

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



Fourteenth meeting of the Plants Committee
Windhoek (Namibia), 16-20 February 2004

REVISION OF THE # ANNOTATIONS FOR MEDICINAL AND AROMATIC PLANTS
INCLUDED IN THE CITES APPENDICES

1. This document has been prepared by the IUCN/SSC Medicinal Plant Special Group. It is the first interim report of the project outlined in document PC14 Doc 7.2.

Background

2. The Plants Committee has discussed the Annotations for medicinal plants in the Appendices since its 8th meeting and recognized the need for improved #-Annotations.
3. At its 13th meeting (Geneva, August 2003), the Plants Committee recommended that a consultant be contracted to clarify problems that arise because of unclear annotations regarding medicinal plant species included in the Appendices of CITES.
4. In December 2003 the Secretariat commissioned the IUCN/SSC Medicinal Plant Specialist Group to (a) identify the plant species in the CITES Appendices which are frequently and predominantly traded because of their medicinal or aromatic value, (b) identify their main commodities in trade, (c) assess the overall volume of international trade in these commodities, (d) make recommendations regarding the parts and commodities of the identified species that need to be included in the Appendices, (e) provide a glossary explaining and defining the terms that are used in the revised Annotations. The final report is due 30 September 2004.
5. The Plants Committee also decided to establish a supervisory group comprised of *inter alia* the regional representatives of North America and South and Central America and the Caribbean, and the observers from Canada, France (chairman), Germany, the United Kingdom and the United States of America to identify specific problems in the current CITES Appendices for medicinal plants.

Medicinal Plant Species Included in the Appendices

6. Since 1975, a total of 19 species have been included in Appendix I or II specifically because of their over-exploitation for medicinal purposes. The majority of these species were included in the 1990's; most of them are single-species listings (exception: *Guaiacum* spp. in 2002). Other medicinal species are included in Appendix II through the listing of whole genera and families (examples: *Aloe ferox* through *Aloe* spp.; *Dendrobium nobile* through Orchidaceae spp.).
7. In total, the CITES Appendices include nearly 300 species with medicinal trade value¹. The family Orchidaceae alone accounts for about 220 of these medicinal plant species. For most of them, however, international trade is marginal.

¹ A full list of CITES-listed medicinal plant species will be included in the final report.

8. The ToRs of this review include identification of those species in the CITES Appendices which are frequently and predominantly traded because of their medicinal or aromatic value, especially those which (a) have been explicitly listed in the CITES Appendices because of their trade as medicinals, or (b) are primarily traded as medicinals and fall under higher taxon listings. The species included in table 1 meet these criteria.

Annotations for Medicinal Plant Species

9. Most of the plant species included in Appendix II and III are accompanied by an Annotation of the #-series (table 2). These Annotations have been developed to specify the parts and derivatives which are included in the Appendices in addition to living or dead specimens [Article I b iii)].
10. While trade for horticultural purposes is mostly in live specimens, the medicinal trade is often in plant parts or in processed material. Annotations #2, #3 and #7 have been developed to define which parts and derivatives of medicinal plants are subject to the provisions of the Convention. At CoP11, a decision was taken to merge former Annotations #2 and #8 (table 3).
11. However, these Annotations use a number of ambiguous terms, such as “broken material”, “chemical derivative”, “extract”, or “finished pharmaceutical product”. These terms make it difficult for implementation officers to understand which commodities are actually protected.
12. Six species are annotated with the standard Annotation #1 which means that all parts and derivatives which may be relevant for the medicinal trade are subject to controls. *Cistanche deserticola* has no #-Annotation which means that only alive and whole dead specimens are covered by the Convention.

Commodities and their Trade Proportion

13. The trade in medicinal plants consists of a large variety of commodities which range from plant raw material like root or bark to processed drugs like extracts or even finished products ready to be sold in pharmacies.
14. The analysis of existing CITES Annual Report data for the focus species provides an overview of which commodities dominate the trade and which are only marginal (table 4).
15. For many species, however, the official CITES data are not sufficient to identify the quantitative role of commodities in trade (table 5). Additional sources will be identified and evaluated in co-operation with TRAFFIC International. In the course of this project, IUCN will also contact exporting countries of focus species and ask for additional information regarding commodities and their trade relevance.

Guiding Principles

16. Decisions on controls of parts and derivatives must be consistent with the purpose of the Convention “to ensure that no species of wild fauna or flora becomes or remains subject to unsustainable exploitation because of international trade” and “to ensure that international trade in wild fauna and flora is increasingly and consistently conducted at sustainable levels” (Strategic Plan, Not. 1999-76).
17. Many years of experience with CITES implementation show that thorough and consistent trade reporting for CITES species is increasingly difficult the more parts and derivatives are subject to controls. It is therefore advisable to restrict CITES controls to those parts and derivatives or commodities which need to be monitored in order to adequately regulate international trade.
18. Two main principles seem to be appropriate as standard guidance when re-drafting the #-Annotations for medicinal plants in CITES:
 - a) Controls should concentrate on those **commodities which first appear in international trade** as exports from range-states (commodities may range from crude to processed material). Commodities which appear only in re-export from non-range-state countries should be excluded from CITES controls.
 - b) Controls should include only those **commodities which dominate the trade**. Marginal commodities should be exempt from controls.

19. These principles bear the following advantages:

- a) Commodities outlined in 17 (i) and (ii) comprise the significant part of trade which is most likely to cause the conservation concern which has led to the inclusion in CITES.
- b) Plant parts in an early stage of processing can be identified more easily than derived products.
- c) The bulk trade in large quantities can more easily be controlled than retail trade in finished products.
- d) Double-counting of consignments at subsequent steps in the trade chain is avoided.

Plants Committee Votum

20. The Plants Committee is asked to discuss and decide,

- a) whether the guiding principles under 17 should form the basis for the review carried out by IUCN and for the drafting of new Annotations for the focus species;
- b) whether the list of focus species in table 1 is complete;
- c) whether the current review should aim at drafting new #-Annotations also for the species which are currently annotated with #1;
- d) whether the current review should aim at drafting a new #-Annotation also for the *Cistanche deserticola* which is currently not annotated.

21. Member states are asked to contribute to the review by providing information on commodities of the focus species and their relevance in international trade.

Table 1: Medicinal plant species in the CITES Appendices selected for this review

Family	Taxon	App.	Annot.	Entry into force	Crit.
Apocynaceae	<i>Rauvolfia serpentina</i>	II	#2	18.01.1990	a
Araliaceae	<i>Panax ginseng</i>	II	#3	19.07.2000	a
	<i>Panax quinquefolius</i>	II	#3	01.07.1975	a
Berberidaceae	<i>Podophyllum hexandrum</i>	II	#2	18.01.1990	a
Compositae	<i>Saussurea costus</i>	I		01.08.1985 ⁽¹⁾	a
Dicksoniaceae	<i>Cibotium barometz</i>	II	#1	01.07.1975	a
Dioscoreaceae	<i>Dioscorea deltoidea</i>	II	#1	01.07.1975	a
Droseraceae	<i>Dionaea muscipula</i>	II	#1	11.06.1992	a
Leguminosae	<i>Pterocarpus santalinus</i>	II	#7	16.02.1995	a
Liliaceae	<i>Aloe ferox</i>	II	#1	01.07.1975	b
Orchidaceae	<i>Bletilla striata</i>	II	#8	01.07.1975	b
	<i>Cremastra variabilis</i>	II	#8	01.07.1975	b
	<i>Dendrobium nobile</i>	II	#8	01.07.1975	b
	<i>Gastrodia elata</i>	II	#8	01.07.1975	b
Orobanchaceae	<i>Cistanche deserticola</i>	II		19.07.2000	a
Ranunculaceae	<i>Adonis vernalis</i>	II	#2	19.07.2000	a
Ranunculaceae	<i>Hydrastis canadensis</i>	II	#3	18.09.1997	a
Rosaceae	<i>Prunus africana</i>	II	#1	16.02.1995	a
Scrophulariaceae	<i>Picrorhiza kurroo</i>	II	#3	18.09.1997	a
Taxaceae	<i>Taxus wallichiana</i>	II	#2	16.02.1995	a
Thymelaeaceae	<i>Aquilaria malaccensis</i>	II	#1	16.02.1995	a
Valerianaceae	<i>Nardostachys grandiflora</i>	II	#3	18.09.1997	a
Zygophyllaceae	<i>Guaiaicum coulteri</i>	II	#2	13.02.2003	a
	<i>Guaiaicum officinale</i>	II	#2	11.06.1992	a
	<i>Guaiaicum sanctum</i>	II	#2	01.07.1975	c
Criteria:					
(a) = Taxon was explicitly listed in the CITES Appendices because of trade as medicinal.					
(b) = Taxon is primarily traded as medicinals and falls under higher taxon listing.					
(c) = Taxon not solely traded as medicinals but also for other purposes, e.g. timber.					
Sources:					
Annotations	www.cites.org, viewed 28.12.2003				
Entry into force	UNEP-WCMC (2003): Annotated Cites Appendices and Reservations				
1) <i>Saussurea costus</i> (Syn. <i>S. lappa</i>) was included in App. II on 1.7.1975 with Annotation "Designates root".					

Table 2: Currently valid CITES #-Annotations

<p>"In accordance with Article I, paragraph (b), sub-paragraph (iii), of the Convention, the symbol (#) followed by a number placed against the name of a species or higher taxon included in Appendix II or III designates parts or derivatives which are specified in relation thereto for the purposes of the Conventions as follows:"</p>	
#1	Designates all parts and derivatives, except: a) seeds, spores and pollen (including pollinia); b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; and c) cut flowers of artificially propagated plants.
#2	Designates all parts and derivatives, except: a) seeds and pollen; b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; c) cut flowers of artificially propagated plants; and d) chemical derivatives and finished pharmaceutical products.
#3	Designates whole and sliced roots and parts of roots, excluding manufactured parts or derivatives such as powders, pills, extracts, tonics, teas and confectionery.
#4	Designates all parts and derivatives, except: a) seeds, except those from Mexican cacti originating in Mexico, and pollen; b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; c) cut flowers of artificially propagated plants; d) fruits and parts and derivatives thereof of naturalized or artificially propagated plants; and e) separate stem joints (pads) and parts and derivatives thereof of naturalized or artificially propagated plants of the genus <i>Opuntia</i> subgenus <i>Opuntia</i> .
#5	Designates logs, sawn wood and veneer sheets.
#6	Designates logs, sawn wood, veneer sheets and plywood.
#7	Designates logs, wood-chips and unprocessed broken material.
#8	Designates all parts and derivatives, except: a) seeds and pollen (including pollinia); b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; c) cut flowers of artificially propagated plants; and d) fruits and parts and derivatives thereof of artificially propagated plants of the genus <i>Vanilla</i> .
<p>in bold = terms used to describe medicinal plant trade commodities</p> <p>Source: www.cites.org, viewed 28.12.2003</p>	

Table 3: History of #-Annotations for explicitly listed CITES medicinal plant species

	1.7.1975	CoP 1 4.2.1977	CoP 5 1.8.1985	CoP 7 18.1.1990	CoP 8 11.6.1992	CoP 9 16.2.1995	CoP 10 18.9.1997	CoP 11 19.7.2000	CoP 12 13.2.2003
<i>Saussurea costus</i>	[App. I = all parts and derivatives are covered by the Convention]								
<i>Panax quinquefolius</i>	Designates root (#1)		Designates roots and readily recognizable parts thereof. (#2)			#3 Designates whole and sliced roots and parts of roots, excluding manufactured parts or derivatives such as powders, pills, extracts, tonics, teas and confectionery.			
<i>Dioscorea deltoidea</i>	Designates trunks (#3)		Standard Annotation for Appendix II plant species (#1)			#1 Designates all parts and derivatives, except: a) seeds, spores and pollen (including pollinia); b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; and c) cut flowers of artificially propagated plants.			
<i>Cibotium barometz</i>	Designates trunks (#3)		Standard Annotation for Appendix II plant species (#1)			#1 Designates all parts and derivatives, except: a) seeds, spores and pollen (including pollinia); b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; and c) cut flowers of artificially propagated plants.			
<i>Dionaea muscipula</i>	Standard Annotation for Appendix II (#1)				#1 Designates all parts and derivatives, except: a) seeds, spores and pollen (including pollinia); b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; and c) cut flowers of artificially propagated plants.				
<i>Aquilaria malaccensis</i>	Standard Annotation for Appendix II (#1)					#1 Designates all parts and derivatives, except: a) seeds, spores and pollen (including pollinia); b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; and c) cut flowers of artificially propagated plants.			
<i>Prunus africana</i>	Standard Annotation for Appendix II (#1)					#1 Designates all parts and derivatives, except: a) seeds, spores and pollen (including pollinia); b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; and c) cut flowers of artificially propagated plants.			
<i>Pterocarpus santalinus</i>	#7 Designates logs, wood-chips and unprocessed broken material.								
<i>Hydrastis canadensis</i>	#3 Designates whole and sliced roots and parts of roots, excluding manufactured parts or derivatives such as powders, pills, extracts, tonics, teas and confectionery.								
<i>Nardostachys grandiflora</i>	#3 Designates whole and sliced roots and parts of roots, excluding manufactured parts or derivatives such as powders, pills, extracts, tonics, teas and confectionery.								
<i>Picrorhiza kurrooa</i>	#3 Designates whole and sliced roots and parts of roots, excluding manufactured parts or derivatives such as powders, pills, extracts, tonics, teas and confectionery.								
<i>Podophyllum hexandrum</i>	[Standard Annotation for Appendix II plant species] ... and chemical derivatives. (#2)				#2 Designates all parts and derivatives, except: a) seeds and pollen; b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; c) cut flowers of artificially propagated plants; and d) chemical derivatives and finished pharmaceutical products.				
<i>Rauvolfia serpentina</i>	[Standard Annotation for Appendix II plant species] ... and chemical derivatives. (#2)				#2 Designates all parts and derivatives, except: a) seeds and pollen; b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; c) cut flowers of artificially propagated plants; and d) chemical derivatives and finished pharmaceutical products.				
<i>Taxus wallichiana</i>	[Standard Annotation] ... and finished pharmaceutical products. (#8)					#2 Designates all parts and derivatives, except: a) seeds and pollen; b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; c) cut flowers of artificially propagated plants; and d) chemical derivatives and finished pharmaceutical products.			
<i>Adonis vernalis</i>	#3 Designates whole and sliced roots and parts of roots, excluding manufactured parts or derivatives such as powders, pills, extracts, tonics, teas and confectionery.								
<i>Panax ginseng</i>	#3 Designates whole and sliced roots and parts of roots, excluding manufactured parts or derivatives such as powders, pills, extracts, tonics, teas and confectionery.								

<i>Guaiacum officinale</i>		Standard Annotation for Appendix II plant species (#1)	#2 Designates all parts and derivatives, except: a) seeds and pollen; b) seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; c) cut flowers of artificially propagated plants; and d) chemical derivatives and finished pharmaceutical products.
<i>Guaiacum sanctum</i>	Designates timber (#2)	Standard Annotation for Appendix II plant species (#1)	
<i>Guaiacum</i> spp.			
<i>Cistanche deserticola</i>		Designates whole and sliced roots and parts of roots, excluding manufactured parts or derivatives such as powders, pills, extracts, tonics, teas and confectionery. (#3)	[no Annotation, i.e. no parts and derivatives are covered by the Convention]

Currently valid Annotation	Previous Annotation
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Table 4: Commodities of Focus Medicinal Plant Species

<i>Adonis vernalis</i>						
ID sheets	Mainly the dried, whole herb (crude drug) or the same cut (cut drug), sometimes also the powdered herb. In addition the fresh herb.					
Other Sources						
<i>Aloe ferox</i>						
	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	112676		carvings	71511	
		84121	l	cultures	1000	
		60000	cartons	fibres	48	kg
		54888	kg	powder	20853	kg
		7455	bottles		45	l
	extract	14189171	kg	roots	480	
		463919		wax	248	
		42375	l		10	l
		975	cans			
	dried plants	152833				
		14417	kg			
		11032	pieces			
		397	cartons			
		172	boxes			
	leaves	338808				
		134201	kg			
		6500	pieces			
pieces	30820					
stems	85859					
	13445	pieces				
timber	526804	pieces				
	167351	kg				
	38780					
timber pieces	209354					
	12382	kg				
ID sheets	Big pieces of the extract, not or at most coarsely chopped (crude drug) or the same diminished (cut drug). In addition the powdered extract (powdered drug), Aloe dried extract, liquid Aloe gel, Aloe gel powder and minutely cut (Aloe tea) or even powdered.					
Other Sources						
<i>Aquilaria malaccensis</i>						
	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	chips	3616120	kg	oil	387	kg
		14	m3	roots	3005	kg
	logs	117	kg			
	powder	79773	kg			
	timber	94417	kg			
	timber pieces	193	kg			
	derivatives	13200	bottles			
		5405	cartons			
	1308	kg				

	extract	5	kg			
ID sheets	Mainly dried, resinaceous, cut heartwood of variable shape and size (crude drug) or the same minutely cut (cut drug). In addition powdered wood and essential oil. Different grades are distinguished according to the resin content.					
Other Sources	Fungus infested wood, but also the oleoresin and the essential oil is exported. [4133]					
<i>Bletilla striata</i>	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	49237	kg			
		508				
		430	cartons			
	roots	1919190				
		40201	kg			
ID sheets	Dried and mainly sliced root tubers (cut drug), further also dried, whole (crude drug) or powdered tubers (in horticultural trade: fresh, whole tubers).					
Other Sources						
<i>Cibotium barometz</i>	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	51820	kg			
		10663	bottles			
		10500	boxes			
		6458	cartons			
		1206				
		30	bags			
	dried plants	466100	kg			
	roots	1282020	kg			
ID sheets	Mainly dried, sliced rootstocks (cut drug). In addition the whole, dried rootstock (crude drug). Dried, not diminished hairs (= fimbrias) of the rootstock (crude drug).					
Other Sources						
<i>Cistanche deserticola</i>	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	6260	kg			
	roots	3821	kg			
	stems	6631	kg			
Other Sources	Main part of the plant is the stem, whether subterranean or aboveground. Mainly these stems are used for medicinal purposes. [7146]					
<i>Cremastra variabilis</i>	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	5286	kg			
		100				
	roots	1000	kg			
Other Sources	Pseudo-bulb. [5888]					

<i>Dendrobium nobile</i>	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	36606		cultures	2	
		17649	kg			
		8990	boxes			
		1489	cartons			
		420	bottles			
	extract	1	bottles			
	dried plants	125500	kg			
	roots	639576	kg			
		503				
	stems	30003	kg			
ID sheets	Dried, stems cut into long pieces (crude drug) or the same minutely cut (cut drug). In addition dried stems or stem pieces rolled into small springs or spheres or spirally rolled („spiral drug“, Huosan Shihu) and also fresh stems.					
Other Sources						
<i>Dionaea muscipula</i>	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	cultures	160001				
	extract	50	kg			
	roots	5000				
Other Sources						
<i>Dioscorea deltoidea</i>	Major Commodities			Marginal Commodities		
Other Sources						
<i>Gastrodia elata</i>	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	61535	kg	powder	152	kg
		51388	bottles			
		18284	boxes			
		14294				
		11358	cartons			
	extract	10				
	dried plants	374	kg			
	roots	334374	kg			
		46835				
	stems	960	kg			
ID sheets	Mainly dried, sliced rootstocks (cut drug), in addition also dried, whole rootstocks (crude drug).					
Other Sources						

<i>Guaiaecum officinale</i>			Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	sawn wood	15050	kg	carvings	48			
	timber	11615	kg	extract	5	kg		
	timber pieces	42966						
ID sheets	Dried, big or ± coarsely diminuted pieces of mainly the heartwood of stem or branch pieces with or without shares of sapwood (crude drug) or the same rasped or cut into small cube-like pieces (cut drug). In addition the powdered wood and essential oil. Coarse, irregular shaped resin pieces (crude drug), rarely globose granules or bowls or smaller fragments (cut drug). In addition the powdered resin. Bark.							
Other Sources								
<i>Guaiaecum sanctum</i>			Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	sawn wood	15030	cm3	carvings	20	kg		
	timber	15000	kg	derivatives	150	pieces		
		145	m3	dried plants	8			
		214485	kg					
		37225	pieces					
		9730						
	timber pieces	2504	m3					
	31							
ID sheets	See <i>G. officinale</i>							
Other Sources								
<i>Hydrastis canadensis</i>			Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	dried plants	4821	kg	derivatives	5	l		
	roots	27728	kg	extract	13	kg		
		25300						
ID sheets	Herb of <i>Hydrastis canadensis</i> is also in trade, but of minor importance. Dried, whole rootstock including attached roots (crude drug) or the same cut (cut drug). In addition the powdered rootstock.							
Other Sources	Traded as a dried crude botanical (roots), also as extract. Limited trade in alkaloids exists. Fibrous roots are also sold with the roots. Dried leaves may be traded when root material is scarce. Retail products include roots (whole, chopped and powdered), tinctures, capsules, tablets, extracts and other items. [5103]							
<i>Nardostachys grandiflora</i>			Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	roots	12500	kg					
ID sheets	Dried, mainly whole rootstocks and roots (crude drug). In addition the powdered rootstock and the essential oil							
Other Sources	Mostly traded as rhizomes and extracts, also stick incense. Oleoresin and oil are exported. [5103]							
	Main products in international trade are unprocessed rhizomes with smaller amounts in processed products such as oil. The 'Marc', the root after the essential oil has been extracted, is also exported. [5997]							

<i>Panax ginseng</i>			Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	roots	243	kg					
ID sheets	Cultivated roots traded in different commodities: fresh whole roots, also in alcohol, dried whole roots, peeled or unpeeled, straight or rolled in the lower part, white or red, glassy, horny roots, lateral roots, the same cut in slices or in small pieces. Also powdered roots, freeze-dried roots or roots soaked in syrup.							
Other Sources								
<i>Panax quinquefolius</i>			Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	75330	kg	chips	45	kg		
		10236		powder	2935	kg		
		7862	cartons					
		862	boxes					
		99	bottles					
	extract	48	kg					
	dried plants	25808	kg					
		52						
	fibres	81211	kg					
	roots	33908422	kg					
		35341						
		236	bags					
		26	shipments					
ID sheets	Mainly dried, whole roots (crude drug), sometimes peeled, very rarely treated differently after harvest and becoming reddish coloured (Red Ginseng), also variably diminished roots (cut drug). Also powdered roots and fresh roots.							
Other Sources								
<i>Picrorhiza kurrooa</i>			Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	100	kg					
	extract	300	kg					
	roots	411	kg					
ID sheets	Mainly the dried, coarsely cut rootstock (crude drug).							
Other Sources	Traded as a rhizome or rootstock, and as an extract made from the rootstock consumed as a tonic. [5103]							
	Main products in international trade are unprocessed rhizomes with smaller amounts in processed products such as oil. [5997]							
<i>Podophyllum hexandrum</i>			Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	10000	kg					
	dried plants	15487	kg					
	roots	36570	kg					
Other Sources								

<i>Prunus africana</i>	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	bark	4714832	kg	carvings	2	
		16021			1	sets
	powder	3057007	kg	roots	1	kg
	derivatives	150900		sawn wood	105	m3
		1869	kg	timber	20	kg
	extract	1269250	kg		3	
		520		timber pieces	800	kg
ID sheets	Mainly dried, big or coarsely cut root pieces (crude drug), rarely root pieces minutely diminished (cut drug) or even powdered. Soft extract or powdered extract.					
Other Sources						
<i>Pterocarpus santalinus</i>	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	extract	22141	kg	carvings	1147	sets
	timber	30	m3	sawn wood	5100	kg
					250	m3
ID sheets	Dried, irregular, sometimes big pieces, logs, cubes or discs or at most longitudinally cut pieces of the heartwood (crude drug) or the same rasped or cut into small pieces (cut drug). In addition the powdered heartwood, essential oil and extract.					
Other Sources						
<i>Rauvolfia serpentina</i>	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	2000000		powder	50	kg
		14	kg			
	extract	7	kg			
	roots	33136	kg			
ID sheets	Dried, at most coarsely cut roots (crude drug) or the same cut in small, irregular pieces (cut drug). In addition powdered roots, extract (reserpine) and essential oil.					
Other Sources						
<i>Saussurea costus</i>	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	25456998	boxes	chips	600	kg
		13842613		seeds	102	kg
		2323383	kg			
		1604885	bottles			
		803021	bags			
		54060	cartons			
		39600	flasks			
	extract	3113976	bottles			
		24120	kg			
		518	cartons			
	oil	4200	bottles			
		1186	kg			
	powder	17662	kg			

	dried plants	827498	kg			
		281186				
	roots	7263002	kg			
		280000	boxes			
		256791				
		1000	cartons			
ID sheets	Mainly dried, sliced roots (cut drug), in addition also at most coarsely cut roots (crude drug). Also powdered roots and essential oil.					
Other Sources						
<i>Taxus wallichiana</i>	Major Commodities			Marginal Commodities		
CITES Trade Data 1975-2002	derivatives	4000	kg			
	extract	96	kg			
	leaves	100	kg			
ID sheets	Mainly dried young twigs and needles, often chopped (cut drug, crude drug). In addition bark and extract (Taxol, Paclitaxel).					
Other Sources	Earlier the leaves were exported but recently the solvent extract is exported to be used in Taxol production. [4133]					
CITES Trade Data: Figures given are total trade volumes based on CITES Annual Reports for 1977-2002 as provided by UNEP-WCMC in Jan 2004. Insignificant terms like 'live', 'specimens', 'unspecified', 'flowers', 'seeds', units like 'g', 'ml' and 'oz', and very small volumes are not shown in this table.						
ID sheets: Lange, D. & Schippmann, U. (2001): Identification manual flora. Section 4. Parts and derivatives. Medicinal and aromatic plants. CITES Secretariat, Geneva.						
Other sources:						
[4133] = Shah, N.C., Central Institute of Medicinal and Aromatic Plants, Lucknow (19.9.1994): in litt. to N. McGough, Royal Botanic Gardens Kew.						
[5103] = IUCN & TRAFFIC (1997): Analyses of proposals to amend the CITES Appendices submitted to the tenth Meeting of the Conference of the Parties, Harare, Zimbabwe, 9-20 June 1997.						
[5888] = Traffic East Asia (1999): Medicinal plant significant trade study (phase 2). Final report submitted to the Bundesamt für Naturschutz, Germany. TRAFFIC East Asia. Unpublished report.						
[5997] = Mulliken, T. (2000): Implementing CITES for Himalayan medicinal plants <i>Nardostachys grandiflora</i> and <i>Picrorhiza kurrooa</i> . Traffic Bulletin 18 (2): 63-72.						
[7146] = IUCN & TRAFFIC (s.dat.): The IUCN/TRAFFIC analyses of proposals to amend the CITES Appendices. Part Flora. Retrieved from http://www.iucn.org/webfiles/doc/SSC/CoP12/Analyses/all_flora.pdf , viewed: 08.01.2004.						

Table 5: Analysis of gaps in data basis

Taxon	Trade Volumes	Commodities
East Asia		
<i>Podophyllum hexandrum</i>	Only little WCMC trade data	Commodities unclear; not included in CITES ID sheets
<i>Panax ginseng</i>	Only two trade records at WCMC	ok
<i>Cistanche deserticola</i>	Only recently listed, therefore very little trade data at WCMC	ok
<i>Cremastra variabilis</i>	Only little WCMC trade data; no other literature available so far	No clear picture of commodities and their ratios
<i>Bletilla striata</i>	ok	ok
<i>Cibotium barometz</i>	ok	ok
<i>Dendrobium nobile</i>	ok	ok
<i>Gastrodia elata</i>	ok	ok
South Asia & Himalayas		
<i>Taxus wallichiana</i>	Only little WCMC trade data	No clear picture of commodities and their ratios
<i>Dioscorea deltoidea</i>	No trade data at WCMC	Commodities unclear; not included in CITES ID sheets
<i>Pterocarpus santalinus</i>	Only little WCMC trade data	No clear picture of commodities and their ratios
<i>Saussurea costus</i>	ok	No clear picture of commodities and their ratios
<i>Nardostachys grandiflora</i>	Only little WCMC trade data	ok
<i>Picrorhiza kurrooa</i>	Only little WCMC trade data	ok
<i>Rauvolfia serpentina</i>	Only little WCMC trade data	No clear picture of commodities and their ratios
South East Asia		
<i>Aquilaria malaccensis</i>	ok	No clear picture of commodities and their ratios
Africa		
<i>Aloe ferox</i>	ok	ok
<i>Prunus africana</i>	ok	ok
Europe		
<i>Adonis vernalis</i>	No trade data at WCMC	ok
North America		
<i>Dionaea muscipula</i>	Only little CITES trade data; Is trade in live plants for horticultural or medicinal reason?	Commodities unclear; not included in CITES ID sheets
<i>Hydrastis canadensis</i>	ok	ok
<i>Panax quinquefolius</i>	ok	ok
<i>Guaiacum coulteri</i>	Only recently listed, therefore no trade at WCMC	Commodities unclear; not included in CITES ID sheets
<i>Guaiacum officinale</i>	Only recently listed, therefore no trade at WCMC	No clear picture of commodities and their ratios
<i>Guaiacum sanctum</i>	ok	No clear picture of commodities and their ratios