

ASSESSMENT OF TRADE IN EPIPHYTIC CACTI AND  
REVIEW OF LISTING OF CACTACEAE SPP. IN APPENDIX II

1. This document has been prepared by Mr James Grogan under contract with the CITES Secretariat.<sup>1</sup>
2. Background information can be found in two key CITES documents:
  - CoP15 Doc. 55, submitted by the Management Authority of Switzerland, describes the issue under consideration in this report, whether certain genera of epiphytic cacti (seven as listed below) should be excluded from Appendix II based on the preponderance of artificially propagated compared to wild-collected specimens in international trade; IUCN Red List conservation status is reviewed, and trade data for gross exports of wild-collected specimens from range nations during 1975–2008 are presented;
  - PC19 Doc. 14.1, prepared by the Chair of the Working Group on the Periodic Review with assistance from the Scientific Authority of Mexico, presents further analysis of trade data during 1998–2008 including the number of specimens of epiphytic cacti in trade that were artificially propagated, number of records and specimens that were wild collected, confiscated or seized, or of unknown origin during this period, and geographic ranges of species in question.

Natural range, morphology & taxonomy of the epiphytic cacti

3. The Cactaceae are a New World family except for one species, the epiphytic *Rhipsalis baccifera*, which is also found in Africa, Madagascar and as far east as Sri Lanka. Seven genera are considered here: *Disocactus*, *Epiphyllum*, *Hatiora*, *Lepismium*, *PseudoRhipsalis*, *Rhipsalis*, and *Schlumbergera*.
4. These genera are grouped in two tribes of the subfamily Cactoideae within the Cactaceae family:
  - Hylocereeae: *Disocactus*, *Epiphyllum*, *PseudoRhipsalis*
  - Rhipsalideae: *Hatiora*, *Lepismium*, *Rhipsalis*, *Schlumbergera*
5. *Disocactus*, *Epiphyllum*, and *PseudoRhipsalis* have mainly Mexican and Central American distributions, with some species found in the Caribbean, northern South America, and points further south. *Hatiora*, *Rhipsalis*, and *Schlumbergera* are found almost exclusively in southeast Brazil's Atlantic Forest (Mata Atlântica), with exceptions. The main region of occurrence for *Lepismium* is eastern Bolivia and northern Argentina, with extension into southeastern Brazil. A complete species list with natural ranges is provided in Annex 1.
6. Species in these genera are predominantly epiphytic or epilithic plants with a scrambling, pendant growth habit. Terete or flattened stems tend to branch frequently and irregularly; flattened stems are often crenate or serrate with areoles arranged along the margins producing hairs or bristles but rarely spines (see Annex 2A for representative images). The epiphytic cacti tend to be forest rather than desert species, requiring higher rainfall and humidity and lower light levels than the more typical heavily armed globe and columnar cacti.
7. The taxonomic status of these plus several other closely related genera of 'vine cacti' (*Hylocereus*, *Pfeiffera*, *Selenicereus*, *Weberocereus*; all are Hylocereeae) has been in flux since classification of the Cactaceae began. Anderson (2001) lists 102 species plus 24 sub-species or varieties among the seven genera under consideration (Annex 1). Minor differences if any are expected between this source and Hunt et al.'s *The New Cactus Lexicon* (2006), which could not be accessed for the purposes of the present study. Discrepancies between Anderson's (2001) list of accepted taxa and species listed in the CITES/UNEP-WCMC species database are minor; see annotations in Annex 1 for comparison.

---

<sup>1</sup> The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat or the United Nations Environment Programme concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.

8. Recent phylogenetic studies have confirmed the tribe Rhipsalideae as a monophyletic group containing the four genera listed above plus Rhipsalidopsis, reconstituting a genus that had been merged with *Hatiora* (that is, *H. gaertneri* & *H. rosea* are proposed to reconstitute the genus *Rhipsalidopsis*). Researchers have also proposed major adjustments to *Lepismium*, including re-instatement of the genus *Lymanbensonia* (to include *Lepismium incachacana* plus two previously 'unrelated' Pfeiffera species) in a third tribe of epiphytic cacti, the Lymanbensonieae. As well, recent publications describe one new *Rhipsalis* species (*R. aurea*) and rediscovery of the long-lost *Rhipsalis triangularis*, both in Brazil's Atlantic Forest. These findings suggest that current taxonomic understanding of the epiphytic cacti may yet see nomenclatural adjustments with implications for CITES listings (see references by Calvente et al., Korotkova et al. & Nyffeler).
9. The high species diversity of the epiphytic cacti means that distinguishing species within and among genera based on vegetative or even fertile (flowering) material can be difficult for non-experts. As an example, all genera except *Schlumbergera* and *Hatiora* contain both flat-stemmed, non-spiny species and round-stemmed, spiny or bristly species. Also, several closely related genera of scrambling 'vine cacti' – noted above – that tend to root in the ground may superficially resemble epiphytic cacti, especially at the small (juvenile) sizes that are typically traded. In particular, several *Selenicereus* species bear striking vegetative and floral resemblance to members of *Epiphyllum* (for example, *S. anthonyanus* vs. *E. anguliger*). Annex 2B highlights similarities and differences among the epiphytic cacti considered in this report.

### Conservation status

10. As of November 2011, no changes in IUCN Red List status for the seven genera considered here had been registered since March 2010 (see CoP15 Doc. 55, Annex 3). A total of 18 species are listed, with one Endangered (EN), four Near Threatened (NT), seven Least Concern (LC), and six Data Deficient (see Annex 1 this document). The major threat cited for EN, NT and LC species is habitat loss due to agriculture, logging, or 'a variety of factors'. Wild-collected specimens in international trade were recorded or inferred for only three species on the IUCN Red List, all three of Least Concern. This trade represented 28 specimens during the period 1975–2010 (20, 3 and 5 specimens of *Epiphyllum phyllanthus*, *Lepismium cruciforme* and *L. warmingianum*, respectively; see analysis below).
11. While past IUCN categories of threat are not completely comparable to the current system, several previously listed epiphytic cacti species are omitted from the current Red List. For example, using 1994 IUCN categories of threat, Taylor (1997) cited the conservation status of additional species from the Brazilian Atlantic Forest as follows:

Extinct in the Wild (EW)	<i>Rhipsalis pentaptera</i>
Endangered (EN)	<i>Hatiora epiphylloides</i> ssp. <i>epiphylloides</i>
Vulnerable (VU)	<i>H. epiphylloides</i> ssp. <i>bradei</i> , <i>H. herminiae</i> , <i>R. baccifera</i> ssp. <i>hileabaiana</i> , <i>R. burchellii</i> & <i>R. mesembryanthemoides</i>
Low Risk (LR)	<i>H. salicornioides</i> , <i>Lepismium lumbricoides</i> , <i>R. baccifera</i> ssp. <i>baccifera</i> , <i>R. campos-portoana</i> , <i>R. cereuscula</i> , <i>R. clavata</i> , <i>R. grandiflora</i> , <i>R. neves-armondii</i> , <i>R. pachyptera</i> , <i>R. puniceodiscus</i> , <i>R. teres</i> & <i>R. trigona</i>
Data Deficient (DD)	<i>H. gaertneri</i> , <i>H. rosea</i> , <i>R. dissimilis</i> , <i>R. ewaldiana</i> , <i>R. juengeri</i> , <i>R. pulchra</i> , <i>Schlumbergera opuntioides</i> & <i>S. orssichiana</i>

12. It should also be noted that Calvente et al. (2005) considered several Brazilian epiphytic cacti as more threatened at local or regional levels than indicated by current or past IUCN Red List status, further highlighting inconsistencies and inadequacies in coverage of the epiphytic cacti by the IUCN Red List:

Endangered (EN)	<i>R. mesembryanthemoides</i>
Vulnerable (VU)	<i>S. opuntioides</i> & <i>S. russelliana</i>
Near Threatened (NT)	<i>L. houletianum</i> , <i>R. cereuscula</i> , <i>R. grandiflora</i> , <i>R. neves-armondii</i> , <i>R. paradoxa</i> , <i>R. pulchra</i> & <i>S. truncata</i>

### Trade analysis: Methods

13. The analysis provided here summarizes UNEP-WCMC trade records for the seven genera under consideration during the period 1976–2010. Data for the year 2010 are incomplete but are sufficiently robust to indicate trends. The analysis is based on total reported trade, that is, it combines reported exports and imports for a given species over time. Where trade records do not match, for example, where X specimens are recorded exported by a given nation but no corresponding specimens are recorded imported by the destination nation, or vice versa, or where recorded export (or import) values exceed import (or export) values within records, the largest of the two values is considered to be the number of specimens in trade.
14. 4236 trade records were provided. 58 records were eliminated because they clearly represented double-counting, that is, separate records from exporting and importing nations documenting the same transaction during the same year. This left a total of 4178 trade records. Species-level trade was sub-divided by source code (A = artificially propagated, W = wild collected, I = confiscated or seized, U = unknown origin, blank = no source code provided). The reported country origin of specimens coded W, I, U and blank was compared to species' natural ranges to determine whether these specimens could possibly have been wild collected; the definition of 'range nation' was applied generously, including all neotropical nations, in case range information was incomplete or erroneous. This means that W totals by species may or may not include W, I, U and blank specimens, depending on whether exported specimens originated from a potential range nation. No attempt was made to account for re-exports because this trade status could not be determined with certainty for any given report. Any doubt about a given record under these codes was treated conservatively, considering those specimens as wild collected.

### Trade analysis: Results

15. Nearly 29.2 million specimens of epiphytic cacti in the seven genera under consideration were reported traded during 1976–2010 when export and import data are combined as described above. Considered separately, reported exports equalled 20.7 million specimens (70.9% of the combined total), while reported imports equalled 9.6 million specimens (33.2%). This means that nearly 30% of total specimens considered to be in trade were not recorded by exporters, while 67% of total specimens in trade were not recorded by importers.
16. Exports of epiphytic cacti could be attributed to 64 nations during 1976-2010. Three exporting nations – Denmark, the Netherlands, and Canada – accounted for 91.4% of combined reported export trade over this period. The top ten exporting nations accounted for 99.1% of combined trade, with only one range nation for the epiphytic cacti, Guatemala (2.4%), contributing significantly to international trade (Table 1). Imports of epiphytic cacti could be attributed to 110 nations during this period. By far the most important importing nation was the USA, accounting for 58.4% of combined reported import trade. The top ten importing nations accounted for 90.9% of reported combined trade, with no range nations in the top ten (Table 1).

TABLE 1. The top 10 exporting and importing nations of the epiphytic cacti during 1976-2010, with % of total. Based on combined reported trade for both exports and imports (see text explanation).

EXPORTING	% Total	IMPORTING	% Total
Denmark	34.3	United States	58.4
Netherlands	30.0	Switzerland	7.9
Canada	27.1	Sweden	4.2
Guatemala	2.4	Canada	3.9
Poland	2.1	Germany	3.7
Tanzania	1.6	Austria	3.4
United States	0.6	Norway	2.6
Australia	0.5	Denmark	2.4
Germany	0.3	Finland	2.3
Thailand	0.3	United Kingdom	2.2

17. Annual trade data (combined total for exports and imports) indicate that trade quantities of epiphytic cacti surged between 1986–1997, driven mainly by trade in artificially propagated specimens of *Schlumbergera* spp., *Epiphyllum* spp., and *Hatiora* spp. (Fig. 1). Trade dropped off sharply in 1998 and again in 2001.

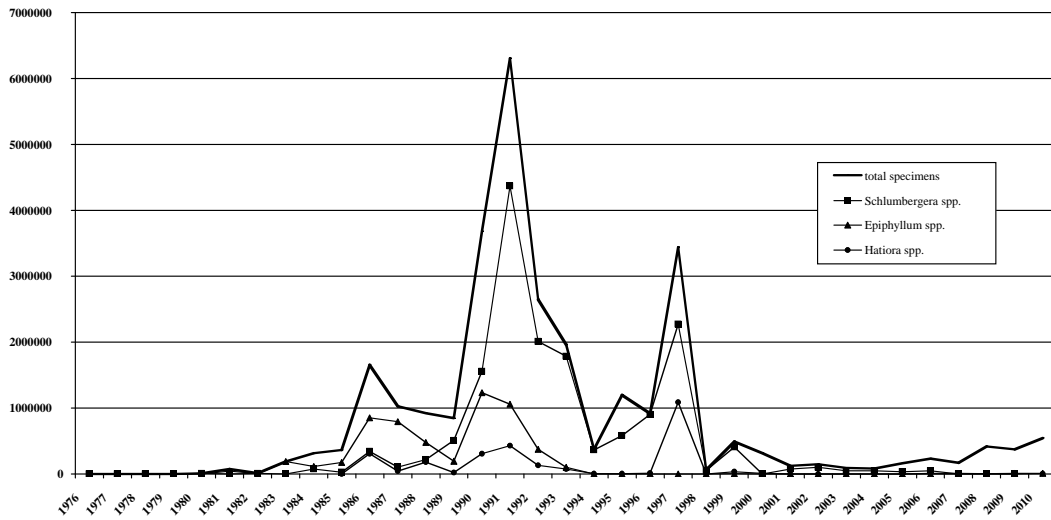


Figure 1. Annual levels of trade in epiphytic cacti, 1976–2010 (darkest line = total specimens), including the three species (or ‘spp.’) with the highest level of trade during this period.

18. Examining annual trade data as above during 2001–2010, we see steady increase in trade quantities during the past decade (Fig. 2). The main driver of trade during the 1980s and 1990s, *Schlumbergera* spp., essentially disappeared from international trade by 2007, while *Epiphyllum* spp. and *Hatiora* spp. also declined in importance compared to other species that came into significant trade after 2001. The most important of these were *Rhipsalis baccifera*, *Rhipsalis* spp., *R. pilocarpa*, *Hatiora salicornioides*, and *R. ewaldiana*. Except for *Rhipsalis* spp., none of these were traded in significant quantities before 2005.

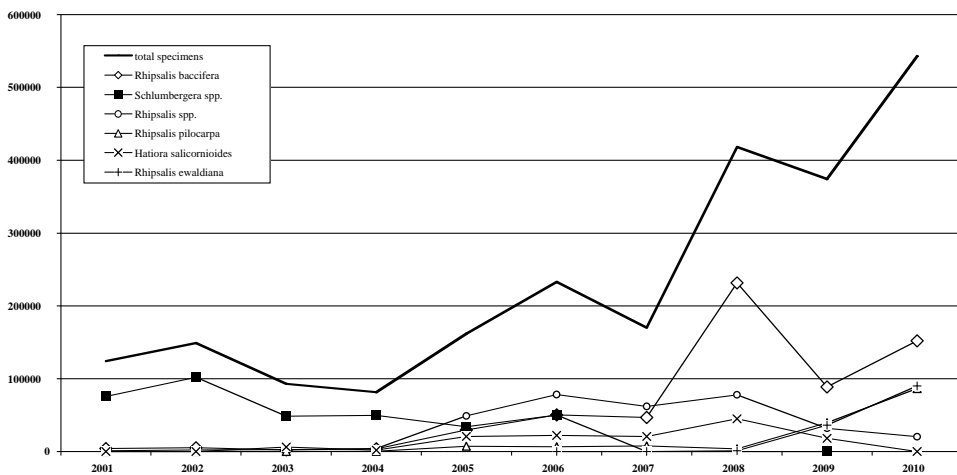


Figure 2. Annual levels of trade of epiphytic cacti, 2001–2010 (darkest line = total specimens), including the six species (or ‘spp.’) with the highest level of trade during this period.

19. Trade data (exports and or imports) were recorded for 106 species, sub-species, 'spp.' and 'hybrid' in the seven genera under review during 1976–2010 as follows (see Annex 3 for complete data):

	No. specimens	
<i>Disocactus</i>	18 including 'spp.' & 'hybrid'	257,440
<i>Epiphyllum</i>	16 including 'spp.'	5,661,505
<i>Hatiora</i>	7 including 'spp.' & <i>H. x graeseri</i>	4,138,209
<i>Lepismium</i>	14 including 'spp.'	40,462
<i>PseudoRhipsalis</i>	4 including 'spp.'	56,329
<i>Rhipsalis</i>	39 including 'spp.' & 7 sub-species	2,591,685
<i>Schlumbergera</i>	8 including 'spp.' & <i>S. x buckleyi</i>	16,416,434
TOTAL SPECIMENS		29,162,064

20. Export and or import data coded W, I, U or blank were recorded for 48 species, sub-species and 'spp.' during this period as follows:

	No. specimens	
<i>Disocactus</i>	7 including 'spp.'	1,426
<i>Epiphyllum</i>	6 including 'spp.'	2,972
<i>Hatiora</i>	4 including 'spp.'	10,981
<i>Lepismium</i>	6 including 'spp.'	114
<i>PseudoRhipsalis</i>	2	19
<i>Rhipsalis</i>	20 including 'spp.' & 3 sub-species	30,703
<i>Schlumbergera</i>	3 including 'spp.'	336,732
TOTAL SPECIMENS		382,947

21. As described above, records coded W, I, U or blank were further analyzed by comparing reported nation of origin with species' natural ranges. This eliminated 14 species (leaving 34 species, sub-species and 'spp.') from reported or possible trade in wild-collected species, as well as the large majority of W, I, U and blank coded specimens as follows (see Annex 4 for data with countries of origin for wild-collected specimens):

	No. specimens	
<i>Disocactus</i>	7 including 'spp.'	107
<i>Epiphyllum</i>	4 including 'spp.'	394
<i>Hatiora</i>	2 including 'spp.'	3
<i>Lepismium</i>	6 including 'spp.'	58
<i>PseudoRhipsalis</i>	2	3
<i>Rhipsalis</i>	10 including 'spp.' & 2 sub-species	458
<i>Schlumbergera</i>	3 including 'spp.'	150
TOTAL SPECIMENS		1,173

22. To summarize, this analysis found that 1,173 wild-collected or possibly wild-collected specimens of 34 species, sub-species or 'spp.' were traded internationally during the 35 years since 1976 (Annex 4). These numbers represented almost 0% to 73% of total reported specimens for a given species, and 0.004% of total specimens in trade during this period.

23. Other notable results from this analysis include:

- 98.7% of all specimens in trade were coded A (Artificially propagated).
- 87.7% of all specimens were traded as 'spp.', that is, of indeterminate specific origin.
- The rate of wild collection or possible wild collection for named species was higher than for 'spp.' records, but the difference was not large considering the number of specimens in trade (0.0075% for named species vs. 0.0036% for 'spp.'). That is, the large numbers of 'spp.' in trade do not appear to hide significant trade of wild-collected specimens of named species.

### Conclusions

24. Available trade data indicate that quantities of wild-collected epiphytic cacti in international trade are negligible. This conclusion applies also to species traded in increasing quantities since 2005 (Fig. 2).
25. The vast majority of trade, on both exporting and importing ends, involves artificially propagated specimens originating outside of range nations. The near disappearance in recent years of formerly prominent species in trade – *Schlumbergera* spp., *Epiphyllum* spp., and *Hatiora* spp., Figs. 1 & 2) – indicates that 'homegrown' industries may now exist in former importing nations to supply domestic markets with extremely popular ornamental hanging cacti.
26. The epiphytic cacti discussed here are highly diverse. This means that distinguishing species is difficult due to convergent growth forms within and among genera (Annex 2). While most species assume a pendant growth habit in the wild, this habit may not be obvious when specimens are packed for international shipment and inspection by customs agents, especially when specimens in trade are juvenile plants. As well, juvenile plants may exhibit bristly or spiny dimorphism (see Annex 2B, *Rhipsalis paradoxa*), further blurring distinctions between epiphytic and non-epiphytic cacti.
27. A second identification issue concerns the four genera of 'vine cacti' not included in the present study (*Hylocereus*, *Pfeiffera*, *Selenicereus*, *Weberocereus*), as well as other essentially terrestrial cacti that may assume a pendent growth habit under both natural and artificial growing conditions (for example, some *Cleistocactus* species). That vine cacti are ground rooting rather than epiphytic in habit may not be obvious at the moment of transport across international borders. Also, juvenile plants may be indistinguishable between the two groups of plants. These additional genera thus present significant look-alike issues that should be assessed if a proposal for de-listing the epiphytic cacti from Appendix II moves forward.
28. Molecular studies could introduce formal adjustments to taxonomic relationships among the epiphytic cacti in the near future. As noted, reconstitution of *Rhipsalidopsis* (*Hatiora gaertneri* + *H. rosea*) has recently been proposed, as well as re-instatement of the genus *Lymanbensonia* and the tribe Lymanbensonieae. Any proposal to de-list the epiphytic cacti from Appendix II will need to account for these proposed changes, ideally including a mechanism to account for future changes.

### Recommendations

29. The Cactaceae are a New World group of up to 1800 species, representing a wide range of adaptations to arid or semi-arid environments, often with barely perceptible morphological differences among species. As reviewed in the next section, the family has been listed on CITES Appendix II since 1975 in response to intense harvest pressures on certain species and wild populations, and to the difficulty of distinguishing among highly similar species. Considering the small population size and highly restricted range of many Cactaceae, this family-level listing continues to play an essential conservation role through regulation of international trade.
30. Many epiphytic cacti species face significant threats to survival, especially in Brazil's Atlantic Forest where habitat loss continues. But no species considered in this report appears threatened by wild collection for international trade. Unlike many epiphytic orchids, for example, market demand for wild-collected epiphytic cacti appears to be low, perhaps because floral characters of most species are relatively nondescript compared to the highly diverse Orchidaceae.
31. Trade analysis presented here indicates that the epiphytic cacti do not meet the criteria of Resolution Conf. 9.24 (Rev. CoP15) for inclusion of species in Appendix II, and should be considered for deletion. They are not frequently traded internationally except as artificially propagated specimens, and identification

issues appear surmountable given the relatively small number of species involved and morphological categories represented.

32. If it is determined that the epiphytic cacti do not meet the criteria for inclusion on Appendix II, then Resolution Conf. 9.24 (Rev. CoP15), Annex 2b, which states that species may be included in Appendix II if "... specimens of the species in the form in which they are traded resemble specimens of a species included in Appendix II", does not apply to this group.

Review of the listing of Cactaceae spp. in Appendix II

33. The Cactaceae are a primarily New World plant family adapted to arid environments, with exceptions as noted in this report. All American species of the Cactaceae were listed on Appendix II at the inception of CITES in 1975. The current annotation #4 reads:

*All parts and derivatives, except:*

- a) *seeds (including seedpods of Orchidaceae), spores and pollen (including pollinia). The exemption does not apply to seeds from Cactaceae spp. exported from Mexico, and to seeds from Beccariophoenix madagascariensis and Neodopsis decaryi exported from Madagascar;*
- 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 of the genus Vanilla (Orchidaceae) and of the family Cactaceae;*
- e) *stems, flowers, and parts and derivatives thereof of naturalized or artificially propagated plants of the genera Opuntia subgenus Opuntia and Selenicereus (Cactaceae); and*
- f) *finished products of Euphorbia antisiphilitica packaged and ready for retail trade.*

34. Exclusions from Appendix II within the taxa adopted at CoP10 (1997, Harare) and remaining in effect until the present time are as follows:

Artificially propagated specimens of the following hybrids and/or cultivars are not subject to the provisions of the Convention:

*Hatiora x graeseri;*

*Schlumbergera x buckleyi;*

*Schlumbergera russelliana x Schlumbergera truncata;*

*Schlumbergera orssichiana x Schlumbergera truncata;*

*Schlumbergera opuntioides x Schlumbergera truncata;*

*Schlumbergera truncata* (cultivars);

Cactaceae spp. colour mutants grafted on the following grafting stocks: *Harrisia "Jusbertii"*, *Hylocereus trigonus* or *Hylocereus undatus*;

*Opuntia microdasys* (cultivars).

35. These *Hatiora* and *Schlumbergera* species crosses and cultivars are widely marketed houseplants popularly known as Thanksgiving, Christmas and Easter cacti, named for the time of year they flower (November, December, and March-April, respectively). Cactaceae spp. colour mutants requiring grafting stocks are among the most popular houseplants in the world.

36. Three additional Cactaceae genera were excluded from Appendix II at CoP14 (2007 The Hague): *Pereskia*, *Peresklopsis* and *Quiabentia*. These are easily identifiable leafy cacti artificially propagated and traded internationally in large numbers.
37. Since CoP3 (1981 New Delhi), six Cactaceae genera ('spp.') and 41 species among an additional 13 genera have been uplisted to Appendix I. These generally are genera or species with highly restricted or specialized habitat that additionally are under threat from collectors for horticultural purposes. Three species of *Ariocarpus* and six species of *Turbinicarpus* had already been listed on Appendix I when those genera were uplisted in 1992.
38. Three species representing three genera have subsequently been restored to Appendix II, including an epiphytic cactus in one of the seven genera under consideration in this report: *Disocactus macdougallii* was uplisted to Appendix I at CoP4 (1983 Baborone) and restored to Appendix II at CoP11 (2000 Gigiri); *Leuchtenbergia principis* and *Mammillaria plumosa* were uplisted to Appendix I at CoP4 (1983 Gaborone) and restored to Appendix II at CoP9 (1994 Ft. Lauderdale).
39. This leaves six Cactaceae genera plus an additional 29 species representing 11 genera currently listed in Appendix I as follows:

<i>Ariocarpus</i> spp.	<i>Melocactus paucispinus</i>
<i>Discocactus</i> spp.	<i>Obregonia denegrii</i>
<i>Pelecyphora</i> spp.	<i>Pachycereus militaris</i>
<i>Strombocactus</i> spp.	<i>Pediocactus bradyi</i>
<i>Turbinicarpus</i> spp.	<i>Pediocactus knowltonii</i>
<i>Uebelmannia</i> spp.	<i>Pediocactus paradinei</i>
<i>Astrophytum asterias</i>	<i>Pediocactus peeblesianus</i>
<i>Aztekium ritteri</i>	<i>Pediocactus sileri</i>
<i>Coryphantha werdermannii</i>	<i>Sclerocactus brevihamatus</i> ssp. <i>tobuschii</i>
<i>Echinocereus ferreirianus</i> ssp. <i>lindsayi</i>	<i>Sclerocactus erectocentrus</i>
<i>Echinocereus schmollii</i>	<i>Sclerocactus glaucus</i>
<i>Escobaria minima</i>	<i>Sclerocactus mariposensis</i>
<i>Escobaria sneedii</i>	<i>Sclerocactus mesaeverdae</i>
<i>Mammillaria pectinifera</i>	<i>Sclerocactus nyensis</i>
<i>Mammillaria solisioides</i>	<i>Sclerocactus papyracanthus</i>
<i>Melocactus conoideus</i>	<i>Sclerocactus pubispinus</i>
<i>Melocactus deinacanthus</i>	<i>Sclerocactus wrightiae</i>
<i>Melocactus glaucescens</i>	



## References

- Anderson EF (2001) *The Cactus Family*. Timber Press, Portland, OR, USA. 776 pp.
- Calvente AM, Freitas MF & Andreato RHP (2005) Listagem, distribuição geográfica e conservação das espécies de Cactaceae no Estado do Rio de Janeiro. *Rodriguésia* 56: 141-162.
- Calvente A, Zappi DC, Forest F & Lohmann LG (2011) Molecular phylogeny of tribe Rhipsalideae (Cactaceae) and taxonomic implications for Schlumbergera and Hatiora. *Molecular Phylogenetics and Evolution* 58: 456-468.
- Eggl U, Marchesi E, Bonifacino M & Nyffeler R (2008) Taxonomy and distribution of epiphytic cacti in Uruguay - Notes towards a checklist of Cactaceae of Uruguay, Part 3. *Haseltonia* 14: 161-169.
- Hunt DR, Taylor N & Charles G (2006) *The New Cactus Lexicon, Vols. I & II: Descriptions and Illustrations of the Cactus Family*. DH Books, Milborne Port, UK. 898 pp.
- Korotkova N, Zabel L, Quandt D & Barthlott W (2010) A phylogenetic analysis of Pfeiffera and the reinstatement of Lymanbensonina as an independently evolved lineage of epiphytic Cactaceae within a new tribe Lymanbensonieae. *Willdenowia* 40: 151-172.
- Korotkova N, Borsch T, Quandt D, Taylor NP, Müller KF & Barthlott W (2011) What does it take to resolve relationships and to identify species within molecular markers? An example from the epiphytic Rhipsalideae (Cactaceae). *American Journal of Botany* 98: 1549-1572.
- Nyffeler R (2002) Phylogenetic relationships in the cactus family (Cactaceae) based on evidence from trnK/matK and trnL-trnF sequences. *American Journal of Botany* 89: 312-326.
- Taylor NP (1997) Cactaceae. In: Oldfield S (comp.), *Cactus and Succulent Plants – Status Survey and Conservation Action Plan*, pp. 17-20, 199-202. Cactus and Succulent Specialist Group IUCN/SSC, Gland, Switzerland & Cambridge, UK.
- UNEP World Conservation Monitoring Centre. 2011. Checklist of CITES Species, Part 2: History of CITES Listings. [http://www.cites.org/eng/resources/pub/checklist11/History\\_of\\_CITES\\_listings.pdf](http://www.cites.org/eng/resources/pub/checklist11/History_of_CITES_listings.pdf)

## ANNEX 1

### SPECIES LIST FOR EPIPHYTIC CACTI, WITH NATURAL RANGES

Species without annotation are listed by Anderson (2001), appear in the CITES/UNEP-WCMC species list, and were traded internationally during 1976-2010. Annotation key: † not listed by Anderson (2001); § not included on CITES/UNEP-WCMC species list; ¶ no reported trade. IUCN Red List categories: EN endangered, VU vulnerable, NT near threatened, LC least concern, DD data deficient.

SPECIES	NATURAL RANGE + IUCN RED LIST STATUS + NOTES
<i>Disocactus ackermannii</i>	Mexico
<i>Disocactus ackermannii</i> var. <i>ackermanii</i> § ¶	Mexico
<i>Disocactus ackermannii</i> var. <i>conzattianus</i> § ¶	Mexico
<i>Disocactus amazonicus</i>	Brazil, Colombia, Costa Rica, Ecuador, Nicaragua, Panama, Peru, Venezuela
<i>Disocactus aurantiacus</i>	Guatemala, Honduras, Mexico, Nicaragua
<i>Disocactus biformis</i>	Guatemala, Honduras
<i>Disocactus cinnabarinus</i>	El Salvador, Guatemala, Honduras, Mexico
<i>Disocactus eichlamii</i>	Guatemala
<i>Disocactus flagelliformis</i>	Mexico
<i>Disocactus kimnachii</i>	Costa Rica
<i>Disocactus macdougallii</i>	Mexico
<i>Disocactus macranthus</i>	Mexico
<i>Disocactus martianus</i>	Mexico
<i>Disocactus nelsonii</i>	Guatemala, Honduras, Mexico
<i>Disocactus phyllanthoides</i>	Mexico
<i>Disocactus quezaltecus</i>	Guatemala
<i>Disocactus schrankii</i>	Mexico
<i>Disocactus speciosus</i>	Mexico
<i>Disocactus hybrid</i> (x <i>hybridus</i> ) † §	Mexico; => <i>D phyllanthoides</i> x <i>D speciosus</i>
<i>Epiphyllum anguliger</i>	Mexico
<i>Epiphyllum cartagense</i>	Costa Rica, Panama
<i>Epiphyllum caudatum</i>	Mexico; may = <i>E pumilum</i>
<i>Epiphyllum columbiense</i>	Colombia, Costa Rica, Ecuador, Panama, Venezuela
<i>Epiphyllum costaricense</i>	Costa Rica, Panama
<i>Epiphyllum crenatum</i>	Belize, Guatemala, Honduras, Mexico, Panama
<i>Epiphyllum crenatum</i> var. <i>crenatum</i> §	Belize, Guatemala, Honduras, Mexico, Panama
<i>Epiphyllum crenatum</i> var. <i>kimnachii</i> §	Mexico
<i>Epiphyllum floribundum</i>	Peru
<i>Epiphyllum grandilobum</i>	Costa Rica, Panama
<i>Epiphyllum guatemalense</i>	Guatemala, Honduras, Mexico
<i>Epiphyllum hookeri</i>	Belize, Costa Rica, Cuba, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Trinidad and Tobago, Venezuela
<i>Epiphyllum laui</i>	Mexico
<i>Epiphyllum lepidocarpum</i>	Costa Rica
<i>Epiphyllum oxypetalum</i>	Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua

**SPECIES****NATURAL RANGE + IUCN RED LIST STATUS + NOTES**

<i>Epiphyllum phyllanthus</i>	Argentina, Bolivia, Brazil, Colombia, Ecuador, French Guyana, Guyana, Panama, Paraguay, Peru, Suriname, Uruguay, Venezuela; LC
<i>Epiphyllum pittieri</i>	Costa Rica, Nicaragua, Panama
<i>Epiphyllum pumilum</i>	Belize, Guatemala, Mexico
<i>Epiphyllum rubrocoronatum</i>	Colombia, Ecuador, Panama
<i>Epiphyllum thomsonianum</i>	Costa Rica, Guatemala, Honduras, Mexico, Nicaragua
<i>Epiphyllum trimetrale</i>	Colombia
<i>Hatiora epiphylloides</i>	Brazil
<i>Hatiora epiphylloides</i> ssp. <i>bradei</i>	Brazil
<i>Hatiora epiphylloides</i> ssp. <i>epiphylloides</i>	Brazil
<i>Hatiora gaertneri</i>	Brazil
<i>Hatiora graeseri</i> †	Brazil
<i>Hatiora herminiae</i>	Brazil
<i>Hatiora rosea</i>	Brazil
<i>Hatiora salicornioides</i>	Brazil
<i>Hatiora</i> x <i>graeseri</i> † §	Brazil; = <i>H. gaertneri</i> x <i>H. rosea</i>
<i>Lepismium aculeatum</i>	Argentina, Brazil, Paraguay; may be sub-population of <i>L. lumbricoides</i>
<i>Lepismium bolivianum</i>	Bolivia
<i>Lepismium brevispinum</i>	Peru, Ecuador
<i>Lepismium crenatum</i>	Bolivia, Peru
<i>Lepismium cruciforme</i>	Argentina, Brazil, Paraguay, Uruguay; LC
<i>Lepismium houletianum</i>	Argentina, Brazil; LC
<i>Lepismium ianthothele</i>	Argentina, Bolivia
<i>Lepismium incachacacum</i>	Bolivia
<i>Lepismium lorentzianum</i>	Argentina, Bolivia
<i>Lepismium lumbricoides</i>	Argentina, Bolivia, Brazil, Paraguay, Uruguay
<i>Lepismium micranthum</i>	Peru
<i>Lepismium miyagawae</i>	Bolivia
<i>Lepismium monacanthum</i>	Argentina, Bolivia
<i>Lepismium paranganiense</i>	Bolivia
<i>Lepismium warmingianum</i>	Argentina, Brazil, Paraguay; LC
<i>PseudoRhipsalis acuminata</i>	Costa Rica, Panama
<i>PseudoRhipsalis alata</i>	Jamaica
<i>PseudoRhipsalis himantoclada</i>	Costa Rica, Panama
<i>PseudoRhipsalis horichii</i>	Costa Rica, Panama
<i>PseudoRhipsalis lankesteri</i>	Costa Rica
<i>PseudoRhipsalis ramulosa</i>	Belize, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Peru, Venezuela
<i>Rhipsalis baccifera</i>	Antigua and Barbuda, Argentina, Belize, Bolivia, Brazil, British Virgin Islands, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, French Guyana, Guyana, Guatemala, Guyana, Haiti, Honduras, Jamaica, Madagascar, Martinique, Mexico, Netherlands Antilles

**SPECIES****NATURAL RANGE + IUCN RED LIST STATUS + NOTES**

<i>Rhipsalis baccifera</i> ssp. <i>baccifera</i>	Belize, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, French Guiana, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Puerto Rico, Suriname, Trinidad and Tobago, United States, Venezuela
<i>Rhipsalis baccifera</i> ssp. <i>erythrocarpa</i>	Kenya, Tanzania
<i>Rhipsalis baccifera</i> ssp. <i>hileiabaiana</i>	Brazil
<i>Rhipsalis baccifera</i> ssp. <i>horrida</i>	Madagascar
<i>Rhipsalis baccifera</i> ssp. <i>mauritiana</i>	Angola, Comoros, Ethiopia, Madagascar, Mauritius, Réunion, Seychelles, Sierra Leona, South Africa, Sri Lanka
<i>Rhipsalis baccifera</i> ssp. <i>shaferi</i>	Argentina, Bolivia, Brazil, Paraguay
<i>Rhipsalis burchellii</i>	Brazil
<i>Rhipsalis campos-portoana</i>	Brazil
<i>Rhipsalis cereoides</i>	Brazil; VU
<i>Rhipsalis cereuscula</i>	Argentina, Bolivia, Brazil, Paraguay, Uruguay
<i>Rhipsalis clavata</i>	Brazil
<i>Rhipsalis crispata</i>	Brazil; VU
<i>Rhipsalis cuneata</i>	Bolivia
<i>Rhipsalis dissimilis</i>	Brazil
<i>Rhipsalis elliptica</i>	Brazil; LC
<i>Rhipsalis ewaldiana</i>	Brazil
<i>Rhipsalis floccosa</i>	Argentina, Bolivia, Brazil, Paraguay, Peru, Uruguay, Venezuela; LC
<i>Rhipsalis floccosa</i> ssp. <i>floccosa</i> ¶	Brazil
<i>Rhipsalis floccosa</i> ssp. <i>hohenauensis</i> ¶	Argentina, Paraguay
<i>Rhipsalis floccosa</i> ssp. <i>oreophila</i> ¶	Brazil
<i>Rhipsalis floccosa</i> ssp. <i>pittieri</i>	Venezuela
<i>Rhipsalis floccosa</i> ssp. <i>pulvinigera</i>	Brazil
<i>Rhipsalis floccosa</i> ssp. <i>tucumanensis</i>	Argentina, Bolivia, Peru
<i>Rhipsalis goebeliana</i>	Bolivia
<i>Rhipsalis grandiflora</i>	Brazil
<i>Rhipsalis hoelleri</i>	Brazil; DD
<i>Rhipsalis juengeri</i> ¶	Brazil
<i>Rhipsalis lindbergiana</i>	Brazil
<i>Rhipsalis mesembryanthemoides</i>	Brazil
<i>Rhipsalis mesembryanthoides</i> † ¶	Brazil
<i>Rhipsalis micrantha</i>	Colombia, Costa Rica, Ecuador, Guatemala, Peru, Venezuela
<i>Rhipsalis neves-armondii</i>	Brazil
<i>Rhipsalis oblonga</i>	Brazil; NT
<i>Rhipsalis occidentalis</i>	Ecuador, Peru, Suriname
<i>Rhipsalis olivifera</i> ¶	Brazil
<i>Rhipsalis ormindoi</i> ¶	Brazil
<i>Rhipsalis pacheco-leonis</i>	Brazil; DD
<i>Rhipsalis pacheco-leonis</i> ssp. <i>catenulata</i>	Brazil

<b>SPECIES</b>	<b>NATURAL RANGE + IUCN RED LIST STATUS + NOTES</b>
<i>Rhipsalis pacheco-leonis</i> ssp. <i>pacheco-leonis</i>	Brazil
<i>Rhipsalis pachyptera</i>	Brazil, Guyana, Suriname
<i>Rhipsalis paradoxa</i>	Brazil; LC
<i>Rhipsalis paradoxa</i> ssp. <i>paradoxa</i>	Brazil
<i>Rhipsalis paradoxa</i> ssp. <i>septentrionalis</i> ¶	Brazil
<i>Rhipsalis pentaptera</i>	Argentina, Bolivia, Brazil
<i>Rhipsalis pilocarpa</i>	Brazil; VU
<i>Rhipsalis pulchra</i>	Brazil
<i>Rhipsalis puniceodiscus</i>	Brazil
<i>Rhipsalis russellii</i>	Brazil; VU
<i>Rhipsalis sulcata</i>	Brazil; DD
<i>Rhipsalis teres</i>	Brazil
<i>Rhipsalis trigona</i>	Brazil
<i>Schlumbergera buckleyi</i> †	Brazil; <i>S. x buckleyi</i> = <i>S. russelliana</i> x <i>S. truncata</i>
<i>Schlumbergera exotica</i> (x <i>exotica</i> ) †	Brazil; <i>S. x exotica</i> = <i>S. opuntioides</i> x <i>S. truncata</i>
<i>Schlumbergera kautskyi</i>	Brazil; EN
<i>Schlumbergera microsphaerica</i>	Brazil; DD
<i>Schlumbergera microsphaerica</i> ssp. <i>candida</i>	Brazil
<i>Schlumbergera microsphaerica</i> ssp. <i>microsphaerica</i> §	Brazil
<i>Schlumbergera opuntioides</i>	Brazil; NT
<i>Schlumbergera orssichiana</i>	Brazil
<i>Schlumbergera reginae</i> (x <i>reginae</i> ) †	Brazil; <i>S. x reginae</i> = <i>S. orssichiana</i> x <i>S. truncata</i>
<i>Schlumbergera russelliana</i>	Brazil
<i>Schlumbergera truncata</i>	Brazil

ANNEX 2A

IMAGES OF REPRESENTATIVE EPIPHYTIC CACTI

Note similarities among genera.

Images are scanned from Anderson (2001).



*Disocactus ackermannii*

*Epiphyllum pittieri*

*Hatiora salicornioides*

*Lepismium cruciformis*  
(with fruit)



*PseudoRhipsalis himantoclada*

*Rhipsalis baccifera*

*Schlumbergera orssichiana*  
ssp. *baccifera*



ANNEX 2B

MORE SIMILARITIES AMONG GENERA OF EPIPHYTIC CACTI

Top row: rounded/tubular stems with conspicuous bristles or spine. Bottom row: flattened, segmented stems.



*Disocactus martianus*



*Lepismium ianthothele*



*Rhipsalis paradoxa*  
(showing dimorphic stems)



*Hatiora epiphylloides*



*Rhipsalis elliptica*



*Schlumbergera opuntiooides* ssp. *epiphylloides*  
(with fruit)

### ANNEX 3

UNEP-WCMC trade data for seven genera of epiphytic cacti, 1976-2010. 'Total Specimens' shows sum of reported Imports + Exports as explained in the text. Source codes: A = Artificially propagated, W = wild-collected, I = confiscated or seized, U = unknown, blank = no code reported. 'No. of nations' shows the number of Importing and Exporting nations reporting trade during this period. 'Range Export' indicates the number of range nations reporting trade.

Species	Total	By source code:					Reported:		No. of nations:		Range
	Specimens	A	W	I	U	blank	Imports	Exports	Import	Export	Export
<i>Disocactus ackermannii</i>	71	71					6	71	12	5	0
<i>Disocactus amazonicus</i>	250	250					160	247	21	4	2
<i>Disocactus aurianticus</i>	50	41	5			4	29	23	8	4	1
<i>Disocactus bififormis</i>	38	38					6	38	9	2	0
<i>Disocactus cinnabarinsis</i>	53	53					7	46	12	4	0
<i>Disocactus eichlamii</i>	25	25					0	25	6	1	0
<i>Disocactus flagelliformis</i>	13,321	13,316	4			1	9,235	4,117	31	15	1
<i>Disocactus hybrid</i>	6	6					6	0	1	1	0
<i>Disocactus kinnachii</i>	2	2					0	2	1	1	0
<i>Disocactus macdougallii</i>	2	2					0	2	1	1	0
<i>Disocactus macranthus</i>	5,572	5,572					5,012	565	16	6	0
<i>Disocactus martianus</i>	304	297	4		2	1	28	278	13	7	1
<i>Disocactus nelsonii</i>	74	69		3		2	5	69	11	5	1
<i>Disocactus phyllanthoides</i>	83	81		2			10	74	13	5	1
<i>Disocactus quezaltecus</i>	20	20					5	20	6	2	0
<i>Disocactus schrankii</i>	23	22	1				1	22	12	2	1
<i>Disocactus speciosus</i>	249	249					10	244	13	3	0
<i>Disocactus</i> spp.	237,297	235,900	25	56		1,316	3,294	234,100	36	21	7
<b>DISOCACTUS TOTALS</b>	<b>257,440</b>	<b>256,014</b>	<b>39</b>	<b>61</b>	<b>2</b>	<b>1,324</b>	<b>17,814</b>	<b>239,943</b>			
<i>Epiphyllum anguliger</i>	1,631	1,631					1,297	346	16	8	0
<i>Epiphyllum cartagense</i>	76	76					24	69	10	5	1
<i>Epiphyllum caudatum</i>	30	26	4				5	26	8	2	1
<i>Epiphyllum crenatum</i>	5,462	5,461		1			797	4,667	19	8	0
<i>Epiphyllum floribundum</i>	29	29					3	26	6	1	0
<i>Epiphyllum grandilobum</i>	10	10					5	9	4	4	1
<i>Epiphyllum guatemalense</i>	31	31					2	29	10	2	0
<i>Epiphyllum hookeri</i>	1,085	1,082	2	1			13	1,079	19	7	2
<i>Epiphyllum laui</i>	23	23					10	23	4	1	0
<i>Epiphyllum lepidocarpum</i>	19	19					16	19	3	3	1
<i>Epiphyllum oxypetalum</i>	796	773	21	2			93	709	18	13	1
<i>Epiphyllum phyllanthus</i>	10,118	10,098	19			1	10,054	9,571	13	12	7
<i>Epiphyllum pittieri</i>	14	14					13	11	3	3	1
<i>Epiphyllum pumilum</i>	27	27					6	27	11	2	0
<i>Epiphyllum thomasianum</i>	107	107					25	106	13	3	2
<i>Epiphyllum</i> spp.	5,642,047	5,639,126	47	189	31	2,654	4,493,353	1,165,864	57	42	19
<b>EPIPHYLLUM TOTALS</b>	<b>5,661,505</b>	<b>5,658,533</b>	<b>93</b>	<b>193</b>	<b>31</b>	<b>2,655</b>	<b>4,505,716</b>	<b>1,182,581</b>			



Species	Total	By source code:					Reported:		No. of nations:		Range
	Specimens	A	W	I	U	blank	Imports	Exports	Import	Export	Export
<i>Hatiora epiphyllloides</i>	1	1					0	1	1	1	0
<i>Hatiora gaertneri</i>	972,089	971,998		12		79	29,001	943,103	28	9	0
<i>Hatiora herminiae</i>	20	20					0	20	1	1	1
<i>Hatiora rosea</i>	1,283	1,234	1	48			1,010	276	14	7	0
<i>Hatiora salicornioides</i>	476,981	476,976	2	2		1	165,455	326,886	28	10	1
<i>Hatiora x graeseri</i>	1,288	1,288					1,288	0	1	1	0
<i>Hatiora</i> spp.	2,686,547	2,675,711		479	100	10,257	126,359	2,571,830	45	14	1
<b>HATIORA TOTALS</b>	<b>4,138,209</b>	<b>4,127,228</b>	<b>3</b>	<b>541</b>	<b>100</b>	<b>10,337</b>	<b>323,113</b>	<b>3,842,116</b>			
<i>Lepismium aculeatum</i>	25	18	3			4	20	9	4	5	2
<i>Lepismium bolivianum</i>	26,833	26,833					21,772	25,724	13	5	0
<i>Lepismium crenatum</i>	1	1					0	1	1	1	0
<i>Lepismium cruciforme</i>	1,220	1,215	2	2		1	880	348	12	9	3
<i>Lepismium houletianum</i>	357	357					305	53	12	4	0
<i>Lepismium ianthothele</i>	47	43				4	10	37	13	3	2
<i>Lepismium lorentzianum</i>	17	17					0	17	5	1	0
<i>Lepismium lumbricoides</i>	3,971	3,890	5			76	1,684	2,290	13	7	1
<i>Lepismium micranthum</i>	24	24					1	24	6	2	0
<i>Lepismium miyagawae</i>	38	38					3	35	6	1	0
<i>Lepismium monacanthum</i>	116	116					103	14	8	4	1
<i>Lepismium paranganiense</i>	41	41					3	38	10	3	0
<i>Lepismium warmingianum</i>	4,507	4,502	5				4,492	15	5	5	1
<i>Lepismium</i> spp.	3,265	3,253	8	4			3,192	96	10	8	2
<b>LEPISMIUM TOTALS</b>	<b>40,462</b>	<b>40,348</b>	<b>23</b>	<b>6</b>	<b>0</b>	<b>85</b>	<b>32,465</b>	<b>28,701</b>			
<i>Pseudorhipsis alata</i>	2	2					0	2	1	1	0
<i>Pseudorhipsis himantoclada</i>	4	3		1			1	3	2	2	1
<i>Pseudorhipsis ramulosa</i>	185	167	15			3	108	93	15	7	2
<i>Pseudorhipsis</i> spp.	56,138	56,138					0	56,138	1	1	0
<b>PSEUDORHIPSALIS TOTALS</b>	<b>56,329</b>	<b>56,310</b>	<b>15</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>109</b>	<b>56,236</b>			
<i>Schlumbergera kautskyi</i>	630	630					0	630	1	1	0
<i>Schlumbergera microsphaerica</i>	33	33					23	33	4	2	0
<i>Schlumbergera opuntoides</i>	257	257					204	254	13	3	0
<i>Schlumbergera orssichiana</i>	229	229					139	91	5	3	0
<i>Schlumbergera russelliana</i>	3,746	3,744		2			3,634	112	10	6	1
<i>Schlumbergera truncata</i>	448,680	437,255		1	1	11,423	56,887	392,920	26	19	2
<i>Schlumbergera x buckleyi</i>	709	709					2	709	2	2	0
<i>Schlumbergera</i> spp.	15,962,150	15,636,844	8	706	100,196	224,395	3,042,445	13,844,405	66	24	7
<b>SCHLUMBERGERA TOTALS</b>	<b>16,416,434</b>	<b>16,079,701</b>	<b>8</b>	<b>709</b>	<b>100,197</b>	<b>235,818</b>	<b>3,103,334</b>	<b>14,239,154</b>			

## ANNEX 4

Estimated numbers of wild-collected specimens of epiphytic cacti traded internationally during 1976-2010 by species or 'spp.' with origin of wild-collected (W) specimens. 'Total no. of Specimens' shows sum of reported Imports + Exports as explained in the text. Source codes: A = Artificially propagated, W = wild-collected, I = confiscated or seized, U = unknown, blank = no code reported. W, I, U or blank records were omitted from estimated number of wild-collected (W) specimens if country of origin did not match natural range (see text for explanation).

Species	Est. no. of	Total no. of	By source code:				Blank	Origin of W collected specimens*
	W specimens	Specimens	A	W	I	U		
<i>Disocactus aurianticus</i>	4	50	41	5			4	Honduras 1990
<i>Disocactus flagelliformis</i>	4	13,321	13,316	4			1	Mexico 1993
<i>Disocactus martianus</i>	4	304	297	4		2	1	Mexico 1992-1993
<i>Disocactus nelsonii</i>	3	74	69		3		2	Mexico 1996
<i>Disocactus phyllanthoides</i>	2	83	81		2			Mexico 2004
<i>Disocactus schrankii</i>	1	23	22	1				Mexico 1993
<i>Disocactus</i> spp.	89	237,297	235,900	25	56		1,316	various 1979-2006
<i>Epiphyllum caudatum</i>	4	30	26	4				Mexico 1992
<i>Epiphyllum hookeri</i>	2	1,085	1,082	2	1			Belize 1999
<i>Epiphyllum phyllanthus</i>	20	10,118	10,098	19			1	various 1992-2001
<i>Epiphyllum</i> spp.	368	5,642,047	5,639,126	47	189	31	2,654	various 1987-2007
<i>Hatiora salicornioides</i>	2	476,981	476,976	2	2		1	Brazil 1991
<i>Hatiora</i> spp.	1	2,686,547	2,675,711		479	100	10,257	Brazil 1998
<i>Lepismium aculeatum</i>	7	25	18	3			4	Argentina 1985, Uruguay 2005
<i>Lepismium cruciforme</i>	3	1,220	1,215	2	2		1	Paraguay 1993, Brazil 2008
<i>Lepismium ianthothele</i>	4	47	43				4	Argentina 1986
<i>Lepismium lumbricoides</i>	27	3,971	3,890	5			76	Argentina 1986, 1997
<i>Lepismium warmingianum</i>	5	4,507	4,502	5				Argentina 1997
<i>Lepismium</i> spp.	12	3,265	3,253	8	4			Bolivia 1999/2006, Ecuador 2001
<i>Pseudorhipsalis himantoclada</i>	1	4	3		1			Costa Rica 2008
<i>Pseudorhipsalis ramulosa</i>	2	185	167	15			3	Dominican Republic 1995
<i>Rhipsalis baccifera</i>	56	613,802	613,739	36			27	various 1981-2007
<i>Rhipsalis baccifera</i> ssp. <i>horrida</i>	8	1,374	1,366	8				Madagascar 1991-2005
<i>Rhipsalis cereuscula</i>	4	101,234	101,230	2	2			Mexico 1990, Paraguay 1993, Brazil 2008
<i>Rhipsalis clavata</i>	1	2,191	2,189		1		1	unknown (code = I) 2002
<i>Rhipsalis floccosa</i> ssp. <i>tucumanensis</i>	63	86	23	7			56	Argentina 1986, 1996
<i>Rhipsalis grandiflora</i>	1	215	214		1			Brazil 2008
<i>Rhipsalis micrantha</i>	4	2,174	2,169	4			1	Ecuador 2001
<i>Rhipsalis occidentalis</i>	1	17	16	1				Ecuador 2001
<i>Rhipsalis puniceodiscus</i>	5	60	55	5				Suriname 1994
<i>Rhipsalis</i> spp.	315	1,360,237	1,330,360	76	64	1	29,736	various 1988-2008
<i>Schlumbergera russelliana</i>	2	3,746	3,744		2			Mexico 2004
<i>Schlumbergera truncata</i>	1	448,680	437,255		1	1	11,423	Mexico 2003
<i>Schlumbergera</i> spp.	147	15,962,150	15,636,844	8	706	100,196	224,395	various 1979-2007
<b>TOTAL</b>	<b>1,173</b>							