The Increased Harvest and Trade of Devil's Claw (*Harpagophytum procumbens*) and Its Impacts on the Peoples and Environment of Namibia, Botswana and South Africa

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Abstract

Devil's Claw, a medicinal plant native to the Kalahari Desert, has recently become popular in Europe on the alternative medicine market. After being first brought to Germany and studied in laboratories about fifty years ago, the plant is now a recognized drug. It was once gathered by local Bushmen to relieve a variety of symptoms; now it is harvested and exported to Europe on a large scale. The indigenous peoples of Namibia, Botswana and South Africa—the countries where the plant presently grows—have increasingly come to depend on harvesting and selling the plant for their livelihoods. Foreigners, many of them Europeans, have established farms for the commercial production and sale of Devil's Claw. These developments have been accompanied by serious social, economic and ecological consequences, some beneficial but others dire.

Many dedicated people are studying this phenomenon in the field, in the laboratory or in offices around the world. This paper attempts to synthesize the various existing reports about Devil's Claw, and thus to formulate a coherent and comprehensive picture both of the various aspects of its harvest and sale, and of the impacts resulting from increasing demand.

The first section provides some background information on the plant itself. The second and third sections examine the commercial chain and market system in their current form. The fourth section discusses the various types of harvesting now employed. The focal points are who harvests, how they harvest, and how much they harvest, as well as the quality of the product resulting from the different methods utilized. The fifth section is devoted to the impacts of increasing demand for Devil's Claw on the indigenous peoples of Botswana, Namibia and South Africa, and on those countries themselves. First, the economic impacts are examined, followed by the social impacts, which are often intertwined with economic factors. Then the ecological impacts of increased harvesting and trading are analyzed. The sixth section describes a few efforts being made to mitigate these impacts. Finally, a few brief conclusions and suggestions for further study are offered.

1 Background Information

Devil's Claw is the most used common name for the plant *Harpagophytum*. This genus is comprised of two species: *Harpagophytum procumbens* (with two sub-species, *procumbens* and *transvaalensis*) and *Harpagophytum zeyheri* (with three sub-species, *zeyheri, sublobatum* and s*chiiffii*). These species are further subdivided into many other sub-species.

These plants are indigenous to the Kalahari Desert of Africa. *H. procumbens* is mostly found in Namibia, Botswana and South Africa. The other species, *H. zeyheri*, is also found in these areas, as well as in Angola, Zambia and Mozambique. There are large quantities of this plant. *H. zeyheri* has not been harvested up to now to the same extent as *H. procumbens* because of its weaker medicinal power. *H. zeyheri* seems to have a lower concentration of harpagoside compared to *H. procumbens* (Kathe, Barsch & Honnef, 2003). According to CITES literature, both species are harvested and sold as Devil's Claw in Namibia; because of the higher demand for Devil's Claw, *H. zeyheri* is also used (Anonymous, 1999). *H. procumbens* has been harvested traditionally for at least several hundred years and has been exported internationally for about fifty years.

Another common English name for Devil's Claw is Grapple Plant, because the form of the fruit resembles a hook which is designed to protect the plant against animals. Other names for Devil's Claw are: Beesdubbetje, Duiwelsklou, Grapple Thorn, Kanako, Kamangu Kloudoring, Ouklip, Rankdoring, Sengaparile, Skerpioendubbeltje, Teufelskralle, Toutje, Tou, Tswana, Tubercule de griffe du diable, Woodspider (Anonymous, 1999).

Like the crocus, the plant blossoms in the early spring for several months (von Willert, 2003, pers. comm.). It has a strong taproot with many secondary tubers, which grow laterally off the taproot.

Which environment is necessary for the growth of Devil's Claw is not yet completely clear. Both species are found in areas of the Kalahari with higher rainfall. It is obvious that the plant grows well in the Kalahari, but it is not clear what special properties are peculiar to the Kalahari sand in comparison to, for example, the soil in Caprivi, where the plant does not grow despite the requisite rainfall (Mbewe, 2001).

Sustainable harvesting usually starts at the beginning of November, or at the latest in the middle of November, during the rainy season. Then the soil is softer than in the dry season, and this is the best time to recognize the right type of Devil's Claw. The harvesting season usually stops at the end of July, but not earlier than the end of June, unless there is a hard frost (van der Vyver, 2002).
In Botswana the harvesting period of Devil's Claw starts in April and ends in September (Matlhare, 2002). The advantages and the disadvantages of wet and dry season harvesting have to be studied more intensively (Motlhaping, 2002).

Other sources state that Devil's Claw can be harvested all year round. However, it is more convenient to harvest during the rainy season, when the soil is moist, digging is easier, and the yield is greater (Nott, 1986).

The root of Devil's Claw is used widely as a medicine, both traditionally and in western preparations. The tuber is traditionally used for fever relief, blood diseases, muscular aches and pains, and as an analgesic during pregnancy,, In addition, pulverized root material is used as an ointment for sores, ulcers and boils, and for difficult births (Watt & Breyer-Brandwijk 1962; Giess & Snyman, 1995). Infusions of the dried root are also commonly used as a cure for digestive disorders, to stimulate appetite, and for post-partum complaints. Ethno-botanical records from Botswana suggest *H. procumbens* (Legatapitse) to be most widely employed for these medical treatments, with *H. zeyheri* (Lengakare) used traditionally to prevent witchcraft. Giess and Snyman (1995) record preparations by the Khoisan of *H. procumbens* through pounding and boiling, which remains widespread in the region.

Today the Bushmen still use the plant. They eat raw tubers, and they believe in their medicinal power only when they are taken orally. For this reason they do not use creams or any other external treatment. The indigenous people use Devil's Claw in many more circumstances than are prescribed by Western medicine. In the Western world, Devil's Claw is generally used to treat rheumatism and arthritis (von Willert, 2003, pers. comm.).

The medicine can be found in the form of pills, capsules, teas, tinctures and creams. In Germany, people have recently begun using Devil's Claw cream to cure horses, with great success. In Africa it is common to buy Devil's Claw products in the supermarket. These products are the same or similar to the ones sold in Europe. The commercial manufacture and sale of these products in Africa began almost at the same time as in Germany (von Willert, 2003, pers. comm.).

2 Commercial Chain of Devil's Claw

The commercial chain of Devil's Claw is very complex. It varies depending on the type of harvester as well as on the region and country.

Traditional harvesters sell their produce on the local market. Devil's Claw gets bought by local people for their own use, by middlemen who sell the material to other middlemen and then to exporters, by local traders and sometimes also by the exporters directly, who often have a network with several middlemen. Usually the commercial chain is very long. It has also happened that an exporter has gone directly to the harvester to buy the material for his or her own use, e.g. to plant the tubers on his or her land and to create a farm (von Willert, 2003, pers. comm.).

The commercial chain of Devil's Claw works according to several different general models:

In Namibia there are approximately 6,000 local harvesters who sell their products to local traders. These local traders supply four to five exporters of Devil's Claw. They also commonly sell this material to other middlemen or traders before it finally reaches the exporter.

A more direct way to the exporter is provided by the model in Namibia that is supported by CRIAA SA-DC (Centre for Research and Action in Africa, Southern Africa Development and Consulting) and its partners within the Sustainably Harvested Devils Claw Project. The small number of communities working according to this model harvest Devil's Claw and sell it directly to the exporter, cutting out the middleman entirely (Wynberg, 2002).

According to another model, one overseas buyer commits itself to buying all the produce from one large local trader. One example of this is Hambleden Herbs UK (Krugmann, 2000).

Yet another model has been tried in Botswana. In the last ten years, a rural development NGO, the Thusano Lefatsheng Trust, bought Devil's Claw material from the harvester communities and put it on the market for export (Wynberg, 2002).

3 Devil's Claw Market

In the last few years there has been a continuous increase in the demand for Devil's Claw. Up to now the plant has been grown in its native areas. Most Devils' Claw is harvested in Namibia, followed by Botswana and South Africa. Initially it was harvested mostly in Namibia, and later, because of increasing demand, also in the other two countries.

The past five years in particular have been distinguished by a three to six–fold increase in the harvesting and supply of *Harpagophytum* trade, reaching a peak of over 600 tons exported from Namibia alone in 1998 and 1999. Importing countries include Germany, France, Switzerland, Spain, Portugal, Italy, United Kingdom, South Korea, Brazil and Belgium (Wynberg, 2002).
There is both a local and an international market. The local market is very small in comparison to the international one. The number of plants sold on the local market in Namibia is not high. A certain amount of the material from Namibia also gets exported to South Africa for the local trade. A large amount is exported directly to Europe or the United States. A market also exists for firms in South Africa seeking to export the (originally Namibian) Devil's Claw to Europe and the United States. The plants harvested in Botswana are exported indirectly to Europe and the United States via Namibia and South Africa (Wynberg, 2002).

Namibia's exports have increased, from about 180 tons back in 1975 to over approximately 1,000 tons in 2002. Projections from the University of Muenster show

that this means an increase of about 15,000 plants (von Willert, 2003, pers. comm.). Approximately 4,000 tons of dried material were exported from Namibia to various destinations between 1995 and 2002.

It is interesting to note that Namibian Devil's Claw is handled by very few exporters. In the period between 1995 and 2002, of the seventeen total exporters from Namibia, 80% of total exports were accounted for by just five exporters. The majority of the others therefore export tiny quantities of the plant, averaging around two tons each. These exporters have a variety of buyers. From 1996 to 2000, one buyer accounted for a disproportionate 25% of the entire market. A further 28% was acquired by South African buyers, who then resold the plants on the international market. Only 12% of supplies went directly to manufacturers (including those manufacturers with their own farms). About 47% of Namibian Devil's Claw passes through the hands of at least two exporters, i.e. middlemen, before reaching a manufacturer. All of these buyers, both large and small, frequently change their sources, often with little or no warning to the producers involved (Lombard, 2002).

As stated above, some European manufacturers have begun to cut out the middleman entirely by starting their own farms in southern Africa. There are three main players in southern Africa involved in relatively large-scale trials. Two of these are in South Africa and one is in Namibia, although the Namibian one has been entity-linked to South Africa (Cole, 2003). This phenomenon will be examined more closely in Section 4 on harvesting methods.

South Africa has a particular status as an exporter and importer of Devil's Claw. Most Namibian Devil's Claw is exported to Germany. Other major importers include France, the United Kingdom, Switzerland, the U.S. and some countries in the Far East (Cole, 2003). German companies—to look more closely at one European market—predominantly import from Namibia. Of the small amounts of Devil's Claw imported from South Africa, a good portion might actually be of Namibian, and sometimes of Botswanese, origin (Anonymous, 2002).

It might be of interest that the listing of Devil's Claw on CITES in 1999 and 2000 might have resulted in the stalling of the European markets (Lombard, 2002).

4 Devil's Claw Harvesting

For hundreds of years at least, local people have harvested Devil's Claw according to traditional methods and practices. The relatively recent increase in demand for Devil's Claw in international, especially European, markets has given rise to new systems of harvesting and cultivation in Africa, mostly under the direction of Europeans. At present, traditional and modern methods exist side-by-side in southern Africa. Presently there are three basic systems/methods:

- Wild harvesting: the harvesters harvest on their own following traditional methods.
- Controlled/Organized harvesting: native harvesters receive organizational support, training and education from NGOs which they then apply to harvesting.
- Commercial cultivation: Devil's Claw is cultivated and harvested on farms, often pre-existing stock farms, and frequently by Europeans.

Although it is convenient, for the sake of presentation, to distinguish between three basic types, it must be kept in mind that these three types often have common elements and overlap. For example, certain commercial farms have ties to NGOs and attempt to better the lives of natives (whereas others most certainly do not). Furthermore, it is not always easy to discern the difference between a wild harvester and an indigenous harvester who has benefited from a controlled/organized harvesting program. We must keep in mind that these categories are somewhat fluid. They are sufficiently concrete, however, for it to make more sense to identify them separately. One final caveat must be made: it is extremely difficult to find full and accurate information on this topic, for a wide range of reasons stretching from lack of data to deliberate obfuscation. We must often rely on disparate, incomplete, and sometimes even suspect data to form our conclusions.

4.1 Wild Harvesting

4.1.1 Who?

In South Africa, Botswana, and Namibia, the vast majority of wild harvesting is done by women. In Botswana, women harvesters range in age from teenagers to grandmothers. For example, in 1999 in a harvester community in Botswana, 95% of the harvester women were middle-aged. This community has been harvesting since 1987. There are many female-headed households, which are very poor (Matlhare, 2002).

In South Africa wild harvesting is done mostly by older women. According to von Willert (2003, pers. comm.), women do the fieldwork and the men go off to hunt or work with the animals. When men sell Devil's Claw—harvested by women—on the market, it is likely that they will buy alcohol, and that the family will not gain anything from the work. He stresses that it is always important that the woman keeps the money from the harvest, as it is certain that she will use it for her family.

Traditional harvesters of Devil's Claw are very poor, particularly in rural areas. The harvesters depend on the harvest and the sale of Devil's Claw to finance their daily life. Most of them do not have any other income outside of harvesting and selling the plant. They come from the poorest section of society and endure the most marginal of agricultural and socioeconomic conditions. In general, these women are poorly educated, have never had another job, or are unemployed and support dependents. Nevertheless, they know about the best places for harvesting plants, about the plant

itself, and about harvesting methods, which have also been taught by the Government and NGOs (Matlhare, 2002).

In Botswana and in some parts of Namibia as well, three ethnic groups have been harvesting Devil's Claw. These minorities are the San (Basarwa), Bakgalagadi and the Coloreds, although the San, who live mostly in small settlements, are the most active in harvesting the plant (Ntseane, 1993). The culture of these groups is extremely rich and they possess an excellent level of knowledge concerning the use of medicinal plant products (Matlhare, 2002).

4.1.2 Harvesting Method

Harvesters go mostly in groups to harvest Devil's Claw. Often they have to travel very long distances of up to 20 kilometers to reach the harvesting sites (Motlhaping, 2002; Kathe, Barsch & Honnef, 2003). The tools they bring with them are spoons, spades and machetes. They have to dig 1 to 2 meters deep to unearth the tubers (Berg & Gensthaler, 2001). The harvesting preparation and the harvest itself are not always performed in the same way, although there are some basic, common steps: the harvester must first remove the soil around the taproot, then cut the tubers off the taproot. The next step is cutting the tubers into slices and letting them dry in the open air (Krugmann, 2000).

There are two problems associated with this type of harvesting. First, the harvesters sometimes do not close the hole that they must dig to unearth the tubers. These holes represent a danger for the plants and for animals too, which are prone to falling into them. Often their injuries are so serious that they must be killed (Berg & Gensthaler, 2001). The second problem, which is graver from the standpoint of sustainable harvesting and the gradual endangerment of wild Devil's Claw, is that the harvesters often damage or destroy the taproot when cutting off the tubers. Plants injured in this way are unlikely to produce more tubers in the future (GTZ, 1999).

4.1.3 Quality of the Harvest

Wild harvesting results in variable and insufficient quality of Devil's Claw. Harvesters are known to blend the dried *H. procumbens* variety of Devil's Claw, which is the more medicinally potent, with the substantially less powerful *H. zeyheri*. The two species are difficult to distinguish (Wynberg, 2003). As well as *H. zeyheri*, the harvesters also mix *Elephantorrhiza sp*. (Fabaceae) and *Acanthosycios naudians* (Cucurbitaceae). Devil's Claw is sometimes mixed with a proportion of plants with no medicinal effect or even poisonous ones. Sometimes harvesters sell their produce still wet (Krugmann, 2000). Wild collected Devil's Claw material is as a result occasionally severely contaminated by microorganisms.

The harpagoside richness of pure *H. procumbens* plants tends to differ widely. It depends on the area and probably on the vitality and age of the plant (von Willert & Schneider, 2001). Thus it is important to have this knowledge in order to collect good, high quality plants.

Although traditionally harvested Devil's Claw has many detractors, some people regard it as a higher quality product because of its essentially organic growth, containing no pesticides or other chemicals.

4.1.4 Quantity of the Harvest

To obtain one ton of dried harvest, Devil's Claw collectors have to dig up 5,000 to 10,000 wild plants (Anonymous, 2003). In Namibia four to five kilos of tubers must be harvested to produce one kilo of dried material (Krugmann, 2000). It is difficult to say much precise about the quantity of the wild harvested Devil's Claw; it is only clear that this cannot be high.

4.2 Controlled/Organized/Sustainable Wild or Semi-Wild Harvesting

4.2.1 Who?

"Controlled," "organized," "sustainable," and "semi-wild" harvesting are all terms that refer to a type of harvesting that is usually done by indigenous people with the support of Devil's Claw traders and/or NGOs. The NGOs attempt to educate indigenous people about the best harvesting methods, and at the same time those that interfere the least with traditional patterns. They range from loose affiliations of local people to communal projects. Certain communities have also taken up some of the methods and knowledge introduced by these projects, without necessarily joining the projects themselves. This method of harvesting is certainly followed in parts of Namibia and Botswana, and possibly also in South Africa.

It is difficult to say with any certainty the number of people involved in organized harvesting projects. The majority of local people involved are destitute and depend on Devil's Claw harvesting as their only source of income. Most are former wild harvesters who stand to benefit from the knowledge and assistance offered by the projects.

CRIAA SA-DC in Windhoek, Namibia, and the Sustainably Harvested Devil's Claw Project:
CRIAA SA-DC (the Centre for Research and Action in Africa, Southern Africa Development and Consulting) is an NGO funded by donors such as Oxfam, the EU, and others. It is the only significant NGO currently working with local harvesters of Devil's Claw. In 1997 it launched the Sustainably Harvested Devil's Claw Project (SHDCP) (Cole, 2003). From 1999 to 2000 this project expanded to 17 other farms

with no time limit for the project's implementation (Cole & du Plessis, 2001). Another source mentions 12 pre-independence resettlement farms, including Vergenoeg, Gemboksfontein, Blouberg, Kalahari Prag, and eight farms linked to the Tjaka Ben Hur complex (Wynberg, 2003). As of 2001, there were 328 registered harvesters living on communal farms in the Omaheke region of Namibia (Cole & du Plessis, 2001).
One of the project's aims is to register the people who have undergone its training, so that they may receive permits to harvest in areas where permits are necessary. The harvesters have to have been trained in a sustainable method of harvesting Devil's Claw to qualify for registration (van der Vyver, 2002). In Botswana, for example, it is necessary to be registered in order to harvest.

Thusano Lefatsheng Trust, Rural Development Organization:
Since 1986, Thusano Lefatsheng has been active with his Grapple Plant (Devil's Claw) program. When he started there were seven communities from two areas involved, with 132 harvesters producing about seven tons of Devil's Claw. The project has become quite popular, and around fifty settlements have participated at one time or another. Thusano Lefatsheng is the only significant exporter in Botswana.

4.2.2 Harvesting Method

Namibia
Harvesters are commonly organized into groups which harvest in a particular area. The manner in which they are organized varies quite considerably, and also determines the income they generate from harvesting. These two groups fall into two broad categories. In the first, they are organized into a group by a middleman and taken to a particular area in which they may remain for some months to harvest. The middleman will supply food and water when collecting the dried Devil's Claw. The cost of food and transport is often deducted from the wages the workers receive upon completion of harvesting. In this scenario, harvesters are unlikely to receive fair compensation for their efforts. The bulk of Devil's Claw is supplied in this manner. In the second category, harvesters are organized into groups by other bodies (NGOs and church organizations) which attempt to maximize the benefit to harvesters. The manner in which harvesters are organized and the benefits they receive have a direct impact on the sustainability of the harvesting practices (Cole, 2003).

Experts from the Bundesamt für Naturschutz in Germany have observed in Namibia in the last few years that controlled harvesting is the best way to save Devil's Claw while still harvesting it. Some of the indigenous people may not know how old they are, but they do possess a great deal of traditional knowledge about the plant, and they certainly know how to harvest it well.

A good example of this is the Bushman village in Vergenoeg. Almost the whole village starts at seven o'clock in the morning for the harvest. The group leader is an advisor to the oldest man in the village. After a ninety-minute walk they reach the harvesting area. It is forty degrees Celsius and there is no shade. Each day they head for

different harvesting areas. These people do not harvest all the plants they can find. Instead, they do as their forefathers taught them, and they are very careful that the plants do not die out. They do not take out the whole plant—only the tubers growing off the taproot. They do not damage the plants, and they close the holes they dig. The plant is thus able to regenerate and can grow well (Anonymous, 2003).

Botswana
Each and every village needs to divide its possible harvesting area into four parts. This is called the quadrant system. This system implies that only one of the four quadrants will be harvested during any one particular harvesting season. This approach is implemented to give the plants enough time to regenerate and to form some new secondary tubers. This principle of rotational harvesting, combined with supporting restoring methods, is especially suitable for gathering medicinal plants from arid zones.

Harvesting can be done with a stick; however, no spades are supposed to be used for digging. This is to lessen the impact of harvesting on the soil. The primary (mother) tuber must stay intact in the soil. A round excavation is supposed to be dug around the primary tuber until the secondary tuber's attachments are found. The digging then takes place on the line of the secondary tuber. After harvesting the secondary tuber, the holes need to be covered up properly and the mother tuber not disturbed. If the primary tuber has been disturbed, the tuber needs to be replanted in the hole with its leaves above ground level (van der Vyver, 2002).

4.2.3 Quality of the Harvest

The quality is quite good. The harvesters receive training on how to harvest, and also on hygienic practices. The harvesters must make sure that their hands are properly clean and that the area where they are working is as hygienic as possible. This ensures the best available quality with the least contamination from outside (van der Vyver, 2002).

4.2.4 Quantity of the Harvest

With the advent of the SHDCP, the harvesters now sell greater quantities than if they had continued with purely wild methods (Cole, 2003).

The total of SHDC Devil's Claw production in 2002 was about 4,650 kg, and in the year before 3,810 kg, in comparison with 1999, which totaled about 10,210 kg (Cole, 2003). This dramatic decrease in production is accounted for in Section 6.1.

4.3 Commercial Cultivation

4.3.1 Who?

The farms where Devil's Claw is cultivated are also livestock farms, owned by white farmers and worked by black families who live on the land. Normally the women work in the household and the men work with the animals and in the field. In most cases, the men who had previously worked on the farm now also do the Devil's Claw harvesting.
When there is too much work in the harvest period, the farmers hire additional men who then work for the number of extra days needed.

On most commercial farms in the southern and western parts of the plant's range, farmers do not have enough labor to harvest much for their own account and are reluctant to allow strangers onto their land due to problems with farm security, stock theft and poaching. However, it is important that sustainable harvesting techniques be extended to these areas to mitigate any potential adverse effects if and when harvesting increases. No wild harvesters, i.e. poor local harvesters, work on these farms (Cole & du Plessis, 2001).

Some farms also work, either together with NGOs, companies, or on their own, to improve the conditions of the indigenous people. Descriptions of some such farms can be found below:

Farm Avontuur, Kurumann, South Africa
Gert Olivier
A pilot project took place in 2000 on the Avontuur Farm called "Harpago-Avontuur," in cooperation with Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ, German technical cooperation) and Salus Haus. The aim of this project was to establish cultivation in rural areas outside the range of rich farms. Devil's Claw was produced in poor settlements or nearby, with the dual aims of helping people save their income and of improving their working conditions. The project first grew Devil's Claw by transplanting young plants; it is now attempting to grow the tubers from seeds (Kathe, Barsch & Honnef, 2003). More will be said about this project in Section 5.3.1.
Farm Eahero, Okahandja, Namibia
Wolf and Irmela Horsthemke
130 km northeast of Windhoek
The farm owners cultivate Devil's Claw in fields; their product is organically-certified according to EU standards.

Farm Vergenoeg, South Africa
G. Betti
CRIAA, the group that launched SHDCP, is collaborating with Farm Vergenoeg on the Vergenoeg pilot project, which aims to increase local incomes and the quality of the

produce at the same time. Central for the success of the project is that the community should take on collective responsibility for their work and success (Krugmann, 2000). One of the project's goals is to supply all the Devil's Claw needs of the German pharmacy Sertuerner from its fields under cultivation.

Farm Soetvlakte, South Africa
Louis Haumann
In August 2003 a pilot project will start using the method of seed propagation. The initiator is Prof. von Willert from the University of Muenster, financed by the German Embassy in South Africa and a company in Switzerland. A main goal of this project is to hand over control of the farm to a local, black family, and it is hoped that it will serve as a model to promote the financial independence of local blacks (von Willert, 2003, pers. comm.). More will be said about this project in Section 5.2.3.

All the above farms are controlled by white farmers. The farms are not only exporters of Devil's Claw, but also livestock farms.

4.3.2 Harvesting Method

Devil's Claw is cultivated in different ways on these farms. Two have been mentioned above: the transplantation of young plants (slips/cuttings)and seed cultivation. The planting of cuttings is normally very time-intensive, manual work. However, Mr. Olivier of the Avontuur Farm has now developed a special, simple machine for planting Devil's Claw s cuttings. He is also designing a machine for the harvesting of Devil's Claw (Schneider, 2001). This type of cultivated plant can only be harvested once because it does not have a mother tuber. Thus, this method is far too expensive (von Willert, 2003, pers. comm). Von Willert claims that seed planting will be the method of choice in the future, and he is in the midst of conducting experiments now to prove its viability in the Kalahari. If successful, he will promote its use on farms.

4.3.3 Quality of the Harvest

In general, the quality of Devil's Claw harvested on farms tends to be higher than that of wild plants. These plants can also be more easily controlled during their cultivation and inspected at their harvest, as it is easy to test and measure various factors, from quality of water and soil used to toxin levels.

The seed cultivation method, if successful, offers several advantages with regard to plant quality. The age of the plants is known exactly, as is the age of the secondary tubers, i.e. the ones to be harvested. This means that the tubers with the highest amount of harpagoside, which depends on plant age, can be harvested (von Willert & Schneider, 2001). The plants are planted in four meter-wide stripes. The plant foliages are one hundred times bigger and they have up to four hundred fruits, which means a high profit. Generally one plant has up to forty to eighty tubers, in comparison with wild

ones, which often have only five tubers per plant. The seed cultivated plant can be harvested several times, in comparison with the slippings. Harvesting does not depend on the season, and theoretically it should be possible to harvest all year round. Finally, the harvesters know where the plants are without having to wait for them to blossom, which makes harvesting much easier (von Willert, 2003, pers. comm).

4.3.4 Quantity of the Harvest

In 2002 the production of cultivated Devil's Claw was estimated to be not more than four to six tons (Cole, 2003).

Of the raw Devil's Claw harvested in the fields, about thirty to forty tons were exported to Salus Haus directly, and about ten to twenty tons to Extrakt Chemie (Kathe, Barsch & Honnef, 2003).

If the demand for cultivated Devil's Claw increases, the seed method, if successful, could easily supply the market with the requisite produce (von Willert, 2003, pers. comm.).

5. Impacts of Increasing Demand for Devil's Claw

5.1 Economic Impacts

5.1.1 Household Incomes

Wild Harvesting
The growth in international markets, due to increasing demand for Devil's Claw, has negatively impacted wild harvesters. Their ignorance of the markets and weak bargaining position make them vulnerable to predatory practices on the part of Devil's Claw buyers and have, for the most part, resulted in a decrease in real income from harvesting.

In South Africa and in Namibia, the local harvesters often do not know how much they harvest in weight (kilos). Nor do they tend to know the official prices of Devil's Claw, or are familiar with the intricacies of the market. Thus, they usually take what they are offered, which is quite often under the trade price. They also enter into dubious credit arrangements. In general the price for dried, sliced Devil's Claw is about US$ 0.15 per kilo, or even less. The highest price is about US $ 1.20 per kilo, which is only paid in exceptional circumstances (exchange rate N$/US$ of 6:1) (Cole, 2003).

The low prices paid to wild harvesters often pale in comparison to the prices at which the initial buyers then resell their purchases. For example, in one instance a South

African farmer bought a large amount of tubers from a local harvester at a low price, and then sold these for twice as much (von Willert, 2003, pers. comm.).

According to one report, when the communal harvesters sell their produce to middlemen they receive N$ 12 to N$ 13 per each kilo (N=Namibian dollars). How much the middlemen earn by selling Devil's Claw to exporters and exporters to industry is not known (Mbewe, 2001). These harvesters earn about 500 Rand in a month (8 Rand=1 Euro), which is far too little to survive; most of them get "money for poor people" from the Government (von Willert, 2003, pers. comm). According to another report from Namibia, the incomes per annum of the harvesters of Devil's Claw are between US$ 10 and US$ 50, "which shows clearly their poverty" (Cole & du Plessis, 2001).[1]

Controlled/Organized Harvesting

In general, those who work in the context of controlled harvesting have higher, more stable household incomes. They are better organized, have greater knowledge of the worth of their product, and enter the market with a stronger bargaining position. These harvesters often sell as a group to fewer buyers, thus guaranteeing higher prices.

For example, in cooperation with SHDC, a large Namibian local trader bought the whole harvest from the Vergenoeg community for about US$ 1.80 per kilo. Hambleden Herbs committed itself to buying all the material from this trader. This is ten times more than they earned previously. From the total US$ 1.80 per kg, the harvesters received US$ 1.20 per kilo a person and the remainder of US$ 0.60 per kg per person went into a community-controlled fund to finance collectively-sanctioned consumption of Devil's Claw or investment in goods. They also used the money to support the harvesters, for example, and help them buy corn and engage in their own marketing, until they were able to finance themselves (Krugmann, 2000).

According to one source, organized harvesters received, on average, an annual income from SHDC production in 2002 of US$ 61.00, and were paid N$ 20 (US$ 1.8) per kg; in the year before, each got US$ 32.00 and, in comparison to 1999, earned on average US$ 62.00 (Cole, 2003).

According to another source, speaking specifically about Namibian participants in an SHDCP resettlement program, annual income is, on average, N$ 264 (US$ 26) per harvester. In other areas of the country it is very different, with incomes, depending on the volume of the harvest, varying from N$ 100 to N$ 500 (CRIAA SA-DC, 2000b).

Commercial Cultivation

Harvesters who live and work on commercial farms do not earn extra money for harvesting Devil's Claw. It is only one of many farm tasks that they, as laborers, must perform (von Willert, 2003, pers. comm.). A certain number of day laborers are hired

[1] Unfortunately, the precise value of these amounts in the Namibian context is not known.

as needed and then let go. The effects on them of this extra, yet unstable, income is not known.

5.1.2 Local, Regional and International Markets

It is very difficult to say what benefits each person involved in the Devil's Claw economic chain receives, or to judge whether these are just or not. It is fair to assume that commercial farmers and pharmaceutical companies make much more money than indigenous harvesters. Devil's Claw is more profitable for those who handle it the further it gets from the Kalahari sand, and the closer it gets to European markets. The final profit made from the herb certainly dwarfs the initial prices paid for the toil necessary to harvest it. One report notes that most European importers, processors and wholesalers do not want to talk openly about their profits and their costs, which shows that they know how unfair their profits actually are (Cole & du Plessis, 2001). The bottom line is that Namibia captures at most 1% of the value of the trade in Devil's Claw extracts, and harvesters no more than 0.5%. Even when the retail mark-ups, packaging, marketing and processing costs are deducted, it seems obvious that the processors and formulators are making outrageous profits at the expense of extremely poor people. Crushed tuber intended for use in herbal tea sells for about twenty times its import price (and forty times what harvesters get) in German pharmacies (Cole & du Plessis, 2001). Thus, it is obvious that Western companies stand to benefit from Devil's Claw. The question is whether Namibia, Botswana and South Africa—and more importantly, their peoples—stand to benefit proportionally.

According to one report, the prices for Devil's Claw paid to Namibian harvesters or traders increased by around 40% each year from 1995 to 2001, representing a net increase of 275%. However, there are always traders who take advantage of the underprivileged situation of the Bushmen, buying Devil's Claw on the cheap and selling it at sky-high prices (Krafft, 2002). These bare facts seem on the surface reassuring, yet it is hard to know what they really have to say about harvesters. Since it is known that each further link on the market chain makes more money, including in these calculations the money paid to middlemen distorts our view of the harvesters alone.

A tangible difference for the harvesters can be seen in those who harvest organic Devil's Claw. An overview of Namibia from 2002 demonstrates the different incomes of the harvesters, middlemen and exporters for organic and non-organic Devil's Claw. Harvesters received US$ 2.50 from the exporters for one kg of organic produce. The exporters sold the produce for US$ 4.20 per kg to the final buyers. For non-organic produce, the harvesters got on average US$ 0.45 to US$ 1.35 per kg from the middlemen. The middlemen sold the produce for US$ 1.80 per kg to the exporters, who then sold it to the final buyer for US$ 3.20 per kg (Cole, 2003).

The ever-increasing popularity of Devil's Claw means that it is becoming ever more interesting for other countries with similar environments. Rumors have spread that

Morocco, because of its compatible conditions, could offer new opportunities for the production of Devil's Claw. Morocco has a further advantage in that it is closer to European importers. All in all, it would be cheaper and probably more accessible (Kathe, Barsch & Honnef, 2003). In the past, many other plants have been transplanted to more economically advantageous countries for cultivation. If this were to happen with Devil's Claw, it would mean that South Africa, Namibia and Botswana would lose their markets, and local people their jobs. This could result in an entire loss of income for those people, because at present wild harvesting is often carried out in regions which lack other forms of livelihood (Lombard & du Plessis, 2003). Furthermore, in the long run this might endanger the natural populations of *H. procumbens* in the range countries. Once the species can no longer be harvested and sold on the market, the plant will lose its economic value and could thus be neglected (Kathe, Barsch & Honnef, 2003).

According to von Willert, however, a cultivation transfer is unlikely to happen in the future. He thinks that the conditions are not the same as in southern Africa, so the plant will not survive for cultivation (von Willert, 2003, pers.comm.).

As reported above, the dried and sliced Devil's Claw harvests are exported as raw material. The import countries produce medicinal products from this raw material, and these are then sold throughout the world. The final products are then reimported to the original exporting countries, like Namibia, where they are sold at such high prices that local people are unable to buy them (Mbewe, 2001). Another source claims, however, that local manufacturers are also a source of finished Devil's Claw products in the harvesting countries, and that these products are sold to the people at an affordable price (von Willert, 2003, pers. comm.).

5.1.3 Creation of Small Business Units

There are several possibilities of allowing Devil's Claw harvesters to make more money by adding value to the plants harvested. For this purpose, the SHDCP works together with local harvesters in order to help them earn more money. They support the harvesters in their efforts to produce Devil's Claw products in the form of medicine. Doing so results in a major increase in the economic value of the harvesters' products. Another possibility is for the harvesters to mill their material by themselves, instead of only selling dried slices. However, it seems that the pharmaceutical industry has no interest in ceding any further economic support to the harvesters (Cole, 2003). Of course, their reluctance might also be due to concerns for quality control, which would be much more difficult if they do not grind the tubers themselves.

The growth in demand for Devil's Claw has benefited pre-existing businesses and spawned growth in new ones. According to the GTZ, the implementation of harvesting and marketing structures for Devil's Claw in South Africa results in better service to buyers and better and more stable income for harvesters (GTZ, 2001).

The higher demand for Devil's Claw obviously benefits middlemen and exporters. Precise information on this, however, has not been reported. It must also be kept in mind that the relationship between harvesters, on the one hand, and middlemen and exporters, on the other, is inversely proportional. That is, the latter tend to profit at the expense of the former, and vice versa.

5.2 Social Impacts

5.2.1 Traditional Harvesters

The higher demand for Devil's Claw seems to have no social repercussions for wild harvesters. They earn about 500 Rand a month (8 Rand=1 euro), which is far too little to survive: most of them additionally receive some form of financial assistance from the Government (von Willert, 2003, pers. comm.).

As described above, however, work and thus life have become more difficult for traditional harvesters. They have to travel further to harvest, and it is becoming progressively more difficult to find the right plants.

If the plants become scarcer, it will become progressively more difficult for harvesters to earn money with Devil's Claw as their livelihood. It should be pointed out that most of these households are headed by women, which means that there would be no man to give support. A consequence of this situation could be that the wild harvesters (mostly women) would have to work on commercial farms, which means working for white farmers.

If von Willert's seed project is successful, and black people become farm owners in the future, a radically new social order will have emerged. Thus black farm owners would give work to poor black people, which would be quite a difficult relationship, since the socioeconomic hierarchy among blacks in southern Africa is characterized by little respect for people from lower classes. This situation would definitely have an influence on family life, on relations among the harvesters, and on their social structures. These important possibilities must be given attention in the future.

5.2.2 Controlled/Organized Harvesters

According to von Willert, the harvesters who participate in the SHDCP are not significantly influenced by the higher demand for Devil's Claw. If there are any social impacts, they come from the involvement of Europeans in the traditional lives and practices of the indigenous people. Von Willert considers this to represent presumptuous interference in what the indigenous peoples know best (von Willert, 2003, pers. comm.).

Although the literature is very controversial about whether organized harvesters earn more money or not, it is more or less clear that they receive their money more regularly, and that they are no longer paid in kind (as was formerly normal, usually payment in alcohol or food). And now that the NGOs are training the harvesters, they are more conscious about their work, and also learn some basic knowledge about trade habits and Devil's Claw prices, thereby increasing their level of education. These facts probably have an influence on the social life of the harvesters. Unfortunately, no-one has written about these impacts, and thus nothing definitive can be said. It is of primary importance that these impacts receive more attention from those working in the field.
Many people who harvest Devil's Claw with SHDC live closer together than before. For example, on the farm Vergenoeg, there are some 1,500 people who share about 10,000 hectares of marginal land (Cole & du Plessis, 2001). Wild harvesters who do not participate live in a much less densely populated way. Thus the environment of these organized harvesters has changed drastically. This fact must have a great effect on family life and their social life in general.

5.2.3 Farm Workers

As long as the harvesters work on the white farms, the increasing demand for Devil's Claw will not have any social impacts. As described above, farm workers live on the farms with their families, as they have for generations. Of course, this situation would change should native people become the farm owners.

Von Willert's new project, in which a black "Tswana" family will live on the Soetvlakte farm and cultivate Devil's Claw from seeds, could represent a first step in this direction. The aim is for a whole family to be able to live from the income of the harvest of Devil's Claw. This family will receive 1,000 Rand a month from the project, which is double what harvesters normally earn. If family members work together it might be possible to save money and to take on an employee, or to integrate another family into the project. However, up to now this is purely theoretical. It will take two years to see if the project works out and if the Tswana family is able to organize its own farm (von Willert, 2003, pers. comm.).

5.2.4 Gender Issues

In the past, the harvesting of Devil's Claw was for the most part women's work. Now men also harvest Devil's Claw on commercial farms, and there are probably more men involved in organized harvesting than in wild harvesting (although no more specific details about this can be found in the literature). This probably has an influence on the relationship between women and men, which is also not discussed in the literature. Another interesting question is who sells Devil's Claw on the market. It seems that women often do this, although sometimes the men sell the harvest, too. Perhaps this will change because of the increasing value of Devil's Claw.

Some studies claim that the higher demand for Devil's Claw has had a positive effect on the business life of female harvesters. However, these do not mention what exactly will change, or how their relationship to their family and partner might be influenced.

Furthermore, habits and culture in Namibia, Botswana and South Africa are not the same between women and men, so it would be interesting to find out more about the differences and the social impact of increased demand for Devil's Claw.

5.2.5 Culture and Religion

Has cultural and religious life been affected by the increasing demand for Devil's Claw? Von Willert claims that traditional medicine men are not influenced by the more widespread harvesting, and that they use the plants as they always have (von Willert, 2003, pers. comm.).
Otherwise it is difficult to add to this observation, given the frustrating absence of such important information in the studies available to the author.

5.2.6 Social Structure

Higher demand for Devil's Claw has several effects on social structure. The harvesters are now divided into groups: wild harvesters, controlled or organized harvesters, and the harvesters who work on the commercial farms. This should have an effect on their relationship. For example, people who do not work for the SHDCP trespass onto private land and steal Devil's Claw. Outsiders coming in to harvest – sometimes even illegally on private land – are usually under time pressure to gather as much as quickly as possible; this is a problem for harvesters, who want to practice sustainable harvesting. This cannot help but heighten tensions between the two groups (Motlhaping, 2002).

Up to now, scientists involved in Devil's Claw research have tended to be white outsiders. Now, local black scientists are starting to be trained and will most probably become increasingly involved in the future. The Institute of Botany at the University of Durban–Westville is becoming involved in the collecting and marketing structure of Devil's Claw. The Botany Institute is going to concentrate more intensively on medicinal plants and their sustainability. As of 1999, this Institute had six teachers, who educated about one hundred students each year, of which 80% were black (Schneider, 2001).

5.2.7 Traditional Knowledge and Intellectual Property Rights

Traditional knowledge about the medicinal properties and applications of Devil's Claw, held mainly by the San in the eastern parts of Namibia, has already been lost, as

some patents on extraction and processing methods have been granted to commercial companies in Germany and UK (Krugmann, 2001).

A German scientist originally brought Devil's Claw from Namibia to Germany, and the plant was studied in 1950 at the University of Jena. Then in 1962 the company Harpago (Pyt) Ltd started to supply the German company Hagen Naturheilmittel with Devil's Claw. Now, the knowledge that once belonged to indigenous people is in the hand of foreign companies. The indigenous peoples do not earn much money from their knowledge; instead, it is the companies who earn the greater proportion of profits from Devil's Claw. As companies try to protect their intellectual property rights through trade secrets, brand names and patents, the control of Devil's Claw knowledge threatens to be taken from its original possessors with no recompense (Cole & du Plessis, 2001).

According to Krugmann (2001), it is especially important at this time for the preservation of traditional knowledge to become more important to the young generation. The younger people should be taught that traditional knowledge and practices do not belong to the past, but are just as relevant today. He believes that this knowledge should be taught in schools, even at the primary and secondary levels. Otherwise, knowledge important for biodiversity will most likely be lost, and the indigenous people will lose control of their right to know about Devil's Claw harvesting and use at the same time as they lose their own heritage.
Until recently, traditional knowledge about Devil's Claw, as with so many other things, was only orally communicated. Now the tendency is toward formal education and the written transmission of knowledge. Thus, the culture of these peoples is being transformed from an oral to a written one.

5.2.8 Land Tenure

Traditionally, harvesters did not "own" land, as the landowner was the "chief." But they had the right to use the land to harvest Devil's Claw and to do other work. Now, farmers from foreign countries have come and bought the land from the harvesters, often at a low price. These harvesters live now, with their families, on these farms. They do not have their "own" land any more, nor any land that they may freely use, and they work as employees on the farms. The long-term effect of this phenomenon is that the children of these people will never have land to use and will grow up dependent on foreign businessmen. Should there be not enough work one day on these farms, the now landless people would thus lose their homes alongside their jobs (Cole & du Plessis, 2001), with disastrous consequences.

5.3 Ecological Impacts

5.3.1. Resource Base

In general, wild harvesting by traditional harvesters tends to conserve the species population, because the harvesters know that it is the source of their livelihood. Increasing demand, however, has stimulated more people, who are typically unversed in traditional knowledge about the plant, to harvest. Their ignorance and negligence results in unsustainable harvesting methods that lead to damage, over-harvesting, and a drastic reduction of the Devil's Claw population. It is becoming increasingly difficult to find plants. Previously in Namibia, for example, there were 1,000 to 2,000 plants of Devil's Claw per hectare in the area where it grows naturally. Nowadays there is often only one plant left per hectare (Berg & Gensthaler, 2001).

In 1999 the Ministry for Environment and Tourism (MET), Windhoek, started once more to issue permits to harvesters in order to control their numbers, to ensure that the plants are harvested in a sustainable way, and to get better information on the dynamics of the *Harpagophytum* trade. The permit is valid for the whole harvest season in a particular area, but is not transferable to other persons (Cole & du Plessis, 2001).

Permits, however, are problematic, for one because it is not always clear who the owner or controller of land is (Cole & du Plessis, 2001). Permits were first issued to harvest, transport and export Devil's Claw from 1977 to 1986; this practice was abandoned because of the lack of compliance and enforcement. Similar problems continue today, as it is simply impossible to check whether the harvesters in the field have a permit and respect the rules (Berg, 2001). In the past there were more harvesters than sold permits. To receive a permit, the harvester has to go at least twice a year to an MET office, which could cost 50% of his harvest income (given the spatial remoteness of harvesting areas and lack of transport). Often the harvesters are not able to write or read what they need to fill out the permit in a constructive way (Cole & du Plessis, 2001).

In Botswana the harvesting season is about five months, but the permits are valid for only three months. This poses a problem: if the people ask too late for the permit, or the weather changes, it is possible that the soil will become too hard, making already difficult work even more arduous (Motlhaping, 2002).

Controlled/organized harvesting keeps the species population intact better. Harvesting is done in a sustainable way, and the harvesters are conscious about the place and manner of harvesting. The plants get the time to recuperate between harvests, and thus remain vital and to recover from any possible damage received.

The growth of farm cultivation, and the corresponding marginalization of wild harvesting, could foster the regrowth of wild populations. But with no traditional harvesters looking after wild lands, those lands, and the plants themselves, could

suffer from even more devastating neglect and maltreatment. Cultivation devaluates wild plant resources and their habitat economically, and reduces the incentive to conserve ecosystems (Schippmann, Leaman & Cunningham, 2002).

H. procumbens tubers have been listed in the European Pharmacopoeia for some time, while *H. zeyheri* was added only in January 2003. *H. zeyheri* got included because of its increasing use (Cole, 2003). It is said that the medicinal power of *H. zeyheri* is lower, although a definitive scientific study is still lacking (Kathe, Barsch & Honnef, 2003).

Since *H. zeyheri* is now listed, the harvest pressure on *H. procumbens* could decrease as the cultivation and harvesting of *H. zeyheri* increases. Furthermore, the knowledge gained about sustainable harvesting from the projects surrounding *H. procumbens* could be transferred to *H. zeyheri* immediately, thereby ensuring better harvesting practices from the beginning (Kathe, Barsch & Honnef, 2003).

There are, however, many possible drawbacks to the official listing of *H. zeyheri.* First, it is still not clear whether its inclusion in the Pharmacopoeia is correct, and thus whether products derived from it do indeed have medicinal power.
As said above, only a definitive study will show this. Second, in the southern part of Angola and in northern Namibia, where *H. zeyheri* is found in copious amounts, the people are extremely poor. There is a danger that poor people will harvest this plant in an unsustainable way as a quick route out of poverty, which could lead to overexploitation. ”Third, the market for *H. procumbens* could be affected*. H. zeyheri* is cheaper than *H. procumbens*, which would make it more attractive for German imports and producing companies.” The increase in harvesting of. *H. zeyheri* could cause the price of *H. procumbens* to decrease, which might endanger sustainable harvesting practices (Kathe, Barsch & Honnef, 2003). Questions of quality will not be respected. To sum up, the introduction of *H. zeyheri* to the Devil’s Claw market will have a great, although at this point uncertain, impact. Serious problems are certain to follow (von Willert 2003, pers.comm.).

5.3.2 Water Consumption on Farms

At the time of the composition of this report, the author regrets not being able to say anything about the general water consumption of commercial farms, i.e. if irrigation systems are in place and, if so, what the source of the water is.

A project is currently underway on the Avontuur Farm in South Africa to test the viability of Devil’s Claw farming with the seed cultivation method in the Kalahari Desert without irrigation (see Section 6.3). Rainfall is low (normally too low for cultivation) and irregular and, due to transpiration and evaporation, the land suffers a net loss of water every year. The farmer, Mr. Olivier, has developed a system for retaining the water in the soil to use for the cultivation of plants. This method, which he calls “rain harvesting,” entails preventing transpiration by eliminating a certain amount of the wild

foliage (with great attention paid to preventing erosion) and decreasing evaporation by forcing the water in the topsoil deeper into the ground (for more information on Olivier's homepage, see the link available at http://www.uni-muenster.de/Biologie.Pflanzenoekologie/science/willert-harpago.htm) (von Willert & Schneider, 2001). If successful, this method could greatly aid sustainable, ecologically-minded harvesting of Devil's Claw.

5.3.3 Listing in CITES

In 1999 Germany asked that both species of Devil's Claw be listed on Appendix II (2) of the Convention on International Trade in Endangered Species (CITES). This part of Appendix II allows controlled trade. The southern African states and Namibia opposed this measure, while CRIAA was absolutely against it. It was not clear what influence this would have on the trade situation and especially on the livelihood of the poor. At a subsequent meeting of CITES, the same parties opposed the listing of Devil's Claw (Cole & du Plessis, 2001). If Devil's Claw were listed in CITES, it is obvious that the buyers would prefer commercial Devil's Claw material. The poor harvesters could no longer live from wild harvesting, and so they would have to try to enter the commercial cultivation system to stay alive. They would not have enough money to buy land or technology to be viable competitors on the market; the wild harvesters would be in a "no win" situation (Cole, 2003). One of the worst possible outcomes is that the commercial farms would gain a monopoly (Cole & du Plessis, 2001). As things stand now, it does not seem that commercial cultivation excludes wild harvesters from the market (Cole, 2003).

6 Mitigating the Negative Impacts of Increased Demand

6.1 Sustainably Harvested Devil's Claw Project SHDC,CRiAA,

Before the SHDC project was founded, almost no-one cared about ensuring fair benefit-sharing with wild harvesters, although international trade had already been in existence for decades. "This organization, a service NGO, is funded by donors to activate and organize registered harvesters. The SHDC project has been able to demonstrate that by ensuring good prices, making information available, creating options, strengthening the harvesters' bargaining position, and providing general support, harvesters are taking responsibility for the management of this resource. Compliance on the part of harvesters with sustainable harvesting techniques, for example leaving the taproot undisturbed and refilling the hole, has increased between 80 and 85 percent" (Cole, 2003).

It should be noted that the participants in the SHDC project have declined in number: in 2002 there were 137 harvesters, in 2001 there were 181 harvesters, and in 1999 328 harvesters. Poor weather conditions and a low growth rate could account for this development. In addition, a group of harvesters decided not to harvest in 2001 and

2002, based on a resource management decision to give the plants a “rest period” (Cole, 2003).

6.2 Organic Certification

The certification of Devil’s Claw means that is certified “Organic” by the Soil Association (UK). This involves an annual inspection of production areas and storage facilities, and a fully traceable audit of certified material. The soil association is used, because its certification is recognized by all the relevant authorities (Cole & du Plessis, 2001). Unfortunately, in the case of Devil’s Claw the organic certification has not increased local value addition (Cole, 2003).
The costs of certification are so high that donors have financed them, and they would not be possible without their charity.

To give an example, we can examine the SHDC Annual Costs for Certification.
In 2002 the net profit from sales was about US$ 3,970, and the costs of certification were about US$ 3,580, so that at the end, the gross profit was about US$ 390 (exchange rate US$ 1: N$ 11). If they had not received support from donors, certified farmers would have made negligible economic gains.

Pharmaceutical companies are not willing to pay more for organic-certified material. There is only one major buyer whose products are based on organic production. There has, however, been increased demand on the part of buyers for the plants of certified harvesters, mostly because this certification guarantees the quality of their purchase. In some circles people are convinced that the organic plants have a higher quality, so the demand for wild products will certainly continue (Cole, 2003). The only question is how to make organic certification economically viable/profitable without the support of donors.

6.3 Seed Method

Von Willert (2003, pers. comm.) believes that the sustainable harvesting method is not the best solution. He is convinced that wild harvesters will never adopt sustainable methods, and that they will continue to destroy the remaining Devil’s Claw supply. He does not believe that this destruction is the result of ignorance, but rather of the harsh conditions under which the plant is harvested—long walks to harvesting areas, the toil of refilling the holes, and the physically demanding nature of all the work involved—and the need to harvest a large amount quickly. Thus, attempts at education are bound to fail both in assisting the indigenous peoples and in conserving wild Devil’s Claw. Furthermore, von Willert thinks it is ridiculous for outsiders to come and educate indigenous peoples about a practice they have been engaged in for centuries. Finally, he does not think that wild harvesters can be convinced or compelled to care for the remaining wild plant population.

Von Willert is convinced that the seed method, which he is currently researching and experimenting with, represents the best future solution. According to this method, Devil's Claw would be raised from seeds on small farms—owned by indigenous people—instead of harvested from taproots in the wild. If successful, this method would end the exhaustion of wild resources and benefit the poorest people economically. This method is still in its infancy and its viability has yet to be proven.

7 Conclusions

In preparing this report, the author read much literature and had numerous discussions about Devil's Claw, many of which were very controversial. It is the author's firm belief that it is necessary to visit Namibia, Botswana and South Africa and to observe all aspects of Devil's Claw harvesting and trade, in order to see the situation as it really is. Most importantly, the social impacts of increased demand for Devil's Claw, and of the current harvesting systems, can only be studied on-site. However, up to now they have been given far too little attention, and most reports on Devil's Claw ignore them entirely.

A definitive scientific study of H. zeyheri should also be undertaken in the near future, as mentioned above. Many outcomes rest on its results.

Furthermore, the question of a possible CITES listing is very sensitive, and the best interests of the harvesters should be consulted before taking any action.

One other phenomenon needs to be kept in mind: a possible market crash. For example, the plant called St. John's Wort was a huge hit two years ago in Europe and the U.S., but then overnight the market collapsed, leaving tons of unsold material. The same happened to Valerian, and it is possible that the same could also happen to Devil's Claw (Hallbauer, 2002). When considering the best way to move forward with Devil's Claw cultivation and harvesting, it is vital to do so with the best interests of the local peoples at heart, not just the needs of Western businesses. Long term, sustainable prosperity and development should always be the goal, not quick profits.

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