

## Review

## To list or not to list? Arguments for and against listing *Harpagophytum* species on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

Moffat P. Setshogo

University of Botswana, Faculty of Science, Department of Biological Sciences, Private Bag UB00704, Gaborone, Botswana.

Accepted 15 April, 2011

Botswana, together with other range states, Namibia and South Africa, that is, countries exporting and trading in devil's claw, was approached by Germany to try to argue for listing the devil's claw on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) at CITES COP11 in April, 2000 in Nairobi, Kenya. The focal points for CITES (flora) in the range states discovered that there were still gaps in the knowledge of the population dynamics of the plant to agree with the suggestion by Germany. In addition to this knowledge gap, livelihoods of poor and marginalised communities in these countries depended on the devil's claw trade for sustenance. The proposal for listing was therefore unsuccessful. Both exporting and importing countries were then tasked with looking at this matter for finalisation at subsequent CITES COP meetings. This article reviews the arguments by both importing and exporting countries for the proposal to list or not to list the devil's claw on Appendix II of CITES. It also outlines the chronology of events between COP11 when the proposal was made to COP13 when all the parties came to an amicable conclusion on the matter. It lays emphasis on lessons to be learnt for application to similar cases in the future.

**Key words:** Devil's claw, Convention on International Trade in Endangered Species (CITES), *Harpagophytum*

### INTRODUCTION

The genus *Harpagophytum* (Burch.) DC. ex Meisn. of the Pedaliaceae is represented by two species in Southern Africa. These are *Harpagophytum procumbens* (Burch.) DC. ex Meisn. and *Harpagophytum zeyheri* Decne. The name devil's claw or grapple plant is often used to refer to these species. *H. procumbens* is however the subject of this article, though it has been reported that a sizeable amount of *H. zeyheri* is also being harvested and traded in Namibia (Cole, 2003). The following is a description of *H. procumbens* (after Ihlenfeldt and Hartmann (1970) and Ihlenfeldt (1988)).

It is a perennial herb with several prostrate annual stems from a succulent taproot, with additional tubers on lateral roots. The leaves are narrowly ovate to ovate (egg-shaped), up to 65 mm long and 40 mm broad. The petiole is 30 to 45 mm long. The lamina is usually pinnatilobed, with 3 or 5 main lobes. Leaf colour is a light-blue to grey-green. Flowers are borne solitary on short axillary pedicels. They are tube-shaped. Limb of the corolla is purple or yellow, 20 to 40 mm in diameter. The flower tube is usually light purple or pink outside and more or less yellow inside, 50 to 60 mm long. The fruit



**Figure 1.** (A) *H. procumbens*, growth habit, (B) *H. procumbens*, whole tuber, (C) *H. procumbens*, ground tuber, (D) Packet for ground tuber, (E) *H. procumbens*, fruit, (F) fruits of both species, *H. procumbens* on the left, *H. zeyheri* on the right.

has four rows of curved arms bearing re-curved spines, with a total diameter of up to 15 cm. These fruits remain on the ground long after the shoots have withered (Figure 1).

#### Distribution of the devil's claw in Southern Africa

The genus *Harpagophytum* occurs between 15 and 30°S latitudes (Figure 2), which includes Namibia, Botswana, South Africa, Angola, and to a lesser extent, in Zambia, Zimbabwe and Mozambique (Ihlendfeldt and Hartmann,

1970). As mentioned earlier, there are two species (*H. procumbens* and *H. zeyheri*) with five subspecies between them. *H. procumbens* has two subspecies, *H. procumbens* subsp. *procumbens* and *H. procumbens* subsp. *transvaalensis* Ihlentf. & H. Hartm. *H. procumbens* subsp. *procumbens* prefers the sandy parts of Botswana and Namibia and in the Northern Cape region of South Africa. Its distribution therefore falls below the solid line as indicated in Figure 2. *H. procumbens* subsp. *transvaalensis* is confined to a relatively small area in the northeast tip of the Limpopo province of South Africa, the eastern tip of Botswana, and just into the adjacent border



**Figure 2.** Distribution of *Harpagophytum procumbens*, *Harpagophytum zeyheri* and their subspecies. (1) *Harpagophytum procumbens* spp. *procumbens*; (2) *Harpagophytum procumbens* spp. *transvaalensis*; (3) *H. zeyheri* spp. *zeyheri*; (4) *H. zeyheri* spp. *schijffii*; (5) *H. zeyheri* spp. *Sublobatum* (Ihlenfelt and Hartmann, 1970).

with Zimbabwe. In regional terminology, this forms part of what is normally referred to as the hardveld. *H. zeyheri* has three subspecies, *H. zeyheri* subsp. *zeyheri*, *H. zeyheri* subsp. *sublobatum* (Engl.) Ihlenf. & H. Hartm. and *H. zeyheri* subsp. *schijffii* Ihlenf. & H. Hartm. This species tends to occur in more humid areas of Southern Africa. *H. zeyheri* subsp. *sublobatum* grows in Angola, Northern parts of Namibia, Northern and North-East Botswana, Western and South-Eastern Zimbabwe, and the northeast tip of South Africa. Data collected for the distribution of *Harpagophytum* species in the area between the distribution of *H. procumbens* subsp. *procumbens* and *H. zeyheri* subsp. *sublobatum* in Botswana (Figure 2), has been found to be highly unreliable and still requires verification through extensive field studies. *H. zeyheri* subsp. *zeyheri* is confined to the eastern hardveld of Botswana and adjacent areas in South Africa. *H. zeyheri* subsp. *schijffii* occurs in a very restricted area on the South African border with Mozambique.

### Economic use of the devil's claw

*Harpagophytum* spp. have been used traditionally for medicinal purposes for a long time by indigenous peoples of Southern Africa. It was not until the 1960's (in Namibia) and 1970's (in Botswana) that commercial exploitation and exportation of the product to Europe started. Indigenous communities used this product for subsistence

and had developed traditional knowledge systems of using it sustainably. When commercial exploitation and international trade on the product surpassed the subsistence use, the traditional knowledge systems, which were in place to ensure its sustainable use, became inadequate. As a result of this, the populations of the plant became threatened in the wild.

In Botswana, harvesting and exporting of the tubers of the devil's claw are still continuing. Though the harvesters have a good knowledge of where and how much of the plant is available, there has never been any study to scientifically quantify and monitor the population sizes. The countrywide distribution of the species is also unknown. A local Non-Governmental Organisation (NGO), Thusano Lefatsheng (TL), which works with harvesters, has through its extension staff sensitised and taught harvesters about sustainable harvesting techniques. This message seems to have been assimilated in the communities adequately well. Though exceptions do occur, most harvesters seem to be now aware of the implications of harvesting secondary tubers and leaving the main tuber, and can also now visually tell when the plant is ready for harvesting (Tebogo Matlhare, pers. comm.).

*H. procumbens* is used for a variety of medicinal purposes. The active ingredients are harpagoside, harpagide, procumbine, furan and pyran (Jadot and Lecomte, 1992). It is used in the treatment of arteriosclerosis, gastro-intestinal problems, diabetes, hepatitis, neuralgia, and arthritis, to mention but a few. It has been reported

that the highest amount of the valuable medicinal ingredients is found in the secondary storage tubers (Nott, 1986; Wenzel and Wegener, 1995). The plant is traded mainly as dried sliced root tubers. The processing of retail products is currently not done in the range countries but in Europe. These products comprise teas, tablets and capsules.

## Main markets

### Namibia

The main importing countries are Austria, Belgium, France, Germany, Greece, Italy, Japan, United Kingdom, United States of America, Spain, Sweden, and Venezuela (Marshall, 1998; Nott, 1986). Namibia offers the largest supply of devil's claw on the international market. Cole (2003) reports that the exports increased from 180 tonnes in 1975 to over 1000 tonnes in 2002, and this represents a significant income in foreign earnings for Namibia. Export data also indicates that a significantly lower tonnage of the material was exported from Namibia in 2000 as compared to other years, and Cole (2003) attributes this to the negative message sent to the market by the devil's claw's proposed listing on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

### Botswana

Botswana exports much less than Namibia. Export figures for Botswana could be masked by the fact that they are likely to be reported under both Namibia and South Africa since 'middlemen' reside in these countries. The amount exported from the country fluctuates, but indicates that there has been a general drop between the years 1996 and 2000, but have shown an increase since 2001 (Raimondo and Donaldson, 2002).

### South Africa

It has proven to be difficult to get reliable figures on exports from South Africa. Export permits are not required to export devil's claw from South Africa, making it difficult to monitor the trade (Cole, 2003).

## REGULATION OF THE DEVIL'S CLAW TRADE IN SOUTHERN AFRICA

Two of the three range states, Botswana and Namibia, have put in place mechanisms to regulate harvest and trade of the devil's claw. This was after the realisation of the vulnerability of the plant due to its demand by

European markets. This was however done without prior knowledge of the status of the population of the plant in the countries. This was based mainly on reports by communities that the resource seemed to be dwindling in the wild.

In Botswana, *Harpagophytum* spp. are protected under the Agricultural Resources Conservation Act of 1977. Harvest and trade of the devil's claw in Botswana is regulated by the Department of Forestry and Range Resources (DFRR) in the Ministry of Environment, Wildlife and Tourism. A permit system is used. A harvesting permit is issued to the communities to enable them to harvest the plant from the wild. An extraction permit is issued to those buying from the harvesters, and then an export permit is given to those who want to sell the plant outside the country. DFRR has also set a time during which harvesting can be done. This is between the months of April and September, when the plant is in the dormant stage, that is, when the shoots have withered. Harvesting is prohibited between October and March to give the plant a chance to flower and produce seeds for natural regeneration.

In Namibia, *Harpagophytum* spp. are protected under Schedule 9 of the Nature Conservation Ordinance of 1975. A permit is required for the collection, transport, possession, and or sale of *Harpagophytum* spp.. A phytosanitary certificate, a weigh bill, permit, etc., are required in order to export *Harpagophytum* spp. from Namibia. Nott (1986) established that only 10% of the harvested devil's claw was being harvested with a valid permit. This led to the subsequent discontinuation of the permit system for harvesting, possession and transportation of the devil's claw since it could not be effectively implemented. Permits thereafter continued to be required only for the export of devil's claw and were mainly intended as a way to monitor exports, no quotas or other limitations were imposed (Cole, 2003). An increase in export figures of the dried devil's claw from approximately 300 tonnes in 1996/1997 to over 600 tonnes in 1998/1999, and reports of unsustainable harvesting practices and exploitative prices being paid to harvesters, prompted the government to re-introduce an amended permit system for the harvesting of the devil's claw in 1999 (Cole, 2003). There is therefore a requirement for a harvest permit, buy/sell and transport permits, and an export permit. In addition to these, any material to be exported needs a phytosanitary certificate.

In South Africa, *Harpagophytum* spp. are protected under Nature and Conservation Ordinance No. 19 of 1974. Here also a permit system is used. The Directorate of Conservation and Environment is responsible for this regulation. An application for a permit goes through a number of stages before it can be issued. General condition that go with the permit include that no harvesting should be done in protected areas and Provincial Nature Reserves and that the expired permits should be returned to the Permit Section. The main

weakness of the permit system is that it does not have an export permit which makes it very difficult to monitor exports from the country. The regional cooperation between the range states has however helped South Africa realise that this is an important aspect of the trade in the devil's claw, and hence will improve the permit system currently being used.

## Devil's claw and CITES

### Background

On the 20th September 1999, a range states meeting was held in Windhoek, Namibia. This meeting was attended by representatives from Botswana, Namibia, South Africa, and Germany (Dipholo, 1999). It was at this meeting that Germany shared with the range states a proposal for the inclusion of the two *Harpagophytum* spp. in Appendix II of CITES. Subsequent to this meeting, authorities responsible for regulating harvest and trade of the devil's claw held stakeholder workshops to check whether information available on the species warranted its inclusion in Appendix II of CITES.

The proposal by Germany specifically stated that *H. procumbens* should be listed on Appendix II in accordance with Article II 2 (a). This requires an Appendix II listing for 'all species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilisation incompatible with their survival'. It also proposed that *H. zeyheri* should be listed on Appendix II in accordance with Article II 2 (b) for look-alike problems. This clause allows the listing of species for which, although they themselves may not be threatened, the trade needs to be regulated in order to effectively control the trade in species listed in accordance with Article II 2 (a). A species that is hard to distinguish from a threatened species would fall into this category and it is certainly the case that the dried, sliced root tubers (the form in which the plant is traded) of *H. procumbens* and *H. zeyheri* are difficult to tell apart.

### Arguments for listing

The proposal by Germany to list the two *Harpagophytum* spp. in Appendix II of CITES put forward a number of reasons. The following are some of the reasons put forward:

**Habitat availability:** The proposal asserted that there was a decline of habitat availability due to the expansion of land use, particularly agricultural expansion. *Harpagophytum* was likely to disappear due to bush encroachment in overgrazed farmland or communal land, because of its low competitive strength.

**Population trends:** The proposal asserted that there was a decline in individual populations of *H. procumbens* due to varying harvesting intensities and harvesting techniques of differing ethnic groups. It is also said that exporters and middlemen were reporting that sliced material of *H. procumbens* was of smaller size than it used to be some years ago, which then was used as an indication in the reduction in the existence of old plants with large storage tubers. It was also said that some harvesters were claiming that they were going further distances in order to find plants to harvest.

**Actual and potential trade impacts:** The proposal also asserted that the increase in demand and exploitation was expected to increase, and with this it was also expected trade to become a major threat to the survival of *H. procumbens* (CITES Prop 11.60).

**Conservation and management:** The permit system in Namibia was said to be ineffective. This led to the subsequent discontinuation of the permit system for harvesting, possession and transportation of the devil's claw since it could not be effectively implemented. It was only used for exportation purposes, but also as mentioned earlier this was re-introduced in amended form in 1999.

In Botswana, the proposal claimed that there was no monitoring by the government despite the fact that there was continuing trade in *Harpagophytum* spp. since enactment of the legislation in 1977.

In all, this proposal by Germany was not ill intended. It was an attempt to persuade the international community to intervene in the devil's claw market chain for the purposes of conservation.

### Arguments against listing

The proposal to list devil's claw in CITES II was considered at workshops held in the range states, at which all stakeholders participated. A number of resolutions were made at these workshops, and reasons put forward for not supporting the listing of *Harpagophytum* spp. on CITES II were as follows:

- 1) Some of the arguments in the proposal were not substantiated with quantified data. For instance, there was not enough information and figures on the population status. Most of the information was based on personal communication.
- 2) It was agreed that even though the proposal for listing *Harpagophytum* spp. under Appendix II of CITES could be acceptable in principle, the proposal lacked sufficient data on which to base an informed decision.
- 3) There was no sufficient evidence of the threatened status of the plant species.

4) There was a claim that the listing would have an impact on livelihoods of poor and marginalised communities in the range states whose only source of income was the trade on *Harpagophytum* spp. This was supported by the evidence that exports went down in 2000 as a result of the negative vibes the market was getting from the proposal to list the species (Lombard and du Plessis, 2003). The other negative impact was acceleration towards commercial cultivation of the species. Communities engaged in harvesting of the devil's claw do not have the land and means to go into large scale commercial farming; this would therefore result in them being further marginalised.

5) At COP 11 the range states made clear their rejection of the proposal and Germany withdrew it before it was put to a vote. Though the proposal was withdrawn, two decisions were passed on it: Decision 11.63 ("The range and importing states should submit to the secretariat all available information concerning the trade, management and biological status of *Harpagophytum* spp. and regulatory measures applying to them"); Decision 11.111 ("the Plants Committee shall review information submitted to the secretariat in accordance with Decision 11.63; summarise the biological and trade status of *Harpagophytum* spp. subject to international trade; and prepare a report on the biological and trade status of *Harpagophytum* spp., at least six months before the 12th meeting of the Conference of Parties (COP12), for consideration at that meeting").

#### **Developments after COP11 with regard to listing**

Raimondo and Donaldson (2002) compiled a report with regard to decision 11.111 from information availed by range states as bound by decision 11.63. Although, importing countries were also expected to provide such information, only Germany managed to submit a report (Cole, 2003). These reports were presented to the twelfth meeting of the CITES Plants Committee in May 2002 and at COP12 in November 2002. The reports concurred with the contention that had always been consistently made by the range states that the population status of *Harpagophytum* spp. was still not known. This led to decisions 11.63 and 11.111 being formally withdrawn at COP12, because they had been satisfied. Interest in listing of *Harpagophytum* spp. however still persisted with the passing of three decisions at COP12. The following are the decisions.

**Decision 12.63:** Range states were to "provide an update on implementation of the policies and management programmes mentioned in the report submitted in fulfilment of Decision 11.63 for consideration by the Plants Committee at its 14th meeting".

**Decision 12.64:** Range states and importing countries

were to "negotiate with the devil's claw industry to obtain support for management programmes that promote sustainable use and the development of communities that are managing the resources".

**Decision 12.65:** Range states "should explore how processes and mechanisms in other international treaties can be used to provide support for sustainable resource use and fair trade".

As can be noted from these decisions, a shift on emphasis was now on promoting sustainable use, community development and fair trade, representing a concern towards the human development aspects of the trade in devil's claw.

The range states reported on the implementation of these decisions at the thirteenth and fourteenth meetings of the Plants Committee. The report of the Chairman of Plants Committee (COP13 Doc 9.2.1) to COP13, at paragraphs 39 to 42, reports on the implementations of decisions 12.63, 12.64 and 12.65. The long and short of these paragraphs is that the Plants Committee had accepted the reports from the range states and was recommending to COP to delete decisions 12.63, 12.64 and 12.65. Through experience with the proposed listing of *Harpagophytum* in CITES Appendix II and subsequent COP decisions, the plants committee recognises that the implementation of CITES decisions may impact on the livelihoods of poor people, and was therefore recommending to the COP to accept the following draft decisions.

**Directed to the secretariat:** The secretariat shall explore options for Parties to include information on the impact of CITES listing on poor peoples' livelihoods as part of drawing up and reviewing proposals to amend Appendices.

**Directed to the plants committee:** The plants committee shall decide on what action is required for outstanding reports from importing countries of *Harpagophytum*.

#### **Increased regional cooperation**

CITES decisions have led to far greater regional cooperation between the range states. There has been the formation of Devil's Claw National Working Groups in Botswana, Namibia and South Africa. There has been the formation of the Regional Devil's Claw Working Group. These working groups were formed to specifically address issues on harvesting and trade on the devil's claw. There has however been the realisation that the mandate of these groups will necessarily expand due to the growing interest on useful indigenous plants of the region.

### Lessons learnt

It is quite clear from the controversy surrounding the listing of *Harpagophytum* spp. that Appendices of CITES lack an important component that would take into account livelihoods of communities involved in either CITES-listed species or those being proposed for listing. This might in some instances undermine well intended goals of conservation.

The second lesson is that of proper consultation. These are at two levels. Firstly, the importing countries need to consult extensively with range states before making any proposal on listing species. It was always going to be hard for an importing country (which holds patents to the species) to convince range states (which hold no patents to the species) to launch a successful bid to list a species in CITES appendices. Secondly, the proposal to list should be joint between all importing countries. The proposal to list *Harpagophytum* spp. was made by Germany, but there are more countries that are involved in the trade. This is why up to this moment only Germany provided information with regard to Decision 11.63 of CITES. Other importing countries probably have a different opinion about *Harpagophytum* trade.

The third reality that came out of the proposal to list was the unpreparedness of importing countries to fund projects that would generate information requisite to elucidate some grey areas of the proposal. Only Namibia has managed to carry out a national situation analysis of the devil's claw (Strohbach, 2003). Botswana and South Africa have not managed to do a similar exercise. This is a serious step that needs to be fulfilled if any proposals to list *Harpagophytum* are intended in the future. Basic scientific data is still lacking with regard to population status and dynamics of *Harpagophytum* spp., and on impacts of harvesting on these population. This is a very important step to take in order to make credible and informed decisions on conservation of any species.

### REFERENCES

- Cole D (2003). The Namibian National Devil's Claw Situation Analysis: socio-economic analysis of devil's claw harvesting and trade issues in Namibia. CRIAA SA-DC. Windhoek, Namibia.
- Dipholo DK (1999). A Report of the Seminar to Consider a Proposal for Listing *Harpagophytum procumbens* Under Appendix II of the Convention on Trade in Endangered Species of Wild Fauna and Flora. Centre for Continuing Education, 29<sup>th</sup> October 1998, Sebele, Botswana.
- Ihlenfeldt HD (1988). Pedaliaceae. In Flora Zambesiaca 8:3.
- Ihlenfeldt HD, Hartmann H (1970). Die Gattung *Harpagophytum* (Burch.) DC. ex Meisn. (Monographie der afrikanischen Pedaliaceae). Mitt. Staatsinst. Allg. Bot. Hamburg 13:15-69.
- Jadot G, Lecomte A (1992). Activité anti-inflammatoire d' *Harpagophytum procumbens* DC. Lyon Méditerranée Médical Médecin du Sud-Est. 28:833-835.
- Lombard C, du Plessis P (2003). The impact of the proposal to Devil's Claw on Appendix II of CITES. In Oldfield (ed.), The Trade in Wildlife: Regulation for Conservation. Earthscan. London.
- Marshall NT (1998). Searching for a cure. Conservation of medicinal wildlife resources in east and southern Africa. TRAFIC International.
- Nott K (1986). A Survey of the Harvesting and Export of *Harpagophytum procumbens* and *Harpagophytum zeyheri* in SWA/Namibia. Unpublished Report, Etosha Ecological Institute.
- Raimondo D, Donaldson J (2002). The Trade, Management and Biological Status of *Harpagophytum* species in Southern African range States. A report submitted to the twelfth meeting of the CITES Plants Committee, Leiden (The Netherlands), 13<sup>th</sup> to 17<sup>th</sup> May 2002.
- Strohbach M (2003). National Devil's Claw Situation Analysis. Namibian Devil's Claw Working Group. Windhoek, Namibia.
- Tebogo Matihare, General Manager, Thusano Lefatsheng (1999). Personal Communications. FRP discussion visit to Southern Africa 12 April – 6 June.
- Wenzel P, Wegener T (1995). Teufelskralle, ein pflanzliches antirheumatikum. Deutsche Apotheker Zeitung 135:15-28.