AMENDMENTS TO APPENDICES I AND II OF THE CONVENTION

Other Proposals

A. PROPOSAL

Transfer of Pachypodium baronii, P. brevicaule and P. decaryi (and their natural hybrids) from Appendix II to Appendix I.

B. PROPONENT

The United States of America.

C. SUPPORTING STATEMENT

1. Taxonomy

11. Class: Magnoliopsida (Dicotyledonae)

12. Order: Gentianales

13. Family: Apocynaceae

14. Species: Pachypodium Lindley

a) P. baronii Costantin & Bois 1907
a1) var. baronii (syn. = P. baronii var. erythreum Poisson; syn. = P. baronii var. typicum Pichon)
a2) var. windsorii (Poisson) Pichon 1949 (syn. = P. windsorii Poisson)
b) P. brevicaule Baker 1886
c) P. decaryi Poisson 1917

141. Natural Hybrids:

? P. brevicaule x P. densiflorum Bak. 1886 (Rauh, 1984, 1985c)
? P. brevicaule x P. rosulatum Bak. 1882 (Rauh, 1972, 1985c; Rowley, 1983)

15. Common Names: English:
a) unknown
a1) vontaka [also used for P. lamerei (Rauh, 1984) and P. geayi (Rauh, 1976)], bontaka: (star of the steppe, star of the veld)
a2) unknown
b) kimondromondro, tsimondromondro; stone-plant (Guillaumet, 1987)
c) unknown

French:
Spanish:

16. Code Numbers:

These four Malagasy endemic taxa have had stable taxonomy and nomenclature for 40 years, since the monograph of Pichon (1949). However, Rowley (1983, 1987) recognizes 13 species in Pachypodium,

with 9 endemic to Madagascar. Markgraf and Boiteau (1976) recognized 17 species, with 12 endemics. Rauh (1972, 1985a) stated that there are about 15 species, to 18 species (Rauh, 1976, 1984) following Pichon's monograph, with 10-13 endemic to Madagascar.

Rauh (1985c) in the text states that he found natural hybrids with P. densiflorum, but the photograph legend states hybrids with P. rosulatum, which he had similarly reported earlier (Rauh, 1972). Hybrids are not mentioned in the recent accounts of either possible species (Rauh, 1985a, 1985b). Rauh is not known to have discussed that P. brevicaule has been found hybridizing with each species, which are sometimes found together (Rowley, 1983). Pachypodium densiflorum appears to be more common in the area of P. brevicaule than is P. rosulatum (Markgraf and Boiteau, 1976; Rowley, 1983).

2. Biological Data

21. Distribution: These endemics are in northern and central Madagascar, which is recognized for its high endemism. Pachypodium brevicaule is in the Eastern Malagasy Region, Centre Domain, western slopes, now sometimes termed the West Central Domain (Koechlin, 1972; Guillaumet, 1987). The domain of P. baronii var. baronii is unclear but appears to be the same as for P. brevicaule. Pachypodium decaryi and P. baronii var. windsorii are in the Western Malagasy Region, West Domain. Koechlin (1972) reported that the West Domain has a generic endemism of 41% and specific endemism of 90%; the Centre Domain has 21% generic endemism and 89% specific endemism. Distributional information for each taxon is given by Markgraf and Boiteau (1976), Rauh (1972, 1985a, 1985c), and Rowley (1983). The taxa occur as follows:

a1) Northwestern part of island (provinces of Mahajanga and Antseranana: Befandriana - Mandritsara area; Bejofo on the Mahevahinja; Maromandia, Sandrakoto; Sofia River basin, Antsakabary; Ambilobe, Marivorahona massif Southwest of Manambato, at 1,000-1,200 m;

a2) extreme North of island (provinces Antseranana); Northwest of town of Antseranana (Diégo-Suarez), near the old British Windsor-Castle; on way North to Cap d'Ambre (Rauh, 1972); [but note Rowley (1983) as to interpretation of type locale];

b) central part of island (provinces of Antananarivo and Fianarantsoa): central plateau: area of Antsirabe and Ambatofinandrhana, e.g. Itremo Mountains West of Ambositra, on massif of Mt. Ibity, elevation 1,400-2,000 m; high Sahatany; Ambohiponana, South of Antsirabe; Ambatomenaloha; Imerina;

c) extreme North of island (province Antseranana): Ankarana, along the bank of Andranonakoho River; hills and plateaus of Ankarana du Nord; Montagne des Français; at 500 m elevation (Rowley, 1983).

22. Population: Jenkins (1987) gives preliminary IUCN Red Data categories for the taxa. Detailed population estimates are unknown; pertinent comments follow:

a1) Indeterminate
a2) Endangered
b) Vulnerable
c) Endangered.

a1) "rare and local" (Rowley, 1983);

a2) two localities, but the type population almost gone from collectors; "hundreds" at the new locality in 1969, but "rare and restricted to a small area" (Rauh, 1972);

b) "very large distribution" (D. Supthut in litt. to B. MacBryde, 27/04/89) or "very small and limited area" (Rauh, 1985c); "great quantities" were found (in 1969 or earlier) only in the "massifs of the Itremo and on Mt. Ibity" (Rauh, 1972); a photograph in Rauh (1983) shows a Malagasy nursery with about 1,500 smaller, perhaps 50-year-old plants that were presumed collected; the species has become "rare in habitat" (Rauh, 1983) from collections. The plant body forms a big flat, stonelike mass (of very short, compressed and thick branches) or can resemble a heap of potatoes, attaining less than 1 m in diameter, and must "be very old" (Rauh, 1985c), with "an age of some hundred years," as the plants grow very slowly;

c) "very local" (Rowley, 1983); this species was of concern to H. Humbert and R. Decary in a published list of species at risk perhaps as long ago as 1927 (Rakotozafy et al., 1987).

23. Habitat: The four taxa appear to occur in habitats that can be broadly classified into three principal climax vegetation types: deciduous xerophyll forest (P. baronii var. windsorii and P. decaryi), evergreen xerophyll forest (P. brevicaule), and evergreen mountain forest [perhaps: (P. baronii var. baronii)], according to vegetation maps in Rauh (1979, 1983) and Koechlin (1972). However, Jenkins (1987) provides a vegetation classification that incorporates its present status: the northernmost two taxa appear to occur within a mosaic of deciduous forest and grassland, and the latter two taxa in secondary highlands vegetation. Collection for export and habitat destruction cause the decline of populations and species over recent decades (Battistini and Verin, 1972; Chauvet, 1972; Jenkins, 1987; Jolly and Jolly, 1984; Knees, 1989; Millot, 1972; Rauh, 1979). Supthut (in litt. to MacBryde, 27/04/89) considers fire the most important current threat to P. brevicaule, and speculates that a few large dealers rather than roadside vendors may now collect it [see section 4.1 (Protection Status) National below]. Other comments on habitat for the species are:

a1) on acid gneiss rocks (Rowley, 1983); rocailles dénudées (bared rocky areas) (Markgraf and Boiteau, 1976);

a2) calcareous escarpments, rocky areas protected from fire (Markgraf and Boiteau, 1976); steep limestone rocks (type locale); steep, very weathered limestone rocks, in clefts and pockets of humus (Rauh, 1972);

b) the western slope of the highlands has a specific botanical character, which includes natural rock gardens; in border regions occur "the strange quartzite massifs" of Ibity and Itremo, where P. brevicaule lives (Guillaumet, 1987);

ecologically specialized, a lithophyte in full sun (Rowley, 1983) only amongst quartzite rocks or in fields of pure quartz sand (Rauh, 1972, 1985c);

c) limestone hills, steep slopes and plateaux, an area along a riverbank (Markgraf and Boiteau, 1976).

3. Trade Data

31. National Utilization: A small amount of trade in succulent species exists within Madagascar, where plants are taken from habitat and kept in nurseries before resale, according to a 1986 site review (Knees, 1989).

32. Legal International Trade: Pachypodium is fairly new to horticulture, with "a meteoric rise to fame over the past two or three decades" (Rowley, 1983), driven by the "urge to broaden the scope and seek out whatever is new, scarce or challenging to cultivate ... pachypodiophily, my friend, is not something for the faint of heart!" (Rowley, 1983). Many of the species were introduced to cultivation by Rauh (1984).

Most of the CITES data on international trade in Pachypodium has been reported only to the genus level, but reporting on species is improving. Campbell (1984) and McCarthy (1987) reviewed the limited U.S. trade data; from 1979-1983, P. brevicaule was the most commonly imported species (580 plants) among the species that were identified. Most Pachypodium were designated as artificially propagated, including many from Madagascar. Oldfield (1985) reviewed the information available from western Europe, stating that most imports from Madagascar are thought to go first to France (although this is not reflected in the annual reports to the CITES Secretariat). All imports from Madagascar were purported to be claimed to be artificially propagated. The data below shows a bit more complex situation [particularly regarding varying declarations on whether specimens (sometimes apparently the same ones!) are artificially propagated]. Trade data for 1976-1986 (partial 1987, 1988) from WTMU (2/89, except 1988 from U.S.A.) on Madagascar's reported exports to the three countries reporting most trade in pachypodiums, and those countries imports from Madagascar, of specimens of unidentified Pachypodium and these three species are in the following table (plus three other countries reported trade in these three species, and a few probable re-exports via F.R. Germany):

COUNTRY & SPECIES	YEAR	NUMBER SPECIMENS * reported exports	reported imports	RE-EXPORTS
(* wild, unless 'ap' noted = artificially propagated)				
FEDERAL REPUBLIC OF GERMANY				
Pachypodium spp.	1977	1500 ap		
"	1978	4713 ap		200
"	1979	2010		
"	1980	10,633		
"	1981	3000 ap		
"	1982	100 ap		
"	1983	30 ap		

"		1984	10,000		
"		1986	40,176		
"		1987	5		
P. baronii ----	--	1984	2		
"		1987	3		
P. brevicaule --	--	1985	32,000		
"		1986	50,000	18,000	
"		1987	5		
JAPAN					
Pachypodium spp.		1976	199 ap		
"		1977	124 ap		
"		1978	217 ap		
"		1979	179		
"		1980	62		
"		1983	52 ap	58	
"		1984	74	340 *	
"		1985	910	1162	
"		1986	397	637 ap	
P. baronii -----	--	1984	120		
"		1986	20		
P. brevicaule --	--	1983	50 ap	50	
"		1984	105		
"		1985	110		
"		1986	100		
UNITED STATES OF AMERICA					
Pachypodium spp.		1977	14 ap	70	
"		1978	170 ap		
"		1979	339	335	
"		1980	1260	907 **	
"		1981	2103 ap	100	
"		"		1460 ap	
"		1982	240 ap	112	
"		"		123 ap	
"		1983	749 ap	734 ap	
"		1984		240 ap	
"		1985	7		
"		1986	150	150	
P. baronii		1982	2 ap		
P. brevicaule		1980	1 ap		FRG
"		1981		400	
"		1983	2 ap		FRG
"		1984	200		
"		1985		86 ap	
"		1986	75	75 ap	
"		1988		25	
P. decaryi		1988		50	
UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND***					
P. brevicaule		1983	50 ap		
REPUBLIC OF SOUTH AFRICA***					
P. baronii		1980	2		FRG

ZIMBABWE***

P. baronii	1985	3
P. brevicaule	1985	2
P. decaryi	1985	5

* Plus 340 kg commercial
** Plus 23 kg commercial
*** Little or no reported trade in unidentified Pachypodium spp. (such U.K. trade only 1979-1983, from Madagascar: 34 wild exported, 182 ap exported; 370 wild imported)

33. Illegal Trade: Extent unknown. Mature individuals of P. baronii and P. decaryi are shrubby pachycauls (with gradually swollen stem bases and stems; Rowley, 1987) 1-2 m or more high; P. brevicaule is somewhat cactiform (cactuslike) and to over 1 m in diameter. However, as with so many plant taxa, a few younger or smaller specimens can be easily smuggled; it is possible to collect whole age-classes of a population into a suitcase. The result is a serious loss, and perhaps distortion of genetic diversity, to any remaining plants in the population.

Many plants exported from Madagascar had been under official CITES certificates that stated they were artificially propagated, when clearly the majority were wild taken (Knees, 1988; Oldfield, 1985; Davis et al., 1986; cf. Rauh, 1983). In April 1987, the European Community placed a ban on import of plants from Madagascar that were claimed to be artificially propagated. At the sixth meeting of the Conference of the Parties to CITES (Ottawa, 1987), there was discussion of the problem with Madagascar during the meeting of the Plant Working Group, and Madagascar acknowledged the problem and their intent to resolve it, in a statement before the Parties

Plant consignments now are accompanied by permits from Madagascar giving wild as their origin. Although the export of wild plants now may be legal, the fragile populations of some species such as these pachypodiums are even more clearly at risk. Great Britain (and perhaps F.R. Germany) imported wild specimens of all or some of these three species in 1988 exported by Madagascar, in addition to the U.S. report above. The trade is considered detrimental by various persons and groups [e.g. the IUCN/SSC Cacti and (Other) Succulents Specialist Group; the International Organization for Succulent Plant Study (April 1989 meeting); the CITES Plants Committee (November 1988 meeting); and the Cactus and Succulent Society of America Conservation Committee (Barad, 1989].

34. Potential Trade Threats:

341. Live Specimens: As interest in these species has grown among collectors, commercial suppliers have attempted to keep pace. Some species are now available from reliable sources who propagate and raise plants from seeds and grafts (and perhaps cuttings) produced in cultivation (Rowley, 1983), and thus have specimens that fully qualify as artificially propagated under CITES Resolution Conf. 2.12. This must be strongly encouraged to reduce the pressure on the iminishing wild populations. However, as long as it is commercially

viable to export these plants from the wild in Madagascar, compared with expensive production in user countries and no shift to produce truly artificially propagated plants in Madagascar, the decline in the species is highly likely to continue. Disadvantages some find in artificially propagated plants of some species can include very slow growth rates (and thus small plants), and an apparent lack of sufficient resemblance to the characteristics of wild plants (as the different growing conditions of some nurserymen sometimes can result in characters not appearing in cultivated specimens).

There can be many seeds in a ripe pachypod fruit, which splits to disperse the seeds by the wind, so there is opportunity to collect seeds from plants in habitat with planned effort (see also section 342. Parts and Derivatives below). Plants removed from habitat may not survive to produce another generation even in cultivation [e.g. P. brevicaule is likely to die within 5 years (Rauh, 1983)]. Furthermore, collection from the wild (if necessary at all) could be limited to seeds and perhaps cuttings (just seeds for P. brevicaule); it doesn't have to result in the complete removal of whole plants. These species may be knowingly collected virtually to extinction if further protection is not afforded them.

342. Parts and Derivatives: All trade data on these species are for whole plants. Trade in the seeds themselves of Appendix II species usually is not monitored by CITES, so its extent in these species is unknown. Nevertheless, a Party has to evaluate whether the collection of wild seeds was not detrimental, when subsequently deciding whether the establishment of propagation stock of a taxon qualifies as artificially propagated under Resolution Conf. 2.12(c)(i). Seed has been the preferred source to obtain most pachypodiums. Unfortunately, Pachypodium seeds are thought to remain viable usually for only a few weeks (Lamb, 1978), although Rowley (1983) indicates some seeds (species not stated) were viable after several years. A few records of seed exports/imports from Madagascar have been reported by the Parties [the seed is likely to be P. lamerei (see section 5 Information on Similar Species below)]:

COUNTRY AND SPECIES	YEAR	SEEDS (kg)
FEDERAL REPUBLIC OF GERMANY		
Pachypodium	1976	28
"	1977	16
"	1978	17
"	1979	1
"	1981	23
"	1982	28
P. lamerei	1983	30
JAPAN		
Pachypodium	1984	3

4. Protection Status

41. National: Madagascar appears to have a law that forbids export of wild plants in CITES appendices, but not those "reproduced artificially by approved growers" or those that appear in CITES Appendix II "but are not endangered (scientific evidence in support supplied by the Department responsible for scientific research)" according to Decree No. 83-108 of 31 March 1983 (cf. Davis et al., 1986). Pachypodium may be protected directly by such a law, as its species are on a list of species adopted by the Malagasy Direction des Eaux et Forêts that need national and also international protection (P. Lowry in litt. to J. MacKnight, 1989). Supthut (in litt. to MacBryde, 27/04/89), who has been to Madagascar in 1982, 1986 and 1988, believes the law is having some effect (but perhaps not with a few large dealers); it is generally known to people. Small dealers no longer were selling pachypodiums along the road, as in 1986.

42. International: Perhaps the best protection for P. brevicaule is its good mimicry, closely resembling the surrounding stone in form and colour. The plants can be seen from a distance only when in flower (Rauh, 1984). All species of Pachypodium have been included in Appendix II of CITES since 1973; P. namaquanum was uplisted to Appendix I in 1981.

43. Additional Protection Needs: In addition to CITES, to curtail the threat from international trade, the Malagasy pachypodiums need further local protection. Réserves Spéciales Botaniques can be established (Jenkins, 1987). Pachypodium brevicaule is at risk from burning in its habitat (Supthut in litt. to MacBryde, 27/04/89); P. baronii var.baronii and P. decaryi also may occur in areas subject to habitat disturbance; although unknown, perhaps the habitat of P. baronii var. windsorii is naturally somewhat secure (Rauh, 1972). Extensive burning, grazing and/or trampling by cattle may be amongst the many hazards facing the survival of these species (Rauh, 1979; Jolly and Jolly, 1984; Chauvet, 1972). The inclusion of these three pachypodiums in Appendix I will encourage artificial propagation in the countries that traditionally import these plants, and perhaps in Madagascar as well, and help to reduce demand for wild-collected specimens by providing an alternate source of supply.

5. Information on Similar Species

No species is similar to P. brevicaule, "the most interesting if not the most remarkable succulent of all" (Rauh, 1984). Pachypodium lamerei Drake has become fairly commonly available as a house plant through artificial propagation and cultivation from wild seeds. Rowley (1983) provides a key to the species of Pachypodium, and Markgraf and Boiteau (1976) provide a key to the 9-13 Malagasy species. Illustrations (sometimes in colour) of these three proposed species and many of the other pachypodiums are in Rauh (1972, 1984, 1985a-1985c) and Rowley (1983, 1987). The similar genus Adenium Roemer & Schultes (1-5 spp.) is treated (including a key) by Rowley (1983).

Rowley (1978, 1987) provide useful general accounts of Pachypodium and many other succulent plants, and of similar pachycaul genera; and Rowley (1980) provides a key to distinguish each genus of succulents.

6. Comments from Countries of Origin

None; to be sought.

7. Additional Remarks

Rowley (1983) provides suggestions for propagating pachypodiums, including the grafting of P. baronii. The species are probably self-incompatible (Rowley, 1983), so a few genetically little-related individuals may be needed to get strong seed production. Pachypodium brevicaule is slow-growing, but complete artificial propagation from nursery-produced seeds and relatively rapid growth of seedlings and young plants are being achieved in California, U.S.A. (C. Hanson, pers. comm. to MacBryde, 4/1989). Rauh (1984) also provides some useful commentary on cultivating pachypodiums.

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