Comments by Mexico on the Proposal to Transfer Mexican Cactaceae from Appendix I to II

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In response to Document PC11.Doc. 13.2, Mexico presents and defends its position opposing the proposal sent by the Management Authority of Switzerland to downlist certain Mexican cactus species from Appendix I to Appendix II. Mexico considers that there are insufficient data, and the arguments in favor of the proposal are not conclusive enough to take such action. It is important to realize that Mexico's decision was made after a meeting between representatives of the Mexican management, scientific and law enforcement authorities, with some academic experts on cactaceae.

I. General Considerations

We are sorely lacking basic ecological information on cacti (population frequency and density). And we also need much more relevant information on regeneration and how well seeds take root in order to know the population status of these species. From an ecological viewpoint, these parameters represent the most critical stages of cactus life cycles, and existing studies show that in many cases, seeds take root at a low rate. This pattern, which seems quite consistent among species, has not been thoroughly evaluated for the great majority of them, but the data available, and especially periodic field observations by several researchers, point in this direction.

II. Ecological Information Available on Some Species

Astrophytum asterias. As far as we know, there are 6 known populations of this species, on which there are no indications of how well seeds take root, or therefore, on regeneration. This pattern could be primarily attributed to pillage (since populations have been seen to decline by as much as 35% between one year and the next), but in fact it seems to have more to do with ecological aspects that have not necessarily been caused by human influence. Data obtained on the species from sampling indicate a density of 8 specimens per m^2. While this figure shows the presence of high densities of *Astrophytum asterias*, the very fact that it does not demonstrate sexual regeneration subjects it to a severe environmental limitation. In general, from the results of various research projects carried out with cactaceae, we know that problems of species regeneration can be attributed to predatory activities and inability to germinate under conditions in the field. Data collected by Martínez-Ávalos (see Table 1) show that even when seeds are viable and germinate under experimental laboratory conditions, they do not take root in the field. This pattern allows us to point out that populations are practically made up of adult individuals, which suggests they are at high risk. Additionally, plundering up to 35% of the populations, which largely affects reproductive adult specimens, increases the extinction rate for this species. From the ecological standpoint, in terms of population, knowledge on the abundance or density of a species is not enough to determine its demographic status. In the context of CITES, such data are not considered sufficient to determine that it should be downlisted from Appendix I to Appendix II. By contrast, data on how the population regenerates and how seeds take root are highly relevant parameters, useful for determining demographic status. However, this type of information is practically non-existent, or at least very scarce.

Aztekium ritteri. There is only one known population of this species in the state of Nuevo León. The species has not been studied. However, field observations show a similar pattern of low regeneration, which could be related to ecological aspects since collectors of this plant prefer, as in the case of the previous species, to acquire adult individuals. It is calculated that even when this species can reach high densities, the fact of lacking regeneration capacity may mean that the species is in a process of extinction accentuated by over-harvest. It is estimated (through periodic field observations) that up to 90% of this species has been harvested, which is why we consider that the proposal to transfer it to CITES Appendix II would not help maintain field populations. We believe it is essential to keep this species in Appendix I, encouraging research on the causes behind its low regeneration rate, in order to find management alternatives that would allow for the restoration or improvement of its population conditions.

Obregonia denegrii. In 1997 López Camacho studied this species. According to his data, population density that year was 2.18 specimens per square meter. By contrast, a study published in 1977 based on data from earlier years (Cante, A.C. and the Desert Botanical Garden, 1977), reported densities of 24 specimens per square meter. These contrasting results may imply two things. First, one of the studies may have had methodological problems resulting in inaccurate figures, or second, in under a year this species could have experienced a major decline in density. But even supposing the species population regeneration is normal, by seeds, we know through periodic field observations that it is seriously threatened by over-harvest. Therefore, given this situation of such uncertainty

as to regeneration, and because of the high risk posed by harvesting, we do not agree with transferring this species from CITES Appendix I to II.

Mammillaria pectinifera. There are 19 known populations of this species. Considering that Peters and Martorell recognize high susceptibility of this species to land use changes, obtaining an average disturbance rate of 60 (measured with a multivariate index including 14 variables on a scale of 0 to 100) it is estimated that over the next 5 years there will be an important reduction in the number of specimens in these populations and the disappearance of several of them. The area occupied by this species is no larger than 100 Km^2. The average density of specimens in the various populations is 2500 per hectare, although some populations have only 145 while others have slightly over 4,000. The average structure in values from 1 to 0 (values close to one indicating young plants) is 0.49, which means populations tend to have more adult specimens. In summary, for Mexico at this point these elements are enough to hold that the species should not be downlisted, as this would not aid in its protection.

Mammillaria solisoides. There are 14 known populations of this species. Considering that Peters and Martorell recognize high susceptibility of this species to land use changes, obtaining an average disturbance rate of 68 (measured with a multivariate index including 14 variables on a scale of 0 to 100), it is estimated that in the next 5 years there will be an important reduction in the number of specimens in these populations and the disappearance of several of them. The area occupied by this species is no larger than 100 Km^2. The average density of specimens among the various populations is 3500, but there are populations with only 900 and others with nearly 5,000. The average structure in values from 1 to 0 (values close to one being indicators of young plants) is 0.51, which means populations are relatively well balanced between adults and young specimens. However, there are 6 populations showing values around 0.6, so for Mexico at the moment, these elements are enough to hold that the species should not be downlisted to CITES Appendix II, as this would not help to protect it.

Other Species. Different research groups on other species have generated scant information, but all that we have been able to collect recently is represented in Table 1, which shows information from the State of Tamaulipas. For this entire group, we consider that there is no forceful ecological basis for transfer to CITES Appendix II.

III. Confiscations of Mexican Cacti Included in PC11.Doc.13.2

This table shows evidence of illicit trade in cactus, although it is legally forbidden to trade in wild specimens. These data from the Law Enforcement Authority contrast with references in the document presented by the Management Authority of Switzerland.

Species	1996	1997	1998	Total
Aztequium ritteri	41	1	9	51
Obregonia denigri	3	37	30	70
Mammillaria pectinifera		9	8	17
Mammilaria solisioides		35	30	65
Strombocactus spp.	1	11	9	21
Astrophytum asterias	38	11	9	58
TOTAL	83	104	95	282

IV. Conclusions

Mexico's decision to oppose downlisting of Mexican cactus species from CITES Appendix I to II is based on available information which, although scarce, does give an indication of the danger this transfer could cause cactus populations. Furthermore, it is based on the recognized ecological principle that restricted populations, although they may or may not show high densities, could be immersed in a process of extinction if they lack natural regeneration. In this sense, it is considered that no sampling based solely on frequency and density data of some populations is enough to determine population status. We feel the most appropriate strategy to learn about population demography is to determine the population's regeneration and establishment rates and the environmental parameters affecting them. Doing this with the proper methods would avoid stumbling into unnecessary, risky improvisations. Apart from the aforementioned biological peculiarities, there is evidence of illicit trade, both in wild specimens and in seeds, which makes it more complicated to have an adequate protection plan if these species are in Appendix II. Mexico understands that the proposal by the Management Authority of Switzerland is part of the review process in progress with all species listed in CITES Appendices, but it is our opinion that in the particular case of cactaceae, it is not worth making a rushed decision that could result in dire consequences for these species. In this sense, Mexico calls for implementation of the Precautionary Principle.

TABLE 1. POPULATION STUDY OF THREATENED CACTI IN THE STATE OF TAMAULIPAS, MEXICO Martínez-Avalos, 1998)

	Known Populations	Population Density	Harvest (%)	Regeneration (%)	Geographical Distribution	Associated Vegetation	% Germination	% Viability	Most Frequent Diameter (cm)	CITES
Ariocarpus gavoides	2	227 spec/18 m^2 = 12.61 spec/m^2	25	30	Tamaulipas SLP	Thorny Shrubbery	50	62	1.5-3	1
Astrophytum asterias	6	167 spec/210 m^2 = 7.95 spec/m^2	70	0	Tamaulipas NL, TX	Thorny Shrubbery	93	85	2-4	1
Turbinicarpus schmiedickeanus	3	60 spec/24 m^2 = 5 spec/ m^2	10	20	Tamaulipas SLP, NL	Thickets of Rosette-forming Life Forms	96	47	1.5-2	1
Pelecyphora strobiliformis	3	3 spec/total	100	0	Tamaulipas SLP, NL	Thickets of Rosette-forming Life Forms	-	-	< 3	1
Mammillaria carmenae	1	71 spec/ 23 m^2 3.08 spec/	5	90	Tamaulipas	Pine Forest	98	45	1-3	1
*Obregonia denegrii**	3	2.18 spec/m^2	60	30	Tamaulipas	Thorny Shrubbery	-	-	7.1-9.0	1

REFERENCES

Martínez-Ávalos, J. G. 1998. *Determinación del estado actual de cinco especies de cactáceas amenazadas del estado de Tamaulipas, México.* CONABIO (Informe Proyecto = H149) 34 pages

* Fidencio López Camacho. 1997. *Estudio Ecológico de Obregonia denegrii (Cactaceae) en el Valle de Jaumave, Tamaulipas, México*. TESIS de Licenciatura. Instituto Tecnológico de Cd. Victoria, Tamaulipas