Riches of the forest: For health, life and spirit in Africa

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Foreword

Africa is a diverse continent, rich in human and natural resources. It is also a continent facing major development challenges: with the highest proportion of poor people compared to any other continent, civil conflict, poor governance, slow economic growth and the spread of HIV/AIDS.

Throughout Africa, non-timber forest products (NTFPs) including plants and bush meat, are in daily use, commonly providing crucial resources for local livelihoods where no other social security is provided by the state. In a typical African country, where only one person in ten has a formal job, economically important forest species provide a significant source of informal income.

Rather than electricity, wood gathered from forests and fields represents the major source of household energy. Nine out of ten people live in informally built houses, often made from local plants, and eight out of ten people consult traditional healers. Traditional toothbrushes, called "chewing sticks" make a major contribution to dental care and edible wild foods and fungi commonly provide dietary supplements. Forest animals and fish constitute a major source of protein, and in Central Africa alone, an estimated 2 million kilogrammes of bush meat are consumed each year.

Harvesting and selling wild fungi, plant and animal resources is one of the few ways in which poor rural people can shift from a subsistence way of life into the cash economy. Generally, it is the most popular species that enter commercial trade, and the highest prices are paid for those species that are the most scarce and difficult to obtain. With an increase in trade, it is the species that produce

the most delicious fruits, the strongest fibres, the most effective medicinal plants or the tastiest bush meat that can become at risk of over-exploitation. Yet, it is precisely these species which have the greatest value to local livelihoods. The shift from subsistence use to commercial sale can have important implications for resource management, with larger volumes being harvested, and at a higher frequency and intensity.

Given the great reliance of many people on locally harvested plant and animal resources, in a region where millions of poor people live, how can "boom and bust" situations and the unsustainable use of this "green social security" be avoided? What are the causes of actual or potential failure in the commercialisation of non-timber forest products? Despite the research that has focused on NTFPs, there is still a lack of knowledge, on the part of both the general public and policy makers, regarding the importance of these forest products for both subsistence livelihoods and trade. For sustainable harvesting and use to become a reality, harvesters, industries and consumers need to be aware of the ecological and socioeconomic factors linked to the products that they work with and consume.

To date, the NTFP research that has been conducted and communicated has been targeted towards a very narrow audience. This book, as part of a three volume set, is a rare and valuable exception. It brings to life the people and products behind the research results, communicating in a very readable format. The individual cases are drawn from a series of studies carried out by the Center for International Forestry Research (CIFOR) and other partner organisations, as part of a comparison project focusing on Asia, Latin America and Africa. Within this volume, a variety of different forest products are included, from various parts of Africa. It is our hope that you enjoy reading these case studies, and that through the sharing of this information, awareness will increase about the diversity of people and landscapes that are closely connected to the forest products we use.

Anthony Cunningham
WWF/UNESCO/Kew Botanical Gardens
People and Plants Initiative

Preface

Do you know how many of the products that you buy in shops contain ingredients, components or materials extracted from African forests? Many forest products for example, are used in the food, cosmetic and pharmaceutical industries. The raw materials often travel a long way from their original source and some of the end products have even become part of modern city life. Such forest resources are not only important for city dwellers, they are essential for the lives of people based in local communities throughout Africa - and have been for centuries.

Among the many resources obtained from the forest, such as bush meat, rattan and caterpillars, trees have been important for people living in rural Africa for hundreds of years. A single tree can be the source of various products, sometimes with dozens of different uses. Some trees grow on sacred sites or they and their products are used in ceremonies, or in innumerable other ways, are essential to the spiritual life of African people. The bounty obtained from trees has endless uses - wild fruits, nuts and bush meats are eaten, leaves are used for animal food, bark for medicine, and wood for manufacturing domestic and farm utensils. Another of the great gifts of trees is the shade under which people can meet and rest.

Over time, fruits, nuts, leaves and bark have traveled far from their places of origin, making their way to cities and even distant lands outside of Africa. In recent times, some products with traditional uses have become more mainstream and new uses have also been discovered. For example, the

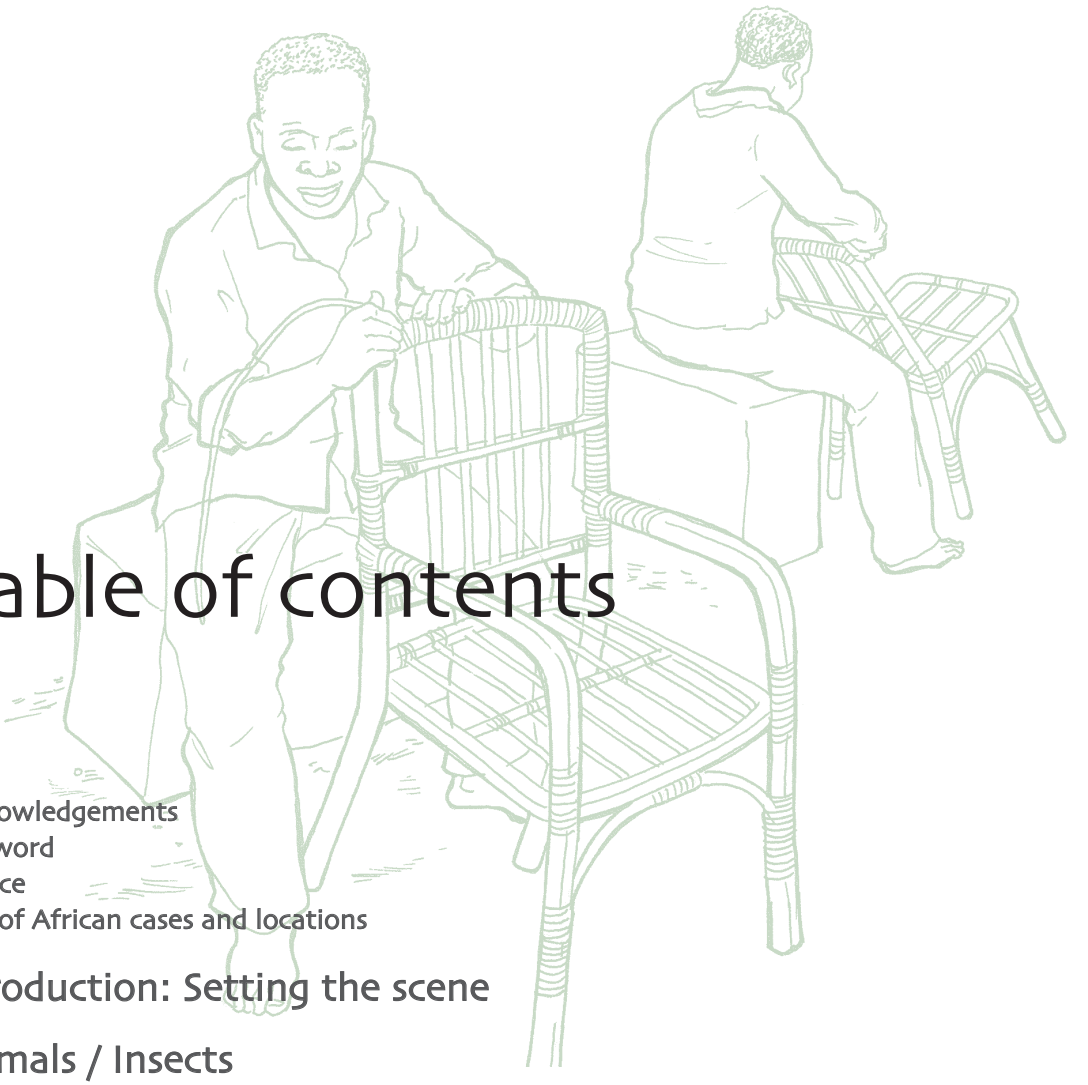
seeds, pulp and skin of some fruits are being processed into oils and essences. Reaching international markets, marula fruits are now being used in the production of certain lipsticks and shea butter is enriching moisturising body creams.

Today, people around the world can appreciate the flavours and exotic far-away tastes of wild fruits and condiments. Ghanaians, Cameroonians, Kenyans and other Africans living overseas can delight in finding local stores that stock the favoured fruits and spices they used to eat in their home villages. From the shelves of food shops and drugstores we can buy dried mango, njansang kernels, and pills for arthritis and rheumatism which contain extracts from devil's claw plants. Away from the places where these plants grow however, little is known about their local uses or whether they are being wisely harvested.

Unfortunately, high demand from consumers and widespread industry marketing of products, such as medicinal bark from *Prunus* and *Warburgia*, has fueled rampant over-harvesting. This has led to the disappearance of trees - in the case of *Prunus*, from certain areas of Cameroon and with regard to *Warburgia*, from throughout Zimbabwe. In the process, villagers who rely on such trees for curing different illnesses are losing access to an important source of medicine. In addition to over-harvesting, changes in land use are also threatening some forest products. Predatory logging, the clearance of forests for farm expansion, and modern agricultural practices that favour the use of pesticides and herbicides, are eroding away the rich tapestry of native plant diversity.

Another change that has had an impact on the use and sale of forest resources is road building. Not so long ago, few villages had road access. But in recent times, the sale of goods along African roadsides has become a custom, and a familiar part of the landscape. Men, women and children travel along dusty and mud-caked roads between villages and cities buying things like bush meat, bitter cola nuts, weevil larvae brochettes and marula beer. Through the placement of their wares in roadside stalls, woodcarving artisans have created a thriving tourist market. Some of the most famous African handicrafts only became well known after roads were opened up - like the beautiful hand crafted kiaat wooden bowls in South Africa, and the carved black ebony elephants and rhinos, and spotted giraffes in Zimbabwe and Kenya. All over Africa, local traders offer the likes of fruits, spices, carvings, potions and amulets, laid out on colourful cloths.

The next time you go to a handicraft shop or local market, if you look carefully you may come across beautiful African woodcarvings, exotic fruits or medicinal products derived from African resources. The stories within this book allow you to learn about the places that these forest goods come from and the hard-working people along the way who make it possible for us to have them in our homes.



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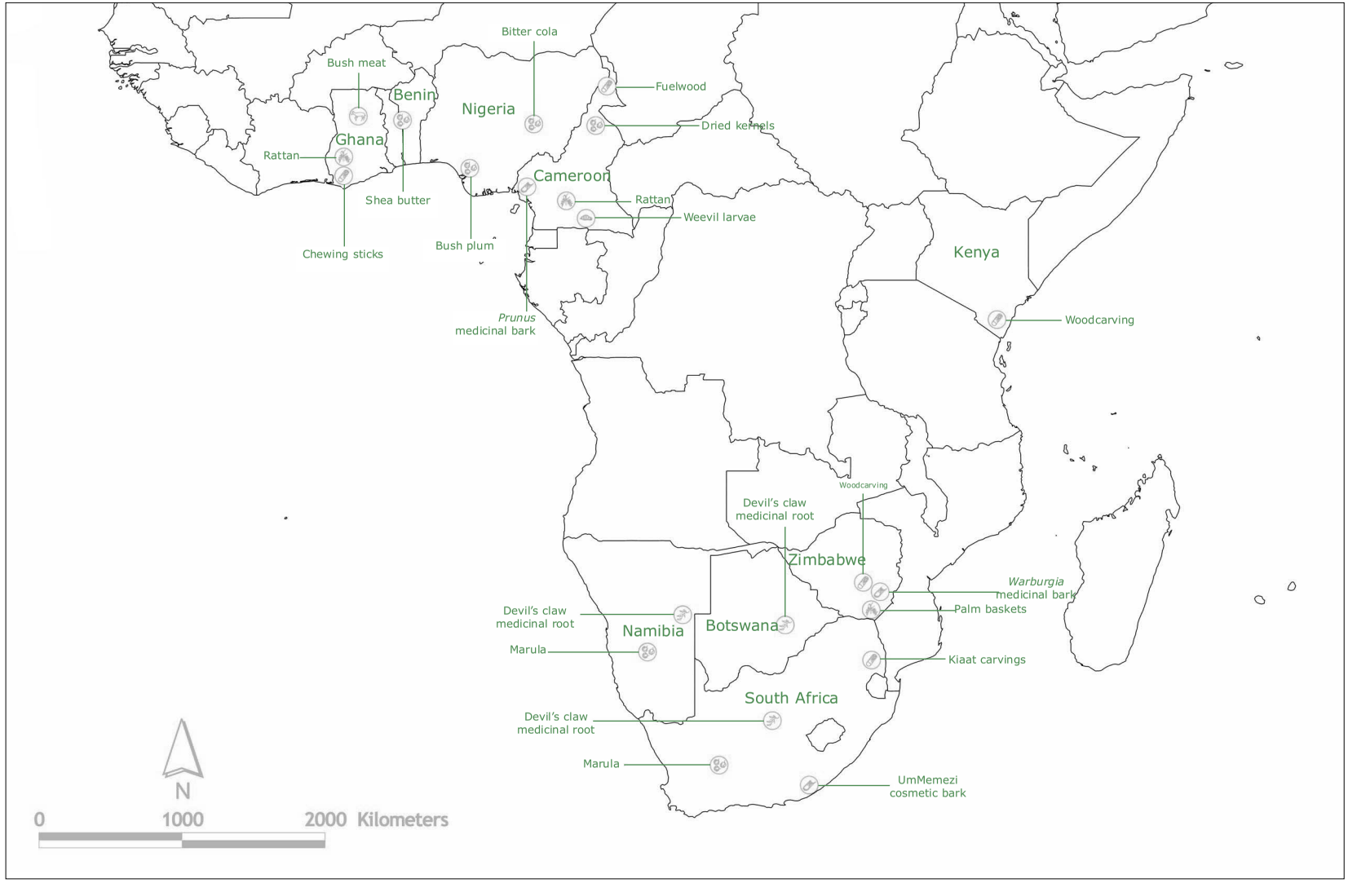


Introduction: Setting the scene

The pages of this volume contain real life stories about a wide range of forest products and the people who use and manage them. The individual chapters illustrate how different forest foods, fibres and medicines are grown, harvested, processed and traded. Through these stories, we learn about the history of such products - some of which have been used and traded for centuries and some of which are relatively new. We also find out about the various opportunities and problems that collectors and traders face, and the way they respond to change.

The group of goods called non-timber forest products (NTFPs) includes a great variety of forest resources, used for both domestic and commercial purposes. Centuries ago, Chinese and middle-eastern traders would cross seas, mountains and deserts in search of forest spices and resins. Later, during the colonial period, there was great interest in Europe in the many valuable foods and spices that can be sourced from forests. Voyages of exploration, sometimes lasting a year or more, were launched to seek new flavourings and preservatives for European markets. After the Second World War however, a shift occurred and forests began to be valued principally for their timber resources and for wood fibre for paper-making. At the same time, commercial and scientific interest in other forest products waned.

Beginning in the 1980s, recognition of the rapid rates of deforestation, and a newfound appreciation of the difficulties facing people living in rural areas, led to a renewed focus on forest products other than timber. Researchers began assessing both the commercial and subsistence roles of these products. Studies carried out in Latin America compared potential income from a variety of forest products (like fruits, medicinal plants and fibres) with the possible income from logging and other land uses, concluding that over the long term, NTFPs could potentially provide more value. Some aspects of the early studies have since been criticised on economic grounds, however the research has served to create a wave of interest in NTFPs, and this has led to an increased appreciation of their overall importance for people in both forest communities and cities.

During the last 15 years, governmental and non-governmental organisations (NGOs) have given their attention and support to various NTFP-related activities, with the aim of improving the livelihoods of families living in and near forests. Some of these initiatives have been effective in achieving social, economic or conservation goals. However, overall results have been mixed, partly due to the great diversity of conditions and the different circumstances in which forest resources are harvested, processed and traded.

Sharing knowledge about forest products

Many researchers have studied forest products in different parts of the world using methods from various disciplines, including biology, economics and anthropology. While these studies have increased our knowledge about forest resources, they have also raised important new questions. Due to the widely differing methods used however, it has been difficult to compare the studies and draw general lessons. To overcome this problem, a group of researchers from around the world recently combined efforts to compare and contrast individual case studies. This collaborative research project, coordinated by the Center for International Forestry Research (CIFOR), with major funding from the UK Department for International Development (DFID), included 61 different cases of forest product commercialisation from Asia, Africa and Latin America. CIFOR worked with small teams and individual researchers, representing 47 NGOs, universities and government research agencies, from 27 different countries. The researchers - which included ecologists, foresters, agronomists and anthropologists - wanted to gain a better understanding about the wide range of conditions that influence whether NTFP trade benefits rural people and helps to conserve forests and if so, how. With improved knowledge about the impacts of commercial trade on forest products and people, the researchers now hope to share this information about rural development and natural resource conservation with decision makers in government and development agencies.

An in-depth, three volume set of scientific reports has been published, focusing on the three regions of Asia, Africa and Latin America - *Forest products, livelihoods and conservation: Case-studies of NTFP systems*. The researchers were also keen to share their knowledge about forest resources with a more general audience, beyond scientists and donors, using simpler language and an illustrated, briefer format. To achieve this goal, three supplementary volumes have been produced: *Riches of the forest - Food, spices, crafts and resins of Asia; Riches of the forest - For health, life and spirit in Africa;* and *Riches of the forest - Fruits, oils, remedies and handicrafts in Latin America*.

The volume in your hands is one of the products of the researchers' collaborative efforts. The 23 researchers involved in the African case studies explain how a selection of forest resources are harvested, processed and traded. Consumers generally go to markets, stores and bazaars, choosing and buying food and goods like decorative or beauty products without knowing much, if anything, about the history of these products or the people involved in their collection and sale. This comes at a time when forest cover worldwide is decreasing rapidly, and forest-reliant communities are having to respond to enormous changes. What can we learn from people who carve out a living harvesting forest products? And how can our buying patterns affect or assist them?

While reading this volume, it is useful to keep in mind the main characteristics of Africa's physical and social landscape. About 22 percent of Africa is covered with forests - ranging from dry vegetation types, like open savanna*, to rainforests and mangroves. Within the rainforests the diversity of plant and animal life is rich but generally to a lesser degree than for rainforests in other parts of the world. For centuries, forest products from Africa have been traded to other countries. During the sixteenth century, cloves, cattle, sugar and bananas, among other products, were shipped to countries on the other side of the Atlantic and Indian Oceans. Such trade intensified when European countries started to colonise and control natural resources across the continent.

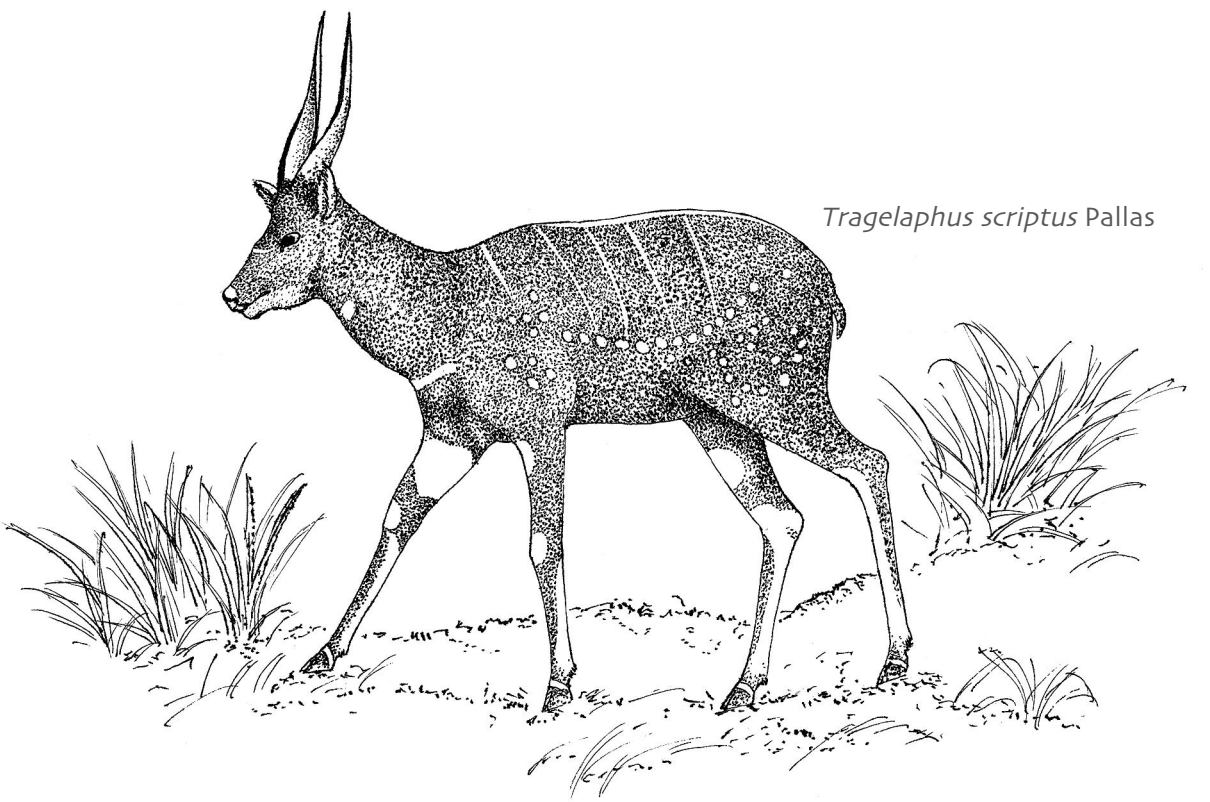
In recent decades, the decolonisation of Africa has shaped a new context for the African people and their environment, as have more recent events, such as civil wars, environmental disasters and waves of migration. As the cases in this book illustrate, this broader context, along with the individual circumstances surrounding each forest product, can present challenges for the harvesters, processors and traders of forest goods. As you will discover, the products described within are as dynamic and diverse as the African landscape and the people who inhabit it.

The case studies

This volume brings to life 19 case studies featuring forest plants and animals. The botanical cases are presented according to the main part of the plant being used - the fruit, bark, roots or wood. Sometimes the plants have multiple uses, or different cultures may use the same part of a particular plant in different ways. Animals and animal products that require forest habitat are also critical for rural livelihoods, and are represented in this volume by bush meat and weevil larvae. In each case, the contributors describe the main characteristics of the forest product, its historical usage, harvesting and management, and how it is processed and traded. In closing, each author comments briefly on trends and current issues regarding the resource. The final chapter reviews common themes and lessons that can be drawn from these cases.

** Throughout the following cases, the symbol * denotes words for which definitions can be found in the glossary, at the end of the book.*

** At the start of each case, you will notice the scientific names of the different forest plants (and animals) that are profiled. A full explanation about the use of botanical and scientific names can also be found in the glossary.*



Tragelaphus scriptus Pallas

Bush meat

Ghanaian case by Anthony Cunningham

'Chop bars' and the bush meat trade

According to an African saying: *Meat is a visitor, but morogo* (edible leafy vegetables) *are a daily food*. Throughout the tropics, starchy staple foods like cassava, rice and maize are made more interesting and appetising with the addition of sauces and side-dishes prepared from wild or cultivated plant products. For most people, meat remains a luxury reserved for special occasions. When meat is eaten in many parts of Africa, it is meat from wild animals ('bush meat' or 'bush beef') that is the preference - although it is more expensive than meat from domesticated animals such as goats, sheep, cows or chickens. In Central Africa alone, the bush meat harvest is believed to total more than two million tonnes annually.

Men dominate two aspects of the bush meat trade in Ghana - hunting and the preparation of carcasses for wholesalers. They prepare these goods by either skinning them or singeing the hair off over a fire. Their payment increases according to the size of the animal.

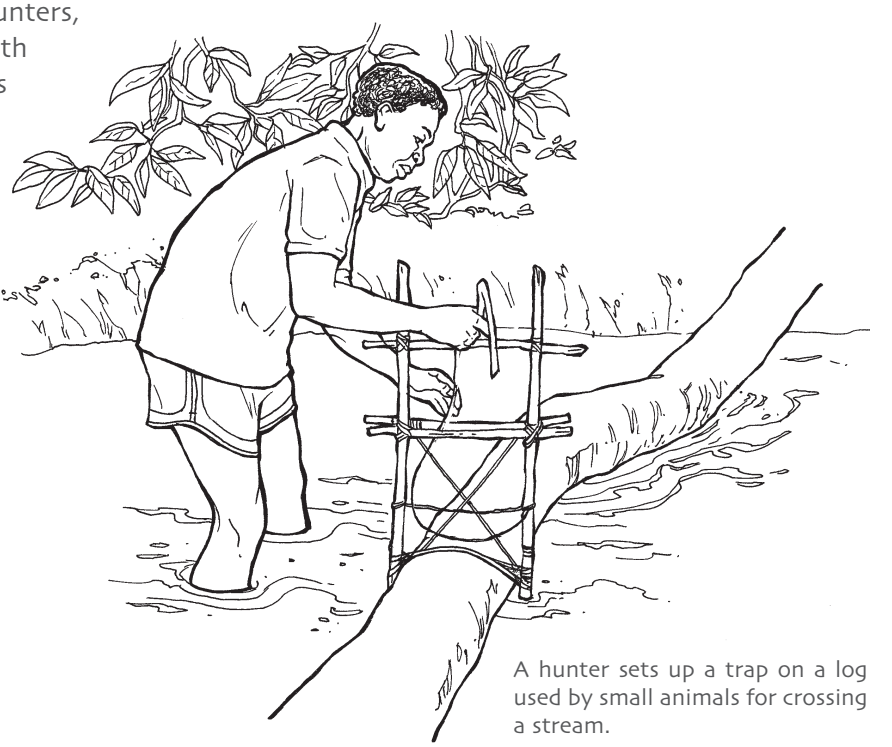
Incomes are higher for urban 'white collar' workers than for people in rural communities and this means that city people can afford to buy bush meat more regularly. Urban markets in Ghana provide a good example of this trade, and some markets, such as the Atwemonom market in Kumassi, are even named after bush meat. In Akan, *atwe* = duikers* and *mono* = fresh, referring to a market for fresh duiker meat. Such markets are like 'barometers', reflecting what is happening to wildlife populations in forests, woodlands and savannas*. Bush meat markets in Ghana have been studied since the 1970s and nationally the trade is estimated to be worth around US$ 350 million per year. Worldwide, the trade is as much of a concern to conservation agencies as it is to those looking at local livelihoods and development.

From forests to markets and 'chop bars'

During the week, throughout Ghanaian cities, office workers crowd their favourite 'chop bars' ('chop' is a widespread pidgin word for food) to enjoy bush meat. Talk to any of them and they will tell you that bush meat has a special flavour, which is not found in the likes of beef or mutton, and which goes well with delicious local soups or with starchy 'fu-fu' (a popular paste made from cassava, corn or sorghum).

Bush meat is sourced from rural bushlands and forests. After harvesting, this wild product changes hands down marketing chains, from hunters to wholesalers, then on to retailers, most of whom are women - with the exception of a few men, who run chop bars. In general, men dominate two main activities. Firstly, hunting and secondly, providing the market service of burning the hair off carcasses before sale.

Both the wholesaling and retailing of bush meat are dominated by women - and what incredible businesswomen they are too! Female wholesalers generally control the price paid to hunters for bush meat, as well as the retail price. Individual wholesalers are often supplied by particular hunters, with whom they build a business relationship. In these cases, women regularly pre-finance the hunters, who then have to repay them with bush meat. These canny wholesalers also provide credit facilities to retailers. Such social and economic links provide a good return for wholesalers. But these links also address a key problem of the NTFP trade - the uncertainty of supply and the high demand - by ensuring regular supplies and a more stable market for bush meat.



A hunter sets up a trap on a log used by small animals for crossing a stream.

Wild forest animals under pressure

The actual trade in bush meat is huge. Studies of a single market (Kantamanto) in Kumassi for example, show that between 1971 and 1986, an annual average of

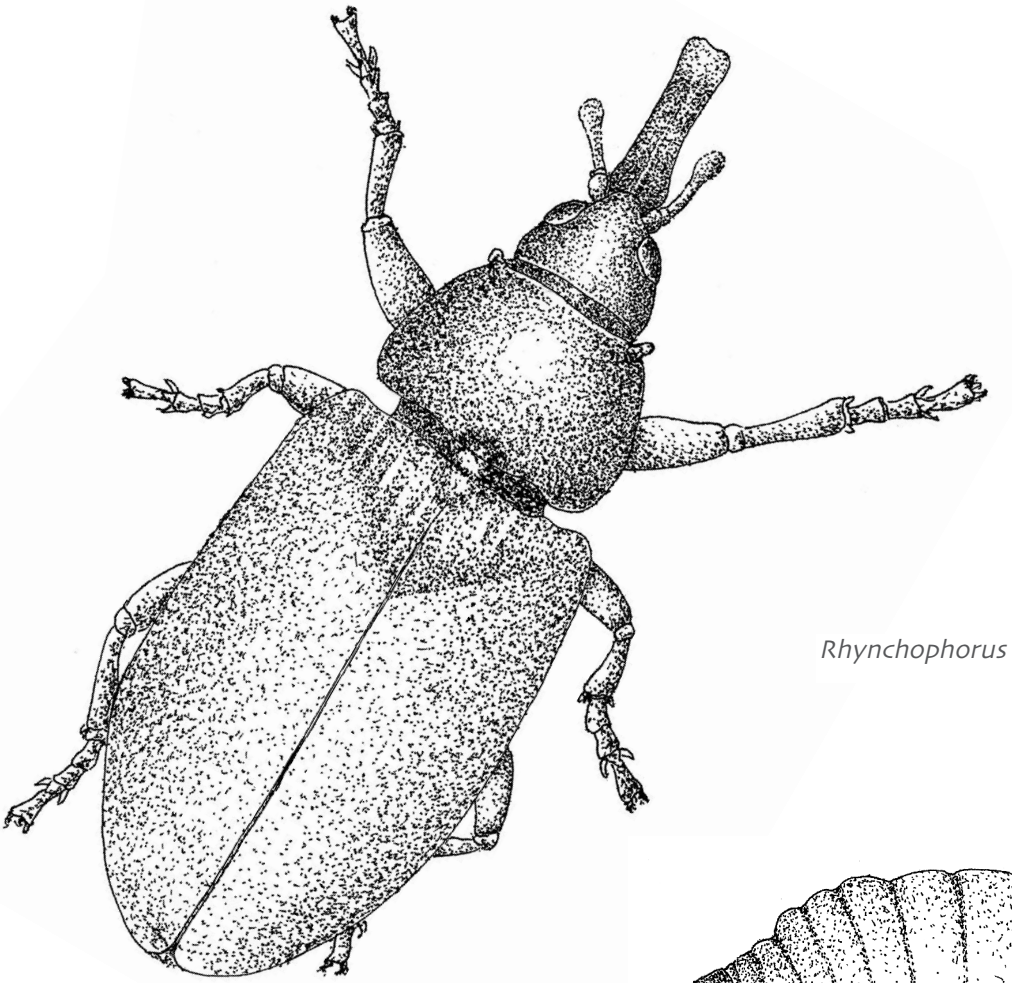
nearly 70 tonnes of fresh bush meat carcasses were sold (ranging from 20-105 tonnes per year). Some markets specialise in smoked bush meat, but the markets selling fresh bush meat often carry a small stock of smoked carcasses as well - including the popular giant African land snails, which come served on a stick.

The most common bush meat species sold in Ghana include grass-cutters* (*Thrynomys swinderianus*), Maxwell's duikers (*Cephalophus maxwellii*) and bushbuck* (*Tragelaphus scriptus*). In Ghana's markets 10-25 different bush meat species are known to be sold, including pangolins*, porcupines and monkeys. These animals are caught in different types of traps and snares or are shot with guns. In more recent times, animals are also being caught using poisoned baits. This is an issue which has raised considerable concern, with recent estimates that around one third of Ghana's bush meat is contaminated by chemical poisons.

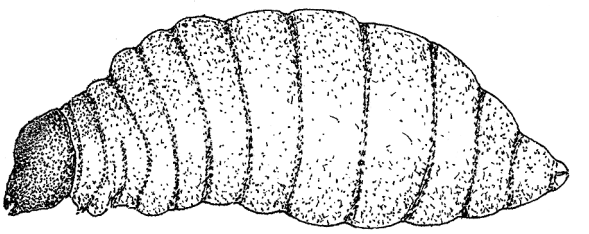
In an attempt to lessen the impact of the bush meat trade on wild animal populations, Ghana's Department of Game and Wildlife has nominated a period during which the hunting of some species is outlawed. This is intended to protect the animals from being hunted at a time when they are pregnant or have recently borne young. Although this seasonal ban is advertised in the national newspaper, this measure is considered to be ineffective in the face of the high demand and prices for bush meat - and prices are continuing to increase rapidly. This situation encourages many rural households to sell bush meat from the animals they catch, rather than consuming it themselves for its nutritional value.

The porcupine is the symbol or totem of the Ashanti nation.

For certain faster growing herbivores, such as grass-cutters and giant snails, high prices can provide an incentive for production through ranching. But for the large bodied, habitat-specific* species, and particularly those with slow reproductive rates, the future may be bleak. This is a cultural issue as much as it is a conservation one. As Ghanaian traditional leader, Okatakyle Agyeman Kudom, pointed out at a recent meeting: "*The proverbial porcupine is the symbol or totem of the Ashanti nation and we used to find them here, but now they have completely disappeared … If we are not careful, all our wildlife will disappear and we will have nothing to show future generations*".



Rhynchophorus phoenicis Ol.



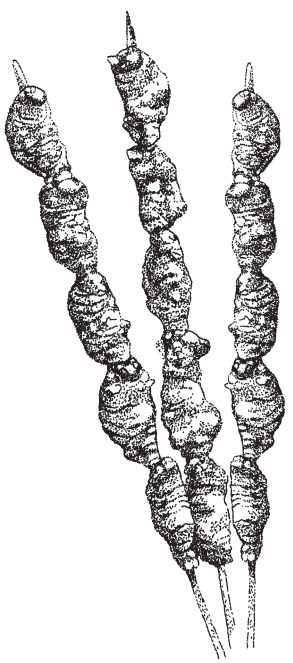
Weevil larvae

Cameroonian case by Edmond Dounias

Edible weevil larvae: A pest for palm trees but a delicacy for city-dwellers

The finger that extracts a weevil larva should not be stiff.
Cleverness is sometimes more suitable than force.
Mvae Proverb, southern Cameroon

Insects have played an important role in the history of human nutrition, and in Africa, Asia and Latin America, hundreds of species are still eaten. Some of the more important groups include grasshoppers, caterpillars, beetles, termites, bees, ant larvae and pupae, cicadas, and a variety of aquatic insects. Generally having a high cultural and symbolic value, insects are also rich in nutrients and are available in large quantities, without the risk of resource extinction. Some insects, like the larvae of the African palm weevil (*Rhynchophorus phoenicis*), are even sources of substantial and sustainable profits.



Roasted palm weevil larvae are sold at toll roads or city bars as a nutritious snack.

The edible larvae of *Rhynchophorus* weevils are found throughout tropical areas. With a flavour resembling hazelnuts, they are a true delicacy for forest inhabitants of the Amazon, Borneo, Papua and Central Africa. However, it is Cameroon where these edible insects have the highest economic value. City-dwellers in Yaoundé and Douala crave these fatty larvae, which are sometimes as big as a thumb, and do not hesitate to pay for them.

The palm-insect marriage: A long evolutionary story

Palm weevil larvae are mainly harvested in *Raphia* palms, and secondarily, in oil-palms. Palms belong to the Palmaceae family, which is distributed throughout the tropics and contains more than 1400 wild and domesticated* species. Palms are visited by countless insect species. Some, like mosquitoes, find optimal conditions for their reproduction. Others, like bees, occasionally visit the palm flowers, and insects like spiders may take up residence in search of prey. Other insects, like certain weevil species, have developed relationships with palms that provide mutual benefits to both partners. In exchange for 'bed and breakfast', the insect actively contributes to the reproduction of its host-plant*, for example, by fertilising flowers. However, this is not the case for the African palm weevil, which is a true pest.

Nicknamed the 'stipe driller', the adults perforate the palm trunks and exploit injuries to the plant caused by human activities, fungal disease or the attack of other insects. When they invade agro-industrial* oil-palm plantations they can cause severe economic damage.

Finding Larvae: Look, smell, listen and feel

Most ethnic groups of the humid forest zone of Cameroon harvest and consume weevil larvae from oil-palms. The larvae are systematically extracted from trunks that have been cut down for palm-wine production. Adult females lay eggs in the decaying trunks that are left after the extraction of sap. Mature larvae may then be harvested a few weeks later. But their unpleasant fermented wine taste confines their consumption to a domestic level.

Extracting sap from oil-palms. The consumption of weevil larvae associated with palm-wine is an unforgettable gastronomic experience!

In Cameroon, larvae are mainly extracted from the trunk of *Raphia* palms, growing densely in swampy lowlands. Harvesters spend hours in the dark, muddy waters, often up to their waists, suffering insect bites and encounters with snakes. Only half a dozen villages in southern Cameroon specialise in the harvesting of larvae for trade. A few ethnic groups, such as the Maka, Bulu, Eton and Mangisa, have developed some expertise, each with specific harvesting tools and techniques.

Larvae may be collected from juvenile trees, although identifying infested ones does require some expertise. Slightly yellow leaves can be a good indication. A skilled harvester may detect the particular smell that larvae emit or if they listen carefully, they might recognise the characteristic sound of larvae crawling within the palm frond stalks (rachis). This insect movement also causes a small vibration, which harvesters may be able to feel. Sometimes, the palms are also host to large *Oryctes* caterpillar larvae. Although edible, these are less favoured than the weevil larvae and are seldom traded. *Oryctes* adults leave recognisable holes when they pierce the rachis, providing an access point for the weevils.

Weevil larvae are mainly sought in adult *Raphia* palms. Identifying infested plants is much easier, as the weevils colonise only sick palms, causing them to lose their leaves and turn a greyish colour. The *Oryctes* holes are also more visible on the adult trunks, and both caterpillar and weevil larvae are frequently harvested simultaneously.

A single adult *Raphia* palm may yield up to 500 weevil larvae.

A small maggot that makes big money

The average monthly income for larvae harvesters is about US$ 71 for live larvae, sold to retailers supplying city markets, and US$ 50 for roasted larvae, sold as snacks along roadsides or in bars. Such income is significantly higher than that obtained by unskilled workers in town, or by the producers of coffee (US$ 50 in good years) or cocoa (US$ 28). Compared with other notable Cameroonian forest products, weevil larvae generate better income than bushmeat (US$ 58), *Gnetum* leaves (US$ 31), or rattan (US$ 26). Margins for retailers are also good: larvae bought from harvesters for US$ 0.14-0.19 apiece fetch around US$ 0.53 apiece in the Douala markets. Uncooked larvae are always traded alive and can be maintained for around 10 days. For consumers, this guarantees the product is 'fresh'.

Is the resource sustainable?

Raphia palms are among the most utilised plants on the African continent. Numerous plant parts are used - for construction, furniture-making, fuelwood, basketry, weaving, cosmetics, textiles, and even for making fish poison, lubricants, medicinal soap and cough mixture. Fruits, as well as the sap, stolons* and young shoots are also consumed, and even the ash obtained after burning the leaves is used as a salt. Yet despite these age old, multiple uses, scientists know relatively little about the ecology* of this tree, and in turn, this lack of knowledge about the weevils' host plant, hinders a better understanding of the larvae.

Larvae harvesting does not endanger the weevil populations, as larvae production continues all year round, and a female adult may lay up to 800 eggs at a time. The factor limiting the long-term exploitation of weevil larvae is the host-tree: *Raphia* swamps are generally perceived as low value and inhospitable ecosystems*. The biodiversity* of swamps that shelter indigenous* plant and animal species is neglected by forest management plans, which often call for a drastic conversion of these landscapes. The economic value of weevil larvae could provide a strong argument for the preservation of *Raphia* swamplands. What a nice ending to the story if the *Raphia* palms could finally be saved by their insect parasites!