, and to have integrated into the national economy. As a result, foundations and organizations representing the Indigenous peoples of Suriname tend to be dominated by the coastal groups and their interests. The Wayana and Trio have fewer opportunities to attend general meetings because of the high travel costs and if they do attend, often remain in the background.

8.5.3 Relations with the Maroons

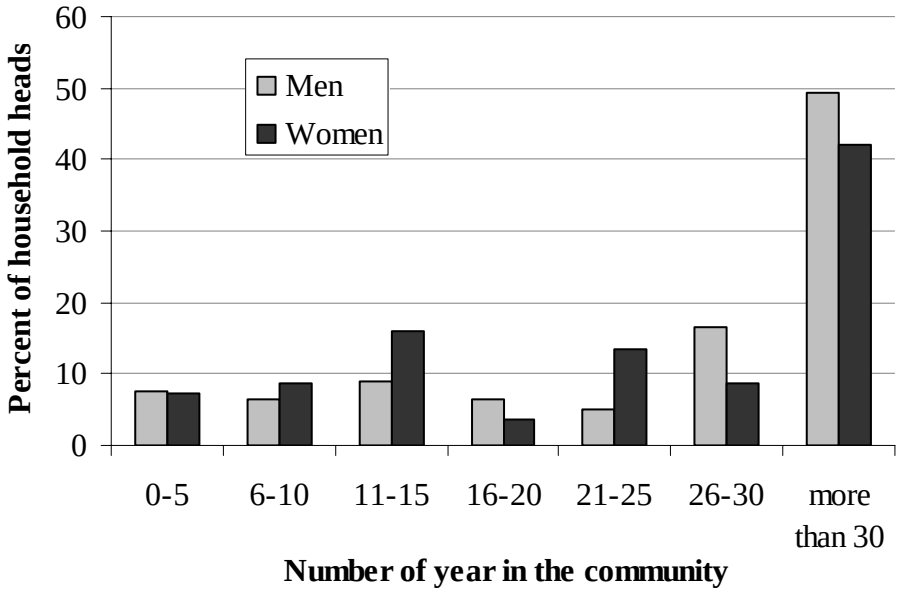
As run-away slaves traveled south, they thanked their survival in part to their contacts with various Indigenous groups, from whom they learned about subsistence strategies in their new natural environment. The Southern Indigenous groups, in turn, used their contacts with the Maroons to acquire coastal assets such as ironware, tools, guns, fish hooks, and many other items that facilitated their productive lives. The Wayana established trade relations with the Ndyuka and Aluku Maroons since their first encounters with these groups. In addition to serving their own economic interests, the Wayana also were intermediaries between the Trio and the Ndyuka along the Tapanahoni River.

Despite their friendly relations with their Maroon neighbors, the Wayana keep a certain distance to them. Mixed marriages and mixed children are rare. Mixed Wayana-Maroon villages do not exist in Suriname, but Wayana do work and go to school in the Aluku village of Maripasula, French Guiana.

8.6 Migration

Prior to the arrival of missionaries, the Wayana were (semi)nomadic, moving every couple of years to new lands to plant and hunt. Today, just below half of Wayana heads of household have been living in their current communities of residence for more than 30 years (Figure 8.1). About a quarter of men (24 %) and 22.2 percent of women could not remember how long they had been living in the community they were living in at the time of the interview.

Figure 8.1 Length of living in the current place of residency



Most interviewed heads of household were born in their current place of residency. Among 70 resident household heads of Puleowime (Apetina), for example, 41 (58.6 %) were born there. Others had come from smaller –now abandoned- settlements along the Tapanahoni River (5), Tëpu (3), the Lawa (3), Palumeu (8), Paramaribo (3), Brazil (3), Wejok along the Palumeu River (3), and an Apalai village (1). Among current residents of Kawemhakan (Anapaike), the majority was born along the Lawa River, with smaller numbers coming from Brazil, the Tapanahoni watershed, and a few other places.

We have no data on the number of Wayana who have migrated to the capital city of Paramaribo, the French Guiana, to Brazil, or elsewhere. Migration of non-Indigenous outsiders to the Suriname Wayana communities occurs seldom and is usually temporary. Examples are a Peace Corps volunteer and an independent entrepreneur in Puleowime (Apetina) and people working for METS in Palumeu.

8.7 Rituals, traditions, and religion

8.7.1 Oral tradition

Traditional tales and myths are an essential part of the Wayana culture and identity. Wayana myths usually tell about the ancient past; about the origin of the Wayana and their culture, about spirits, and about animals in the mythical times that humans could change into animals and vice versa. These stories typically emphasize the symbiosis between the Wayana and their natural environment, conveying the message that while the Wayana obtain their food from the forest and the river, these natural elements also may demand a

tribute in the form of illness or death if the equilibrium is disturbed. In doing so, ancient tales teach principles of natural resources management that allow the Wayana to live harmoniously with nature and with one another.

Storytelling used to take place in the evening hours around a camp fire. In modern times, as children are attending school and their families watch foreign DVDs and go to church, youngsters are interacting less with their tribal elders and loosing knowledge of tribal myths.

8.7.2 Traditional cosmology and the pïyai

The traditional Wayana cosmology perceives nature and society as one interconnected system wherein all elements – humans, animals, spirits, and plants- maintain relations with one another (Boven 1998, n.d.). In this cosmology, the natural world of plants, animals, rivers, and other natural elements, and the human world are analogous. This analogy returns in rites, ceremonies, and customary practices and laws. Each society of plants or animals has its own customs, knowledge, skills, and goods, which distinguish it from other groups. People, animals, and plants can take on different forms and may transform into another being or element; humans become plants or animals and vice versa in order to perform a specific task or obtain a certain goal. In this process each group has its own attributes and skills. Customary rules help maintain the harmony between humans and other groups, and violations of these rules may result in an act of vengeance by the harmed party. For example, a person who has hunted a forbidden animal may fall ill.

In this interconnected world, ghosts and spirits are omnipresent. Spirits (*yolok*) live in the forest and can take all sorts of appearances; as animals, persons, or even complete nations. The water spirits (*ipo*) inhabit the river.

The pïyai plays a central role in this system as negotiator between the different elements; he is responsible for keeping or restoring the equilibrium between people and the natural elements. In the past, the pïyai –then called alïlïman- was associated with black magic. The story goes that the last four powerful pïyai –reigning four different regions of the Wayana territory- fought one another with black magic, killing each other's followers. The most powerful of the four managed to kill the other three by sending powerful spells upon them. In revenge, the souls (*yeye*) of the deceased pïyai came upon the victor and killed him as well. Since that time, pïyai are no longer as powerful, though they still are by many Wayana associated with negative forces (kapt. Aines, pers. com.). The ancient pïyai played an important role in planting, hunting, and/or fishing. Modern-day pïyai are more active as traditional healers.

8.7.3 Rituals and symbols

Since the 1960's, under influence of the Baptist church, traditional Wayana rituals and symbols involving association and communication with the spirit world, have been depreciated as undesirable pagan elements. Traditional clothing, dances, songs, story-telling, and other ancient cultural expressions are hardly practiced anymore by Suriname Wayana adults and unknown by their children. Likewise traditional initiation rites, such as the wasp-test, have been abandoned. For this test, a woven math with wasps was being rubbed on the skin of the young adolescent, who was to bear the pain of the stings to demonstrate his or her preparedness to enter adulthood.

When asked about their participation in traditional cultural activities, two-thirds of the Suriname Wayana population (64 %) said they never take part and the remaining third (36 %) said they do so only once in a while (less than once a month). Wayana living along the Tapanahoni River are significantly more likely to once in a while practice traditional culture than those living along the Lawa River: 43 percent versus seven percent, respectively ($p<0.001$). Modern-day Suriname Wayana still sing, dance, and hold ceremonies, but these expressions have been shaped by the Baptist church; that is, they sing worship songs, dance modestly to church music, and celebrate the important Christian holidays.

The French government stimulates cultural preservation in the French Wayana villages by subsidizing the construction of a *tukuspan* (traditional meeting house) and the use of Indigenous symbols in public buildings such as the school, among other things. Moreover, the regular presence of French tourists has raised awareness of the economic value of traditional Indigenous culture among the French Wayana. In Suriname, ACT-Suriname promotes the retaining of traditional knowledge through its shaman's apprentice and novices programs in Puleowime (Apetina). These programs will be extended to Palumeu in the year 2007.

8.7.4 Modern religion

In 1959 the Suriname government granted the US 'Door-to-Life Gospel Mission' permission to work among the Trio Indigenous group (Bakker et al. 1998). In 1960 missionaries from this denomination, headed by Claude Levitt, first made contact with the Trio in the Sipaliwini watershed. In 1961 evangelizing activities started. In 1962 the 'Door-to-Life' organization was taken over by the 'West-Indies Mission', a US-based missionary group operating in Suriname under the name 'Suriname Interior Fellowship' and, since 1978, the 'World Team'.

The Wayana first came in contact with the missionaries in Palumeu. Soon a missionary post was established along the Lawa River in the current Kawemhakan, followed by a post in Puleowime (Apetina). Missionary activities rapidly earned many followers among the Wayana.

Today, the large majority of heads of Wayana households (male and female) in the Puleowime (Apetina) (94.7 %), Palumeu (100 %) and Kawemhakan (Anapaike) (88.5 %) general areas is Baptist. Even though only a share of them regularly attends church, the general Wayana population demonstrates a strong aversion against anything to do with traditional cosmology. A small minority of Wayana (5.2%) reports to be practicing the traditional animist religion. It is possible that the latter is underreported because people want to give the socially desirable answer, which is to be a member of the Baptist church. Yet observations of the strong Baptist influence on people's mind and behavior on the one hand, and a lack of traditional ceremonial and spiritual expressions on the other hand, support these figures.

The original Baptist church was very strict in its teachings, but the institution has become slightly more open to the Wayana culture in recent years, after the departure of the US missionaries. The church in Puleowime (Apetina), for example, is today mostly operated by Wayana Baptists and since 2005 supervised by a Suriname missionary. The US missionaries return regularly to review the evangelizing work.

The two religions dominating other parts of the Suriname interior, Evangelical (EBG) and Roman Catholic, have no followers among the Wayana. Neither did anyone report to belong to the newer denominations currently winning souls in the interior, such as the Jehovah's Witnesses, Mormons, or smaller protestant groups.

CHAPTER IX
PHYSICAL CAPITAL

This chapter describes physical resources in the Wayana area. We first look at the modes and availability of (public) transportation and access to public spaces. Next we expose differences in housing quality and access to utilities between the Lawa and the Tapanahoni communities. This comparison reinforces the impression that the Lawa communities, due their access to French resources and their customary ownership of large gold reserves, have greater access to resources than the Wayana villages located along the Tapanahoni River. Next the chapter evaluates access to information through various communication channels such as telephone and TV, radio, newspapers, and other people. The closing section focuses on remaining traces of traditional material culture such as traditional clothing.

9.1 Access ways

None of the Wayana villages can be reached by road, being removed from the nearest Suriname road network by more than 200 km. The French have been planning for some years to build a road to village of Maripasula (approx. 50 km from Kawemhakan) but this plan has not yet materialized. Currently the main access to the main Wayana villages is by plane or by boat. Both modes of transport are expensive and -in the case of traveling by boat- may take several days to reach the coast (Table 9.1). Smaller kampus near these population centers can only be reached by boat. There is no Suriname public transport over land, air, or water to any one of the Wayana villages. A school boat from one of the French Guiana Wayana villages does make a stop at Kawemhakan to take the children to school. METS allows Palumeu residents to buy a seat on their regular flights, which improves the mobility of the Wayanas from this village.

Table 9.1 Costs of travel to Wayana villages from Paramaribo in time and money

	Puleowime (Apetina)	*Palumeu*	*Kawemhakan (Anapaike)*
Linear distance to Paramaribo	140 km	155 km	160 km
Travel duration by plane	1:05 hr – 1:15 hr	1: 15 – 1:30 hr	1:30 – 1:45 hr
Cost of travel by plane	US$ 595 for 4-p charter plane	35 US$ (95 SRD) with METS	± 800 US$ for 4-p charter
Travel duration by boat, upstream	3-5 days	3-5 days	2-3 days
Cost of travel by boat; av. fuel expenses 1 boat one-way	± 400 US$	± 450 US$	± 400 US$

9.2 Public spaces

Traditionally the center of each village is the tukuspan (Figure 9.1), a large oval open wooden structure with a high roof (~ 6 m.) made of palm leaves. This central hut was used

for community meetings, ceremonies, and rituals. Because the tukuspan is associated with traditional ceremonies, many baptized villages no longer have such a structure.

Figure 9.1 Tukuspan at Palumeu

The small settlement of Tutu Kampu, half-an-hour upstream from Puleowime (Apetina), may be one of the few places where the local population built a tukuspan on its own account. In 1994, METS constructed a tukuspan in the center of Palumeu in an effort to restore some of the traditional architecture as a tourist attraction. The local population uses this space as a meeting center. The same has happened in several French Wayana villages under the auspices of the French government as part of its cultural preservation program.

Puleowime (Apetina) has a non-traditional *krutu-oso* (meeting space). ACT-Suriname is now discussing with this community about the construction of a tukuspan to serve as a cultural center. The village of Kawemhakan features a modern meeting center; an open space with cement beams, a sink roof, and electric lighting. All larger Wayana villages have a church building.

There are few sports and recreational facilities for Wayana youth. Only the village of Palumeu has a volleyball court. In addition, men from all villages may play soccer on an available piece of land. Wayana living in the French department of La Guyane enjoy access to more extensive sports facilities. Other types of recreational spaces are similarly sparse in the Suriname Wayana lands. Palumeu has a bar at the METS tourist camp but villagers seldom go there. Stichting Kuluwajak in Puleowime (Apetina) regularly shows videos outside to be viewed for free by the villagers. There are no sports or recreational facilities in the village of Kawemhakan (Anapaike).

9.3 Housing conditions

Wayanas tend to live with their nuclear family unit in one-room houses. Traditionally, these houses are built of bamboo and palm leaves (see Ch. 5.4.1). Today, more people buy sink roof plates in the city and the presence of chainsaws has allowed people to saw wooden boards for the walls (Fig. 9.2). Both traditional and modernized houses tend to be built on stilts. Along the Lawa River one finds more modern Wayana houses that resemble urban housing; featuring cement walls, glass windows, and sink roofs.

Tapanahoni Wayana are more likely than Lawa villagers to live in traditional houses and less likely to use imported construction materials. The majority (53.1 %) of Wayana houses in Puleowime (Apetina) and surroundings, and 41.2 percent of interviewed houses in Palumeu have thatch roofs. In the Suriname Lawa villages of Kawemhakan (Anapaike)

and Kumakapan, by contrast, respectively all and three out of four houses have sink roofs. Due to French subsidies for cultural preservation –including traditional architecture- Wayana houses on the French side of the boarder are more likely to have thatch roofs; 42.9 percent of houses of interviewed families.

Figure 9.2 Typical Wayana housing

Traditional Wayana house with thatch roof and bamboo walls

Modern house with sink roofs and walls of wooden boards

There was little difference between the villages in materials used for the floor and outside walls. The majority of houses in both watersheds (82.8 %) have wooden floors, 9.4 percent of houses have a floor woven of *wapu* leafs, and less than 5 percent of Wayana families lives in a house with either a cement or a sand floor. Houses in the Suriname Lawa villages are slightly larger than those in the Tapanahoni watershed. More than half (64.7 %) of the Lawa houses have more than one room and almost a quarter (23.5 %) have three and four rooms, while the grand majority of Tapanahoni families (71.9 %) live in one-room houses. The national medium, by comparison, is 5 rooms (ABS 2006).

Figure 9.3 Traditional Wayana kitchen

Most households use a kitchen outside of the home, which may be shared with different households belonging to one extended family (Figure 9.3). In Puleowime (Apetina) for example, we counted 34 kitchens for 63 houses. Wayana kitchens are usually open structures with a thatch roof and a space for wood fire. Wayana houses tend to have little furniture. Often there is no more than hammocks woven of webbed cotton.

In addition to public spaces and Wayana houses and kitchens, the larger villages have structures owned by outsiders such as a clinic, a government building (Puleowime/Apetina and Kawemhakan/Anapaike), and a tourist lodge (Puleowime/Apetina and Palumeu). In

Puleowime (Apetina) there also are two houses owned by Americans, an ACT clinic, and one building owned by Stichting Kuluwajak.

9.4 Utilities

9.4.1 Electricity

Throughout the interior the public provision of utilities is poor, a condition which worsens further south. Puleowime (Apetina), Palumeu, and Kawemhakan (Anapaike) have government village generators, but the two generators in Apetina are broken. Moreover, without regular government supply of fuel, these generators are rarely working in the Tapanahoni villages. In Kawemhakan (Anapaike), fuel donations by gold miners who work on customary village lands are keeping the generators running. Better-off households have personal generators: nine out of 36 interviewed households in Puleowime (Apetina), one out of 24 Wayana households in Palumeu (plus another 9-10 among non Wayanas), and 11 out of 19 households in Kawemhakan (Anapaike). The division of generators reflects the relatively greater wealth of Lawa Wayana.

In addition to generators, there are several other sources of energy. The village of Palumeu owns one common solar panel to operate a village freezer – which is currently not working. The clinic and METS have their own solar panels. One person from Puleowime (Apetina) and several French Wayana families also have a solar panel. In addition, the school in the French Wayana village of Twainken uses solar power.

Fig. 10.3 Village generator at Kawemhakan (Anapaike), Lawa

A small hydropower dam was built near Palumeu with funding from the UNDP small grants program. Technical execution was in hands of the ADEK University of Suriname. To date, the villagers have not been able to benefit from this project because there is no more money in the budget for transmission lines from the transformer on the dam to the village. The smaller Wayana settlements in Suriname have no access to any source of electricity

9.4.2 Drinking water and sanitation

For drinking water the inhabitants of Kawemhakan rely on a community water system, which draws water from a nearby mountain creek and distributes this water to several communal village taps. Wayana living across the Lawa River, in French Guiana, have access to public water provisions. Along the Tapanahoni, by contrast, most households need to arrange for their own drinking water supply. Just over one fifth (22.1 %) of

Tapanahoni Wayana households versus 10.5 percent of Suriname Wayana families from the Lawa own a large 500-1000 liter water basins (*durotank*) to catch rainwater for drinking. In addition, the village of Puleowime (Apetina) owns six communal water basins. In the smaller family-based settlements, people collect rainwater in smaller (laundry) bins during the rainy season. These Tapanahoni families mostly rely on the river and creeks during the dry season. Particularly during the large dry season, when the flow in the river is reduced, the quality of river water is poor.

Sanitary conditions are poor across regions. Only stichting Kuluwajak in Puleowime (Apetina), the METS tourist lodges in Palumeu, and the Palumeu elementary school have toilets that can be flushed (manually). There are three communal traditional pit latrines (*kumakoisi*) in Puleowime, one in Kawemhakan (Anapaike), and two in Palumeu. More than half of families (54.5 %) has no access to any form of lavatory, and instead uses the forest or the river.

9.4.3 Waste management and recycling

Palumeu is the only Wayana village where garbage is collected on a regular basis. Bi-weekly two garbage collectors, who are paid by the village collective funds (*dorpskas*), separately collect plastics and waste that may be burned. The villagers themselves dispose of most food leftovers by feeding them to cats and dogs, and throw remaining organic waste (e.g. cassava peals) into the river.

In Puleowime (Apetina), Kawemhakan (Anapaike), and the smaller settlements there is no central waste management system at all. In Apetina, each family has its own garbage heap and is responsible for cleaning the area around the own home. Some plastic bottles are used by the ACT clinic. Children also play with plastic bottles, which often ultimately end up in the river. In Kawemhakan (Anapaike) and most smaller settlements villagers throw their garbage on collective piles on the edge of the village or in the river. In the dry season, these piles are being burned.

9.5 Access to information and communication networks

None of the Suriname Wayana villages can connect to the Suriname telecommunication network. Villagers from Kawemhakan (Anapaike) and Kumakapan along the Lawa can make use of the public (satellite) phone cabins in the village of Taluwen (15 minutes by boat) or Maripasula (1 hr by boat). These phones may be used with a French phone card. In the main villages, people use a radio transmitter to contact the city or other villages. The national postal service does not reach the villages of the interior; the only way to send letters to Wayana is opportunistically via airplane pilots or people visiting these villages.

The Wayana not only are limited in their ability to maintain personal contacts with people from outside, they also are deprived from national news and information. None of the national newspapers is sold in the villages; newspapers only reach the Wayana population

when taken by visitors from the city. Neither does national television broadcasting reach the Wayana villages. Two national radio stations can be received in the forest: radio Apinti and radio Boskopu, both of which cater to the interior populations, particularly Maroons. The Wayana from Apetina and Palumeu also receive the community-based radio station in Drietabbetje, which features informative programs and entertainment for and by the Ndyuka. In the villages of Kawemhakan (Anapaike) and Palumeu, village officials use a megaphone to transmit relevant information.

Given the poor access to information and communication networks, it is not surprising to find that 80.7 percent of Wayana says they never read the newspaper, while another 14.8 percent reads the paper once in a while. Radio is among the most important sources of outside information, with about 12-13 percent of Wayana listening to national and local radio programs on a daily basis, and just over a quarter of people (26.6 %) listening once in a while. Still, more than half of Wayana (56.4 %) say they never obtain information from the radio. People in the village of Puleowime (Apetina) listen relatively more to the radio than those in the villages of Palumeu and Kawemhakan (Anapaike)/Kumakapan, possibly due to the better reception in Puleowime (Apetina), which is located closer to Drietabbetje and Paramaribo.

Watching videos and DVDs is gaining in popularity, particularly in the Lawa village where relatively more people can afford to buy a DVD player and access to electricity is relatively stable. As a result, we recorded vast differences in the frequency of video viewing: more than half (55.6 %) of the population in Kawemhakan (Anapaike)/Kumakapan watch DVD or video on a daily basis, while the grand majority of households (94.1 %) in Palumeu and 62.9 percent of households in Puleowime (Apetina) never watch DVD/Video. There are relatively more occasional movie-goers in Puleowime (Apetina) due to the free video viewing evenings organized by Stichting Kuluwajak.

9.6 Traditional clothing, ornaments, and painting

Traditionally Wayana men dressed in a *kalimbe* – a red loincloth drawn between the legs and fastened by a cord around the waist (Devillers 1983). Women also went naked above the waist, wearing only the *weyu*, an apron leaving the buttocks exposed, or a *kamisa*, a short wrap-around the waist. Children under the age of six usually went totally naked.

In part due to missionary influences (see Chapter III), few Suriname Wayana now wear the *kalimbe*. A few elderly continue to dress regularly –though seldom exclusively- in traditional clothing. Most others, however, only wear traditional clothes, head dresses, and body-paints at special festivities and ceremonies. And even then, youngsters will often wear western underwear beneath their *kalimbe* or *weyu*. Traditional jewelry – or modern variations of these ornaments- continue to be popular among woman and men. Children attending school in French Guiana wear the *kamisa* as their school uniform.

CHAPTER X
SYNTHESIS

This synthesis compiles the findings from the previous chapters. We first expose vulnerabilities and problems in the target communities, and then identify capacities, resources and opportunities to overcome these problems and improve the sustainability of Wayana livelihoods.

10.1 Vulnerabilities, problems, and risks

Vulnerabilities are trends and shocks that affect peoples' livelihoods. These trends and shocks are typically unanticipated, that is, people cannot foresee them. An example is the flooding of May 2006, which destroyed the harvests of many interior inhabitants. Shocks also tend to occur unexpectedly; people may know they might happen but do not know when. An example is the cyclical occurrence of leaf-cutter ant plagues. The erratic nature of these events makes that local people have little or no control over them, even when they occur repetitively.

Problems are issues that hinder peoples' pursuit of livelihood objectives. For example, Wayana parents' desire to formally educate their children is obstructed by a variety of problems, including the poor educational infrastructure in the interior, the parents' own low educational achievement, and a lack of money to send the child for education to the capital city. Risks are issues that may become problems if they are not being addressed. For example, HIV/AIDS zero-prevalence rates are low in the Wayana community. However, widespread promiscuity coupled with low condom use create the conditions in which HIV/AIDS is likely to become a problem.

10.1.1 Natural capital

Suriname does not have a history of natural disasters. However, the floods of May 2006 demonstrated that extreme climatic events can harm the food security of Wayana households. Neither the Wayana nor the national government proved prepared for this event. The current lack of food stocks increases the vulnerability of the Wayana to recurring problems that may cause additional crop loss such as pests, drought or excessive rainfall. In dry years, by contrast, there are shortages of drinking water. As climate change is likely to bring more extreme weather, it is necessary that the Wayana develop adaptive strategies to increase their resilience against climatic shocks.

A second source of vulnerability is the Wayanas' dependency on ever decreasing wildlife resources. Wayanas are no animal breeders. Instead, wild-caught animals and fish are making up 90-100 % of the animal diet, with larger animals being preferred. This livelihood strategy was sustainable when the Wayana were scattered and used their cultural game calendar. Population concentration, abandonment of the traditional hunting and fishing calendar, and the use of modern hunting and fishing methods (e.g. shotgun) have

elevated the pressure on wildlife and fish resources. Even though most Wayanas believe that wildlife reserves will remain sufficient for the next decades, it is unlikely that the ecosystem will be able to sustain this pressure over time.

Observations and conversations with the Wayana suggest that in the Wayana territory the trade in live mammals, amphibians, and birds does not yet exceed carrying capacity. No in-depth research has been performed though, and the threat that wildlife trade poses to local animal populations merits monitoring. Future population growth also may cause more pressure on agricultural land. This may lead people to shorten fallow period and thus both exhaust the soil and obtain smaller yields. The use of agricultural methods that yield increased harvests and help the soil recovery may reverse this trend.

With conversion to baptism and abandonment of the traditional belief system, the Wayana are also loosing valuable ancient ecological knowledge. Young Wayana in French Guiana, for example, learn modern ecological principles but no longer know traditional rules and regulations for ecosystem management. The loss of traditional knowledge is a threat to the future existence of the Wayana, who continue to rely on the forest for the largest share of their dietary intake, household utensils, tools, and other objects.

Last, the lack of legal rights to the territories and resources they depend upon leaves the Wayana particularly vulnerable in their access to natural and financial capital; their lands may be given out in concession or be destined for national development at any time. The lack of land titles also inhibits enterprise development.

10.1.2 Human Capital

The educational situation throughout the Wayana area is depressing to young Indigenous children and their parents. Children in Apetina and nearby settlements have not had a chance to go to school for many years and children in Kawemhakan can only go to school by virtue of French goodwill. The option to obtain secondary education and beyond is closed to the grand majority of Wayana children. This situation is a violation of the UN Convention on the Rights of the Child, which Suriname ratified on 31 March 1993, and which states in Article 28, section 1:

> "States Parties recognize the right of the child to education, and with a view to achieving this right progressively and on the basis of equal opportunity, they shall, in particular:
> (a) Make primary education compulsory and available free to all;
> (b) Encourage the development of different forms of secondary education, including general and vocational education, make them available and accessible to every child, and take appropriate measures such as the introduction of free education and offering financial assistance in case of need;
> (c) Make higher education accessible to all on the basis of capacity by every appropriate means; …"

The denial of Wayana children's access to education also obstructs Suriname's progress towards the Millennium Development Goals. Due to their low educational achievement Wayana adults are disadvantaged in their access to formal employment, advancement, and political voice in Suriname society - all of which perpetuate their vulnerability.

The main health problems in the Wayana area are poor nutritional health (e.g. vitamin deficiency); viral, bacterial, and parasitic infections; malaria; common colds and flu; diarrhea. Also, due to their fish-rich diet, the Wayana are particularly vulnerable to mercury contamination. No recent data exist on the severity and manifestations of mercury poisoning, though, which prevents the development of any intervention programs. Health threats that have not yet manifested themselves on a large scale but warrant attention are HIV/AIDS and diseases associated with high fat/sugar/salt diets such as diabetes.

As public health services in the Wayana area are understaffed and underfunded, traditional knowledge of healing practices and forest medicine is particularly important. With the arrival of the church and the consequent aversion to anything related to pïjai practices, there is a severe risk of losing this knowledge. ACTs shaman's apprentice program has been successful in promoting the transfer and preservation of traditional medicinal knowledge but is not self-sustaining.

Women's responsibility over their children makes them particularly vulnerable to household shocks such as food shortages. Women also have relatively less access to coping strategies due to their economic dependence on men and their relatively lower literacy and language skills, access to information, and power of decision-making.

10.1.3 Financial Capital

In the absence of banks and other financial infrastructure in the Wayana area, it is difficult for Wayana individuals to save money in a bank account, to take out a loan, to regularly receive their social welfare payments, or to involve in any other form of household or business financial management.

Also wage labor opportunities are virtually non-existent in the Wayana area. As a result, the Wayana rely heavily on their natural environment for income. This situation may lead to the unsustainable harvest of birds, reptiles, and wildlife species for sale in Paramaribo and abroad, but no reliable data exist on extraction rates or the ecological impact of trapping. The lack of income generating opportunities also is likely to increase willingness to allow gold miners to work near the villages or endorse other non-sustainable resource use by outsiders. Another source of vulnerability is the Wayanas dependence on tourists to come to the villages; if tourists stop traveling to the Wayana area, a primary source of income will be lost.

Manufactured goods have become increasingly important in Wayana communities, particularly along the Lawa river. As a result of their increased reliance on plastic ware, outboard motors, shotguns, nylon fishing nets, manufactured clothing, and other items

from outside, few indigenous youngsters still know how to use their natural environment to make baskets, a blow-pipe and curare, fish traps, and other handicrafts. The loss of traditional skills increases vulnerability to external events such as inflation and droughts; decreases the Wayanas ability to be autarchic; and increases dependence on cash money. Increased economic need, in turn, may lead to the over-extraction of selected natural resources, particularly commercially attractive animal species.

Donor assistance is direly needed but also creates a risk of dependency on outside money. There is little capacity within the Wayana community to design and manage donor projects and to proactively search for funding for community development.

10.1.4 Social capital

One of the most important sources of vulnerability in this category is the absence of strong Wayana leadership. In addition to the Wayanas own reluctance to recognize leadership from another family or tribe, the power of customary authorities to govern their people is limited by their lack of an operational budget and the absence of legal recognition of their position within the nation state. Traditional reliance on family elders, however, appears inadequate in governing the large population concentrations of today. In addition to managing day-to-day village affairs, one generally accepted leader or village council should serve as a contact for outsiders, such as NGOs wanting to invest in the village. Furthermore, within the modern nation state, tribal groups without strong centralized representation risk being ignored by policy makers.

The Suriname government does not have a long-term policy strategy to cushion either household shocks or community- and region-wide disasters in the interior. Also within the Wayana community, community-based organizations for socio-economic support and (semi)formal self-help groups are rare and have limited membership. The limited presence of social safety nets leaves the Wayana poorly prepared to cope with unexpected misfortune.

Social cohesion in Wayana communities is threatened by the decreasing transfer of cultural values and traditions from elders to youngsters. Children and youngsters are no longer familiar with ancient traditional tales and myths. Traditional cosmology, which involves associations with the spirit world, has been abandoned and related rituals are no longer publicly performed. If this trend continues, the Suriname Wayana will have lost their cultural heritage within two or three generations.

10.3.5 Physical capital

The Wayana are isolated in every meaning of the word. They are physically isolated by the lack of access roads and expensive transport to the area, and communicatively isolated by the absence of telecommunication networks in the area. In addition, as the Wayana cannot receive any TV nor most radio broadcasting, they are deprived from national and

international news and other relevant information. Their multi-facetted isolation leaves the Wayana vulnerable to external shocks such as price changes, weather events, and planned development activities in the interior. Not knowing when, where, and how these events will occur also decreases the Wayanas ability to adaptively respond to them.

In the Suriname Lawa villages, where people are increasingly building with modern construction materials, there is a risk that youngsters will no longer know how to build homes from materials found in nature. The loss of this skill may become a problem if current sources of money give out, for example, if gold mining stops or the French ban informal entrepreneurial activities in French Guiana.

The lack of a consistent source of electricity inhibits entrepreneurship and other development in the Wayana communities. The absence of a reliable drinking water source, poor sanitary and sewage conditions, and a lack of waste management present a threat to public health.

10.2 Opportunities, capacities, and resources

The Wayana have access to various opportunities to overcome the listed vulnerabilities and to both material and immaterial assets that may help the communities overcome problems in the pursuit of their livelihood objectives.

10.2.1 Natural capital

Although inhabitants of the Wayana area adapt more and more to the modern way of living, the forest still plays a central role in their daily life and their traditions. Wayanas still use wild plants in the surrounding forest for the construction of houses and canoes, for the production of woven utensils, to prepare medicines and pesticides, to collect natural jars, brooms, fibers, arrow poison, firewood, body care products and to gather food supplements. There is no evidence that the resources the Wayana need for their daily sustenance are being depleted. Also current agricultural practices seem to be sustainable.

In addition to forest resources, the Wayana lands also are likely to be rich in subsoil resources. If these resources are managed wisely, they may provide a substantial source of income. Also wild plants, which are currently hardly used commercially, may be used for income generation. The Wayana lands provide many opportunities for the development of NTFPs, such as forest shampoos, snacks, perfumes, and medicine.

10.2.2 Human capital

Literacy is high among the Wayana. Being able to read and write will facilitate learning of Dutch, Suriname’s national language, or French. Speaking and reading in Dutch is important because it opens access to information and income generation. Quite a few men and some women already speak Dutch, which provides an opportunity for community

based language classes. Also, even though educational achievement is generally low, in every community there are some higher educated people who could be mobilized for either adult or child education. We also noted a strong motivation to learn a sincere commitment to teach children both modern and traditional knowledge.

The Wayana generally enjoy good health; a condition that must be cherished. HIV/AIDS awareness and education on dietary health should be implemented prior to these risks turning into health hazards. The church has probably had a positive influence in reducing suicide, and could become a venue for the delivery of health education. Even though few practicing *pïjai* are left, knowledge of medicinal plants is still present among elders. It is a challenge to the community to preserve this knowledge for future generations. ACTs intention to sponsor a traditional health clinic in Palumeu will contribute to this effort.

10.2.3 Financial capital

The natural environment provides many opportunities for sustainable income generation. In addition to the development of NTFP's ecotourism may provide direct and indirect income to Wayana. More benefits could be gained from the presence of tour operator METS in Palumeu by locally producing vegetables, fish, and snacks; commercializing the sale of handicraft; and offering (semi)traditional cultural performances.

The Wayana have become more mobile than in the past, and more frequently travel to the coast. In addition to buying items, these trips could be used to bring their handicraft for sale to town. An appropriate venue -- e.g. tourist shops or the Central Market-- must be sought out to market these items.

The Wayana communities are eligible for the aid of several donor organizations that are active in Suriname. Assistance to the Wayana in community development planning, project proposal design, and project management could both attract more funding and reap greater benefits from the same amount of funds.

10.2.4 Social capital

The various Wayana communities are safe, have a low crime rate, and have a low incidence of deviant behavior such as drugs use and alcoholism. The church plays an important role in maintaining social cohesion and takes care of the most vulnerable members of Wayana society. This institution would also be the most appropriate venue to develop more structured, long-term disaster prevention strategies.

The recently established Trio and Wayana foundation TALAWA provides an opportunity to more pro-actively place the interests of the Southern Indigenous Peoples on the national political agenda. This organization also will serve as a useful contact point for organizations wishing to develop -either private business or charity- projects in the area. Friendly relations with neighboring tribes will facilitate collaboration between the

Wayana and any or all of these groups. Such collaboration will be necessary in the national discussion about land rights.

Even though the transfer of indigenous knowledge to children occurs less than before, this knowledge still does exist among the Wayana shamans and other elders. Organizations concerned about cultural preservation such as the ACT can be a resource in helping secure this ancient knowledge for future Wayana generations.

10.2.5 Physical capital

Throughout the Wayana territory there are people who are skilled in traditional architecture, such as the building of a tukuspan. The Wayana increasingly realize that having a tukuspan is not incompatible with Baptism, and they are now more open to the idea of building one than before. A tukuspan would elevate the ecstatic value of the communities for tourism, and may be used for a variety of purposes such as a cultural documentation center, ethno-education, and the practice of traditional cultural arts.

Tour operator METS has demonstrated that it is possible to implement a basic waste management/garbage collection plan in the Wayana villages. Similar strategies, possibly with outside assistance, could improve public health conditions and make the villages more enjoyable.

Many adults still know to make and wear the traditional dress, the *kalimbe, weyu,* and *kamisa*. While we do not want to urge the Wayana to exchange their jeans and T-shirts for the traditional loin cloth, dressing up in the traditional dress could be strategically used, for example, when press coverage is important.

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APPENDIX A. PEOPLE AND INSTITUTIONS INVOLVED IN THE EES

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Field assistants from Puleowime (Apetina):
Stunka (Laif) Ikinaidu
Leisa (Richard) Kawaidu
Mehelu Ukilli
Nesta Nailipun

Field assistants from Lawa
Frans (Kawemhakan)
Salomon (Maripasula)

Field assistants from Palumeu:
Kalijen Pakome
Denice Sapa
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ACT Field Coordinator
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APPENDIX B. TIME TABLE

Dates	*Site*	*Activities*
August 2004	Paramaribo	Start EES
August 2004 – February 2005	Paramaribo	Collection secondary biological and geophysical data and maps; analysis and writing
September 24-28, 2004	Apetina	Biological and geophysical field data collection
November 29-December 1, 2004	Kawemhakan	Biological and geophysical field data collection
February 17, 2005	Paramaribo	Submission 1st draft biophysical part of the EES
May-June 2006	Paramaribo	Secondary data collection; ethnological/socioeconomic data
June 23-26, 2006	Puleowime (Apetina) region (Tapanahoni)	Household surveys; Village surveys
June 26-July 3	Puleowime (Apetina) region (Tapanahoni)	Household surveys
July 11-14, 2006	Kawemhakan region (Lawa)	Household surveys; Village surveys; Agricultural surveys; Fishers and Hunters surveys
July 15-17	Kawemhakan region (Lawa)	Household surveys
August 11-13, 2006	Palumeu (Tapanahoni)	Household surveys; Village survey; Agricultural surveys; Fishers and Hunters surveys
July-August 2006	Paramaribo	Data entry, cleaning, and analysis
May-October 2006	Paramaribo	Report writing
October 31st 2006	Paramaribo	Submission final report

APPENDIX C. SURVEY TEMPLATES

DORPS-ENQUÊTE FORMULIER

(A)

VOOR DE VERZAMELING VAN BASIS-GEGEVENS OVER HET DORP

Algemene richtlijnen: Neem één survey per dorp af. Houd een krutu met het dorp, interview sleutelpersonen, en doe groepsinterviews om de gevraagde informatie te vinden. Gebruik waar mogelijk codes voor de antwoorden om het invoeren en verwerken van de data te vereenvoudigen.

LAAT GEEN ENKELE VRAAG OPEN. Idien het niet mogelijk was een antwoord te krijgen op een vraag, zet dan een streepje (-) in de desbetreffende ruimte. Plaats een aantekening in de kolom "Beschrijving/Commentaar" als de data niet beschikbaar, onvolledig, onbetrouwbaar, of voor een andere reden niet goed is.

Project naam: ___Baseline data voor het Wayana gebied_____
Project sponsor: __Amazon Conservation Team Suriname_____
Uitvoerende instantie: __ACT met Wayana onderzoekers_____
Leider Wayana onderzoeksteam: __Laif_____
Onderzoekscoordinator: ____Marieke Heemskerk_____

Land: _Suriname_____ District: _Sipaliwini_ Resort: _Coeroenie_
Dorps naam: _____ Interviewer(s): _____
Dorps ID: _____ Datum: _____

Opmerking:

A. Algemeen

1. Aantal inwoners:
2. Aantal huishoudens:
3. Aantal clans (groep gezinnen die samenwerkt en deelt in economische goederen):

B. Natuurlijk Kapitaal

1. Waarvoor wordt de rivier of de kreek gebruikt? Kruis alle antwoorden aan die goed zijn:
☐ Drink water
☐ Jezelf wassen
☐ Kleren en vaat wassen
☐ Vis om te eten
☐ Andere waterdieren om te eten, bijvoorbeeld: .....
☐ Transport
☐ Anders, namelijk: .....

2. Hoe komen mensen aan water om te drinken?
☐ Rivier
☐ Kreek
☐ Pomp (grondwater)
☐ Gemeenschapelijke (dorps)kraan
☐ Kraan in huis
☐ Anders, namelijk:

3. Kwaliteit van het drinkwater is:
☐ Zeer slecht - ondrinkbaar
☐ Slecht
☐ Redelijk
☐ Goed

4. Welke ondergrondse hulpbronnen worden gewonnen/gebruikt door de dorpsbewoners?
☐ Zand / grind
☐ Goud
☐ Anders, namelijk

5. Zijn er tamme dieren (b.v. hond, kip) in het dorp?
☐ Nee
☐ Ja, namelijk: .....

6. Ligt het dorp vlakbij een national park of beschermd gebied?
☐ Dorp ligt in een national park/beschermd gebied
☐ Dorp grenst aan een national park/beschermd gebied
☐ 1-10 km afstand (Minder dan een uur varen)
☐ 11-50 km afstand (Minder dan een dag varen)
☐ Meer dan 50 km afstand (Meer dan een dag varen)

9. Is er land bij het dorp dat een speciale religieuze of spirituele waarde heeft, zoals een begraafplaats, voorouderlijke gedenkplaats, enz. Beschrijf het aantal, soort, en geschatte omvang:

10. Zijn er de afgelopen 5 jaar conflicten of ruzies geweest over natuurlijke hulpbronnen in de (Bv over grond, water, of goud). Vermeld de plaats en de oorzaak.

11. Heeft elk huishouden landbouwgrond (een kostgrondje)? Omcirkel het juiste antwoord.
Ja Nee, slechts ..... deel van de huishoudens heeft een kostgrondje

12. Korte beschrijving van de gemeenschaps regels voor het verkrijgen van grond (bv om goud te winnen, om een huis te bouwen, om te planten):

13. Korte beschrijving van de regels voor het gebruik van natuurlijke hulpbronnen, bv. busimeti, planten, vruchten, vis, enz:

14. Status van de grond, b.v. eigendom, huurpacht, domeingrond

C. Sociaal Kapitaal:

1. Aantal en soort dorps organisaties:

Soort	Aantal	Naam / Namen
☐ Vrouwenorganisatie		
☐ Jeugdclub		
☐ Sportclub		
☐ Stichting voor dorpsontwikkeling		
☐ Informele spaar- en kredietgroepen (kas-moni)		
☐		
☐		

2. Beschrijf het aantal een soort openbare ruimtes/gemeenschapsruimtes, bv om te vergaderen:

3. Beschrijf het aantal een soort privé gemeenschapscentra, zoals een videohuis of een bar:

4. Soort van dorps leiderschap
☐ verkozen ☐ aangewezen
☐ erfelijk ☐ anders, n.l.:

5. Traditionele gezagsdragers in het dorp

	Aantal Mannen	Aantal vrouwen	Rol/Taak
☐ Granman			
☐ Kapitein			
☐ Basja			
☐			

6. Aanwezigheid vertegenwoordigers van de nationale overheid

	Aantal Mannen	Aantal vrouwen	Rol/Taak
☐ BO			
☐			
☐			

7 Manier van besluitvorming tijdens dorps vergaderingen (krutu's).
☐ consensus; ☐ democratisch; ☐ autoritair; ☐ anders

8. Afstand naar de dichtbijzijnste politiepost
☐ Politiepost in het dorp
☐ 1-10 km afstand (Minder dan een uur varen)
☐ 11-50 km afstand (Minder dan een dag varen)
☐ Meer dan 50 km afstand (Meer dan een dag varen)

9. Aantal misdrijven (bv roofmoord) die iemand hebben verwond of gedood over het afgelopen jaar (Aantal en soort):

10. Aantal misdrijven (bv diefstal, inbraak) zonder persoonlijk letsel over het afgelopen jaar

11. Wat doet men als iemand in het dorp een diefstal heeft geleegd?
☐ Aangeven bij de politie
☐ Oplossen door traditioneel gezag
☐ Oplossen in de privé-sfeer (thuis)
☐ Anders, nl

12. Wat doet men als iemand in het dorp een serieuze misdaad heeft begaan, bijvoorbeeld moord?
☐ Aangeven bij de politie
☐ Oplossen door traditioneel gezag
☐ Oplossen in de privé-sfeer (thuis)
☐ Anders, nl

13. Beschrijf de relatie tussen de traditionele leiders en de vertegenwoordigers van de nationale overheid

D. Financiëel Kapitaal

1. Cash inkomen. Hoe komen mensen in het dorp aan geld?

Activiteit	Niemand doet het	Weinig mensen (Hoeveel?)	Veel mensen (Hoeveel?)
a. Verkoop sieraden			
b. Verkoop zoogdieren, b.v. apen			
c. Verkoop vogels			
d. Verkoop reptielen			
e. Toerisme			
f. Vaste loondienst van ACT			
g. Vaste loondienst bij andere organisatie in het dorp, nl:			
h. Klusjes in het dorp (bv bouw)			
i. Werk in ander dorp, nl.			
j. Werk in Paramaribo			
k. Goudwinning			
l. Overheidsbaan, bv kapitein			
m. Overheidsuitkering, bv AOV			

2. Investering door donoren organisaties over het afgelopen jaar.

Organisatie (bv UNDP, CDFS)	Project	Bedrag

E. Menselijk Kapitaal

Afstand tot:	a. In kilometers	b. In reistijd (vervoersmiddel)
1. Dichtbijzijnste lagere school		
2. Dichtbijzijnste MULO school of ander vervolg onderwijs		
3. Dichtbijzijnste Medizebs kliniek		
4. Dichtbijzijnste ACT kliniek		

5. Mogelijkheid van beroeps (praktijk)training in het dorp.

☐ Nee

☐ Ja; beschrijf :

6. Aantal gezondheidsmedewerkers in het dorp (artsen en verplegers/sters):

7. Aantal traditionele genezers:

8 Belanrijkste doodsorzaken in het dorp, Noem de oorzaak van de meeste sterftegevallen eerst.

9. Kindersterfte: Aantal kinderen jonger dan vijf jaar dat is overleden in de afgelopen drie jaar.

10. Belangrijkste stammen in het dorp (b.v. Wayana, Trio), gerangschikt naar grootte. Noem de stam met de meeste mensen in het dorp eerst.

11 Belangrijkste godsdiensten en geloofovertuigingen (inclusief traditionele inheemse geloven) in het dorp.

Soort	Deel van de bevolking	Gebouw/ plek? (Ja / Nee)
Katholiek		
RBG		
Protestant/Gereformeerd		
Jehova		
Traditioneel (Kulturu)		
Anders, namelijk:		

Vragen voor het hoofd van de school of lereressen:

12. Aantal leraren op de lagere school

13. Aantal leslokalen

14. Percentage of deel van de kinderen in de leeftijd 6-12 die naar school gaan.

a. Jongens	*b. Meisjes*
☐ Allemaal	☐ Allemaal
☐ Meer dan 90% (Bijna allemaal)	☐ Meer dan 90% (Bijna allemaal)
☐ Ongeveer ¾ (75%)	☐ Ongeveer ¾ (75%)
☐ Meer dan de helft	☐ Meer dan de helft
☐ Ongeveer ¼	☐ Ongeveer ¼
☐ Minder dan 10% (1/10)	☐ Minder dan 10% (1/10)
☐ Niemand	☐ Niemand

18. Percentage of deel van de kinderen die in de eerste klas beginnen die de lagere school afmaken

a. Jongens	*b. Meisjes*
☐ Allemaal	☐ Allemaal
☐ Meer dan 90% (Bijna allemaal)	☐ Meer dan 90% (Bijna allemaal)
☐ Ongeveer ¾ (75%)	☐ Ongeveer ¾ (75%)
☐ Meer dan de helft	☐ Meer dan de helft
☐ Ongeveer ¼	☐ Ongeveer ¼
☐ Minder dan 10% (1/10)	☐ Minder dan 10% (1/10)
☐ Niemand	☐ Niemand

19. Belangrijkste redenen voor drop-out (=het niet afmaken van de lagere school) voor:
a. jongens:

b. meisjes:

20. Beschrijf de kwaliteit van het onderwijs. Bijvoorbeeld, hoe ziet het schoolgebouw eruit, zijn er genoeg stoelen en talfels voor alle leerlingen, zijn er genoeg boeken, schriften, en potloden om mee te werken? Hebben de leraren een lerarenopleiding gevolgd?

21. Voornaamse problemen wat betreft het onderwijs in het dorp

Vragen voor gezondheidswerker(s):

22. Aantal mensen in het dorp die de afgelopen vijf jaar zijn overleden aan HIV/AIDS:

23. Aantal dorpsbewoners dat HIV positief is:

24. Algemene indruk van HIV/AIDS bewustzijn onder de bevolking?

25. Belangrijkste bedreigingen van de gezondheid van dorpsbewoners.

26. Hoe herkent men ondervoeding? B.v. gezwollen buikjes, gelige huid, etc.

27. Aantal kinderen in het dorp dat tekenen van ondervoeding vertoont:
☐ Geen enkel kind
☐ 1-3 kinderen
☐ 4-10 kinderen
☐ Meer dan 10, namelijk:

F. Fysiek Kapitaal

1. Aantal huizen, bewoonbaar:
2. Aantal huizen, totaal:
3. Aantal winkels:

4. Is het dorp bereikbaar over de weg? ☐ Nee
☐ Ja, over een G verharde (asfalt) weg G zandweg

5. Wat kost het om het dorp te bereiken vanuit de stad?

Transport middel	*Duur in uur:minuten*	*Kosten in geld (SRD)*
a. Vliegtuig		
b. Boot		
c. Anders, nl:		

6. Aanwezigheid van postdiensten (Surpost),
☐ Geen ☐ Slechte kwaliteit ☐ Goed

7. Riolerings systeem; wat gebeurt er met ontlasting? Kruis alle antwoorden aan die van toepassing zijn.
☐ In het bos
☐ In de rivier
☐ Gemeenschappelijke WC-huisjes
☐ WC-huisjes op het erf bij het huis
☐ WC binnenshuis
☐ Anders, namelijk

8. Vuilverwerking; hoe gaat men om met huisvuil en ander afval? Kruis alle antwoorden aan die van toepassing zijn.
☐ Gooien in het bos
☐ Gooien in de rivier
☐ Afvalhoop buiten het dorp
☐ Afvalhoop binnen het dorp
☐ Begraven
☐ Verbranden

9. Toegang tot electriciteit
☐ EBS aansluiting
☐ Dorpsgenerator
☐ Gemeenschappelijke zonnepanelen
☐ Waterkrachtcentrale
☐ Prive generators
☐ Prive zonnepanelen

10. (Tele)communicatie netwerk
☐ Geen; ☐ cel; ☐ vaste lijn; ☐ radio

11. Aanwezigheid en ontvangst van televisie stations
☐ Geen, ☐ Ontvangst nationale zender, ☐ Ontvangst Braziliaanse zender (sateliet)

12. Aanwezigheid van sport en ontspanningsfaciliteiten voor de jeugd, bv. Voetbalveld, jeugdclubhuis

13. Heeft het dorp een afdeling van de burgelijke stand (CBB) voor registratie van geboorten, huwelijken, en sterftegevalen?
☐ Ja ☐ Nee

14. Hoe geschiedt de uitbetaling van uitkeringen, bv voor on- en minvermogenden en AOV?
☐ Uitkeringen worden niet betaald
☐ Uitkeringen worden gestort op een rekening in de stad
☐ Uitkeringen worden in het dorp betaald ..... keer per jaar

G. Problemen en Noden

1. Wat zijn voor mannen de belangrijkste problemen in het dorp?

2. Wat zijn vooor vrouwen de belangrijkste problemen in het dorp?

3. Wat zijn voor jongeren de belangrijkste problemen in het dorp?

HUISHOUD ENQUÊTE FORMULIER

(B)

VOOR DE VERZAMELING VAN BASIS-GEGEVENS OVER HET HUISHOUDEN

Algemene richtlijnen: We beschouwen als huishouden een samenwonend kopel of alleenstaande moeder met kind(eren), dat/die voor het eigen voedsel zorgt. Neem 25 huishoud surveys af in Apetina, Palumeu, en Kawemakhan, plus nog 10 in kampus in de omgeving van elk van deze dorpen. In totaal zijn dat 105 huishoud interviews. Stel jezelf voor bij elk huis waar je binnengaat, en leg het doel van het onderzoek uit. Bij de afsluiting van het interview kun je de mensen een zakdoek geven als dank voor hun medewerking.

LAAT GEEN ENKELE VRAAG OPEN. Idien het niet mogelijk was een antwoord te krijgen op een vraag, zet dan een streepje (-) in de desbetreffende ruimte. Plaats een aantekening in de kolom "Beschrijving/Commentaar" als de data niet beschikbaar, onvolledig, onbetrouwbaar, of voor een andere reden niet goed is.

Het ID nummer van het huishouden wordt samengesteld door het nummer van het dorp (1=Apetina, 2=Palumeu, 3=Kawemakhan, 4=Toetoe kampoe, etc) plus een uniek nummer bestaande uit 2 cijfers. Bijvoorbeeld, het 5^{e} huis geinterviewd in Palumeu zou als nummer krijgen: 305. Vul nu het nummer van het huishouden in.

Huishoud ID nummer

Project naam: ___Baseline data voor het Wayana gebied_____
Project sponsor: __Amazon Conservation Team Suriname_____
Uitvoerende instantie: __ACT met Wayana onderzoekers_____
Lokale onderzoeksteam leider: __Laif_____
Onderzoekscoordinator: ____Marieke Heemskerk_____

Land: _Suriname_____ District: _Sipaliwini_ Resort: _Coeroenie_____
Dorps naam: _____ Interviewer(s): __
Dorps ID: _____ Datum: _____

Opmerking:

0. Introdukties

Stel jezelf voor en leg het doel va de enquete uit. Waarom zijn we hier? Wat is het voordeel voor het dorp om deze informatie te verzamelen? Leg uit dat deelname aan het interview vrijwillig is; als de persoon niet wil meedoen zal dat geen nadelige cosequencies hebben voor hem of haar en zijn of haar familie. De informatie zal vertrouwelijk behandeld worden; de naam van de persoon zullen we niet gebruiken in het rapport.

A. Huis

Je kunt deze informatie verzamelen vóór of na het interview

Nr	*Kenmerk*	
1	Dak, 0= palmblad (pina), 1= zink, 2=anders	
2	Vloer, 0=zand, 1=cement, 2= anders	
3	Buitenmuur; 0=palmblad, 1= modder, 2=hout, 3=steen, 4=anders	
4	Heeft het huis electriciteit? 0=Nee, 1=Ja	
5	Is er stromend water in huis? 0=Nee, 1=Ja	
6	Sanitaire voorzieningen (toilet), 0=geen, 1=buitenhuis, 2= doortrek toilet, 3= anders	
7	Aantal kamers	

B. Persoonlijke data – Hoofd(en) van het huishouden

Verzamel deze data voor de man en de vrouw die aan het hoofd van het huishouden staan. Het mannelijke hoofd is de persoon die het huis bezit en het meest bijdraagt aan het huishoud inkomen. Het vrouwelijke hoofd is zijn vrouw, of in het geval van een alleenstaande vrouw de bezitter van het huis. ID van de persoon (00000) = Huishoud ID (000) + Persoonlijke ID (00).

Nr	*Kenmerk*	Man- Hoofd
1	Persoons ID (00001)	
2	Naam	
3	Ethnische groep	
4	Geboortedorp	
5	Tijd dat de persoon in dit dorp woont	
6	Aantal kinderen	
7	Moedertaal	
10	Spreekt Sranantongo? Nee = 0; Ja=1	
11	Spreekt Nederlands? Nee = 0; Ja=1	
12	Kan lezen en schrijven in Wayana taal? Nee = 0; Ja=1	
13	Kan lezen en schrijven in het Nederlands? Nee = 0; Ja=1	
14	Religie of geloofsovertuiging 1=Traditioneel, 2=Katholiek, 3=Protestant, 4=Anders	

Nr	*Kenmerk*	Vrouw
1	Persoons ID (00002)	
2	Naam	
3	Ethnische groep	
4	Geboorte dorp	
5	Tijd dat de persoon in dit dorp woont	
6	Aantal kinderen	
7	Moedertaal	
10	Spreekt Sranantongo? Nee = 0; Ja=1	
11	Spreekt Nederlands? Nee = 0; Ja=1	
12	Kan lezen en schrijven in Wayana taal? Nee = 0; Ja=1	
13	Kan lezen en schrijven in het Nederlands? Nee = 0; Ja=1	
14	Religie of geloofsovertuiging 1=Traditioneel (culturu), 2=Katholiek, 3=Protestant, 4=Anders (noem)	

C. Samenstelling van het huishouden

Maak een lijst van alle vaste inwoners van het huis die geen apart huishouden voeren; volwassenen en kinderen. In kolom 4 kun je alle beroepen of activiteiten invullen die de persoon doet: a=landbouwer/planten, b=jagen, c= vissen, d=Vaste baan, e=Winkeleigenaar, f= hosselaar, g=student, h= Overheidsbaan; i= goudzoeker, j=Werkt niet en gaat niet naar school. In kolom 6, beschrijf de relatie van de persoon met het hoofd van huishouden, bijvoorbeeld moeder van de man, zus van de vrouw, zoon van het koppel, enzovoort.

	1	2	3	4	5	6	7
Nr	ID (00000)	Leeftijd (Jaar)	Geslacht 1=man 2=vrouw	Werk a-i	Scholing (hoogste klas)	Relatie tot man hoofd	Naam
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

2. Aantal kinderen tussen de 6 en 12 jaar oud die niet naar school gaan:

D. Financieel kapitaal

D.1. Inkomen in geld

Geef in table D1 het geschatte jaarinkomen van elke persoon die geld heeft verdiend in het afgelopen jaar. Om de persoon te helpen herinneren, vraag hoeveel hij/zij heeft verkocht (per maand bijvoorbeeld) en wat de eenheidsprijs is. Schrijf ook op om welke aktiviteit het gaat, bijvoorbeeld juwelen maken, dieren verkopen, voor ACT werken, enzovoorts.

Persoons ID of naam	*Activiteit/ werk*	*Inkomen in SRD*

D.2. Schat hoeveel het huishouden het afgelopen jaar heeft uitgegeven:

De meeste mensen onthouden niet goed hoeveel ze uitgeven over een langere periode. Vraag daarom wat het gezin normaal gesproken uitgeeft in een week of maand aan bijvoorbeeld rijst of groenten, en vermenigvuldig dit bedrag dan om een jaarbedrag te krijgen.

Item	*SRD per jaar*
Dagelijkse voeding (groente, brood, suiker, thee, enz.)	
Voedselvoorraden (Rijst, Blom, Cassave, enz.)	
Luxe voedsel (bv. Blikjes vis of vlees, zoetigheid)	
Kleding	
Schoenen	
Huis constructie (bv. Nieuw dak)	
Huis inrichting (bv. Pannen, meubels)	
School (schoolgeld, uniformen, boeken)	
Bruiloften, geboorten, begrafenissen	
Kerk	
Anders	
TOTAAL	

D.7. Rijkdom en Sparen

In Tabel D7 vragen we over goederen die de bewoners van het huis bezitten, zonder de kwaliteit van die goederen in acht te nemen, zolang ze maar bruikbaar zijn (dus bv geen kapotte radio).

Goed	*Aantal in bezit*
1. Vee (koeien, varkens, etc.), aantal per soort	
2. Gevogelte, bv. Kip, doks	
3. Radio	
4. Televisie	
5. Koelkast	
6. Boot	
7. Buitenboort motor	
8. Zakken rijst in voorraad	
9. Huizen	
10. Durotank	
11. lichtmotor/generator	
12. DVD speler	
13. Kruiwagen	
14. Stihlzaag	

15. Hoe spaart men? Bijvoorbeeld in voorraden cassave, in juwelen, geld in een potje, etc..

E. Gezondheid

Hoeveel dagen zijn de bewoners gedurende de afgelopen twee weken ziek geweest? Met ziek bedoelen we alles dat de persoon verhindert om te werken of naar school te gaan, zoals in bed liggen door ouderdom of de geboorte van een kind, hoofdpijn, bot-breuken, enz. Vertel in kolom 4 wat de persoon heeft gedaan om beter te worden: 0=niets; 1 = oso dresi; 2 = shaman of ACT kliniek, 3 = Medizebs doktor in het dorp, 4= dokter in de stad.

1	2	3	4
PersoonsID	Dagen ziek (ziekte)	Dagen in bed	Behandeling
00000	#	#	0-3

2. Aantal dagen in de afgelopen twee weken dat één van de hoofden van huishouden thuis is gebleven met een ziek familielid, bijvoorbeeld een kind of een ouder.

Omcirkel het juiste antwoord bij de volgende vragen

3. Aantal rijstmaaltijden per dag: 1 2 3 meer dan 3

4. Aantal maaltijden per week met vis: Minder dan 1 1-2 3-5 meer dan 5
in de regentijd

5. Aantal maaltijden per week met vis: Minder dan 1 1-2 3-5 meer dan 5
in de droge tijd

6. Aantal maaltijden p. week met busmeti: Minder dan 1 1-2 3-5 meer dan 5
in de regentijd

7. Aantal maaltijden p. week met busmeti: Minder dan 1 1-2 3-5 meer dan 5
in de droge tijd

8. Aantal maaltijden per week met vlees/vis uit de stad, b.v. blikjes, gedroogde vis, enz.

Minder dan 1 1-2 3-5 meer dan 5

F. Sociaal kapitaal

F.1. Dorps-organisaties (CBO's)

Is iemand in het huishouden lid van een dorpsorganisatie, bijvoorbeeld een vrouwengroep of een stichting?

	1	2
	Persoons ID of naam 00000	Soort organisatie
1		
2		
3		

F.2. Religie

1. Hoeveel volwassenen uit het gezin gaan minstens 1 maal per week naar een kerk bijeenkomst?

2. Hoe vaak houden gezinsleden een dienst ter ere van traditionele goden of geesten, b.v. in verband met ziekte, een belangrijke gebeurtenis (e.g. geboorte, dood), of om te danken? Omcirkel het juiste antwoord.

Dagelijks Minstens 1 maal per week Minstens 1 maal per maand

Enkele malen per jaar Nooit

F.3. Communicatie netwerken

1. Hoe vaak krijgen de leden van het gezin informatie of nieuws van de volgende bronnen?

1. Krant ☐ Dagelijks ☐ Paar keer per week ☐ Paar keer per maand ☐ Paar keer per jaar ☐ (Bijna) nooit, minder dan 1 keer per jaar	**4. DVD/Video** ☐ Dagelijks ☐ Paar keer per week ☐ Paar keer per maand ☐ Paar keer per jaar ☐ (Bijna) nooit, minder dan 1 keer per jaar
2. Nationale radio ☐ Dagelijks ☐ Paar keer per week ☐ Paar keer per maand ☐ Paar keer per jaar ☐ (Bijna) nooit, minder dan 1 keer per jaar	**5. Post, brieven uit de stad** ☐ Dagelijks ☐ Paar keer per week ☐ Paar keer per maand ☐ Paar keer per jaar ☐ (Bijna) nooit, minder dan 1 keer per jaar
3. Gemeenschapsradio ☐ Dagelijks ☐ Paar keer per week ☐ Paar keer per maand ☐ Paar keer per jaar ☐ (Bijna) nooit, minder dan 1 keer per jaar	**6. Mondelijke informatie van mensen van buitenaf** ☐ Dagelijks ☐ Paar keer per week ☐ Paar keer per maand ☐ Paar keer per jaar ☐ (Bijna) nooit, minder dan 1 keer per jaar
3. Televisie nieuws ☐ Dagelijks ☐ Paar keer per week ☐ Paar keer per maand ☐ Paar keer per jaar ☐ (Bijna) nooit, minder dan 1 keer per jaar	**7. Mondelijke informatie van lokale mensen uit het dorp** ☐ Dagelijks ☐ Paar keer per week ☐ Paar keer per maand ☐ Paar keer per jaar ☐ (Bijna) nooit, minder dan 1 keer per jaar

2. Hoe krijgen de gezinsleden nieuws over gebeurtenissen in het Wayana gebied, zoals b.v. overlijden, geboortes, etc?

☐ Radio
☐ Andere mensen uit het dorp
☐ Wayana van buiten het dorp die op bezoek komen
☐ Post
☐ Anders, namelijk.....

J. Einde.

Dank je wel voor uw tijd en moeite. Uw hulp was erg belangrijk voor ons.

Tïpït tïpeinom malë lëken pampila

Househoud survey formulier in Wayana language

Project naam: ___Baseline data voor het Wayana gebied_____
Project sponsor: __Amazon Conservation Team Suriname_____
Uitvoerende instantie: __ACT met Wayana onderzoekers_____
Supervisor lokale onderzoeksteam Apetina: __Laif_____
Veld coordinator: ____Samoe_____
Algemene Onderzoekscoördinator: _____Marieke Heemskerk_____
Interviewer(s): _____

Land: _Suriname_____ District: _Sipaliwini_ Resort:_Tapanahoni_____
Dorps naam: _Kawemhakan_____
Dorps ID: __2_____ Datum: _11-14 july 2006_____

A. Pakolo

1	Ale	☐Malalija	☐ Zink	☐ Tïwelën palanka	
2	Itlan	☐Hamut	☐ Simenti	☐ Palanka	
3	Talinhao	☐Palanka	☐ Simenti	☐ Imna	☐ Malalija (soort blad)
4	Wapotohpe kane pakolo	☐Uwa	☐ ïna		
5	Tunahpe kane pakolotao	☐Uwa	☐ ïna	☐ Pakolo uikatop	
6	Pakolotao uikatop?	☐Uwa	☐ Talihnao	☐ Uikatop enoktopohpan	

7. Hakëne ïnïktopoh pe?

B.1 Ehluwa

1	Ehluwa ehet	
2	Ënik janaman?	
3	Ëitë ëwekaktane	
4	Tapsik ëweinane talë?	
5	Tapsikne ëpeinom?	
6	Ënik omi jao ëje ëwe pane?	
7	Sranan omika mukekja?	
10	Hollans omika mukekja?	
11	Wayana omi jao kamitïpke?	
12	Hollans omi jao kamitïpke?	
13	Tënonpona man hemalë?	

B.2 Wëlïi

Wëlïi ehet	
Ënik janaman?	
Ëitë ëwekaktane	
Tapsik ëweinane talë?	
Tapsikne ëpeinom?	
Ënik omi jao ëje ëwe pane?	
Sranan omika mukekja?	
Hollans omika mukekja?	
Wayana omi jao kamitïpke?	
Hollans omi jao kamitïpke?	
Tënonpona man hemalë?	

C.1 Tïpït tïpeinom malë lëken

	1	2	3	4	5
Nr	Ehet	Tapsik jalï	Eluwa tanme Wëlïi	Taphele klas pona mëhepane?	Ëtï pëk kalakuli meneja?
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

C.2. Taphelene peitopït 6 jalï tëweihamo 12 jalï tëweihamo sikolo pëkëla?

D.1 Kalikuli

1. Tapsik wëlïham nïtëja fotopona pëkënatpë weji jao?

2. Tapsik kalikuli alëja?

3. Tapsik eluwakom nïtëja fotopona pëkënetpë weji jao?

4. Tapsik kalakuli alëja?

D.2 Tïmïn palëk eitop

	Tapsi
1. Tëhamo	
2. Tolopït	
3. Lalijo	
4. Tënehem	
5. Ahalamatën	
6. Kanawa	
7. Montolu	
10. Tuna enï pepta	
11. Tututu hawenkatop	
12. DVD etëtop	
13. Waki waki	
14. Pepeka	

E. Uwame eitop

Ënik ëpakolotontao min wikijao uwamela kunehak?

Ehet	Taphele awaina wamela minwikijao	Tala ëwepit mënene

F. Ëtïkom mepïja

1. Taphele pona alesi mepija pëkënatpë awaina?

☐ 1 ☐ 2 ☐ 3 ☐ 3 upholo

2. Taphele ka mëja pëkënatpë wikijao?

☐ Wantë wantë ☐ 1-2 ☐ 3-5 ☐ awainakuptë

3. Taphele ituhtalïtom mëja pëkënatpë wikijao?

☐ Wantë wantë ☐ 1-2 ☐ 3-5 ☐ awainakuptë

4. Taphele pona kalipano otï mëja pëkënatpë wikijao?

☐ Wantë wantë ☐ 1-2 ☐ 3-5 ☐ awainakuptë

G. Ëtakëlëntom

Ënëkne ëtakëlëntom pakolotao?

	Ehet	ëtakëlëntom
1		
2		
3		

H. kuweitoponpï komjao

Tala ëweitoponpï mukukja**?**

☐ awainakuptë ☐ wikikuptë ☐ nunuwëkuptë ☐ wantë wantë ☐ uwahle

I. Ihjan ekalëimëtop

Tala ihjan ekalëtop mipananme**?**

1	Kolanti	☐ awainakuptë	☐ Wikikuptë	☐ nunuwëkuptë	☐ wantë wantë	☐ uwahle
2	Ladio	☐ awainakuptë	☐ Wikikuptë	☐ nunuwëkuptë	☐ wantë wantë	☐ uwahle
3	Tëkalëhem ekalëmetop	☐ awainakuptë	☐ Wikikuptë	☐ Nunuwëkuptë	☐ wantë wantë	☐ uwahle
4	Tënehem	☐ awainakuptë	☐ Wikikuptë	☐ Nunuwëkuptë	☐ wantë wantë	☐ uwahle
5	DVD videocasset enï	☐ awainakuptë	☐ Wikikuptë	☐ Nunuwëkuptë	☐ wantë wantë	☐ uwahle
6	Teneh pohem pamila	☐ awainakuptë	☐ Wikikuptë	☐ Nunuwëkuptë	☐ wantë wantë	☐ uwahle
7	Tala talïhnalïtom omi ekalëja	☐ awainakuptë	☐ Wikikuptë	☐ Nunuwëkuptë	☐ wantë wantë	☐ uwahle
8	Tala ihjan eitop mapëhja	☐ awainakuptë	☐ Wikikuptë	☐ Nunuwëkuptë	☐ wantë wantë	☐ uwahle

EINDE – TALA!!

APPENDIX D. LIST OF WILD PLANTS USED BY THE WAYANA
Also a few cultivated semi-wild plants are included in this list (in blue).

TABLE a: CONTRUCTION MATERIALS FOR SHELTERS, CAMPS AND HOUSES

Scientific name	**English name**	**Dutch name**	**Sur-Ned (SN) / Sranan Tongo (ST) name**	**Wayana name**	***Trio name***	**Part of plant /use**
CONSTRUCTION WOOD						
Vouacapoua americana (Caesalp.)			bruinhart	wakap	wakapu	wood as posts of houses
Dicorynia guianensis (Ceaslp.)			basralokus	?	?	wood
Vochysia tomentosa			wanakwari	wanakwari	?	wood
Couratari spp			ingipipa	ingipipa	?	wood
Goupia glabra (Goupiac.)			Kopi	warima	pasisi	wood
Nectandra & Ocotea spp. (Laur.)			Pisi	apisi	wai	wood
Eperua falcata (Caesalp.)			Walaba	wapa	totopo	wood
Carapa spec. (Meliac.)			Krapa	krapa	karapa	wood
Licania micrantha (Chrys.)			zwarte fungu	several species, such as karipoime	several species names not known	wood as roof support
Xylopia nitida (Annon.)			witte pedreku			
Croton spec. (Euph.)			langbladige tabakabron			
Jacaranda copaia (Bign.)			Gubaya			
Eschweilera corrugata (Lecyth.)			umabarklak	kuput	anjamaraiwa	as roof supports
FLOORS AND WALLS						
Euterpe oleracea (Palmae)			Pina	apu	wapu	split stems (floors, walls)
Iriartea exorrhiza (Palmae)			ingiprasara	pëpë	piura	split stems (floors, walls)
Bambusa vulgaris (Gram.)	bamboo	bamboe	bambusi	kurumuri	paara	split stems (walls)
Ischnosiphon spp. (Marant.)			warimbo	wama	waruma	split stems (woven walls)
ROOFING THATCH						
Geonoma baculifera (Palmae)			Taspalm	mararia	maraja	leaves
Astrocaryum sciophilum (Palmae)			bugrumaka	mumu	muru	leaves
Attalea regia (Palmae)			Maripa	maripa	maripa	leaves

TABLE b: FURNITUE AND HOUSEHOLD UTENSILS

Scientific name	English	Dutch	Sur-Ned/ Sranan	Wayana	Trio	Part of plant / use
WOVEN UTENSILS: MANIOC PRESSES (MATAPI), SIEVES (MANARI), FANS, STORAGE BOXES (PAGARA), BASKETS, CARRIER BASKET (KATARI) etc.						
Ischnosiphon spp. (Marant.)			warimbo	wama	waruma	split stem
Astrocaryum (Palmae)			bugrumaka	mumu	muru	(wide yellow) strips from young leaf slips
Gynerium sagittatum (Gram.)			pijlriet, peri	purow	pureowime	culm of inflorecense
Annona spec. (Annon.)			kapuweri boszuurzak	?	?	bark
Couratari spp. (Lecyth.)			ingipipa	katari	pono, tirenen	bark
Eschweilera spec. (Lecyth.)			barklak	katari ewa	?	bark
Mouriria spec. (Humir.)			spikri-udu		mirimiri	wood for frames
Rinorea spec. (Viol.)			manaritiki	manare epu	?	wood for frames
HAMMOCKS						
Gossypium barbadense (Malv.)	cotton tree	katoen	katun	mawu	maru entu	cotton from seeds
Mauritia flexuosa (Palmae)			morisi	kuwai	koi	strips from leaf slips, not used at Apetina
JARS, CONTAINERS						
Crescentia cujete (Bign.)	calabash	kalebas	krabasi	karapi	kamo	pericarp
Lagenaria siceraria (Cucurb.)	gourd	fles-kalebas	ingigodo	tutpë	atoreïme	pericarp
Attalea maripa (Palmae)			maripa	maripa	maripa	spathe of inflorescence used as tray
Bambusa vulgaris (Gram.)	bamboo	bamboe	bambusi	kurumuri	paara	culm: container for poisenous arrow-heads[29]

Scientific name	English	Dutch	Sur-Ned/ Sranan	Wayana	Trio	Part of plant / use
POTTERY						
Licania spp. (Chrys.)			kwepi	apurukun	kuwepi	charcoal from bark to mix with clay
Protium aracouchini (Burs.)			kumete	?	?	ingredient for paint to which colors should be added
Inga spec. (Mimos.)			rode prokoni	sikë	?	bark to produce red paint
BROOMS AND BRUSHES						
Bambusa vulgaris (Gram.)	bamboo	bamboe	bambusi	kurumuri	paara	split culm
Euterpe oleracea (Palmae)			pina	apu	wapu	infloresence
Attalea regia (Palmae)			maripa	maripa	maripa	leave veines, split leaf stalk
Oenocarpus bacaba (Palmae)			kumbu	airiki	kumu	leave veines, split leaf stalk

TABLE c: FIBERS AND TWINING MATERIALS

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant / use
FIBERS AND TWINING MATERIALS						
Gossypium barbadense (Malv.)	cotton tree	katoen	katun	mawu	maru entu	cotton from seeds
Bromelia alta (Brom.)			singrasi	kuraiwat	wirawaito	fibers of leaves, at Awarakumpu Tapanahoni) leaves with smooth margins
Agave sisalana	American Aloe	agave		mami	ajawari	fibers of leaves
Mauritia flexuosa (Palmae)			morisi	kuwai	koi	rope from leave slips
Carludovica sarmentosa (Cycl.)			mankamina	mami	nopojame	aerial roots
Stigmaphyllon convolvulifolium (Malp.)			konkoni-kasaba	?	matukru	liana
Cucurbitaceae spec.				?	kumikumi	liana

Bagassa guianensis (Morac.)			bagase	?	pakasa	bark (to carry babies)
Heteropsis jenmanii (Arac.)			kaminatetei	mami	ajaaware	aerial roots
Philodendron grandiflora (Arac.)			tayatetei	?	sintime	aerial roots
Philodendron spec. (Arac.)			makatetei	?	ukana	aerial roots
Araceae spec. (Arac.)			sparitaya	?	wukana	aerial roots

TABLE d: RESINS, RUBBER AND NON-COOKING OILS

Scientific name	**English**	**Dutch**	**Sur-Ned / Sranan**	**Wayana**	**Trio**	**Part of plant / use**
RESINS, RUBBER, NON-COOKING OILS						
Hymenaea courbaril (Caesalp.)			lokus, loksi	mepu	kauru	resin from bark, to lit fire
Protium spp. (Burser.)			ajawa-tingimoni, busikandra	awa	awa	resin from bark, for lightening
Symphonia globulifera (Clus.)			mataki	prakta	mani	resin from bark= tar for ropes
Hevea spec. (Euph.)	rubber tree	rubber-boom		?	awee	rubber from bark to remove mosquito-worms (botflies)
Manilkara bidentata (Sapot.)	bullet tree		boletri	ekupima	parahtara	balata (palata) also used as glue
Bagassa guianensis (Mor.)			kawudu	ekupima	pakasa	false balata to fill leaks in boats
Copaifera guianensis (Caesalp.)			hoepelhout	kupaiwa	kopaiwa	wood oil, also used as insecticide
Macoubea guianensis (Apoc.)			sokosokomapa	?	?	to catch birds
Apocynaceae spec. 1			tarabon	?	haipukwime	to catch birds
Apocynaceae spec. 2			taratetei	were		to catch birds

TABLE e: CONSTRUCTION WOOD FOR CANOES

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant / use
CANOES & PEDDLES						
Bagassa guianensis (Morac.)			kawudu	ekupima	pakasa	wood for boat constuction
Brosimum spec. (Morac.)			dukali-species	?	pïï	wood for boat constuction
Vochysia tomentosa (Voch.)			wanakwari	?	etekërë	wood for boat constuction
Nectandra & Ocotea spp. (Laur.)			pisi	apisi	wai	wood for boat constuction
Sloanea spp. ((Eleocarp.)			rafrunyanyan	?	tephaima	wood for boat constuction
Swartzia spp. (Papil.)			bugubugu	?	kwikwiweti	wood for boat constuction
Aspidosperma spec. (Apoc.)			pari-udu, parelhout	eparai	?	wood foor peddles

TABLE f: HUNTING & FISHING UTENSILS AND WEAPONS

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant / use
BOW[30]						
Piratinera spp. (Morac.)		letter-hout		paida?	urapawewe	wood
Brosimum rubescens (Morac.)		satijn-hout	saten-udu	?	ulaba	wood
ARROW SHAFTS[31]						
Gynerium sagittatum (Gram.)			pijlriet, peri	purow/pilëuime	puleowime	culm of inflorecense
Bambusa sp. (Gram.)	bamboo	bamboe	bambusi	kurumuri	paara	culms: heads for larger mammals
Aulomyrcia hostmanniana (Myrt.)			rode bast bosgujave	?	sorosoro-idipa	wood: heads for larger birds
Mouriria spec. (Hum.)			spikri-udu	?	mirimiri	wood: heads for larger birds
Attalea maripa (Palmae)			maripa	maripa	maripa	leaf stalk: heads for smaller mammals
Rinorea spec. (Viol.)			leletiki	kamara	kurunje	wood: heads, small birds

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant / use
ARROW POISON [32]						
Strychnos guyanensis (Logan.)	curare	curare		urari	urare	root bark
Strychnos medeola (Logan.)	curare	curare		?	urare	substitute for Strychnos guianensis
Piper bartlingianum (Piper.)				?	mamewiranu	poison ingredient
Piper poiteanum (Piper.)				arakupani	arakupane	poison ingredient
Piper aff. alatabaccum (Piper.)				?	ademeputupu	poison ingredient
Piper spec.				petpë		poison ingredient
Capsicum annuum. (Solan.)			rode peper	asi	kunebebe	poison ingredient
Rapatea paludosa (Rapat.)				?	towtow	poison ingredient
Endlicheria bracteolata (Laur.)				?	wi	poison ingredient
Ocotea guianensis (Laur.)				?	wi	poison ingredient
cf. Iriartea (Palmae)				?	pehurat	poison ingredient
Philodendron melinonii (Arac.)					wikaw	poison ingredient
FISH TRAP - PAKUSHI						
Iriartea exorrhiza (Palmae)			ingiprasara	pëpë	piura	stems
Heteropsis jenmanni (Arac.)			kaminatetei	mami	ajaaware	aerial roots
FISHING RODS and LINES						
Anaxagorea sp.? (Anon.)			manpikapika	?	mekrowewe	fishing rods are rarely used
Bromelia alta (Brom.)			singrasi	kuraiwat	wirawaito	fibers of leaves
FISH BAIT[33]						
Mourera fluvialtilis (Podost.)			kumaru-nyanyan	?	pema	flowers
Eugenia patrisii (Myrt.)			sekrepatu kersi	?	pomoime	fruits
Montrichardia arborescens (Arac.)			mokomoko	?	kurukuni	young fruits
Phytolacca rivinoides (Phytol.)			gogomango	pararipan	panarepane	fruits
Cordia tetrandra (Borag.)			tafrabon	mojoi	kaaka	fruits
Clibadium surinamense (Comp.)			kunami	kunani	kunani	fruits
Genipa americana (Rub.)			tapuripa	kurupë	menu	fruits

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant / use
Jacaranda rhombifolia (Bign.)			morokobita	?	paade	seeds
Eperua spp. (Caesalp.)			walaba	?	totopo	seeds
FISH POISON						
Lonchocarpus spp. (Papil.)			neku-udu	harihari	kunotoke	wood
Lonchocarpus spp. (Papil.)			neku (tetei)	?	ineku	roots
Tephrosia toxicaria (Papil.)			bumbi	asikuna	asikuna	roots
Clibadium surinamense (Comp.)			kunami	kunani	kunani	leaves
Smilax schomburgkiana (Lil.)				pretauw		
Piratinera spp. (Morac.)			letterhout	?	arapawewe	wood to produce weapon club
Bambusa vulgaris (Gram.)	bamboo	bamboe	bambusi	kurumuri	paara	split stems to make suite of armour

TABLE g: FOOD[34]

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant / use
FRUITS						
Euterpe oleracea (Palmae)			pina	apu	wapu	palm heart
Attalea maripa (Palmae)			maripa	maripa	maripa	palm heart
Caryocar glabrum (Caryoc.)			ingi noto	?	cho	nuts
Lecythis davisii (Lecyth.)			kwatapatu	tura	turaran	seeds
Anacardium occidentalis (Anac.)		kasjoe	kasyu	oroi		nuts
Bactris spp. (Palmae)			keskesmaka	?	piritu	seeds
Gnetum nodiflorum (Gnet.)				?	towa	seeds (roasted)

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant / use
COOKING OIL AND FATS						
Bactris oligocarpa (Palmae)			grote awara	?	amana	fruits
Astrocaryum sciophilum (Palmae)			bugrumaka	mumu	muri	fruits
Attalea maripa (Palmae)			maripa	maripa	maripa	fruits
Oenocarpus bacaba (Palmae)			kumbu	airiki	kumu	fruits
WARM DRINKS						
Theobroma cacao (Sterc.)	cacao	cacao	kakaw	arapuru	wereke	seeds (sqeezed)
Oenocarpus bacaba (Palmae)			kumbu	airiki	kumu	fruits
Oenocarpus bataua (Palmae)			patawakumbu	patawa	kumuime	fruits
Euterpe oleracca (Palmae)			pina, podosiri	apu	wapu	berries
JUICY FRUIT						
Omphalea diandra (Euph.)			babunnoto	?	warike	pulp (seeds poisonous)
Platonia insignis (Clus.)			pakuli, geelhart	?	kunumima	fruits
Rheedia macrophylla (Clus.)			hoogland pakuli	?	anjumara-ede-toto	fruits
Eugenia patrisii (Myrt.)			sekrepatukersi	?	pomoime	fruits
Mouriria spp. (Melast.)			spikri-udu	?	mirimiri	fruits
Byrsonima spp (Malp.)			sabanakwari	?	?	fruits
Humiria spec. 1 (Hum.)			langbladige blakaberi	?	makaraima	Fruits (not as sweet as makara)
Humiria spec. 2 (Hum.)			hoogbos blakaberi	?	kara	fruits
Tetragastris spp. (Burser.)			rode sali	?	adita	fruits

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant
Anacardium occidentalis (Anac.)	cashew	kasjoe	rode & gele kasyu	oroi	oroi & oroi ararawa	juicy fruit stalks
Anacardium giganteum (Anac.)			boskasyu	orosimë	itu oroi	juicy fruit stalks
Spondias mombin (Anac.)			mope	maapa	maapa	fruits
Tapirira guianensis (Anac.)			weti-udu, duka, jamaica-siri	?		fruits
Manilkara bidentata (Sapot.)			boletri	?	parahtara	fruits
Pouteria spp. (Sapot.)			dyuboletri	?	tumori	fruits
Ecclinusa cuneifolia (Sapot.)			kwatabobi	tumuri	emori	fruits
Herrannia kanukuensis (Ster.)			busikakaw	?	akanapatorotot oro	fruits
Theobroma spec. (Sterc.)			busikakaw	?	adikanama	fruits
Pouteria guianensis (Sapot.)			Jan Snijder	?	?	fruits
Ambelania acida (Apoc.)			batbat	?	kamagi	fruits
Duroia spec. 1 (Rub.)			marmeldoos	wütuk	menoima	fruits
Duroia spec. 2 (Rub.)			marmeldoos	?	awasana	fruits
Attalea regia (Palmae)			maripa	maripa	maripa	fruits
Mauritia flexuosa (Palmae)			morisi	?	koi	fruits
Bactris gasipaes (Palmae)			paripu	krupoime	paripo	fruits
SWEETS						
Inga spec. 1 (Mimos.)			switbonki	?	karutapa	pulp around seeds
Inga spec. 2 (Mimos.)			liba switbonki	?	kiurami	pulp around seeds
Inga spec. 3 (Mimos.)			Brazil switbonki	turi	arimi arokri	pulp around seeds
Theobroma coacao (Buett.)	cacao	cacao	kakaw	arapuru	wereke	pulp around seeds
Hymenaea courbaril (Caesalp.)			rode lokus, loksi	?	kaura, roka	pulp around seeds
SMOKERS' REQUISITES						
Couratari spp (Lecyth.)			ingipipa		pono	bark as sigaret paper

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant
HALLOCYNOGENS						
Helicostylis tomentosa (Morac.)			takini	?	takini	liquid from bark
Brunfelsia guianensis (Solan.)			malasi-udu, man-bitawiwiri	?	kupedeja	bark

TABLE h: FIRE WOOD

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant
FIREWOOD						
Elisabetha aff.princeps (Caesalp.)			rode bast tamarin	?	kakaimë	most preferred firewood by the Trio: trees are especially killed to produce firewood
?			kwepi	?		most preferred firewood by the Wayana

TABLE i: MEDICINES, POISONS AND REPELLANTS

MEDICINES
For an overview and descriptions of different species of medicinal plants (including trees, palms, lianas, shrubs, herbs incl. ferns, mosses and fungi) used by the WAYANA people see: PLOTKIN (1986): *Ethnobotany And Conservation of the Tropical Forest with special reference to the Indians of Southern Suriname.* Thesis Tufts University.

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant / use
PESTICIDES AND REPELLANTS						
Lonchocarpus spp. (Papil.)			neku	harihari	ineku	roots as insecticide
Pachyptera alliacea (Bign.)	garlic vine		knofrokotetei	?	akapota	stems to chase away bats

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant / use
Bombax aquaticum (Bomb.)			watrakakaw	?	mekumpe entu	fruits used to kill sand-fleas
Carapa 2 spp. (Meliac.)			krapa	karapa	karapa	oil from seeds as repellent against ticks
Euphorbia spec. (Euph.)			mirkasaba	?	kunapalu	leafs when eaten kill leaf-cutting ants in gardens
Bixa orellana (Bixac.)	annoto	annoto	kuswe	onot	whise	seed-arillus as insect repellant

TABLE j: BODY CARE, CLOTHING, ADORNMENTS, MUSIC INSTRUMENTS

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant
SOAP / SHAMPOO						
Bignoniaceae spec.			liana	?	?	bark with saponine
Furcraea foetida (Amaryll.)			ingisopo	amra	wiwiri	juice of succulent leaves stimulates hair growth
Cedrelinga cateniformis (Mimos.)			donsedre	?	pinjeje	extract of bark as hair shampoo
Attalea speciosa (Palmae)			granmaripa	kuxi	kui	oil from fruit used as hair oil
BODY PAINT[35]						
Bixa orellana (Bixac.)	annoto	annoto	kuswe	onot	whise	fatty arillus as red bodypaint
Genipa americana (Rub.)			tapuripa	kurupë	menu	fruits to produce blue-black body paint
TRIO HAIR COMB[36]						
Bambusa vulgaris (Gram.)	bamboo	bamboe	bambusi	kurumuri	paara	split culm to produce

						comb teeth
Attalea maripa (Palmae)			maripa	maripa	maripa	split leaf stalk to produce comb teeth
Oenocarpus bacaba (Palmae)			kumbu	airiki	kumu	split leaf stalk to produce comb teeth
Gossypium barbadense (Malv.)	cotton tree	katoen	katun	mawu	maru entu	cotton from seeds
			EYE CARE			
Imperata contracta (Gram.)			mosoyo-grasi	?		glumae to depilate eyebrows and beard hairs
Scientific name	**English**	**Dutch**	**Sur-Ned / Sranan**	**Wayana**	**Trio**	**Part of plant / use**
CLOTHING, HEADDRESSES, HAIR TUBES, NECKLACES, ARMLETS[37]						
Didimopanax morototoni (Sterc.)			morototo	?	maramara	(brown) seeds for loincloth = keweyu (in the past), necklaces and to decorate hair tubes
Guadua spec. (Gram.)	bamboo	bamboe	fluitbamboe	?	sari	culms used as hair tubes
?				?	apurukwi	bark to produce black paint for maramara seeds
?				?	?	idem, for orange paint
?				?		
Talisia sp. (Sapind.)					taari	extraction of leaves, for deep purple color
?				?	?	for blue paint
Flacoutiaceae spec.				?	?	bark for maroon paint
?			eetbare mispel	?	jakadi	redish purple
Bignoniaceae spec.				?	?	green paint
?				?	?	yellow paint
Mucuna sloani (Papil.)			kawai	?	?	seeds for necklaces
Coix lacrima-jobi (Gram.)			kanefro	sampere	ampere	seeds for necklaces
Tetragastris spp. (Burser.)			sali	?	sawawaima	seeds for necklaces

Scientific name	English	Dutch	Sur-Ned / Sranan	Wayana	Trio	Part of plant / use
Phenakospermum guianensis (Musac.)			bigi palulu	?	paru	seeds for necklaces
Ormosia spp. (Papil.)			kokriki	onokowe	wotow	seeds for necklaces
Cana indica (Can.)	Indian shot	Cana/ indisch bloemriet	sakasiri	?	?	seeds for necklaces
MUSIC INSTRUMENTS[38]						
Cedrela odorata (Meliac.)			sedre	?	?	wood for drums
Nectandra & Ocotea spp. (Laur.)			pisi	apisi	wai	wood for drums
Guadua sp. (Gram.)		bamboe	bambusi	?	sari	culms for panflutes
Lagenaria siceraria (Cucurb.)	gourd	fles-kalebas	krabasi	tutpë	atoreïme	pericarp for maraka
Canna coccinea (Cannac.)			sakasiri	?	?	seeds are used in the maraka
Thevetia peruviana (Apoc.)			Jorojoro, karwasi	kawai	?	fruits with ripe seeds are used as marakas
Didymopanax morototoni (Sterc.)			morototo	?	maramara	seeds as adornments for maraka: for paints see: necklaces

APPENDIX E. TABLES OF WILD ANIMALS FOR NON-COMMERCIAL USE BY THE WAYANA AND TRIO

Ensembled with special assistance from Basja Marius of Puleowime (Apetina) in 2004, and from Salomon at Kawemhakan in 2006

Legend of colors:

Column 1:
blue: game species: hunting allowed, also catching and keeping in cages. Export quota 2002 in column at right
purple: cage species: catching and keeping in cages allowed. Export quota 2002 in column at right
red: harmful species. shooting and catching allowed all year around. Export quota in column at right
green: protected species, but limited trade allowed. Export quota 2002 in column at right.
black: protected species, trade prohibited
brown: not protected reptiles and amphibians. Export quota 2002 in column at right

Column 6
Quota numbers in bold red: **CITES Appendix I species, export prohibited**
Quota numbers in bold green: **CITES Appendix II species**
Quota numbers in black: **non-CITES species**

TABLE a: FOOD

Scientific name	English	Dutch	Sur-Ned (SN) / Sranan Tongo (ST)	Wayana	Trio	Nat'l Exp. Quota 2002
MAMALIA - MAMMALS - ZOOGDIEREN - METI						
ALL PRIMATES (8)						
Chiropotes satanus	black saki	baardsaki	kwataswagri, bisa	isoimë	isoimë	**0**
Pithecia pithecia	pale-headed saki	witkopaap	wanaku	kushiri	ariki	**0**
Alouatta seniculus	howler monkey	brulaap	babun	arawata/ alawata	arawata	**0**
Cebus apella	brown capuchin	bruine capucijner	keskesi, meku	meku	taripi	**114**
Cebus olivaceus	tufted capuchin	grijze capucijner	bergikeskesi	wakew	akeu	**0**
Saimiri sciureus	squirrel monkey	doodskopaap	monkimonki	kwanan	akarima	**1000**
Ateles paniscus	spider monkey	zwarte spin-aap, slingeraap	kwata	arimi alimi	arimi	**0**
Saguinus midas	red-handed tamarin	roodhand-zijdeaapje	saguwenke	makui	makui	**320**
Scientific name	**English**	*Dutch*	**SN / ST**	Wayana	**Trio**	**NEQ**
MOST EDENTATES (9)						
Myrmecophaga tridactyla	giant anteater	reuze miereneter	tamanwa	walisimë	masiwe	**0**
Tamandua longicaudata	lesser anteater	middelste miereneter	mirafroiti	walisimë	marime	0
Bradypus tridactylus	three-toed sloth	drieteen luiaard	sonloiri	ili	arekore	0
Choloepus didactylus	two-toed sloth	tweeteen luiaard	skapuloiri	ili	wirinai	0
Priodontes giganteus	giant armadillo	reuzengordeldier	granman kapasi	moraime	moraime	**0**
Euphractus sexcinctus	six-banded armadillo	zesbandig gordeldier	(kapasi)	moaimeime	?	0
Cabassous unicinctus	broad-banded armadillo	naaktstaart gordeldier	pikin kapasi	kapasi	?	0
Dasypus kappleri	Kappler's armadillo	Kappler's gordeldier	makakapasi	kapasi	kapaime(n)	0
Dasypus novemcinctus	nine-banded armadillo	negenbandig gordeldier	lontutere kapasi	kapasi	potepote	0

Scientific name	English	Dutch	Sur-Ned (SN) / Sranan Tongo (ST)	Wayana	Trio	NEQ 2002
CERTAIN CARNIVORES (5)						0
Panthera onca	jaguar	jaguar	peni tigri	kakui	timenuren	0
Nasua nasua	coati	neusbeer	kwaskwasi	seu/sijeu	seu	0
Potos flavus	kinkajou	rolstaartbeer	netikeskesi	kuikui	kuikui	0
Gallictis vittata	grison	grison	weti-aira	?	?	0
Eira Barbara	grey-headed weasel	zwartbruine veelvraat	aira	kerepuke	ekerepuke	100
ALL UNGULATES (6)						0
Tapirus terrestris	South-American tapir	Z-Am. tapir	bofru	maipuri	pai	**0**
Dicotyles pecari	white-lipped peccary	witlip-pekarie	pingo	peneke pëinekë	pëinjekë	**0**
Tayassu tajacu	collared peccary	halsband-pekarie	pakira	pakira	pakira	0
Odocoileus virginianus	white tailed deer	savannehert, strandhert, zeehert	sabanadia	kapaw	wikapau	0
Mazama americana	large red brocket	groot boshert	prasara-dia, pranasi-dia	kariak kalejak	kajake	0
Mazama gouazoubira	grey brocket	klein boshert	busikrabita, kuriaku	kariak	kajake	0
CERTAIN RODENTS (12)						0
Sciurus aestuans	Guiana tree-squirrel	Surinaamse eekhoorn	bonboni	meri	meri	0
Sciurus pusillus	South American pygmee squirrel	kleine Surinaamse eekhoorn	boniboni	meri	sikarakara	0
Proechymus guyanensis	spiny rat	stekelrat	maka-alata	alu	Munupe-ime	0
Proechymus spec.	spiny rat	stekelrat	maka-alata	alu	sawa	0
Mesomys spec.	spiny rat	stekelrat	maka-alata	alu	sawa	0
Echymis chrysurus	white-crested spiny rat	Surinaamse goudrat		arawime	awarime	0

Scientific name	English	Dutch	Sur-Ned (SN) / Sranan Tongo (ST)	Wayana	Trio	NEQ 2002
Hydrochaeris hydrochaeris	capybara	capibara	kapuwa, waterhaas	kapiwala	iwuri	150
Dasypocta leporina	orange-rumped aguti	Surinaams konijn, agoeti	konikoni	akuri	akuri	250
Dasyprocta cristata	?			?		250
Myoprocta exilis	reddish acuchi	staart-agoeti	mambula	pasi	pasinure	100
Agouti paca	paca	Surinaamse haas,paca	haas, he	kurimau kulima	kurimau	200
Coendoe prehensilis	South-American tree porcupine	boomstekelvarken	gindyamaka	alu *(not eaten by Wayanas)*	mudi	0
AVES - BIRDS - VOGELS - FOWRU						
ALL TINAMOUS (5)						
Tinamus major	great tinamou	grote tinamoe	mamafowru-anamu	ololo	potuhna	146
Crypturellus cinereus	cinereous tinamou	grauwe tinamoe	anamu	mawi	mawi	66
Crypturellus soui	little tinamou	kleine tinamoe	pikin anamu, ston-anamu	suwi	suwi	66
Crypturellus erythropus	red-legged tinamou	roodpoot tinamoe	redifutu-anamu	?	makawa	0
Crypturellus variegatus	variegated tinamou	bonte tinamoe	tigri-anamu, redi anamu	maipo	sorosoroi	66
ANININGAS (1)						
Anhinga anginga	anhinga, darter	slangenhalsvogel	duikelaar, fisman	kiakokoima	kujakopoi ma	164
CERTAIN HERONS (5)						
Ardea cocoi	white-necked heron	sokoi-reiger, zwartkruinreiger	kumawari	?	wara	0
Pitherodius pileatus	capped heron	kapreiger	(sabaku)	akaraima/ wakaraimë	?	0
Egretta thula	snowy egret	kleine zilverreiger	(sabaku)	wakaraimë	?	0

Scientific name	English	Dutch	Sur-Ned (SN) / Sranan Tongo (ST)	Wayana	Trio	NEQ 2002
Agamia agami	chestnut-bellied heron	agami-reiger	-	wakaraimë	kujawiwi	0
Tigrisoma lineatum	rufescent tiger- heron	rosse tijgerroerdomp	tigrifowru	onori	onore	0
ALL STORKS (3)						
Mycteria americana	American wood stork	houtooievaar	nengrekopu	*not eaten by Wayanas*	?	0
Euxemnura maguari	Maguari stork	Magoeari	redifutu	*not eaten*	?	0
Jabiru mycteria	jabiru	Jabiroe	blaasman	*not eaten*	?	0
IBISSES (1)						
Mesembrenicus cayennensis	green ibis	groene ibis	korokoro	toko	kuruku	0
CARACARAS (1)						
Daptrius americanus	red-throated cararara	roodpoot cararara	busikaka	?	kaakow	0
DUCKS (1)						
Cairina moschata	muscovy duck	Muskuseend	bosdoks	urumaima	urumaima	120
CURASSOWS, GUANS & CHACHALACAS (5)						
Crax alector	black curassow	zwarte hokko	powisi	owok	oko	27
Penelope marail	marail guan	Marail	marail	akawak	marasi	
Penelope jacquacua	Spix's guan	Spix' sjakohoen	busikrakun	akawak	marasi	
Ortalis motmot	little chachalaca	kleine chachalaca	wakago	aratkwa	araha	142
Aburria cumanensis	white-headed piping guan	blauwkeel guan	wet-ede marai	kuiwi	kuiwi	0
QUAILS & PARTIDGES (2)						
Colinus cristatus	crested-bobwhite	bobwhite, kuifkwartel	sabana-anamu	?	oi tokoro	94
Odontophorus gujanensis	marbled-woodquail	gemarmerde tandkwartel	tokoro	?	tokoro	94
TRUMPETERS (1)						
Psophia crepitans	grey-winged trumpeter	trompetvogel	kamikami	makamari	mami	42

Scientific name	English	Dutch	Sur-Ned (SN) / Sranan Tongo (ST)	Wayana	Trio	NEQ 2002
RAILS & GALLINULES (5)						
Aramides axillaris	rufous-necked wood-rail	roodnek-bosral	(anamu)	?	?	0
Aramides cajanea	grey-necked wood-rail	Cayenne bosral	kriko	?	?	0
Porzana albicollis	ash-throated crake	witkeel-porseleinhoen	(anamu)	?	?	
Laterallus viridus	russet-crowned crake	roodkruinral	(anamu)	?	?	0
Porphyrula martinica	purple gallinule	purperhoen	blawkipanki	?	?	0
FINFOOTS & SUNBITTERNS (2)						
Heliornis fulica	sungrebe	kleine fuutkoet		?	?	0
Eurypyga helia	sunbittern	zonneral	sonfowru	ororaima	?	0
PLOVERS (8)						0
Charadrius collaris	collared plover	kraagplevier	(snepi)	?	?	0
Bartramia longicauda	upland plover	Bartram's ruiter	(snepi)	?	?	0
Tringa solitaria	solitary sandpiper	bosruiter	(snepi)	?	?	0
Actitis macularia	spotted sandpiper	oeverloper	(snepi)	?	?	0
Gallinago galinago	common snipe	watersnip	(snepi)	waipipi	?	0
Gallinago undulata	giant snipe	reuzesnip	(snepi)	waipipi	?	0
Calidris pusilla	semipalmated sandpiper	grijze strandloper	(snepi)	?	?	0
Calidris minutilla	least sandpiper	kleinste strandloper	(snepi)	?	?	0
SKIMMERS (1)						0
Rhynchops nigra	black skimmer	schaarbek	fisman	muramura	?	0
ALL PIGEONS & DOVES (13) incl.:						
Columba speciosa	scaled pigeon	geschubde duif	peni-ati busidoifi	uhtuku	uhtuku	0
Columba cayennensis	pale-vented pigeon	rosse duif	mangrodoifi , grun-ede doifi	uhtuku	uhtuku	120
Columbina passerina	scaly-bregsted ground-dove	musduif	grijze stondoifi	uruwë	oreh	544

Scientific name	English	Dutch	Sur-Ned (SN) / Sranan Tongo (ST)	Wayana	Trio	NEQ 2002
Columbina minuta	plain-breasted ground-dove	dwergduif	grijze stondoifi	uruwë	oreh	544
Columbina talpacoti	ruddy ground-dove	steenduif	stondifi	uruwë	oreh	544
Leptotila verreauxi	white-tipped dove	Verreaux duif	pakadoifi, pasidoifi	warami	arami	0
Leptotila rufaxilla	grey-fronted dove	grijskruinduif	pakadoifi, pasidoifi	warami	arami	0
ALL MACAWS, PARROTS AND PARAKEETS (24) incl.:						
Ara ararauna	blue-and-yellow macaw	blauwgele ara	tjambaraaf	ararawa	arawawa	**650**
Ara macao	scarlet macaw	geelvleugel ara	bokraaf	kunoro	kinoro	**100**
Ara chloroptera	red-and-green macaw	groenvleugel ara	warauraaf	kujari	kujari	**250**
Ara severa	chestnut-fronted macaw	dwergara	rafruprakiki	?	karaakara	**250**
Ara manilata	red-bellied macaw	roodbuikara	morisi-rafruprakiki	sakai	sakai	**470**
Ara nobilis	red-shouldered macaw	roodschouderara	ston-rafuprakiki	?	?	**150**
Aratinga leucophthalmus	white-eyed parakeet	witoog-aratinga	(praskiki)	?	marakaana	**792**
Aratinga pertinax	brown-throated parakeet	maisparkiet	karuprakiki	werekere	?	**2710**
Aratinga aurea	peach-fronted parakeet	goudvoorhoofd parkiet	sipaliwini-prakiki	?	*only at the Sipaliwini savanna*	**100**
Pyrrhura picta	painted parakeet	bonte parkiet	kapuweri prakiki	?	kurepepheh	**854**
Forpus passerinus	green-rumped parakeet	groene muspapegaai	okro-prakiki	merew	merew-merew	**4632**
Brotogeris chrysopterus	golden-winged parakeet	oranjevleugel-parkiet	kankantri prakiki	?	?	**1194**
Pionites melanocephala	black-headed parrot	zwartkopcaique	wetbereprakiki	mapuje	pijepijeh	**1378**
Pionus menstruus	blue-headed parrot	zwartoorpapegaai	margrietje	kurikuri	kudikanai	**1500**

Scientific name	English	Dutch	Sur-Ned (SN) / Sranan Tongo (ST)	Wayana	Trio	NEQ 2002
Pionus fuscus	dusky parrot	bruin margrietje	basra fransmadam	papakija	?	**800**
Amazona dufresniana	blue-cheeked parrot	blauwwang-amazone	(mason)	kijokjio	kijokjio	**70**
Amazona ochrocephala	yellow-headed parrot	geelvoorhoofd-amazone	(mason)	parawa	parawa	**580**
Amazona amazonica	orange-winged parrot	amazonepapegaai, oranjevleugel amazone	kulekule	kuraikurai	jarijari	**4800**
Amazona farinisa	mealy amazon	grote amazone, Muellers amazone papegaai	mason	?	sorosoro	**450**
Deroptyus accipitrinus	red fan parrot	kraagpapegaai	fransmadam, waaier	?	kinakina	**300**
ALL HUMMINGBIRDS (19)				tukwi, tuka	tukwi, tukai	0
ALL TROGONS (5) incl.:						
Trogon viridus	white-tailed trogon	witstaart trogon	pingofowru	owori	oori	40
Trogon melanurus	black-tailed trogon	zwartstaart trogon	udulosofowru	owori	oori	20
Trogon violaceus	violaceous trogon	violette trogon	don fowru	owori	oori	40
ALL PUFFBIRDS (8)						
ALL BARBETS & TOUCANS (8) incl.:						
Capito niger	black-spotted barbet	zwarte baardvogel	papayafowru	?	kaikwisen	100
Pteroglossus viridus	green araçari	groene arassari	-	parawana	amantakana	100
Pteroglossus aracari	black-necked araçari	warned-arassari	-	kisi	keswimpeh	100
Selenidera culik	Guianan toucanet	Guyana-pepervreter	-	parawana	pumpuri	25
Tucanus vitellinus	channel-billed toucan	groefsnavel toekan, geelbeftoekan	blakanoso-kuyake	kuruw	kuruw	100
Ramphastos tucanus	white-throated toucan	roodsnaveltoekan	bigi kuyake	kiapok	kijapoko	100

Scientific name	**English**	*Dutch*	**SN / ST**	Wayana	**Trio**	**NEQ**
ALL WOODPECKERS AND PICULETS (17)				wetu	wetu	0
ALL WOODCREEPERS (14)				makahoho	wakoko	0
ALL SPINETAILS (14)						0
ALL ANTBIRDS (46)						0
ALL TYRANT FLYCATCHERS (65) incl.:						
Pitangus sulphuratus	great kiskadee	grote kiskadie	grikibi	?	wiwi, wetephe	188
Tirannus melancholicus	tropical kingbird	tropische koningstiran	grikibi	?	wiripihi	324
MANAKINS (12), incl.:						
Pipra erythrocephala	golden-headed manakin	geelkop manakin	-	?	?	400
COTINGAS (21) & COCK OF THE ROCK (1)						
Phoenicircus carniflex	Guianan red cotinga	rode cotinga	-	?	maahtu	20
Cotinga cotinga	purple-breasted cotinga	purperborst-cotinga	-	?	weeki	20
Cotinga cayana	spangled cotinga	halsbandcotinga	blauwe cotinga	wanat	wanatu	100
Xipholena punicea	pompadour cotinga	pompadour-cotinga	bruine cotinga	pokoro	pokoro	100
Lipaugus vociferans	screaming piha	schreeuw-piha	busiskowtu, groenhartvogel	wajo	paipaje	50
Tityra cayana	black-tailed tityra	zwartstaarttityra	-	?	wakakakai	100
Querula purpurata	purple-throated fruitcrow	purperkeel-vruchtenkraai	-	siri	kajre-tehweh, wïki	50

Scientific name	English	Dutch	SN / ST	Wayana	Trio	NEQ
Perissocephalus tricolor	capuchin bird	geelkruin cotinga	busikaw	?	ruwa	40
Haematoderus militaris	crimson fruitcrow	karmozijn vruchtenkraai	-	wapotojek	?	0
Gymnoderus foetidus	bare-necked fruitcrow	kaalnek-vruchtenkraai	blaw doifi	?	manima	100
Rupicola rupicola	Guiana cock-of-the-rock	rotshaan	rotshaan	meu	meu	**0**
ALL MOCKINGBIRDS (3) & THRUSHES (5) including:						
Mimus gilvus	tropical mockingbird	tropische spotlijster	dagukafowru	?	?	188
Turdus leucomelas	pale-breasted thrush	vaalborstlijster	boontjedief	wape	pajama	324
Turdus nudigenis	bare-eyed thrush	naaktooglijster	ger'ai boontjedief	kuraiwe	kuraiwe	???
ALL VIREOS & GREENLETS (5)						0
ALL HONEY CREEPERS (8)						0
ALL TANAGERS (30) including:						
Schistoclamys melanopis	black-faced tanager	sluiertangare	zwartkop, grijze savannevink, zwartmasker	?	?	108
Hemithraupis guira	guira tanager	guira-tangare	zwartkeel, mangrokanari	?	?	54
Hemithraupis flavicollis	yellow-backed tanager	geelstuittangare	geelstuit	?	?	543
Tachyphonus cristatus	flame-crested tanager	vuurkuiftangare	vlamkuif, oranjekuif	?	?	54
Tachyphonus surinamus	fulvous-crested tanager	goudkuiftangare	goudkruin	?	?	54
Tachyphonus rufus	white-lined tanager	zwart tangare	zwarte kin, tokokin	?	?	336

Scientific name	**English**	*Dutch*	**SN / ST**	Wayana	**Trio**	**NEQ**
Tachyphonus phoenicius	red-shouldered tanager	roodschouder-tangare	roodschouder	?	wulami	54
Ramphocelus carbo	silver-beaked tanager	fluweeltangare	rode kin	kwitaki	kwitaki	788
Thraupis episcopus	blue-grey tanager	bisschoptangare	blauwforki	sikwi	sikwi	1120
Thraupis palmarum	palm tanager	palmtangare	kronto blauwforki	sikwi	sikwi	430
Euphonia plumbea	plumbeous euphonia	grijze organist	savanneblauwdas-kanarie	?	ulramii. kanari	84
Euphonia finschi	Finch's euphonia	Finsch organist	blauwdaskanarie	kuramijik	ulramii. kanari	852
Euphonia violacea	violaceous euphonia	violette organist	geeldaskanarie	?	ulramii., kanari	1112
Euphonia minuta	white-vented euphonia	witbuikorganist	wititerekanari	?	ulramii, kanari	320
Euphonia cayennensis	golden-sided euphonia	Cayenne-organist	grangrandier	?	ulramii. kanari	84
Tangara mexicana	turquoise tanager	turkooistangare	blauwvink, anijsvink, paleisvink, portretvink, epauletvink	?	?	1088
Tangara chilensis	paradise tanager	paradijstangare	paradijsvink, zevenkleur, kuli-color	?	wisawisa	108
Tangara punctata	spotted tanager	druppeltangare	stippelvink, druppel	?	?	156
Tangara gyrola	bay-headed tanager	okerkaptangare	bruinkop	?	?	54
Tangara cayana	rufous-crowned tanager	sabeltangare	goudvink	?	?	122
Tangara velia	opal-rumped tanager	opaalstuittangare	bruinbuik	?	?	54
Dacnis lineata	black-faced dacnis	zwartmaskerpitpit	kraaloog, witbuik pitpit, pusi-ai	siwsiw	suri	980
Scientific name	**English**	*Dutch*	**SN / ST**	Wayana	**Trio**	**NEQ**
Dacnis cayana	blue dacnis	blauwe pitpit	blauwe pitpit (male),	siwsiw	knotoi	560

			groene pitpit (female)			
Chlorophanes spiza	green honeycreeper	groene suikervogel	zwartkop pitpit (male), groene pitpit (female)	siwsiw	knotoi	198
Cyanerpes caeruleus	purple honeycreeper	purperen suikervogel	geelpoot honingzuiger, purper honingzuiger	siwsiw	tukuje	820
Cyanerpes cyaneus	red-legged honeycreeper	blauwe suikervogel	roodpoot honingzuiger, blauwe honingzuiger	siwsiw	tukuje	820
Tersina viridus	swallow-tanager	zwaluwtangare	?	?	?	400
ALL FINCHES AND GROSBEAKS (21) such as:						
Volatina jacarina	blue-black grassquit	jacarina-gors	srio, dansmeestertje	?	pirinsu	309
Sporophila schistacea	slate-colored seedeater	leigrijs dikbekje	gelebek	?	kiripek	772
Sporophila plumbea	plumbeous seedeater	loodgrijs dikbekje	sabana mustas	?	mustas	54
Sporophila americana	variable seedeater	bont dikbekje	dyak, jack	?	?	676
Sporophila bouvronides	Lesson's seedeater	lessons dikbekje	plenmustas	mustas	mustas	896
Sporophila lineola	lined seedeater	witster-dikbekje	kroonmustas	?	mustas	748
Sporophila minuta	ruddy-breasted seedeater	dwergdikbekje	rowti, oransyka	?	roti	1020
Sporophila castenaeiventris	chestnut-bellied seedeater	roodbuikdikbekje	blawbaka rowti	roti	roti	170
Oryzoborus crassirostris	large-billed seed-finch	dikbekzaadkraker	twatwa	twatwa	twatwa	**0**
Oryzoborus angolensis	lesser seed-finch	zwartkopzaad-kraker	picolet	pikolet	pikolet	0
Caryothraustis canadensis	yellow-green grosbeak	geelbuikkardinaal	gele vinktangara, sabana-twatwa	?		80
Pitylis grossus	slate-colored grosbeak	witkeelkardinaal	roodsnavel, redimofo	piku	piku	18

Scientific name	English	Dutch	Sur-Ned (SN) / Sranan Tongo (ST)	Wayana	Trio	NEQ 2002
Passerina =Cyanocompsa) cyanoides	blue-black grosbeak	blauwrugbisschop	bergitwatwa?	?	maripa-tetatakakai	272
ALL ORIOLES AND BLACKBIRDS (14) such as:						
Psaracolius decumanus	crested oropendola	kuiforopendola	ponpon	kulima	knoto	236
Psaracolius viridis	green oropendola	groene oropendola	busiponpon	tahe	tapui	68
Cacicus cela	yellow-rumped cacique	geelstuit-buidelspreeuw	geelrug banabeki	pajakwa	pasakua	188
Cacicus haemorrhous	red-rumped cacique	roodstuit-buidelspreeuw	roodrug banabeki	halau	sowha, saramin	188
Icterus chrysocephalus	moriche oriole	Moriche troepiaal	kaduri	?		198
Agelaius icterocephalus	yellow-hooded blackbird	geelkoptroepiaal	gelekop, ger'ede karufowru	?	?	984
Molothrus bonariensis	shiny cowbird	glanskoevogel	putter	?	?	1152
Scaphidura oryzivora	giant cowbird	grote koevogel	bigi karufowru	?	posisi	120
REPTILIA - REPTILES – REPTIELEN						
ALL TORTOISES & TURTLES (8) :						
Geochelone (Testudo) denticulata	yellow-foot tortoise	bosschildpad	Busisekrepatu	kuriaputpë/ kuliputpë	kurija-wëri (male) kurija-kïrï (female)	**692**
Geochelone (Testudo) carbonaria	red-foot tortoise	savanneschildpad	sabanasekrepatu	kuria	oi-kurija	**630**
Kinosternon scorpioides	scorpion mud turtle	modderschildpad		pejo	pejo piropahka	660
Rhinoclemys (Geomyda) punctularia		moerasschildpad	arakaka	kurarawa	warakaka	730

Scientific name	English	Dutch	SN/ ST	Wayana	Trio	NEQ
Podocnemis unifilis		geelkop-waterschildpad	kronneki, peni-ede arakaka	?	sawaru; pejo pinpahka	630
Phrynops gibbus (Mesoclemmys gibba)		bochelschildpad	kronneki, skoifineki	?		660
Batrachemys nasuta (Phrynops nasutus)		gewone kikkerkop-schildpad	kronneki, skoifineki	kurarawa	pejo pujiji	660
Platemys platycephala	south-american snake-necked turtle	roodkop-deukschildpad	kronneki, skoifineki	kurarawa	pejo pinpahka	720
ALL CAIMANS (3)						
Caiman crocodylus	spectacled caiman	brilkaaiman	benedenlandse kaiman	ariwe/aliwe	ariwe	**925**
Paleosuchus palpebrosus	smooth-fronted kaiman	wigkopkaaiman	bovenlandse kaai-man, blakakaiman	ariwe	ariwe	0
Paleosuchus trigonatus	Schneider's caiman	dwergkopkaaiman	bovenlandse kaai-man, blakakaiman	ariwe	ariwe	0
SOME LIZARDS (4)						
Anolis punctatus	anolus	gras-anolus		suisui		1720
Iguana iguana	iguana	Groene leguaan	legwana	orori/ololi	iwana	**42800**
Plica plica			agama	wakak	wasarapipa	1720
Tupinambus nigropunctatus	tegu	reuze teju-hagedis	sapakara	hapakala		**2400**
AMPHIBIA - AMPHIBIANS - AMFIBIEëN						
SOME FROGS (2)						
Leptodactylus pentadactylus		reuze fluitkikker		umu	muru	0
Hyla boans		boomkikker		kutoh	koto	0
ICHTHYES - FISHES - VISSEN - FISI - KANA						
MOST OF THE 193 RECORDED SPECIES LISTED IN ANNEX F						
In Suriname, no fish species is protected. Most of the (230) fish species known from the Wayana inhabited area (estimated over hundred species) are used as food fish (cooked in pepper-water soup). No fish species is protected by law or included in the CITES Appendices I and II. A small number of food fish species is caught for commercial use (neglect able numbers are sent by plane to Paramaribo), while there is no trade in aquarium fishes.						

Scientific name	English	Dutch	SN/ ST	Wayana	Trio	remarks
INVERTEBRATA - INVERTEBRATES - ONGEWERVELDE DIEREN						
Atta sexdens / A. cephalotes	leaf-cutting ants	bladsnijdermieren , draagmieren	prasoromira	mikake	mikake	seri: roasted females (around New Year)
Rhynchophorus palmarum	palm weavel	palm-snuitkever (larve)	langamofo sege (woron)	iripe		tukuma: roasted larvae (found in heart of palm species)
Meliponidae spp.	stingless bees	angelloze bijen	blaka & redi oni	alama		Honey
Vespidae spp.	wasp larvae	wespen-larven	waswasi (woron)	kaphew	mulawale	fresh/roasted
		zoetwater-garnalen	switwatra sararara		piuru	
Potamocarcinus latifrons	river crab	rivierkrab	libakrabu	krabu	mokoko	
Macrobrachyum carinus	giant river shrimp	riviergarnaal	stonsarasra	isu	piuru	
Castalia & Diplodon spp.	fresh water mussels	zoetwater-mossels	(skropu)	?	pete	use not confirmed; *not eaten by Wayanas*
Doryssa spp.	freshwater snails	zoetwater-slakken	(pakro)	kuweme	mari	
Pomacea spp.	freshwater snail	zoetwater-slakken	(pakro)	konoto	kuwe	

TABLE b: TOOLS

Scientific name	English	Dutch	SN/ST	Wayana	Trio	Parts and use
Dicotyles pecari	white-lipped peccary	witlip-pekari	pingo	peneke	pëinjekë	jaws with tusks used as plane
Tayassu tajacu	collared peccary	halsband-peccarie	pakira	pakira	pakira	jaws with tusks used as plane
Agouti paca	paca	Surinaamse haas, paca	haas, he	kurimau	kurimau	yaws with incisors used as chisel

TABLE c: HUNTING AND FISHING UTENSILS

Scientific name	English	Dutch	SN/ST	Wayana	Trio	Parts and use
Bradypus tridactylus	three-toed sloth	drieteenluiaard	sonloiri	?	arekore	skin as lid of bamboo containers for poisonous arrow heads
Harpia harpya	South-American harpy eagle	harpij-arend	gonini	pija	iju	feathers as arrow shafts for more accurate shooting
Morphnus guianensis	crested eagle	wurg arend	pakani-aka	pija	?	feathers as arrow shafts
Sarcoramphus papa	king vulture	koningsgier	granman tingifowru	kuru	?	feathers as arrow shafts
Cathartes spp.	yellow-headed vulture	geelkopgier	blaka-tingifowru	awira	?	feathers as arrow shafts
Crax alector	black curassow	zwarte hoko	powisi	okoo	okoo	feathers as arrow shafts
Psittacidae & Ramphastidae	parrots & toucans	papegaaien & toucans	popokai & kuyake	?	?	feathers as adornments of bows and hunting arrows, and of bamboo containers of poisonous arrow heads
Dendrobatidae spp.	poison frogs	pijlgifkikkers		okopipi	okopipi	frog skin poison for arrow heads and/or for more accurate shooting (D. azureus is protected)
Characidae spp.	silver bait	karperzalmpjes	sriba	opi	opi	silver bait as bate for fishing

TABLE d: MEDICINES

Scientific name	English	Dutch	SN/ST	Wayana	Trio	Parts and use
Alouatta seniculus	red howler monkey	brulaap	Babun	arawata	arawata	gorogoro = larynx against stuttering
Cervidae spp.	deer	herten	dia	kariak	?	dia-tutu = antlers against convulsion
Ramphastidae spp.	toucans	toekans	kuyake	kiapok	?	soup of whole bird or dried beak against stuttering

TABLE e: INITIATION RITUALS

Scientific name	English	Dutch	S-N	Wayana	Trio	Parts and use
Vespidae sp.	stinging wasp	angelwesp-soort	waswasi	okomojot	?	wasp for kunana
Vespidae sp.	stinging wasp	angelwesp-soort	waswasi	kaphew	?	wasp for kunana
Vespidae sp.	stinging wasp	angelwesp-soort	kapasi-waswasi	kuruku	?	wesp for kunana
Vespidae sp.	stinging wasp	angelwesp-soort	waswasi	tuigkai	?	wasp for the kunana
Vespidae sp.	stinging wasp	angelwesp-soort	waswasi	toktoro	?	wasp for the kunana
Vespidae sp.	stinging wasp	angelwesp-soort	waswasi	apara	?	wasp for the kunana
Vespidae sp.	stinging wasp	angelwesp-soort	waswasi	muglowari	?	wasp for the kunana
Vespidae sp.	stinging wasp	angelwesp-soort	waswasi	orokot	?	wasp for the kunana
Formicidae sp.	stinging ant	angelmier-soort	ayuka-mira	yuk	?	ant for the kunana
Formicidae sp.	stinging ant	angelmier-soort	mira	irak	?	ant for the kunana
Formicidae sp.	stinging ant	angelmier-soort	mira	?	?	poison to fill skin incisions
Dendrobatidae sp.	certain poison frog(s)	bepaalde gifkikker (s)	mira	?	?	poison to fill skin incisions
Crotallidae sp.	poison snakes	gifslangen	mira	?	?	poison to fill skin incisions

TABLE f: ADORNMENTS AND MUSIC INSTRUMENTS

Scientific name	English	Dutch	SN / ST	Wayana	Trio	Parts and use
ADORNMENTS						
Ateles paniscus	spider monkey	slingeraap	kwata	arimi	arimi	bones for combs
Primates spp.	monkeys	apen	yapyapi	?	?	teeth for necklaces
Dicotyles pecari	white-lipped pecari	witlip peccarie	pingo	peneke	pëinjekë	teeth for necklaces
Tayassu tajacu	collared peccari	halsband peccarie	pakira	pakira	pakira	teeth for necklaces
Panthera onca	jaguar	jaguar	peni-tigri	kakui	timenuren	teeth for necklaces
Harpia harpya	harpy eagle	harpij-arend	gonini	?	iju	feathers for headdresses; down feathers glued as adornment on skin and hair
Psittacidae &	parrots &	papegaaien &	popokai &	?	?	feathers as adornments for

Ramphastidae	toucans	toucans	kuyake			combs, headdresses, hair tubes, necklaces and armlets.
Potamotrygon histrix	river stingray	rivier stekelrog	libaspari	sipari	sipari	stingray backbones as beads
MUSIC INSTRUMENTS						
Ateles paniscus	spider monkey	slingeraap	kwata	arimi	arimi	bones as fluits
Bradypus tridactylus	three-toed sloth	drieteen-luiaard	sonloiri	?	arekore	skins for drums
Mazama gouazoubira	grey brocket	klein boshert	busikrabita, kuriaku	kaliak	kajake	bones for flute
Podocnenis unifilis		geelkop-waterschildpad	peni-ede arakaka	?	sawaru	tortoise shell with cooked wax from stingless bee nests used as music instrument (Trio)
Psittacidae & Ramphastidae	parrots & toucans	papegaaien & toucans	popokai & kuyake	?	?	feathers as adornments for flutes and marakas

APPENDIX F. FISH SPECIES FOUND IN THE WAYANA AREA

	Scientific Names *** probably introduced**	**Surinamese name**	**Wayana name**
	fish	fisi	
	CHARACOIDEA (116 spp.)	**ZALM-ACHTIGEN**	
1	Acestrorhynchus falcatus	dagufisi, zadoe	
2	Acestrorhynchus microlepis		
3	Acnodon oligacanthus	stonfisi	laku
4	Anostomus brevior		etpa
5	Anostomus ternetzi		etpa
6	Aphyocharacidium melandetum		
7	Argonectes longiceps		
8	Astyanax bimaculatus	sriba, wetberesriba	opi
9	Astyanax orthodus aff.	sriba, wetberesriba	opi
10	Astyanax spec. 1	sriba, wetberesriba	opi
11	Astyanax spec. 2	sriba, wetberesriba	opi
12	Astyanax validus		opi
13	Bivibranchia bimaculata		opui, epui (G: opi)
14	Brycon falcatus	moroko, mooko	molokoïme
15	Brycon pesu	soort sriba	enké, entke, (G: Holobrycon pesu = anke)
16	Bryconamericus aff. stramineus		
17	Bryconamericus hyphesson		
18	Bryconops affinis	nyanganyanga	wiwi
19	Bryconops caudomaculatus		
20	Bryconops melanurus	nyanganyanga	
21	Caenotropus maculosus		
22	Chalceus macrolepidotus	alampiya, lampya	
23	Chalceus spec.		
24	Characidium fasciatum group		
25	Characidium pellucidum		
26	Characidium spec. 1		
27	Characidium spec. 2		
28	Characidium zebra		
29	Charax gibbosus	funda wetfisi	
30	Charax pauciradiatus		elémaké, olémaké
31	Copella arnoldi		pilamagnoe-magnone
32	Copella carsevennensis		
33	Creagrutus melanzonus		kaliditah (G)
34	Curimata cyprinoides	pohakë, pohaké	
35	Cynodon gibbus		
36	Cynodon meionactis		
37	Cynopotamus essequibensis		elémaké, olémaké
38	Cyphocharax aff. spilurus		

39	Cyphocharax helleri	kulimatu, kulumata, kwimata, makafisi, makasriba, kululu	
40	Cyphocharax punctatus		
41	Cyphocharax spilerus group?	kulimatu, kulumata, kwimata, makafisi, makasriba, kululu	
42	Cyphocharax spilurus		
43	Cyphocharax spilurus group		
44	Erythrinus erythrinus	walapa	
45	Gasteropelecus sternicla		
46	Hemigrammus guyanensis		
47	Hemigrammus spec.	sriba, wetberesriba	
48	Hemiodopsis huraulti		walé walé, waléwalé
49	Hemiodus quadrimaculatus		waléwalé
50	Hemiodus unimaculatus		epui, opui, palasi
51	Holobrycon pesu (G)		anke (G)
52	Hoplerythrinus unitaeniatus	stonwalapa	oualapa
53	Hoplias aimara (= H. macrophthalmus)	anyumara (G)	aimara, aimala
54	Hoplias malabaricus	pataka	patakasi
55	Hyphessobrycon (aff. sovichthys)		
56	Hyphessobrycon sovichthys		
57	Hyphessobrycon roseus		
58	Hyphessobrycon takasei		
59	Jupiaba abramoides		
60	Jupiaba cf. keithi		
61	Jupiaba keithi		
62	Jupiaba maroniensis		
63	Jupiaba meunieri		
64	Jupiaba pinnata		
65	Knodus heteresthes		
66	Leporinus despaxi		walak
67	Leporinus fasciatus	kwana, kintrasi, kwasima	ciaomouné, kalanalé
68	Leporinus friderici	waraku, abokia	talani, kaounali
69	Leporinus gossei		
70	Leporinus granti	abonkia	kaéti
71	Leporinus lebaili		walak
72	Leporinus maculatus	babun waraku	halanaé, kalanalé
73	Melanocharacidium cf. blennioides		
74	Melanocharacidium dispilomma		
75	Microcharacidium eleotrioides		
76	Moenkhausia chrysargyrea		
77	Moenkhausia collettii		
78	Moenkhausia georgiae	sriba, wetbere-sriba	
79	Moenkhausia grandisquamis	sriba, wetbere-sriba	piki pilélou

80	Moenkhausia hemigrammoides		
81	Moenkhausia inrai		pikili
82	Moenkhausia intermedia	sriba, wetbere-sriba	
83	Moenkhausia moisae		
84	Moenkhausia n.sp.aff. simulata		
85	Moenkhausia oligolepis	sriba, wetbere-sriba	wayapiléa
86	Moenkhausia shidelari	sriba, wetbere-sriba	
87	Moenkhausia spec. 1	sriba, wetbere-sriba	otululu, opi, yaya, kalala
88	Moenkhausia spec. 2	sriba, wetbere-sriba	
89	Moenkhausia surinamensis	sriba, wetbere-sriba	
90	Mylesinus? Sp1		coumarou, watau
91	Myleus pacu		
92	Myleus rhomboidalis		asitao, astao, pacu
93	Myleus rubripinnis (G: Paramylophus ternetzi)	kumaru, mambe	pasina (G)
94	??	kumaru	watauw
95	Myleus ternetzi	pakusi, mambe	pasina
96	Nannostomus bifasciatus	potloodje	
97	Odontostilbe gracilis		
98	Parodon guyanensis		
99	Phenacogaster megalostictus		
100	Phenacogaster spec.		
101	Poptella brevispina		
102	Pristella maxillaris		
103	Pristobrycon striolatus	piren, mayanapiren, pakusipiren, pikinpiren, redi piren	piraïe-pene, poene
104	Prochilodus reticulatus (G: P. insignis)		kulumata (G), koumata
105	Prochilodus kneri (G)		alumasu (G)
106	Pygoprirtis denticulata		poene
107	Pyrrhulina filamentosa		pilamagroe-magnone
108	Roeboexodon guianensis		
109	Schizodon fasciatus	nyamsifisi	
110	Semaprochilodus varii		alumasi, koumata
111	Serrasalmus humeralis		poene
112	Serrasalmus rhombeus (G)	piren, mayanapiren, pakusipiren, pikinpiren, redi piren	piraïe-pene, poene
113	Steindachnerina varii		
114	Tetragonopterus chalceus	sriba, wetbere-sriba	
115	Thayeria ifati		
116	Triportheus rotundatus		kampuluka
	GYMNOTOIDEA (10 spp.)		
117	Eigenmannia humboldtii		
118	Eigenmannia virescens	logologo, saprapi	oumétpéknatou

119	Electrophorus electricus	prake, nakfisi, maisi	alimina, anguille
120	Gymnotus anguillaris	logologo	maléto
121	Gymnotus carapo	logologo	maléto
122	Hypopomus artedi		mapalaime, kwaliminen
123	Hypopygus lepturus		kwaliminen
124	Porotergus gymnotus		
125	Rhampichthys rostratus		
126	Sternopygus macrurus		mitoë, miwa, itoï, mapala, kwaliminen
	CICHLIDAE (14 spp.)	**BAARS-ACHTIGEN**	
127	Aequidens Palumeuensis	krobia, manyakoko, owruwefi	talepuru
128	Aequidens tetramerus	krobia, manyakoko, owruwefi	talepuru
129	Cichla ocellaris	tukunari, sonfisi	matawalé (G)
130	Cichlasoma bimaculatum		
131	Cleithracara maronii		awalipa
132	Crenicichla albopunctata	kolopimpé	
133	Crenicichla multispinosa	kolopimpé	
134	Crenicichla saxatilis	kolopimpé	
135	Geophagus harreri	krobia, agankoi, songe	hawa hawa
136	Geophagus surinamensis (G)	krobia, agankoi, songe	awalipa, hawa lipa
137	Guianacara (Guianacara) owroewefi	owruwefi	hawa lipa, pakilali
138	Guianacara (Oelemaria) oelemariensis		hawa lipa, pakilali
139	Krobia itanyi		hawa lipa, talépoulou
140	Nannacara anomala	stonkrobia	
	SILURIFORMES (76 spp.)	**MEERVAL-ACHTIGEN**	
141	Ageneiosus inermis		mitala, mita
142	Ancistrus cf. leucostictus		militemela
143	Ancistrus cirrhosus		
144	Ancistrus hoplogenys		
145	Ancistrus spec.		
146	Auchenipterus dentatus		pilateau, pilakoupéanchi
147	Auchenipterus nuchalis		pilateau, pilakoupéanchi
148	Bunocephalus coracoideus		
149	Bunocephalus verrucosus		
150	Callichthys callichthys	platede-kwikwi	etpa
151	Centromochlus punctatus		
152	Cephalosilurus nigricaudus	switwatra lompu	palakta
153	Cheirocerus sp.		
154	Corydoras aeneus		ilikyé

155	Corydoras baderi	seseiguse	
156	Corydoras bondi	seseiguse	
157	Corydoras geoffroy		ilikyé
158	Corydoras guianensis	seseiguse	
159	Corydoras oxyrhynchus	seseiguse	
160	Corydoras sipaliwini		ilikyé
161	Ctenoloricaria maculata		lapipi
162	Doras carinatus		
163	Doras micropoeus		agonosu
164	Exastilithoxus spec.*		
165	Farlowella reticulata		
166	Farlowella rugosa		
167	Glanidium leopardus		
168	Guyanancistrus brevispinis		
169	Harttia surinamensis		lapipi
170	Helogenes marmoratus		
171	Hemiancistrus medians		mili
172	Hemisorubim platyrhynchos		akomu, akamu
173	Heptapterus bleekeri		casue de imé
174	Heptapterus brevior		casue de imé
175	Heptapterus longior		iwiepu, wiwi epupté
176	Heptapterus tapanahoniensis		casue de imé
177	Hypostomus gymnorhynchus	warawara	kabitanka
178	Hypostomus plecostomus		kawawa
179	Imparfinis minutus		
180	Ituglanis amazonicus		
181	Lasiancistrus niger*		
182	Lithoxus stocki		yanian wili
183	Loricaria cataphracta		
184	Loricaria nickeriensis		
185	Megalechis thoracata		atpaima
186	Megalonema cf. platycephalum		
187	Metaloricaria paucidens		
188	Microglanis poecilus		
189	Microglanis secundus		
190	Ochmacanthus flabelliferus		
191	Ochmacanthus reinhardtii		
192	Otocinclus cf. mariae		
193	Otocinclus spec.		
194	Panaque cf. dentex		
195	Parauchinipterus galeatus		
196	Peckoltia aff. braueri		pelé simali
197	Pimelodella cristata	dyaki, maipambu	kasiwe, kawaisama, tapumi pepta
198	Pimelodella geryi		kasiwe, kawaisama, tapumi pepta
199	Pimelodella procera	dyaki, maipambu	
200	Pimelodella spec. 1	dyaki, maipambu	
201	Pimelodella spec. 2	dyaki, maipambu	

202	Pimelodus ornatus	kaweri, mapambu	liku
203	Platydoras costatus		hoké
204	Platydoras dentatus		
205	Pseudacanthicus serratus		mekolo
206	Pseudancistrus barbatus		pële, peulé
207	Pseudocetopsis minuta		
208	Pseudopimelodus bufonius		palakta
209	Pseudopimelodus raninus raninus		palakta
210	Pseudoplatystoma fasciatum	spigrikati	huluwi
211	Pseudoplatystoma tigrinum		uluwi
212	Rhamdella cf. leptosoma		casiwe
213	Rhamdia quelen	dyaki, pikin dyaki	lëtkë
214	Rineloricaria spec.		
215	Rineloricaria stewarti	basyafisi, bayakakaku	lapipi
216	Tatia brunnea		
	OTHER GROUPS (14 spp.)	**ANDERE GROEPEN**	
217	aff. Parotocinclus		
218	Pachypops fourcroi		kupi, masao, kubi
219	Plagioscion squamosissimus		kubi
220	Polycentrus schomburgkii		
221	Potamorrhaphis guianensis		
222	Potamotrygon histrix	libaspari, tyubula	sipali, cipali, raie
223	Rivulus agilae		
224	Rivulus breviceps		
225	Rivulus cf. geayi		
226	Rivulus holmiae		
227	Rivulus igneus		
228	Rivulus lanceolatus		
229	Rivulus lungi		
230	Synbranchus marmoratus		

APPENDIX G: IMPACT OF THE GAME RESOLUTION 2002 ON THE TRIO AND WAYANA DIET

By P. Teunissen

Based on the 1954 Game Act, in December 2002 the Game Resolution SB 2002 no 116, was announced. By means of this resolution, the game law became applicable also on the forest peoples living in the southern half of Suriname, including the Trio and Wayana. According to the 1954 the Game Act (and amendments) and Game Resolution 2002, all wild mammals, birds, sea turtles, caimans, and also the iguana and the blue poison frog are protected animals, except for species indicated by law as:

- game species: allowed to hunt during open seasons (incl. bag limit)
- cage species: allowed to catch during open seasons (incl. catch limit), to keep as pets and to use as food
- harmful species: allowed to kill year around such as house rats and mice and house and blood-sucking bats.

Articles 2 and 3 of the Game Resolution 2002 make two exemptions for forest peoples in Southern Suriname:

- hunting at game species and catching of cage species is allowed year around (unless the hunting or catching season is closed year around)
- hunting at game species and catching of cage species is unlimited but during closed seasons it is not allowed to export bush meat and living animals to the northern part of Suriname.

Although exemptions have been made for the forest peoples of Southern Suriname (no closed seasons for game species, no bag and catching limit), the 2002 Game Resolution (GR2002) has a severe impact on the traditional diet, the culture and the sources of income of these forest peoples. The table below shows a summary of numbers of available food species before and after the issuance of Game Resolution 2002.

TAXA	Mammals	Birds	Reptiles & Amphibians	Invertebrates	TOTAL
Number of traditional Trio and Wayana food species	39	395	17	10+	461+
number of game species	18	23	2	0	43
Number of cage species allowed to catch and eat	2	62	2	0	66
number of remaining Trio and Wayana food species (B+C+ not protected species)	20	85	15	10+	130+
number of protected species no longer allowed as food (A-D)	19	310	2	0	331
number of protected species only allowed to trade (part of E)	1	28	0	0	29

From the 461+ wildlife species, traditionally hunted and eaten by the Trio and Wayana, GR 2002 prohibits to hunt and eat 331 species (over 72 %). This means in more detail:

- From the 39 species of mammals, traditionally hunted and eaten by the Trio, the GR2002 prohibits to hunt and eat 19 species among which spider monkey, howler monkey, both sakis and the tufted capuchin monkey, two anteaters, both sloths, two armadillos, coati, kinkayu, grey-headed weasel, both squirrels, spiny rats and tree porcupine. Slaughter waste of howler monkey is used as medicine, sloth skins are used to make drums

- From the 395 species of birds, traditionally hunted and eaten by the Trio and Wayana, the GR2002 prohibits to hunt and eat 310 species among which herons, storks, rails, plovers, 10 species of macaws, parrots and parakeets, 8 species of barbets and toucans, wood creepers and woodpeckers, ant birds, fly catchers, cotingas, trushes, honeycreepers, tanagers, finches, orioles and blackbirds. Slaughter waste of macaws, parrots and parakeets (feathers) are used for cultural adornments and to manufacture crafts.
- From the 17 species of reptiles and amphibians, traditionally hunted an eaten, the GR2002 prohibits to hunt and eat 2 species of caimans (Paleosuchus spp.), which are considered as a delicacy to the Trio and Wayana.

Exemptions in favor of trade in stead of food

From the 331 so-called "protected" species that the indigenous forest peoples may no longer hunt for food, the government makes an exemption for limited numbers of 29 species. This is not done to feed the forest people, as those 29 protected species may not be hunted for food. They may only be trapped to sell to animal traders in the coastal area for export purposes.

It may be clear that the indigenous communities of the far south of Suriname or their representatives have not been fully consulted and were not invited / represented at stakeholders meetings during the development of GR2002 (possibly because of the high costs of air transportation and overnight stays in Paramaribo).

In case of consultation, it may be expected that the forest peoples of the far south certainly will understand the need to protect locally endangered and vulnerable species such as the twatwa, Paleosuchus caimans and the blue poison frog, and to protect species that can help develop ecotourism such as river otter, cock-of-the-rock, and again the blue poison frog. However it will be more difficult to explain why internationally endangered and vulnerable (CITES) species such as macaws, parrots, parakeets and toucans (which are still common in the entire Trio area), may no longer be hunted and eaten and that their slaughter waste (feathers) may no longer be used for cultural purposes and to manufacture crafts, while for such animals an exemption is made for animal traders in Paramaribo to export quota to foreign countries.

APPENDIX H. ANIMALS CAUGHT FOR TRADE PURPOSES (PETS)

Legend of colors:

Column 1:

blue: game species: hunting allowed, also catching and keeping in cages. Export quota 2002 in column at right
purple: cage species: catching and keeping in cages allowed. Export quota 2002 in column at right
red: harmful species. shooting and catching allowed all year around. Export quota in column at right
green: protected species, but limited trade allowed. Export quota 2002 in column at right.
black: protected species, trade prohibited
brown: not protected reptiles and amphibians. Export quota 2002 in column at right

Column 6

Quota numbers in bold red: **CITES Appendix I species, export prohibited**
Quota numbers in bold green: **CITES Appendix II species**
Quota numbers in black: **non-CITES species**

ANIMALS CAUGHT ONLY FOR TRADE PURPOSES (PETS)

Mammals (Opossums)

Scientific name	English	Dutch	SN / ST	Wayana	Trio	NEQ
Didelphis marsupialis	common opossum	grote opossum	dagu-awari	?	aware	200
Metachirus nudicautatus	brown-masked oposssum	bruine opossum	Froktu-awari	?	?	100
Chironectes minimus	water opossum	water opossum	watraston awari	?	?	100

Lizards

Plica umbra	-		agama	?		?
Polychrus marmoratus		marmerleguaan	agama	suisui	iwana-wanaime	1720
Urocentron azureum	-	gordelstaart leguaan, doornstaart leguaan	-	këlëkëlëwa	?	740
Uranoscodon supercilliosa	-	mopskopleguaan	-	hupururu	supurumu	1560
Ameiva ameiva	-	gewone ameiva	lagadisja	wera	?	1720
Cnemidophorus lemmiscatus	-	wenkpootje, blauwe hagedis	waiwai-anu	?	?	2590

Snakes

Eunectus murinus	anaconda	anaconda, waterboa	aboma, boma	ukuomi	imatapi	**330**
Boa constrictor	boa constrictor	boa constrictor, afgodslang	tapijtslang, dagwe, papasneki, gadosneki	ololo sneki	aramari	**1010**
Epicrates cenchris	rainbow boa	regenboogboa	egron-aboma	kuwene	kïwïnï	**160**
Corallus enydris	Cook's boa	slanke boomboa	takru tetei, ingi sneki	ukoi/ëkëi	kupshi, itujahka, parakaman	**1900**

Scientific name	English	Dutch	SN / ST	Wayana	Trio	NEQ
Corallus caninus	emerald tree boa	groene boomboa, hondskopslang	bigi popokaisneki	hololo	itu aaro	**900**
Drymarchon corais	indigo snake	indigoslang	konkonisneki	atalakale	wapunpë, akurikuri	Colubridae 2100
Pseudoeryx plicatilis	-	-	walapasneki	?		
Chironius carinatus	-	geelbuikslang, kielrugslang	reditere, sipo	wapu	wijokane	
Chironius fuscus (= C. cinnamonius)	-	-	ingibangi	kujari	kujari	
Mastigodryas boddaerti		-	alataman	atalakare		
Spilotus pullatus	yellow rat snake	kippenslang, hoenderslang	sapakarasneki	?	sapakara	
Pseudoboa (= Clelia) cloelia	mussurana	mussurana	todomansneki	wapu	atarakare	
Leptophis ahaetulla	parrot snake, green whip snake	paradijs-boomslang	(swipi sneki)	tukui	tukui-pakoloman, napi aretekuru	
Oxybelis argenteus	silver-green whip snake	zilvergroene spitskopslang	(swipi sneki)	tukui	?	
Oxybelis aeneus	brown whip snake	bruine spitskopslang	(swipi sneki)	tukui	?	
Leptodeira annulata	banded nightsnake, cat-eye snake	katte-oogslang	(sneki)	ukoi, kupsi	onopakaime	
Philodryas viridissimus	-	groene boomslang	(sneki)	?	tukui pakoroman	
Phylodryas olfersii	-	groene boomslang	(sneki)	tukui	tukui	
Lachesis muta	bushmaster	bosmeester	makasneki, kapasisneki	piirakïrii	piirakïrii	75

Scientific name	English	Dutch	SN / ST	Wayana	Trio	NEQ
Crotalus durissus	rattle snake	ratelslang	sakasneki	*Not found in the Wayana area*	iaka	?
Botrops atrox	lance-head snake, fer de lance	gewone lanspuntslang	owrukuku, labaria, rasper	irukuku	irukuku	85
Bothrops bilineatus	green tree viper	groene lanspuntslang	popokaisneki, papegaaislang	kuraikurai	parakawa-ijëkëi	75
Bothrops brazili			busi-owrukuku	?		?
Micruridaes spp.	coral snakes	echte koraalslangen	krala sneki	makrakra	kuurape entauonoupë, kujari-ijekëi	?

Amphibians

Dendrobatus tinctorius	dyeing poison frog	zwartgele pijlgifkikker	tidetide	okopipi	okopipi	**1886**
Phylobates trivitatus	three-striped poison frog	gestreepte pijlgifkikker	(todo)	?	pepekane	**1452**
Hyla leucophylata	(tree frog)	(boomkikker)	(todo)	?	?	6030
Hyla marmurata	(tree frog)	(boomkikker)	(todo)	?	?	
Hyla rubra	(tree frog)	papitodo	(todo)	?	?	
Hyla punctata	(tree frog)	(boomkikker)	(todo)	?	?	
Phyllomedusa bicolor.	(tree frog)	(boomkikker)	(todo)	?	?	5160
Phyllomedusa hypogondrialis	(tree frog)	(boomkikker)	(todo)	?	?	
Phyllomedusa tomoptera	(tree frog)	(boomkikker)	(todo)	?	?	
Phrynohyas venulosa	(tree frog)	(boomkikker)	merkitodo	?	?	3006
Ceratophrys varia	horn toad	hoornpad	(todo)	kuti	marakau	5360
Pipa pipa	surinamese toad	surinaamse pad, pipa	pipatodo, swamputodo	pipa *(not found in the Wayana area)*	pujiji	7000

Scientific name	English	Dutch	SN / ST	Wayana	Trio	NEQ
Bufo marinus	giant toad	reuzenpad	bigi todo	?	përërëru	11000
Bufo typhonius	(toad)	(pad)	(todo)	?	koropikara	
Bufo guttatus	(toad)	(pad)	(todo)	?	kuura	
Bufo granulosus	(toad)	(pad)	(todo)	?	?	
Bufo melanostus	(toad)	(pad)	(todo)	?	?	
Bufo marmuratus	(toad)	(pad)	(todo)	?	?	

Invertebrates

Avicularinae spp.	tarantulas	vogelspin	busi-anansi	?	adimi	unlimited

APPENDIX I. LIST OF CROPS AND DOMESTICATED ANIMALS

APETINA & KAWEMHAKEN

Scientific name	English	Dutch	Sur/Ned	Trio	Wayana
CULTIVATED PLANTS					
STAPLE FOOD					
Manihot esculenta (Euph.)	cassava, manioc, tapioca	Bittere cassave	kasiri kasaba	unareka wii	ule
Manihot esculenta (Euph.)	cassava, manioc, tapioca	Bittere cassave	brede kasaba	tikabiren wii	ule
Manihot esculenta (Euph.)	cassava, manioc, tapioca	Bittere cassave	kwak (geri) kasaba	kayamai wii	ule
Manihot esculenta (Euph.)	cassava, manioc, tapioca	zoete cassave	switi kasaba	makasera	tapakula
Ipomoea batatas (Conv.)	sweet potato	Bataat	gewone zoete patat, switpatata	"napi"	napi
Ipomoea batatas (Conv.)	“red” yam	Bataat	rode zoete patat	sakura "napi" or sakura patata	napi
Dioscorea trifida (Diosc.)	Cushcush, yam		witte napi	napogo or nanaipi?	napë
Dioscorea trifida (Diosc.)	Cushcush, yam		rode napi	napogo or nanaipi?	napë
Dioscorea alata (Diosc.)	yam	Yams	yamsi	namisi	
Musa spec. (Mus.)	plantain	Bakbanaan	bana (dik)	mamano	palu
Musa spec. (Mus.)	plantain	Bakbanaan	bana (dun)	soroso	palu
Musa spec. (Mus.)	plantain	Bakbanaan	loweman-bana (kort, dik)	pantoro	palu
Zea mais	corn	Mais	koren	anai	ehnai
VEGETABLES					
Cucurbita pepo (Cucurb.)	pumpkin	Pompoen	pampun	waikara	asikala
Cestrum latifolium (Solan.)	bitter greens	Bitterblad	bitawiri		
Amaranthus dubius (Amaran.)	spleen amaranth		klaroen		
Cucurbitaceae spec				atola	
Vigna sinensis (Papil.)	yard bean	kouseband	kowsbanti		‘kouseband’
Momordica charantia	carilla		sopropo	sopropo	sopolopo

(Cucurb.)					
Luffa cylindrica (Cucurb.)	towel gourd	zeefkomkommer	sukwa	pusa	
Xanthosoma sagittifolium (Arac.)	tanya leaves	Tayerblad	tayawiwiri	Koime	ëkëimitpë
SWEETS AND SPICES					
Saccharum oficinarum (Gram.)	sugar cane	suikerriet	ken	pereime, pireime	asikula
Cymbopogon citratus (Gram.)	lemon grass	citroengras	strungrasi	saa	kijawëk pokan
Capsicum frutescens (Solan.)	Cayenne pepper	(Cayenne) peper	alatapepre	wikwiru	asi
Capsicum spec.			pepre	pumai	asi
Capsicum spec.			pepre	kawalamo	asi
Capsicum spec.			pepre	tarapije	asi
FRUITS					
Syzygium samarangense (Myrt.)	makopa, Java apple	Curacaose appel	korsow-apra		
Syzygium malaccensis (Myrt.)	pomerac	pommerak		aloi ime	tëpelem
Citrus grandis (Rut.)	pummelo	pompelmoes	pompelmusu	pompelmusu	pampamusi
Citrus		grapefruit			
Citrus aurantifolia (Rut.)	lime	limoen	lemki, lemmetje t	demeki	lemiki
Citrus sinensis (Rut.)	sweet orange	Sinasappel	aprasina	peresina	pelesina
Citrus reticulata (Rut.)	mandarin		mandarijn, ponpon or gele king		
Persea americana (Laur.)	avocado	Advocado	advocaat, afkati	advocaat	afkati
Terminalia catappa (Combr.)	almond tree		amandel, amandra	tuhkuime	amandel
Artocarpus heterophyllus (Mor.)	Jack fruit	Broodvrucht	katahar	Saga	pelepon
Mangifera indica L. (Anac.)	mango	mango	tetei-manya	manja	maja
Mangifera indica L. (Anac.)	mango	mango	oli-manya	manja	maja
Mangifera indica L. (Anac.)	mango	mango	watrasupu-manya	manja	maja
Mangifera indica L. (Anac.)	mango	mango	roodborstje or rediborsu manya	manja	maja

Mangifera indica L. (Anac.)	mango	mango	golek	manja	maja
Punica granatum (Pun.)	pomegranate	granaatappel			
Citrullus vulgaris (Cucurb.)	water melon	watermeloen	watramun	Watramun	malasija
Passiflora sp. (Passif.)	passion fruit	markoesa	markusa	Marakuhsa	urukuja
Annonaceae spec.	sweetsop?	?	?	iriraime	
Annona muricata (Annon.)	soursop	zuurzak		Irira	iliwaime
Musa spec.	banana	banaan	bacove: pikinmisfinga	Maripa	palu
Musa spec.	banana	banaan	bacove: apra bakba, appelbacove	Minina	palu
Musa spec.	banana	banaan	bacove: bana bakba, bananenbacove	urana, wulana?	palu
Musa spec.	banana	banaan	bacove: ingi bakba	kuutakiri, tepebru	palu
Bactris gasipaes (Palmae)	peach palm		paripo	paripo	
Theobroma cacao (Buetn.)	cacao	cacao[1]	kakaw	Adikanaina	arapuru
Anacardium occidentale (Anac.)	cashew	kasjoe	sabana-kasyu	oloi (orange-red), oloi alalawa (yellow)	oloi
Anacardium giganteum (Anac.)	caju-acu, cajui		busi-kasyu	itu oloi	
Chrysophyllum cainito (Sapot.)	star apple	sterappel	sterapra		
Spondias cytherea (Anac.)	golden apple	pomme de Cythere	pomusiteri		
Hymenea courbaril (Papil.)	stinking tree		rode lokus, loksi		
Inga spec. (Mimos.)		zoete bonen	switbonki (from Brazil)	kalau	
Carica papaya (Caric.)	Papaya G	papaja	papaya	Mapaja	kumau
Psidium guajave (Myrt.)	guava	guave	guyaba	Kuriamo	kujapa
Ananas comosus (Brom.)	pine-apple	ananas	ingi-nanasi	nana, nanaeime	nana
Ananas comosus (Brom.)	pine-apple	ananas	ingi-nanasi	watrapeni	
Ananas comosus (Brom.)	pine-apple	ananas	ingi-nanasi	akeinana	
Ananas comosus (Brom.)	pine-apple	ananas		warino	
Ananas comosus (Brom.)	pine-apple	ananas		kujari	

Ananas comosus (Brom.)	pine-apple	ananas	busi nanasi	enireimi	
Eugenia uniflora (Myrt.)	Surinamese cherry G	Surinaamse kers	geribde kers, monkimonkikersi		tëpelem
Malpighia punicifolia (Malp.)	West-Indian cherry	Westindische kers	kersi		
Zizyphus jujuba (Rhamn.)	jujuba, Chinese date		olijf		
NUTS					
Cocos nucifera (Palmae)	coconut palm	kokospalm	krontobon	coconoto, pakunoto	coconoto
Artocarpus altilis (Mor.)	breadnut	kastanje-broodvrucht	siri-bredebon	tuhaime	
NON-FOOD PLANTS					
Gossypium barbadense (Malv.)	cotton	katoen	katun	maru(entu)	
Bixa orellana (Bix.)	anotto	anotto	kuswe	wihse	
Crescentia cujete (Bign.)	Calabash G	kalebasboom	krabasi	kamo, kadiwa?	
Bromelia alta (Brom.)			Singrasi, getand bladrand	wirawaito	
			Singrasi, gladde bladrand		
Lagenaria siceraria (Cucurb.)	gourd	leskalebas	ingigodo	atoreime, mula?	
Furcrea foetida (Amaryll.)		Mauritiushennep	ingi sopo	wiwiri, wanda?	
Coix lacrima-jobi		Knoflookkraal jobstranen	kanifro	ampere	
Sorghum sp.					
Jorojoro					
Tephrosia toxicaria					
Niem					
ORNAMENTALS (only near houses of "outsiders")					
Bougainvillea spec. (Nyct.)		bougainville	bougainville		
Solanum macranthum (Solan.)		aardappelboom			
Hibiscus rosa-chinensis (Malv.)		chinese roos	angalampu, matrozenroos		

Turnera subulata (Turn.)			achtuursbloem, zeven-even		
Allamanda cathartica (Apoc.)			Wilkensbita		

Saved during clearing, or secondary growth

Attalea maripa (Palmae)	maripa		maripa	maripa	malipa
Mauritia flexuosa (Palmae)	morete palm, Mauriti palm	Mauritiuspalm	morisi	koi	kuwai
Oenocarpus bacaba (Palmae)	bacaba (wine) palm		kumbu	kumu	kumu
Euterpe oleracea (Palmae)	cabbage palm		pina	wapu	wapu
Inga sp. (Mimos.)		zoete bonen	switbonki	kalau	
Spondias mombin (Anac.)	yellow mombin, hog plum		mope		maapa
Bagassa guianensis (Morac.)	cow wood		kaw-udu	pagasa	
Cordia sagotii ((Borag.)			tafrabon	mamii	

[1] Van Troon: Along the Peluli-creek of the upper Tapanahoni River "wilde" cacao-trees occur