

## AMENDMENTS TO APPENDICES I AND II OF THE CONVENTION

A. Proposal

Delisting from Appendix II of *Cactaceae*, Subfam. *Opuntioideae* (all species).

B. Proponent

The Swiss Confederation.

C. Supporting statement1. Taxonomy

1.1 Class: *Angiospermae* (Angiosperms; Flowering Plants)

1.2 Order: *Caryophyllales*

1.3 Family: *Cactaceae*

1.4 Subfamily: *Opuntioideae* Schumann, all species

(361 species, of which 156 are only provisionally accepted at species level, according to the CITES Cactaceae Checklist, 2nd edition, most species belonging to the genus *Opuntia* Miller, few to the additionally accepted genera *Pereskia* Britton & Rose, *Pterocactus* Schumann, *Quiabentia* Britton & Rose and *Tacinga* Britton & Rose) [Anderson (2001) now accepts many more genera: *Austrocylindropuntia* Backeberg, *Brasilopuntia* (K. Schumann) A. Berger, *Consolea* Lemaire, *Cumulopuntia* F. Ritter, *Cylindropuntia* (Engelmann) F. M. Knuth, *Grusonia* F. Reichenbach ex Britton & Rose, *Maihueniopsis* Spegazzini, *Miqueliopuntia* Frič ex F. Ritter, *Opuntia* Miller, *Pereskia* Britton & Rose, *Pterocactus* K. Schumann, *Quiabentia* Britton & Rose, *Tacinga* Britton & Rose, *Tephrocactus* Lemaire and *Tunilla* D. R. Hunt & Illiff. This concept is not yet generally accepted].

1.5 Scientific synonyms: None.

1.6 Common names: Nopal, Cholla, Prickly Pear, Tuna, Tunilla

Further (for certain *Opuntia* spp. in certain regions): airampo, ayrampu, alfilerillo, catalinaria, tasajillo, tasajo, cardoncillo, velas de coyote, clavelilla, xoconostle, joconostli, cardenche, coyonostle, coyonostli, entreña, cardón, abrojo, tencholote, coyonostle, organillo, viejo, sacasil, cardo, nopal cardoso, vixivixio, nopal de tortuga, nopal de culebra, cegador, cuija, coyotillo, pak'an, yaaxpakan, nopal de caballo, nopal duraznillo, duraznillo blanco, nopal colorado, nopal crinado, nopal de crines, nopal cascarón, tuna chaveña, nopal memelo, tempranilla, nopal tapón, bartolona, nopal camueso, arrastradillo, nopal serrano, oveja echada, chuchampe, perrito, gatito, puskaye, puscaya, puskayo, espina, jala-jala, leoncito

Further (for certain *Nopalea* spp.): zacam, nopal de lengüita, lengua de vaca, nopal chamacuero, tuna de playa

Further (for certain *Pereskioopsis* spp.): alfilerillo, chapistle, tzompahuiztle, alcages, xoconoxtle, rosa amarilla, alcahuésar, tuna de agua, chirrioncillo, tasajillo, joconoxtle, patilón

Further (for *Quiabentia* spp.): quiabento

## 2. Biological data

### 2.1 Distribution:

The subfamily *Opuntioideae* is native to North- and South America, from southern Canada to Patagonia, and to the Caribbean from sea level to 5200 m altitude in the Andes of South America. Various species are introduced in many other regions of the world with mediterranean or semiarid climates, such as Australia, South Africa, Madagascar or the Mediterranean region.

### 2.2 Habitat availability:

Opuntioids inhabit diverse types of vegetation, but are most frequent in semi-deserts, tropical seasonal forests, succulent and thorn scrub and dry grasslands, inhabiting climax vegetation, but also frequently degraded habitats, such as overgrazed grasslands or plowed land, where they are even favoured.

### 2.3 Population status:

In Mexico, 6 spp. of *Opuntia* (of ca. 129 native spp.) are officially classified as rare, none as endangered (SEMARNAP). Rare species (\* = endemic to MX): *Opuntia anteojoensis* Pinkava\*, *O. arenaria* Engelm (referred to *O. polyacantha* Haworth in the CITES Cactaceae Checklist, 2nd edition), *O. bravoana* Baxter\*, *O. excelsa* Sanchez-Mejorada\*, *O. rosarica* Lindsay\*, *O. santamaria* (Baxter) Wiggins\*. These rare species have not been reported in international trade.

In USA, a single species of *Opuntia* (of ca. 81-87 native spp.), the Bakersfield cactus (*Opuntia treleasei* Coulter) is nationally listed under the Endangered Species Act as endangered by habitat loss (US Fish and Wildlife Service). It has not been reported in international trade. Further, 44 taxa (either species or subspecies or varieties) are reported to be rare on the level of single states, but not on national level.

In Brazil, some native species of the caatinga vegetation are reported to suffer from forest clearance for agriculture: *Opuntia palmadora* Britton & Rose, *Tacinga braunii* Esteves Pereira and *T. funalis* Britton & Rose. Further, *Opuntia wernerii* Eggl is reported to be threatened through granite quarrying (Taylor, Kiesling & Kraus in Oldfield, ed., 1997).

In north-eastern Argentina, eastern Paraguay and especially Uruguay, *Opuntia* spp. and other cacti are reported to be seriously affected by agricultural practices and forest clearance. (Taylor, Kiesling & Kraus in Oldfield, ed., 1997).

In the Cactus and Succulent Plants - Status Survey and Conservation Action Plan of the IUCN/SSC Cactus and Succulent Specialist Group (Oldfield, ed. 1997), Opuntioids are not mentioned as of concern.

#### 2.4 Population trends:

Not applicable.

#### 2.5 Geographic trends:

Wide spread outside the natural range through human activity. Strongly invasive in some regions of the world.

#### 2.6 Role of the species in its ecosystem:

*Opuntia* spp. are reported to be used extensively as a source of nutrition by many animals, such as deer, javelina (peccaries), rodents and birds (Anderson 2001).

#### 2.7 Threats:

In some regions inside and outside the natural range, Opuntioids are actively eradicated, especially by burning of vegetation, in order to improve the land for cattle grazing. Further, habitats are destroyed by conversion into agricultural land and by other activities such as road construction, urbanisation etc. This is reported to threaten certain species so far (see 2.3).

### 3. Utilization and trade

#### 3.1 National utilization:

As the geographical range of Opuntioids is very extensive, this account is most probably incomplete. Manly in Mexico, stems ("nopalitos") and fruits ("tuna") of *Opuntia* spp. are widely used for human consumption and Opuntias are locally used as medicinal plants (treatment for diarrhoea, diabetes, whooping cough, prostate problems, rheumatism and nose bleed) and for production of natural carmine dyes from the crushed bodies of the cochineal insect *Dactylopius coccus* („cochinilla del nopal"), which is parasitic on *Opuntia* spp. Large plantations of several species of *Opuntia* can be found in many places in Mexico, and fruits and young stems are also collected from wild plants. Fruits are processed into prickly pear honey („miel de tuna") and prickly pear cheese („queso de tuna"). An other popular use is planting stems as fences or placing them on stone walls as a substitute for barbed wire in rural regions. In Cuba, a traditional red wine is made out of the fruits of *Opuntia dillenii* (Ker-Gawler) Haworth and the mucilage from the stems is still in use to make a paint. Such paint is also in use in Mexico. Fruits of *Opuntia schumannii* Weber ex Berger are used to colour ice cream and juices in northern South America and seeds of *Opuntia soehrensii* Britton & Rose are used as a red food colouring in South America. Outside the natural range, Opuntias are cultivated for the production of natural carmine dyes on Canary Islands. Further in the Mediterranean region, fruits of *Opuntia ficus-indica* (Linnaeus) Miller are used for human consumption. Especially on the island of Sicily, large plantations had been established. The fruits are also processed into syrup and jam. Commercial plantings of *Opuntia ficus-indica* are also found in Argentina, Brazil, Chile, Algeria and South Africa. In some regions of the world, inside and outside the natural range, stems of *Opuntia* spp. are used as cattle fodder and forage, especially during drought periods (Benson 1982, Bravo & Sanchez-Mejorada 1991, Valles ed. 1997, Fitz Maurice & Anderson in Oldfield, ed. 1997, Anderson 2001).

#### 3.2 Legal international trade:

“Reported trade” (as compiled from the annual CITES reports of the parties, source: WCMC, John Caldwell, 2001) in wild-collected specimens has been compiled, checking the following genus names: *Airampoa*, *Austrocylindropuntia*, *Brasiliopuntia*, *Consolea*, *Corynopuntia*, *Cumulopuntia*, *Cylindropuntia*, *Grusonia*, *Maihueniopsis*, *Marenopuntia*, *Micropuntia*, *Miqueliopuntia*, *Nopalea*, *Opuntia*, *Pereskiopsis*, *Platyopuntia*, *Pterocactus*, *Puna*, *Quiabentia*, *Tacinga*, *Tephrocactus*, *Tunilla* (these names only partly represent accepted genera, as taxonomy is still unresolved; some genus names are considered as synonyms of *Opuntia* in the CITES Cactaceae Checklist, 2nd edition).

Taxon	Year	Live*	Other (timber, carvings, fruits)
Austrocylindropuntia spp.	1999	3	2 fruits
Consolea spp.	1995	8	
	1996	4	
Cylindropuntia spp.	1995	2	
	1998		9 + 2000kg timber
	1999	1	
Maihueniopsis spp.	1999	3	
Nopalea spp.	1996		2
Opuntia spp.	1989	3	
	1991	72	
	1992	27	15 + 7054 pounds timber
	1993	23	45 timber
	1994	137	20'000 + 150 kg timber
	1995	43	122'867 timber
	1996	1515	44'485 timber
	1997	45	6750 + 1258 kg timber
	1998	11	8128 + 40 m3 + 2000 kg timber, carvings
	1999	22	11 fruits + 15 carvings
Pterocactus spp.	1992	57	
	1996	29	
Tephrocactus spp.	1996	19	
	1999	2	

\* Mostly for scientific purposes

“Reported trade” in wild-collected live specimens is minimal, it is mainly exchange of specimens for scientific purposes. Reported commercial trade in wild-collected specimens is predominantly in timber (carvings) of *Opuntia* spp. (*Cylindropuntia* spp.). Most such timber has been exported from Mexico to Japan and USA, and from USA to Japan and Europe. This timber trade is in most common species of “*Cylindropuntia*”. Harvest is restricted to dry “skeletons” (lignified vascular bundles), thus no direct impact on populations is presumed. Further, harvesting of “skeletons” has to be done in extensive populations of common species for economic reasons. Consequently, none of the involved species are listed as rare or endangered by their countries of origin:

*Opuntia bigelowii* Engelman timber has been exported from USA. The species is widely distributed in southwestern USA and northwestern Mexico (Benson 1982, Bravo 1978), forming extensive stands in Sonoran desert vegetation (Shreve & Wiggins 1964).

*Opuntia cholla* Weber and *O. fulgida* Engelman timber has been exported from Mexico. *O. cholla* is widely distributed in the whole Peninsula of Baja California in Mexico (Bravo 1978). *O. fulgida* is widely distributed in southwestern USA and northwestern Mexico and locally common, forming extensive forests (Benson 1982, Bravo 1978).

Trade in artificially propagated specimens for horticulture is extensive worldwide, but not affecting wild populations. Propagation is usually vegetative, using cuttings, that can be rooted very easily. This trade is already partly excluded from CITES (see 7): The most important species in horticulture is *Opuntia microdasys* (Lehmann) Pfeiffer. Its cultivars are excluded from CITES prescriptions (°608).

### 3.3 Illegal trade:

Not likely.

### 3.4 Actual or potential trade impacts:

No species is reported to be endangered by international trade in wild-collected specimens.

### 3.5 Artificial propagation for commercial purposes (outside country of origin):

Very extensively propagated in horticulture in Europe, also planted for production of fruits in the Mediterranean region and in South Africa. The international trade is already partly excluded from CITES (see 7).

## 4. Conservation and management

### 4.1 Legal status:

#### 4.1.1 National:

To be reported by range-states upon consultation, according to Resolution Conf. 8.21.

#### 4.1.2 International:

Included in Appendix II of CITES in 1975, subsequently partly excluded from CITES (see 7).

### 4.2 Species management:

To be reported by range-states upon consultation, according to Resolution Conf. 8.21.

#### 4.2.1 Population monitoring:

To be reported by range-states upon consultation, according to Resolution Conf. 8.21.

#### 4.2.2 Habitat conservation:

To be reported by range-states upon consultation, according to Resolution Conf. 8.21.

#### 4.2.3 Management measures:

To be reported by range-states upon consultation, according to Resolution Conf. 8.21.

#### 4.3 Control measures:

To be reported by range-states upon consultation, according to Resolution Conf. 8.21.

##### 4.3.1 International trade:

See under 3.

##### 4.3.2 Domestic measures:

To be reported by range-states upon consultation, according to Resolution Conf. 8.21.

#### 5. Information on similar species

*Cactaceae*, subfamily *Opuntioideae* can be defined morphologically by the presence of characters, which are exclusive in their combination, or some of them even on their own (as indicated below).

Opuntioids are terrestrial cacti, showing multiply segmented stems (fig. a) with cylindrical (fig. b), globose or flattened (fig. a) stem segments and spiniferous areoles, which are not restricted to edges of ribs or pronounced tubercles of the stem, but regularly arranged on the whole stem surface (fig. a), partly on low tubercles (fig. b) and which bear spines and glochids (small, barbed bristles occurring in the spiniferous areoles; exclusively found in Opuntioids; rarely concealed [only in *Opuntia clavarioides* Pfeiffer]) (fig. c) as well as deciduous or rarely persistent leaves in new growth (rudimentary to conspicuous) (figs. a and b), and producing seeds with a bony aril (exclusively found in Opuntioids) (fig. d).

Timber of Opuntioids can not be confounded with the woody cylinders of Cactoids (*Echinopsis chiloensis* [Colla] Friedrich & Rowley, *Eulychnia acida* Philippi) that are used for the production of rainsticks (CITES Appendix II). Rainsticks are filled with fine gravel. But the woody cylinders of Opuntioids („Cylindropuntias“) are coarsely perforated and sometimes have little volume in the centre (fig. e) and therefore can not be used for the production of rainsticks, as they could not be filled with gravel.

#### 6. Other comments

##### Early listings of higher taxa

Opuntioid cacti have mainly been included in Appendix II of CITES in 1975, because the entire family of the *Cactaceae* has been listed then, without differentiating between lower taxa with different conservation and trade status.

After 25 years of monitoring under CITES, international trade in *Cactaceae* is better understood and moreover, has notably changed under the influence of CITES. It seems

possible today to differentiate between the various subfamilies of *Cactaceae* and to concentrate the efforts of CITES on the subfamily *Cactoideae*.

### Identification

The definition of Opuntoid cacti as given above is based on clear morphological criteria and most likely to define Opuntoid cacti accurately enough to prevent confusion with other cacti.

It has to be considered, that the already existing, substantial exemptions of certain Opuntoids (see 7) request exactly the same kind of identification, like it is resulting from this proposal. Up to now, this has not lead to reports on identification problems.

The main concern is to avoid confusion with members of subfamily *Cactoideae*, which holds the species that are affected by international trade, e.g. all taxa listed in Appendix I. Confusion is not probable, but might occur with some small epiphytic cacti with segmented, flattened stems, *Schlumbergera* Lemaire or certain spp. of *Hatiora* Britton & Rose. These however lack glochids as well as leaves in new-growth, are dwarf-sized, have pendant stems and a root system typical for epiphytes. They can therefore easily be told apart. The existing exceptions (°608) for certain taxa of *Schlumbergera* and *Hatiora* already request capacity for their identification. Further, some cereoid or columnar, shrubby or arborescent cacti like *Calymmanthium* Ritter, *Armatocereus* Backeberg or *Jasminocereus* Britton & Rose show segmented or nearly segmented stems, but they have strongly ribbed or winged stems with the spiniferous areoles restricted to the edges of the ribs and they lack glochids as well as leaves in new-growth. There is little possibility of confusion.

### Conservation

If after delisting of *Opuntioideae*, a species should prove to suffer from unsustainable levels of international trade in wild-collected specimens, it should be specifically included in the appropriate Appendix of CITES in a later CoP.

### Existing exceptions from the provisions of CITES

There are already two substantial exceptions for Opuntoid cacti. One exception is referring to parts and products of introduced populations and artificially propagated specimens of all species of subgenus *Opuntia* (#4 d), the other is referring to artificially propagated specimens of cultivars of *Opuntia microdasys* (°608), the most important species in horticulture. These two exceptions would no longer be needed, if Opuntoid cacti would be delisted from Appendix II.

### Validity of data

The IUCN Red List of Threatened Plants (Walter & Gillett 1998) lists various taxa of the genus *Opuntia* (7 species and 6 varieties) as endangered. These assessments however are controversial and urgently need further study and careful interpretation. They are based on data gathered from literature and partly refer to a regional status of the taxa concerned and not to the status in the whole range or on national level. *O. atacamensis* Philippi (CL), *O. aureispina* (Brack & Heil) Pinkava & Parfitt (US), *O. jamaicensis* Britton & Harris (JM), *O. pachypus* Schumann (PE), *O. sanguinea* Proctor (JM) and *O. yanganucensis* (Rauh & Backeberg) Rowley (PE) are listed as endangered in their whole range. But the taxonomical status of the listed taxa is partially unresolved. From the species listed above, only *O. aureispina* and *O. pachypus* have the status of accepted species in the CITES Cactaceae Checklist (2<sup>nd</sup> edition) and none of the varieties are accepted (Anderson [2001] however accepts 6 of the 7 species and 3 of the 6 varieties). Further, the listings are partly in

contradiction with national listings (see 2.3). For example, from the 8 taxa (species and varieties) of *Opuntia* native to the United States and listed as endangered in the IUCN Red List, none is nationally listed as endangered in USA. On the other hand, the only species that is nationally listed as endangered in USA, *O. treleasei*, is not listed as endangered in the IUCN Red List (the taxon in deed has two different listings in the IUCN Red List: It is ambiguously listed as indeterminate, occurring in California, and at the same time, under its synonym *O. basilaris* var. *treleasei*, it is listed as vulnerable, occurring in Arizona, California and Utah). As long as such contradictions are unresolved, the IUCN Red List can not be given full consideration.

## 7. Additional remarks

This proposal is submitted to the Secretariat before 5 July 2001 for the agenda of the 11th meeting of the Plants Committee (according to Notification No. 2001/015). At the same time, it is submitted for consultation of range-states and for consideration at the next meeting of the Conference of the Parties (according to Resolution Conf. 8.21).

The Swiss Confederation would like to invite range-states as further proponents.

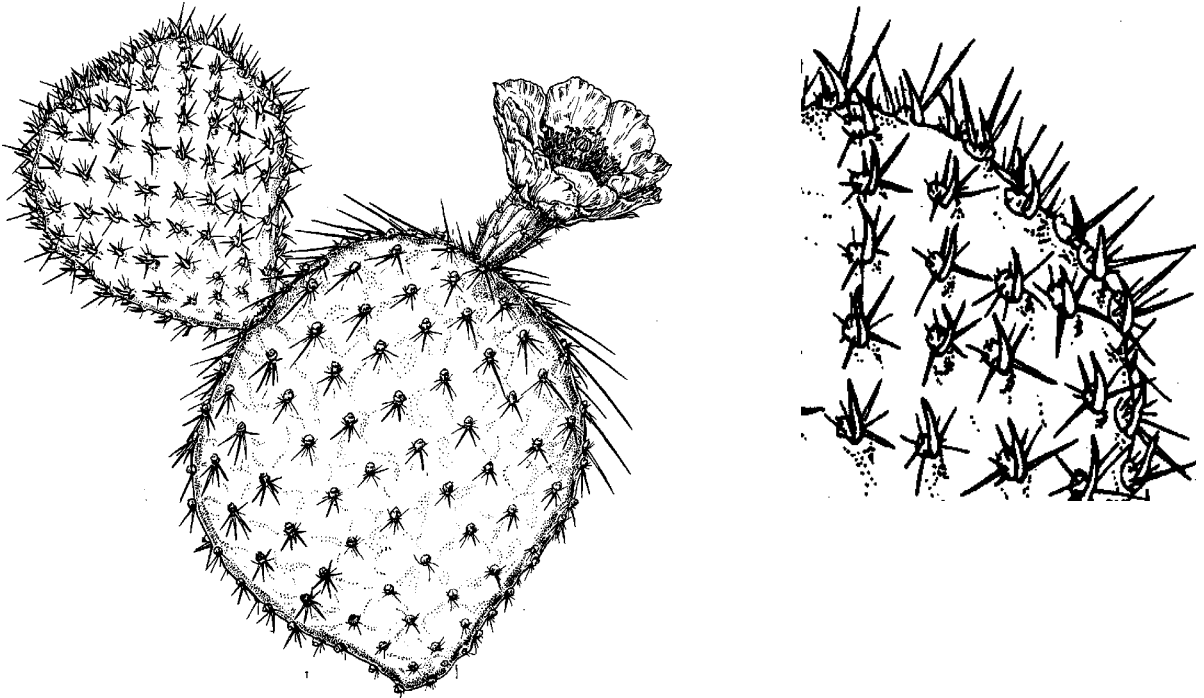
## 8. References

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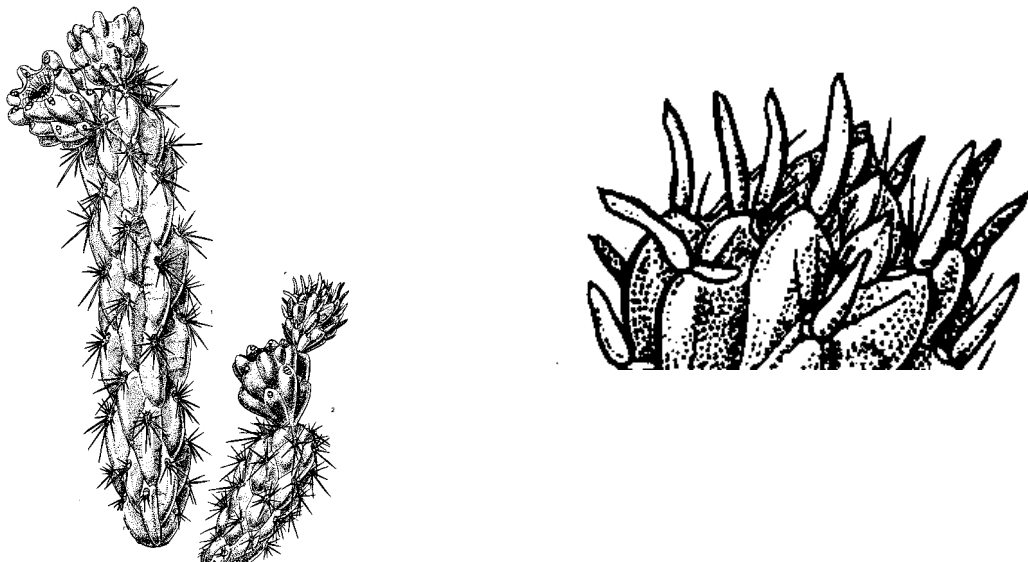


Illustrations:

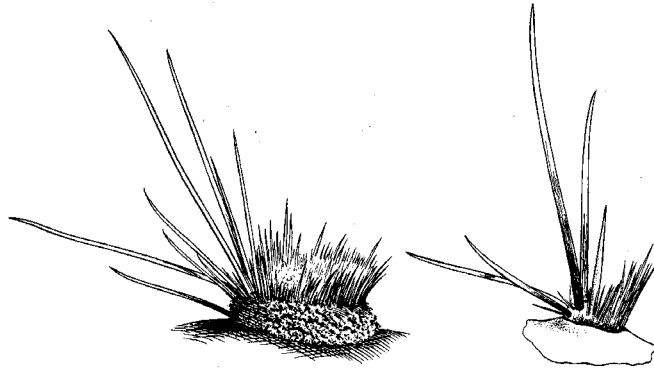
- a) Segmented stem with rudimentary leaves on new growth (upper segment, enlarged at right) and spiniferous areoles distributed on the whole stem surface, stem flattened ("Platyopuntia")



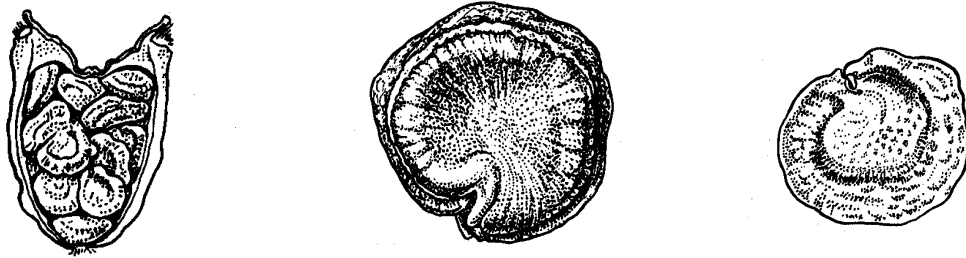
- b) "Cylindropuntia" with cylindric stem and spiniferous areoles on low tubercles; rudimentary leaves on new-growth (enlarged at right)



c) 2 spiniferous areoles, each with spines (left part) and glochids (right part). Glochids are small, barbed bristles, different from the spines, very easily breaking off, penetrating skin and sticking because of the barbs, only occurring in Opuntioids



d) fruit (left) and seeds (centre and right) with a bony aril



e) *Cylindropuntia* timber (lignified vascular bundles)



## AMENDMENTS TO APPENDICES I AND II OF THE CONVENTION

A. Proposal

Delisting from Appendix II of leaf-bearing cacti (*Cactaceae*): Subfam. *Pereskioideae* (all species) and the genus *Pereskioopsis* (all species) and the genus *Quiabentia* (all species).

B. Proponent

The Swiss Confederation.

C. Supporting statement1. Taxonomy

1.1 Class: *Angiospermae* (Angiosperms; Flowering Plants)

1.2 Order: *Caryophyllales*

1.3 Family: *Cactaceae*

1.4 Subfamily: *Pereskioideae* Schumann incl. genera *Pereskia* Miller and *Maihuenia*

(Philippi ex F. A. C. Weber) Schumann, all species

[comprising presently, according to the CITES Cactaceae Checklist: *P. aculeata* Miller, *P. aureiflora* Ritter, *P. bahiensis* Gürke, *P. bleo* (Knuth) De Candolle, *P. diaz-romeroana* Cardenas, *P. grandifolia* Haworth, *P. guamacho* Weber, *P. horrida* (Knuth) De Candolle, *P. lychnidiflora* De Candolle, *P. marcanoi* Areces, *P. nemorosa* Rojas, *P. portulacifolia* (Linnaeus) Haworth, *P. quisqueyana* Liogier, *P. sacharosa* Grisebach, *P. stenantha* Ritter, *P. weberiana* Schumann, *P. zinniiflora* De Candolle, *M. patagonica* (Philippi) Britton & Rose, *M. poeppigii* (Pfeiffer) Schumann]

and

Genus: *Pereskioopsis* Britton & Rose (subfamily *Opuntioideae* Schumann), all species

[comprising presently, according to the CITES Cactaceae Checklist: *P. aquosa* (Weber) Britton & Rose, *P. blakeana* J. G. Ortega, *P. diguetii* (Weber) Britton & Rose, *P. kellermanii* Rose, *P. porteri* (Brandege ex Weber) Britton & Rose, *P. rotundifolia* (De Candolle) Britton & Rose, *P. spathulata* (Otto ex Pfeiffer) Britton & Rose]

and

Genus: *Quiabentia* Britton & Rose (subfamily *Opuntioideae* Schumann), all species

[comprising presently, according to the CITES Cactaceae Checklist: *Q. verticillata* (Vaupel) Vaupel and *Q. zehntneri* (Britton & Rose) Britton & Rose]

1.5 Scientific Synonyms: The genus *Rhodocactus* (Berger) F. Knuth, originally described as a subgenus of *Pereskia*, is included in genus *Pereskia* (Hunt 1999);

*Maihuenia* has recently been treated as a new, separate subfamily Maihuenioideae Fearn, but is usually still included in *Pereskioideae* (Leuenberger 1997)

1.6 Common Names: *Maihuenia*: maihuen, chupa sangre, espina blanca, espina del huanaco, flor del guanaco, hierba del guanaco, luan mamell, quisquilla, quisquillo, siempre verde, siempre viva, yerba del guanaco

*Pereskia*: tsuma, bugambilia blanca, arbol del matrimonio, guititache, guichitache, guitache, manzanote, matial, patilón, cruz del matrimonio, cuncú, cuncu marín, mateado, amatilla, matiare, matiari, mateare, mateares, grosellero, jasmín de uvas, ramo de novia, camelia blanca, Barbados gooseberry, Surinam gooseberry, groseiller criole, groseille-pays, groseille-Barbade, groseiller-pays, groseiller de Barbades, groseiller de la Barbade, ora pro nobis, azedinha, lobolóbô, cipó estrela, padre nostro, curuzú ipochi, uturunku, cervetano, facho, ora pro nobis de mata, guamacho, supí, suspiro, suspire, siichí, erizo, abrojo, camelia roja, najú de culebra, najíí or najú de espinas, bleo, chupa, bleo de chupa, chupa melón, amapola, mori, suruby-i, quisca del bosque, tuna quisca, sacharosa, cuguchi, guyapa, sabonete, quiabento, espinha de Santo Antônio, flor de cêra.

*Pereskiosis*: alfilerillo, chapistle, tzompahuiztle, alcages, xoconoxtle, rosa amarilla, alcahuésar, tuna de agua, chirrioncillo, tasajillo, joconoxtle, patilón

*Quiabentia*: quiabento

## 2. Biological data

### 2.1 Distribution:

*Pereskia*: Central America and the eastern side of the Andes to northern Argentina, and eastward to the West Indies, Venezuela, Guyana, eastern Brazil, and northern Uruguay. Doubtfully native in Florida (AN, AR, BO, BR, CO, CR, CU, DO, EC, GF, GT, GY, HN, HT, MX, NI, PA, PE, PR, PY, SR, SV, TT, US, UY, VE, VI, WI, see distribution map below); *Maihuenia*: AR, CL; *Pereskiosis*: GT, HN, MX, *Quiabentia*: BR, AR, BO, PY (CITES Cactaceae Checklist, Leuenberger 1986).

### 2.2 Habitat availability:

*Pereskia*, *Pereskiosis* and *Quiabentia* inhabit seasonally dry, deciduous tropical forests, *Pereskia* also semi-deciduous forests. *Maihuenia* inhabits temperate dry grasslands and Patagonian semi-deserts.

### 2.3 Population status:

The only species of the genus *Pereskia* (containing 17 spp.) listed as endangered (E) in the 1997 IUCN Red List of Threatened Plants is the relatively recently (1977) discovered *Pereskia quisqueyana* Liogier from Dominican Republic. The species is naturally rare and could become endangered due to its extremely small and exposed habitat on a shoreline near a village with sand beaches (Leuenberger 1986). It is now subject to a specific conservation program (Leuenberger 1992, García & Rodríguez 1999) and can be regarded as quite safe (Leuenberger, pers. comm. 2001). In Brazil, *Pereskia aureiflora* Ritter, a native species of the caatinga vegetation, is reported to suffer from forest clearance for agriculture (Taylor, Kiesling & Kraus in Oldfield, ed., 1997). It is however probably not very rare (Leuenberger, pers. comm. 2001). No other species of *Pereskia* is listed as rare or endangered.

No species of neither *Pereskiopsis* nor *Quiabentia* is listed as rare or endangered.

Both species of genus *Maihuenia* are amply distributed and classified as neither rare nor endangered (Leuenberger 1997).

### 2.4 Population trends:

Not applicable.

### 2.5 Geographic trends:

Not applicable.

### 2.6 Role of the species in its ecosystem:

Not applicable.

### 2.7 Threats:

See 2.3.

## 3. Utilization and trade

### 3.1 National utilization:

Leaf-bearing cacti generally are of little economic importance. *Pereskia grandifolia*, originating from Brazil, is popular in horticulture and has been widely introduced in tropical regions. Other species are also cultivated in tropical regions outside their natural range. *Pereskia grandifolia*, *P. bahiensis* and *P. stenantha* in Brazil, *P. guamacho* in Venezuela and *P. lychnidiflora* in El Salvador are used for construction of livestock fences or as hedges around homesteads (Leuenberger 1986, Taylor, Kiesling & Kraus in Oldfield, ed., 1997). The leaves of *P. aculeata* are still widely used as a pot herb or vegetable in some rural areas of Brazil and even sold on markets. The fruits of *P. aculeata* and *P. guamacho* are reported to be edible (Leuenberger 1986).

### 3.2 Legal international trade:

“Reported trade” (as compiled from the annual CITES reports of the parties, source: WCMC, John Caldwell, 2001) in wild-collected specimens has been compiled, checking the following genus names: *Maihuenia*, *Pereskia*, *Pereskiopsis*, *Quiabentia* and *Rhodocactus*.

Taxon	year	live*	Other
Maihuenia spp.	1992	12	
	1995	6	
	1996	9	
	1999	12	
Pereskia spp.	1995	12	
	1996	16	
	1997	1	
	1999		4 dried specimens

\* Mostly for scientific purposes

“Reported trade” in wild-collected live specimens is minimal, it consists mainly of exchange of material for scientific purposes. The entire “reported trade” in wild-collected specimens is: *Maihuenia* spp. (1992-1999 ): 39 live specimens. *Pereskia* spp. (1995-1999): 4 dried specimens, 29 live specimens. It has to be noted, that “specimens” in these taxa usually refer to cuttings and not to whole individuals. The minimal trade level in parts of individuals is not likely at all to have any detrimental impact.

Leaf-bearing cacti are generally not popular in under-glass collections, as they occupy a lot of space and lack the bizarre stem forms of the Cactoid cacti (subfamily *Cactoideae*). To the general public, they might not even be recognisable as cacti (cf. illustration). They are more commonly found in Botanical Gardens, mainly *Pereskia grandifolia* and *Pereskia aculeata*, and further are used to some extent as ornamental trees in tropical regions. Demand in international trade therefore is minimal, as clearly demonstrated by the above figures.

Trade in artificially propagated specimens for horticulture is insignificant. The only widely distributed „species” in horticulture is *Pereskiaopsis spathulata*, a taxon of unknown origin, which could even be a product of horticulture. It is very popular as stock for grafting of seedlings of rare species of Cactoid cacti and is most easily propagated in great quantities by cuttings.

### 3.3 Illegal trade:

Not likely.

### 3.4 Actual or potential trade impacts:

No species is reported to be endangered by international trade in wild-collected specimens. The only species listed as endangered (E) in the 1997 IUCN Red List of Threatened Plants is *Pereskia quisqueyana* Liogier from Dominican Republic, which is naturally rare. This species has been exported in very few specimens for scientific research (totally 10 specimens 1995-1996) with CITES export permits, implying that this trade was non-detrimental. Most probably, the traded specimens were only cuttings and not whole individuals.

### 3.5 Artificial propagation for commercial purposes (outside country of origin):

No significant production, demand or trade.

#### 4. Conservation and management

##### 4.1 Legal status:

###### 4.1.1 National:

To be reported by range-states upon consultation, according to Resolution Conf. 8.21.

###### 4.1.2 International:

Included in Appendix II of CITES in 1975 under *Cactaceae* spp.

##### 4.2 Species management:

See 2.3.

###### 4.2.1 Population monitoring:

See 2.3.

###### 4.2.2 Habitat conservation:

To be reported by range-states upon consultation, according to Resolution Conf. 8.21.

###### 4.2.3 Management measures:

To be reported by range-states upon consultation, according to Resolution Conf. 8.21.

##### 4.3 Control measures:

To be reported by range-states upon consultation, according to Resolution Conf. 8.21.

###### 4.3.1 International trade:

See under 3.

###### 4.3.2 Domestic measures:

To be reported by range-states upon consultation, according to Resolution Conf. 8.21.

#### 5. Information on similar species

The main concern is to avoid confusion with members of subfamily *Cactoideae*, which holds the species that are actually or potentially affected by international trade, e.g. all taxa listed in Appendix I.

Leaf-bearing cacti (subfamily *Pereskioideae* and the genera *Pereskia* and *Quiabentia*) can be defined morphologically by simple and easy to check characters, which are exclusive within the *Cactaceae*. They are terrestrial trees or shrubs, bearing conspicuous leaves (dorsiventrally flattened; or terete in *Maihuenia*) on woody, barely succulent, non-ribbed and non-tuberculate, spiny stems and branches.

## 6. Other comments

Early listings of higher taxa.

Leaf-bearing cacti (subfamily *Pereskioideae* and the genera *Pereskia* and *Quiabentia*) have mainly been included in Appendix II of CITES in 1975, because the entire family of the *Cactaceae* has been listed then, without differentiating between lower taxa with different conservation and trade status. After 25 years of monitoring under CITES, international trade in *Cactaceae* is better understood and moreover, has notably changed under the influence of CITES. It seems possible today to differentiate between various taxa of *Cactaceae* below family level and to concentrate the efforts of CITES on the subfamily *Cactoideae*.

### Identification

The definition of leaf-bearing cacti (subfamily *Pereskioideae* and the genera *Pereskia* and *Quiabentia*) as given above, based on simple morphological criteria, is most likely to define this group accurately enough to prevent confusion with Cactoid cacti (with strongly succulent, ribbed or tuberculate stems and bearing no leaves).

### Conservation

If after delisting of leaf-bearing cacti (subfamily *Pereskioideae* and the genera *Pereskia* and *Quiabentia*), a species should prove to suffer from unsustainable levels of international trade in wild-collected specimens, it should be specifically included in the appropriate Appendix of CITES in a later COP.

## 7. Additional remarks

This proposal is submitted to the Secretariat before 5 July 2001 for the agenda of the 11<sup>th</sup> Meeting of the Plants Committee (according to Notification No. 2001/015). At the same time, it is submitted for consultation of range-states and for consideration at the next meeting of the Conference of the Parties (according to Resolution Conf. 8.21).

The Swiss Confederation would like to invite range-states as further proponents.

## 8. References

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- Leuenberger, B. E. (1986): *Pereskia* (Cactaceae). Memoirs of the New York Botanical Garden 41: 1-141.
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Distribution of *Pereskia* (Leuenberger 1986)

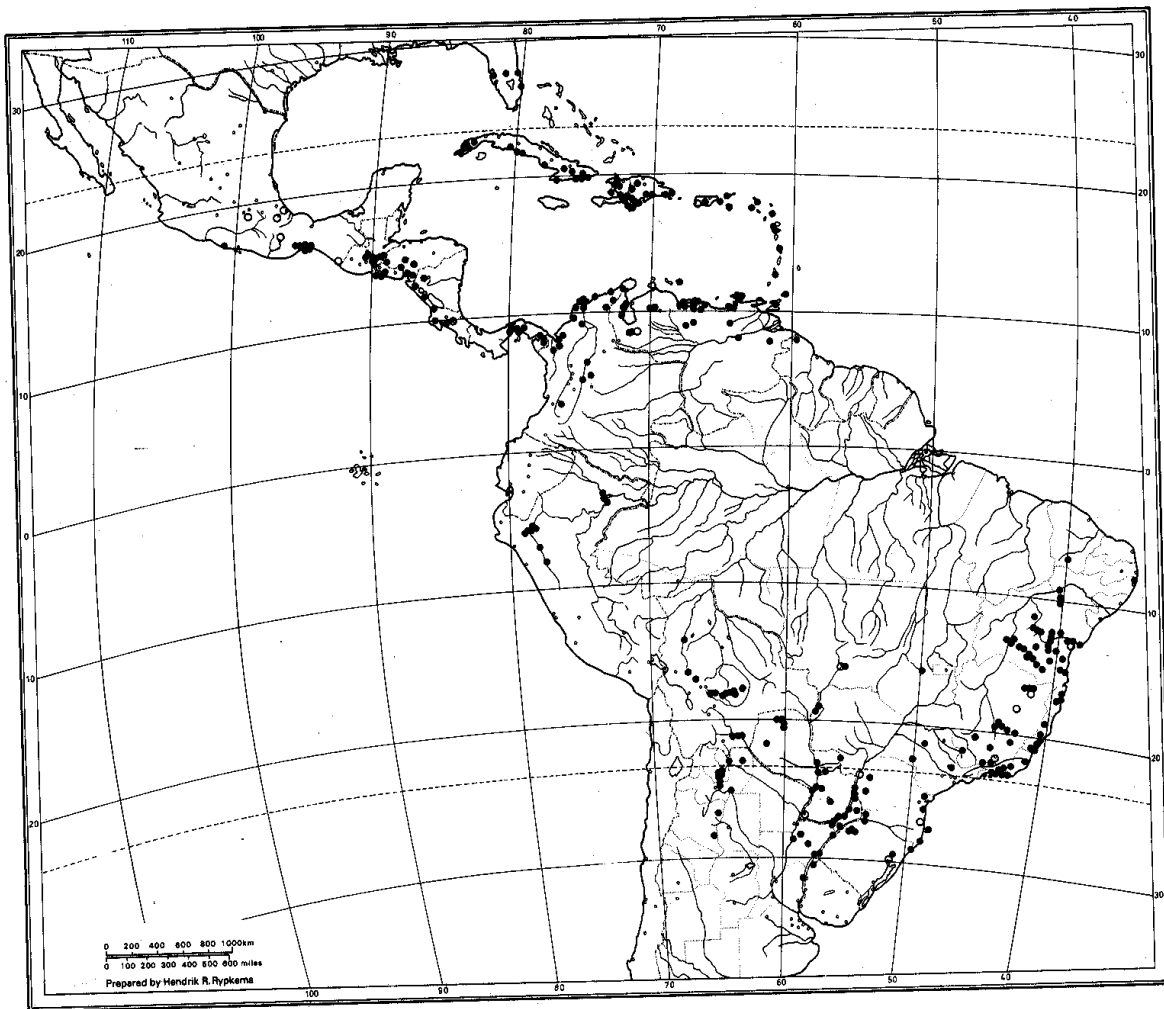


Illustration: *Pereskia* (*P. nemorosa*), a leaf-bearing and spiny shrub with barely succulent branches (Benson 1982)

