CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

CONVENCIÓN SOBRE EL COMERCIO INTERNACIONAL DE ESPECIES
AMENAZADAS DE FAUNA Y FLORA SILVESTRES

CONVENTION SUR LE COMMERCE INTERNATIONAL DES ESPECES
DE FAUNE ET DE FLORE SAUVAGES MENACEES D'EXTINCTION

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A REVIEW OF THE STATUS OF *SAUSSUREA COSTUS*

The attached information document has been submitted by the CITES Secretariat[1].

El documento informativo adjunto ha sido presentado por la Secretaría CITES[2].

Le document d'information joint est soumis par le Secrétariat CITES[3].

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A Review of the Status of *Saussurea costus (Fale.) Lipsch.* in India and the Impact of its listing in CITES Appendix I
A study by TRAFFIC India

A. Data from CITES documents and UNEP sources

1) Rationale for present listing in the Appendices

*Saussurea costus (*synonymous with *Saussurea lappa)*, locally known as ''Kuth'' is a robust perennial herb of the Western Himalayas, distributed in Pakistan and India. The species is endemic to a geographically limited part of the Himalayas, and grows on moist slopes at altitudes of 2600-4000 m (Shah 2006) and (Hajra, Rao, Singh and Uniyal 1995).

S. costus was first listed in Appendix II of CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) on 1.7.1975 as *Saussurea lappa* and later uplisted to Appendix I in 1985.

In India, *S. costus* is recorded as naturally growing in the Suru Valley, Kishenganga and the upper reaches of the Chenab valleys in Jammu & Kashmir with possible non-commercial sporadic occurrence in adjoining areas in Kashmir Valley, Himachal Pradesh and Pakistan. In Himachal Pradesh and Uttarakhand, the species has been under cultivation since the 1920s and 30s (Butola and Samant 2010) and (Kuniyal *et. al.* 2005).

The species has been used in traditional healthcare systems of the region since times immemorial. Among the species of *Saussurea*, *S. costus* is the most commercially viable species. Its medicinal properties are well documented in traditional Chinese medicine, the Tibetan system of medicine, and ayurvedic medicine. The roots of *S. costus* have a strong and sweet aromatic odour with a bitter taste, and are used as an antiseptic and in controlling bronchial asthma, particularly of the vagotonic type. Preparations made from this species are also reported to cure various diseases and conditions. The oil extracted from the roots is known as Costus Oil, which is used in high-grade perfumes and in the preparation of hair oil. Costus Oil is also said to be effective in the treatment of leprosy. In the Himalayan states of India, the roots are used as insecticide to protect shawls and woollen fabrics, and as incense. In the Lahaul and Spiti districts of Himachal Pradesh, dried leaves of *S. costus* are smoked as tobacco and the upper parts of its plants are used as fuel and fodder. (Butola and Samant 2010).

Due to the various documented uses, it is in high demand both locally and at the international level. It is one of the most commercially used Appendix I CITES species for various ailments in several indigenous systems of medicine (Hamilton 2004, Pandey, Rastogi and Rawat 2007). It is the aromatic roots of the plant, known as 'Kushta' in Sanskrit and '*S. costus* Roots' in trade that are traded locally, in the domestic herbal industry and exported, mainly to China and Japan.

There has been controlled extraction from the wild in Jammu & Kashmir until the recent past. However, as the limited natural populations from Jammu & Kashmir were unable to fulfil the growing trade requirements, domestication trials on the species were initiated during the early 20th century in Kashmir, Garhwal (Uttarakhand) and Himachal Pradesh. As a result of these trials, *S. costus* became a regular crop for commercial cultivation in Lahaul Valley in Himachal Pradesh during the 1920s and 1930s. The area under *S. costus* cultivation increased to more than 600 hectares during the 1950s, and the Valley came to be recognized as a major source of *S. costus* for both export and domestic trade with an annual trade volume ranging between 300 and 400 metric tonnes . A similar increase in area under *S. costus* cultivation occurred in the Garhwal region also. The China-India war in 1962, however, badly affected the export market and the area under cultivation rapidly declined thereafter.

S. costus is a common herb used in tradional Chinese formulations. Natural distribution of *S. costus* being largely restricted to Jammu & Kashmir, China was totally dependent upon India, mainly on cultivated sources from Himachal Pradesh and Uttarakhand, for its supplies.

However, with supplies from India coming to a practical standstill post-1962, China initiated cultivation of *S. costus* and soon started meeting its domestic requirement from its own cultivated sources. So much so that China has now become a major exporter of the herb. The area under cultivation in both Lahaul (Himachal Pradesh) and Garhwal (Uttarakhand) continued to decline, with corresponding decline in the production of *S. costus* roots. Even as quality of *S. costus* cultivated in Lahaul is considered very high and it commands higher market prices, *S. costus* cultivation in the country has declined to an extent where is not able to even meet the 150-200 MT annual requirement of domestic herbal industry. Most of the industrial demand of *S. costus* in the country is being met from import of the material, legally or in clandestine way, from China. It also points to the fact that wild harvested material, if any, coming to the market clandestinely from Jammu & Kashmir, is negligible and is not making any significant impact on *S. costus* trade in the country.

S. costus was first listed in Appendix II of CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) on 1.7.1975. It is important to note that at the time, India was not a Party to CITES; it deposited the instrument of ratification on 20th July, 1976 and was the 25th Party to the Convention, admitted on 18th October 1976. As such, there is very little information available in India on the rationale behind this listing.

In 1985, *S. costus* was uplisted from Appendix II to Appendix I at CoP5, following a proposal submitted by India on the basis of a rapid depletion of the wild population (see Annexes I and II). The proposal was opposed by Pakistan. Dr. P.K. Hazra, then Director of the Botanical Survey of India (CITES Scientific Authority for India) participated in the debate and has reported that India did not agree to a suggestion for a compromise so that the Indian population of *S. costus* could be kept in Appendix I while populations in Pakistan were retained in Appendix II. It was argued that plants did not recognize any international boundaries and that such a listing would be against the spirit of CITES. The CITES Secretariat also supported the proposal for uplisting and when put to vote in Committee I, it received 23 votes in favour versus 7 against (Jain 2001).

Through an amendment in 1991 to its Wildlife (Protection) Act of 1972, India added a Schedule VI to the Act, which lists six plant species including *S. costus*. This offers protection to these species and prohibits picking, uprooting etc. of these specified plants from any Forest land or area so specified by notification. It also prohibits possession, sale, offer for sale or transfer by way of gift or otherwise or transportation of any of these plants, whether alive or dead, including their parts and derivatives. The cultivation of such plants without a license is also prohibited.

S. costus whether found in, or brought from a forest ***or not***, is identified as Forest Produce under the Indian Forest Act of 1927 (Section 2(4). This includes *S. costus* from any source, including cultivated sources.

It is pertinent to note here that the Wildlife (Protection) Act, 1972 is applicable to all of India ***except*** the state of Jammu & Kashmir, which has its own wildlife legislation. Similarly, the state of Jammu & Kashmir also has its own Forest Act. As mentioned above, Jammu & Kashmir (J&K) is an important area for *S. costus* where the species occurs in the wild at several locations. (Under the constitution of India, the State of Jammu and Kashmir has been accorded special status under Article 370. Thus, there are many subjects on which Parliament can legislate only with the concurrence of the Government of the State). In Jammu & Kashmir, a special Act, ***"The Kuth Act, 1978 (1921 A.D.) Act***

No.1 of 1978" *(see Annex-I)* was enacted for the regulation of trade of *S. costus* (Jain 2001). It prohibited the cultivation, extraction, possession, transport, export & sale of *S. costus* or the manufacture of any substance or preparation containing *S. costus* ***except by permission***. Violators can be arrested without a warrant and be punished by a jail term of up to 2 years or a fine which may extend to INR 5000 or both. This is indicative of the seriousness the state placed on control of the trade in *S. costus*. The Act was repealed in 2002. However, a complete ban on collection from the wild was subsequently put in place in 2005.

The species has also been included in the Negative List of Exports – plants notification No.24 (RE-98) / 1997-2002, Ministry of Commerce, Government of India *(see Annex -IV)*. Thus ''export is permitted only in products which may contain portions/extracts of *S. costus in* unrecognisable and physically inseparable form'' (Dutta and Jain 2000).

2) Trade data

The summary of *S. costus* reported exports from India (all forms of products and derivatives) are given below in Table 1 and the summary of quantities of *S. costus* imported into India between 1995-2007 is given in Table 2.

Table 1: CITES gross export data for India from 1983-2009:

Year	derivatives (bottles)	derivatives (boxes)	derivatives (cartons)	derivatives (kg)	derivatives (unkown)	extract (bottles)	extract (cartons)	extract (kg)	live (kg)	live (unkown)	oil (bottles)	oil (kg)	roots (kg)	roots (unkown)
1983									3060				1000	
1988													5000	
1989				1000									75300	
1990													6000	
1991										15720			30000	
1992									15000				31950	
1993									5200				13000	5000
1994											4200		6000	
1995	1137209	12	578	165	2000							28	31	
1996						3113972	468	176.90						
1997					600		50	9344.36				71		
1998								9239.14					16000	
1999								71.43				5		
2000								35.17				5	25020	
2001					10			0.11				5	8000	100
2002					108			33					16500	
2003					1			2					15500	
2006								500					3496	
2007					20			500					4999	
2008					2								10648	
2009					3153								10000	

No exports reported from 1975-1982, 1984-87 and 2004-5Source: http://www.unep-wcmc.org/citestrade/process.cfm?result=Finish.cfm&CFID=41874187&CFTOKEN=64903933

Table 2 : The summary of *S. costus* reported imports to India (all forms of products and derivatives).

Year	Exporter	Origin	Imp Quantity (kg)	Imp Term	Imp Purpose	Imp Source	(Re-)Exp Quantity (Kg)	(Re-)Exp Term
1995	IN						2000	derivatives
2001	FR	IN					1	extract
2002	FR	IN					0.002	extract
2005	CN						11000	roots
2006	CN		100200	roots	T	A	105700	roots
2006	CN						20000	derivatives
2006	CN						38000	roots
2007	CN		19000	roots	T	D	48220	roots
2007	CN		100400	roots	T	A	162800	roots

Source: http://www.unep-wcmc.org/citestrade/process.cfm?result=Finish.cfm&CFID=41874187&CFTOKEN=64903933

Collection of *S. costus* roots from the wild has been in practice for many years, during the colonial period it was one of the most valuable herbal exports of Kashmir (Sir Walter Roper Lawrence 1895)

Collection of *S. costus* from the wild was authorised by the J&K Forest Department, till 2005. Available records mention the quantity extracted from wild sources since the 1980s to 2005. Collection from the wild even through permits is not allowed since 2005. The summary of yield/extraction of *S. costus* from the wild in Jammu and Kashmir, India is given in Figure 1 below.

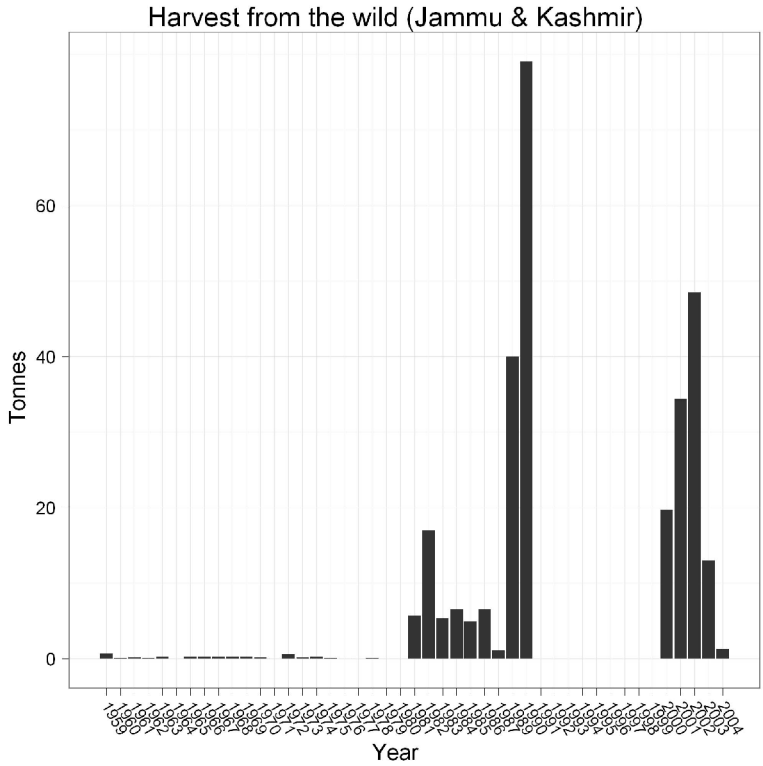
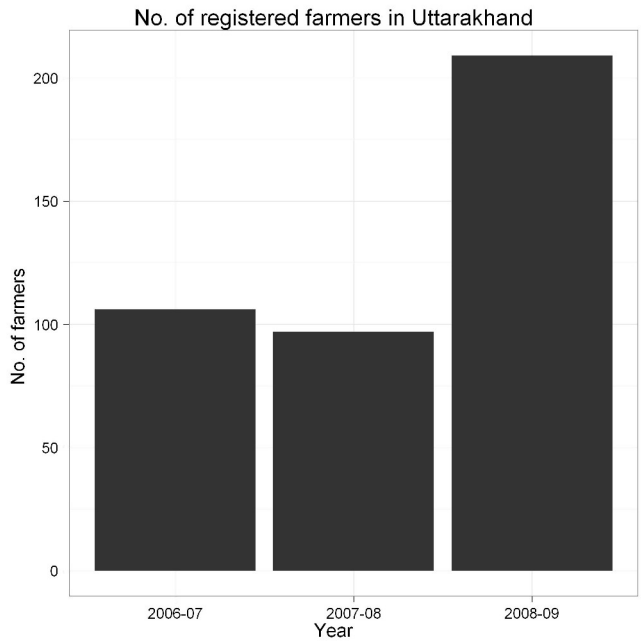


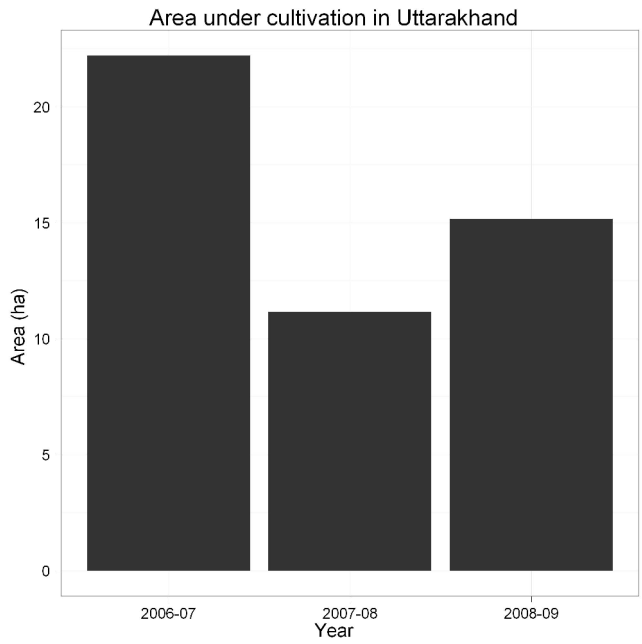
Figure 1: Yield/Extraction of *S. costus* from the wild in J&K (1959-2004). Source : J&K Forest Department, Digest of Forest Statistics 2009 (Pages 74-80). Note: No harvest reported between 1991-2000

In Uttarakhand, there are differing opinions on the status of *S.costus* in the wild. While it has been reported as naturally occurring from the Nanda Devi and Valley of Flowers National Parks in Nanda Devi Biosphere Reserve, (Kala, Rawat and Uniyal 1998), it has been argued by some that the size of the population is so minimal that it can never be said that the species has naturalised itself or species is found in wild but such specimens are likely escapees from cultivation. (G.S. Goraya, Rakesh Shah, G.S. Rawat pers. comm. 2010) The species has been under cultivation for local consumption in many parts of the state, especially in Mana and Tapovan villages in the Nanda Devi Biosphere Reserve. In both villages it is reported that a limited amount of *S.costus* was being cultivated by a small number of farmers for personal use (Belt et al 2003). However, no records of such trade are available (R. Shah, pers. comm.).

The 2001 industrial policy of Uttarakhand specifically identifies the Herbal and Medicinal Plants sector as one of massive potential which has remained largely unexploited in the absence of a well-planned and coordinated strategy for commercial cultivation and integrated arrangements for processing and marketing. The State Government has prioritized 26 potential species of medicinal and aromatic plants, including *S.costus* for promotion of cultivation.
Since 2006, the state has registered farmers who are taking up the cultivation of *S.costus*. The recorded production of *S.costus* has gone up from 1.2 *Tonnes* in 2007-08 to 3.148 *Tonnes* in 2008-09 (pers.comm .Rakesh Shah, Chief Conservator of Forests, Uttarakhand Forest Department). No records of Kuth production prior to 2006 are reported available with the Uttarakhand state government.

The number of farmers registered for cultivation of Kuth in Uttarakhand has increased from 106 (2006-07) to 412 (2008-09) and the area of Kuth cultivation has increased from 22.2 hectares to 48.5 hectares during the period 2006-09 (See Figure 2a & 2b.) Records are not available prior to 2006.





2a **2b**

Figure 2. Status of *S. costus* cultivation in Uttarakhand in recent years, although the number of registered farmers have increased in recent years, the total area under cultivation has actually declined compared to 2006-7

Between 2005-2007, India has imported 385720 Kg of S. costus of roots and derivates from China (CITES comparative table data). Chinese imports from India or of S. costus of Indian origin have been negligible throughout the recorded duration (1983 to 2009).Globally, China has exported a total of 1024 tons of roots and derivates overall since 1983 to 2009 compared to a total of 266 tons of global export from India during the same period (CITES comparative table data).

In Himachal Pradesh, Lahaul is the major Kuth production area (Aswal and Mehrotra 1994). The kuth roots from Lahaul are collected by the Lahaul Kuth Grower's Society, Manali and supplied to State Trading Corporation.

Details of *S.costus* export permits issued by Lahaul Forest Division from the year 2005 to 2008 and the quantity exported are represented below in Figure 3. (Source: Forest Department records, Himachal Pradesh).

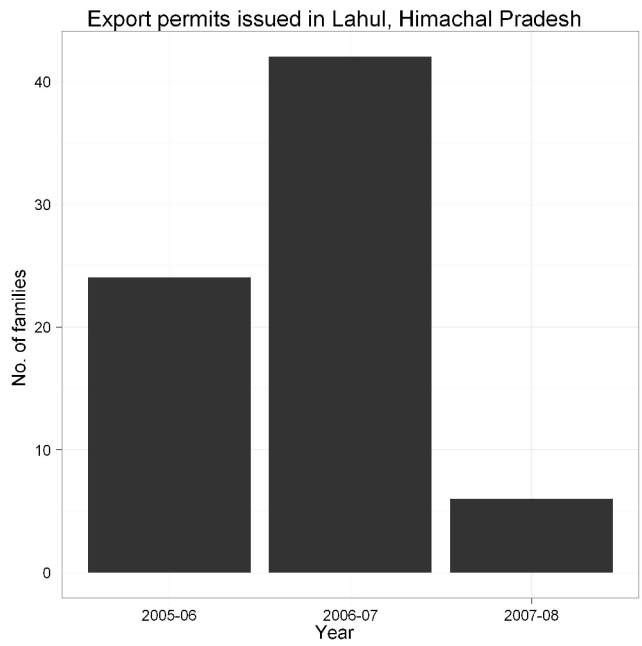


Figure 3. Recent trends in *S.costus* export from Himachal Pradesh
** Please note that export implies movement from beyond the state and NOT International trade.*

B. Data from national CITES sources or other sources

Evidence of illegal trade

The CITES records available from the Indian CITES MA (Management Authority) office were searched for evidence of seizures of illegal exports. The violations related to *S. costus* were detected at various Export/Import Custom Points in India over the period 2000-2008 are presented in Table 3.

Table 3 : Violations relating to *S. costus* detected at various Export/Import Custom Points in India over the period 2000-2008

Place of Detection	Year	Origin/Consignor	Destination	Description of the item detained / Seized	Quantity	Nature of offence
IGI Air Cargo New Delhi	30/11/2000	M/s Deshrakshak, Haridwar, U.P.	Australia	Ayurvedic item containing Saussurea lappa and Aquilaria malaccensis	10 kg and 10 litrs	Violation of EXIM Policy & CITES regulation.
C F S Patarganj Delhi	01/02/2002	Amsar Pvt. Ltd Indore MP	Singapore	Ayurvedic preparation Containing Saussurea lappa	60000 Capsules	Violation of provisions of CITES EXIM Policy & WL (P) Act 1972
IGI Air Cargo New Delhi	18/02/2002	Maharishi Ayurvedic Products Mathura Rd, New Delhi	Mauritius	Ayurvedic medicine containing Saussurea lappa (i) Vidyarthi Amrit (ii)Engergol M A Tab	200 units each 20ml, 48 units (20X1) Tabs	Violation of provisions of CITES EXIM Policy & WL (P) Act 1973
Mulund CFS	25/09/2002	China General Merchant, Mumbai	Unknown	Saussurea lappa, Euphorbia, Aristolochina spp.	11 kg each	Violation of CITES & EXIM Policy & WL(P) Act.
IGI Air Cargo New Delhi	19/04/2003	M/S Yogi Herbo Club, Delhi-34	Netherland	1. Indiagra cap containing orchid mascula 2. Punarnava mandoor vati conatining Saussurea lappa 3. Mahanarayan Oil containing Saussurea lappa	6000 pieces, 10kg, 20litres	Violation of CITES & EXIM Policy & WL(P) Act.
IGI Air Cargo New Delhi	23/05/2003	M/s Ganpati Export New Delhi	USA	Herbal Item Purim containing Saussurea lappa	100 Pcs.	Violation of CITES & EXIM Policy & WL(P) Act.
IGI Air Cargo New Delhi	10/01/2003	Upgrade Export New Delhi	Japan	Kapha Oil containing Saussurea lappa	2 kgs	Violation of CITES & EXIM Policy & WL(P) Act.
Air Cargo Complex	26/12/2003	WWS Sky Shop Pvt. Ltd., Mumbai	Dubai	Ayurvedic oil (body oil)	60 btls	Violation of CITES & EXIM Policy & WL(P) Act.

				contain Saussusrea lappa as one of the ingredients		
Palam Airport	29/12/2003	M/s San Bron Overseas A -24, Okhla Industrial Area Phase -1 New Delhi	Korea	Herbal Oil Ambica containing Saussurea lappa	6 btls	Violation of CITES & EXIM Policy & WL(P) Act.
Palam Airport	29/12/2003	M/s San Bron Overseas A -24, Okhla Industrial Area Phase -1 New Delhi	China	Herbal Oil Ambica containing Saussurea lappa	6 btls	Violation of CITES & EXIM Policy & WL(P) Act.
Palam Airport	29/12/2003	M/s San Bron Overseas A -24, Okhla Industrial Area Phase -1 New Delhi	Singapore	Herbal Oil Ambica containing Saussurea lappa	6 btls	Violation of CITES & EXIM Policy & WL(P) Act.
C F S Patarganj Delhi	06/07/2007	Indian Herbs Overseas, Saharanpur, U.P.	Helal Bioceutical Kwalalampur, Malayasia	Export of Cough Syrup containing Saussurea lappa	1000 lts	Violation of CITES & EXIM Policy & WL(P) Act.
N S Dock, Kolkata	02/02/2007	M/s Arjun Herbal Products, Salkia, Howrah, WB	Not known Imported from China	Costus / Kuth roots Saussurea costus (Fale.) (Lipschitz)	500 Kgs.	Violation of CITES & EXIM Policy & WL(P) Act.

3) *Population status and trend*

During the Biodiversity Conservation Prioritisation Project (BCPP), India undertook a prioritisation exercise for species, sites and strategies for conservation. The Endangered Species Subgroup Selected the Conservation Assessment and Management Plan Process (CAMP) and the IUCN Red List Criteria (Revised 1994) for assessing the conservation status of species. S. costus was ranked as nationally critically endangered based on restricted and fragmented range and an observed decline of 70% in 10 years before 1997. It is to be noted that wild populations of *S.costus* are largely restricted to India with few locations in Pakistan. As such the species has a very restricted global distribution. Hence the national threat ranking is also by default the global threat rank for *S. costus.*

This CAMP workshop was conducted for selected medicinal plants of northern, north-eastern and central India to assess their status in the wild. Selection was made by participants on the basis of their concern over the status of the species. The Workshop took place in January 1997 in Lucknow, hosted by the Uttar Pradesh Forest Department. Other local collaborators were the National Botanical Research Institute, Central Institute for Medicinal and Aromatic Plants and Central Drug Research Institute. The workshop was attended by 45 participants from 25 institutes with expertise ranging from field biology to forest management.

S. costus has been listed as Endangered (EN) in 1997 (Walter and Gillet (1998), page 190). It is to be noted that the 1997 IUCN Red List of Threatened Plants used pre 1994 IUCN categories and hence did not have a Critically Endangered (CR) category, Endangered was the second highest category after Extinct/Extinct in the wild category EX/EW. No assessment or reference of *S. costus* regarding its listing in IUCN RedList, is available later than that.

Presently, a majority of the wild population of *S. costus* in India is known from Jammu &Kashmir (J&K) with around 70% of the global wild population.

- Distribution of *S. costus* in J&K in the wild

Jammu	:	Chenab Valley
Kashmir	:	Gurez Tilel in Kishanganga Valley
Ladakh	:	Suru Valley

The areas that support *S. costus* population in Jammu are Rajouri (Kuthwali gali, Pathargali, Sabjiyan, Gagariyan), Seoj in Bhaderwah area of Doda District, Kounsarnag (Pir Panjal Mountain range of Shopian district) and Dahi Nalla, Sonamarg, Toshmaidan areas in the Kashmir region. However, there is an absence of detailed information on population sizes.

During the present review assessment, a new record of *S. costus from* the wild has been reported from the Chanju Village, Churah Tehsil, District Chamba, Himachal Pradesh. However, this will need detailed verification.

In Uttarakhand *S. costus* is reported to occur in the wild in Nanda Devi National Park and the Valley of Flowers National Park (Adhikari 2004), which together constitute the Core Zone of the Nanda Devi Biosphere Reserve. However, as mentioned above, there is lack of unanimity of scientific opinion as to whether such populations are truly wild or represent escapees from cultivation.

Being habitat specific and distributed in a narrow geographical range, most high altitudinal species of *Saussurea* in the Himalayas are in need of some sort of protection for conservation (Butola & Samant 2010).

S. costus has been in high demand in the pharmaceutical industry, but during the last decade the species has been even more popularized due to its threatened status globally. Due to high market demand and uncontrolled exploitation of the species, it was reported to be extinct in many pockets in the wild.

Illegal extraction of *S. costus* from the wild is also reported to continue from the Gurez and Tilel areas in Jammu and Kashmir where the produce is reportedly smuggled out in Potato trucks. In Lahul Spiti areas of Himachal Pradesh, it is reported that *S. costus* is smuggled out of adjoining Bani/Sarthal/Bhaderwah areas of Kathua and Bhaderwah Doda districts of J&K state (Seth, pers. comm.)

Due to great demand for raw material from these plants, most of the natural populations of the species are either under destructive harvesting or have been extirpated (Butola & Samant 2010).

4) Impact of international trade on natural population(s)

Inclusion of *S. costus* in CITES Appendix I was a result of the observation that the species was facing a major threat due to over harvesting from the wild. This led to the domestic prohibition too on the collection of *S. costus* from the wild. Restrictions were also placed on the domestic cultivation and trade in the species and its derivatives. However, the species continues to remain popular in various medicinal systems and there is a ready demand for it today. To meet this demand, cultivation of the species is being encouraged in the Indian States of Himachal Pradesh and Uttarakhand. The National Medicinal Plants Board, Govt. of India has also identified *S. costus* as one of 32 priority species for overall development of the medicinal plants sector.

The only state with a wild population that was historically harvested over the past hundred years was J&K. This harvest experienced wide fluctuations and decline in volumes before it was banned completely in 2005.

Much of the *S. costus* that is required by the Indian Ayurvedic / pharmaceutical industry is today being procured from China. This is also largely due to the fact that *S. costus* being imported from China is cheaper. This has implications for wild collection or even cultivation of *S. costus* in India.

As such it does seem that while wild populations of *S. costus* in India have been impacted by trade, it is not clear how much of this is due to international trade.

5) Evaluation

Criterion	**Application to taxon under review**	**Conclusion**		
		met	**not met**	**unclear**
A) The wild population is small, and is characterized by at least one of the following:				
A)(i) an observed, inferred or projected decline in the number of individuals or the area and quality of habitat;				*
A)(ii) each subpopulation being very small;		*		
A)(iii) a majority of individuals being concentrated geographically during one or more life-history phases;			*	
A)(iv) large short-term fluctuations in population size;			*	
A)(v) a high vulnerability to either intrinsic or extrinsic factors.		*		

B) The wild population has a restricted area of distribution and is characterized by at least one of the following:				
B)(i) fragmentation or occurrence at very few locations;		*		
B)(ii)large fluctuations in the area of distribution or the number of subpopulations;				*
B)(iii) a high vulnerability to either intrinsic or extrinsic factors;		*		
B)(iv) an observed, inferred or projected decrease in any one of the following:				
• ***the area of distribution;***				*
the area of habitat;				
• ***the number of subpopulations;***				
• ***the number of individuals;***				
• ***the quality of habitat;***				
• ***the recruitment.***				

C) A marked decline in the population size in the wild, which has been either:

C)(i) observed as ongoing or as having occurred in the past (but with a potential to resume);				*
Cii) inferred or projected on the basis of any one of the following:				
• ***a decrease in area of habitat;***				
• ***a decrease in quality of habitat***				
• ***levels or patterns of exploitation;***		*		
• ***a high vulnerability to either intrinsic or extrinsic factors;***				
• ***a decreasing recruitment***				

6) Conclusions

The regulations imposed on the trade in *S. costus* in India and their subsequent implementation and enforcement, coupled with rising cultivation of the species, particularly in China, have given respite to its wild collection. Several stakeholders from Uttarakhand and Himachal Pradesh believe that despite the tiny distribution and population of the species, some level of collection from the wild may occur periodically. This is believed to be an opportunistic activity only, and limited to local/domestic use and not for any large scale trade. This is because wild populations, except possibly for some localised patches in Jammu and Kashmir (J&K), cannot support any sustained commercial level of exploitation and trade, although this issue is currently being reviewed by the J&K Forest Department. Even for J&K, there is an absence of quantitative data on wild *S. costus* populations and currently, there is a ban on wild collection in the State.

However, demand persists and in spite of a ban trade in *S. costus* has been pushed underground. Despite government efforts to encourage its cultivation, the response has not been very positive for a variety of reasons, including low cost of imports, uncertainty of demand and the cumbersome and time-consuming procedures involved in procuring required cultivation certificates.

Firstly, the restrictions which operate today on wild collection also equally apply to cultivation. Thus, the process of certifying produce as of cultivated origin is not sufficiently understood both by those required to issue such certification as well as those applying for the certificates. A case in point was a study presented by a stakeholder at one of the discussions for this study, where a notice of cultivation for *Picrorhiza kurroa* (CITES Appendix II) was submitted to the authorized officer in March 2008. An application for Certificate of Cultivation was submitted prior to harvest in October 2009. After several rounds of approaching the field-level officials, the certificate was finally issued by the Divisional Forest Officer in July 2010 but was deemed to be insufficient to meet CITES requirements as it did not have even the scientific name of the species and was not issued on the official letterhead.

The Planning Commission, Govt. of India, in a report on Socio-Economic and Administrative Development of J&K, mentions the *Kuth* Act (subsequently repealed) as an economic inhibitor to the growth of the sector. In effect, it only supports the contention that control measures which do not or cannot distinguish between wild collected and cultivated medicinal plants that are in widespread use only end up stifling cultivation efforts.

A recent study by the Royal Tropical Institute, Amsterdam, in association with the Institute of Applied Manpower Research, New Delhi and the Centre for Sustainable Development, Dehradun, have documented some of the bottlenecks in cultivation of species like *S. costus* in Uttarakhand. It states that in the Chamoli District, Uttarakhand, in the past a number of farmers had grown *S. costus*, but none of them continued. *S. costus* is a species with a long gestation period of up to three years. In the absence of a ready market linkage, the produce is not bought and farmers suffer a loss. The absence of a well-structured market chain is also attributed to the fact that getting export permits for such species is a cumbersome and time-consuming process in which cultivators and buyers are reluctant to engage. The experience created enormous frustration among all involved and many farmers are now so frustrated they are unwilling to plant *S. costus*, or any medicinal plant species.

Based on the above, there is little evidence to suggest that the uplisting of the species into Appendix I 25 years ago has done much to conserve the species in the wild in India. Apart from existing populations in J&K, whose present capacity for harvesting is under doubt, one new population (not verified) is reported from Himachal Pradesh while the populations in Uttarakhand are hosted inside National Parks or otherwise protected. Even these are possibly escapees from cultivation. On the contrary, the high and often complex level of regulations has only deterred potential cultivators with the result that commercial cultivation has also not picked up. This could have served as a buffer for wild populations.

The main legal issues concern permits for cultivation and access to forest resources for collection. In the case of cultivation, there is great uncertainty whether permits will be granted or not. There is also some confusion regarding the government agency responsible for issuing the permits. This is compounded by a lack of transparency regarding the rules and regulations and an unclear process of decision making. This has led to a situation where Indian cultivators, those who venture into *S. costus* cultivation, do not find buyers while the market is flooded with Chinese imports from cultivated sources.

Appendix I listing by itself may not be the best conservation tool for a plant species like *S. costus*, which has a long history and tradition of use in traditional healthcare systems and can be successfully cultivated.

For such a listing to succeed in meeting its desired conservation goals, it is important to link it with appropriate awareness and capacity building programmes. This could focus on alternatives, if any and how to access them; rules and regulations on collection, harvest, trade etc. and how to implement them at the national level, especially in the areas where such plant populations occur naturally or are under cultivation.

Wherever possible, cultivation can and should be promoted in consultation with the CITES Management and Scientific authorities so that the pressure on wild collection can be removed. This needs to be linked to registration of such cultivators and periodic non-detriment findings (NDFs) to establish that the wild populations are not being impacted adversely due to trade.

In cases where wild collection can be permitted, it should be linked to standards like the FairWild Standard.

Lack of adequate knowledge at the national and local levels on what an Appendix I listing imply across various levels is also seen as a major impediment.

Such species, which have a history of traditional use and recent cultivation could also benefit from periodic listing where the listing would originally be for a given period of time (i.e. a 'sunset clause')

and be renewed only on production of credible, scientific information that such listing meets its objectives.

In summary, it is a concern that Indian cultivators appear to have lost a good opportunity while countries like China, who are not range States, seem to have derived some advantage from the CITES Appendix I listing of the species due to their efforts in promoting cultivation.

As such, there is need to reconsider the present listing of the species.

However, the CITES Management Authority of India is of the view that a more comprehensive study needs to be undertaken before a conclusive decision on down listing of the species from Appendix I is considered for discussion.

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