

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



Twenty-first meeting of the Plants Committee
Veracruz (Mexico), 2–8 May 2014

Interpretation and implementation of the Convention

Periodic review of species included in Appendices I and II [Resolution Conf. 14.8 (Rev. CoP16)]

PERIODIC REVIEW OF *TILLANDSIA MAURYANA*

1. This document has been submitted by the CITES Scientific Authority of Mexico¹.

Background

2. At its 15th meeting (Geneva, 2005), the Plants Committee approved a list of taxa to be included in the periodic review process during the period between the 13th and 15th meetings of the Conference of the Parties (Bangkok, Thailand, 2004, and Doha, Qatar, 2010, respectively); the aforementioned list included *Tillandsia mauryana* (listed in Appendix II since 1992, with Annotation #4²).
3. At the 19th meeting of the Plants Committee (Geneva, 2011), Mexico, as the only natural range country of the species, volunteered to carry out the review of *Tillandsia mauryana*.

¹ *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.*

² #4 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 *Neodypsis 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 antisyphilitica* packaged and ready for retail trade.

4. The CITES Scientific Authority of Mexico (CONABIO) funded the project "Evaluation of the status of *Tillandsia mauryana* in CITES Appendix II based on conservation and trade status of the species". The project was led by Dr. María Teresa Valverde Valdés from the Faculty of Sciences at the National Autonomous University of Mexico (FC-UNAM), and involved an evaluation of the conservation status, utilization, management, threats to, and trade of *T. Mauryana*.
5. In order to collect data on the utilization and trade of the species, CONABIO consulted National Authorities, the database of the United Nations Environment Programme-World Conservation Monitoring Centre (UNEP-WCMC), Internet searches, and CITES authorities from 13 countries for which trade records exist for the species either in WCMC or on Internet, and Members of the Plants Committee.
6. Using the information collected, as described in paragraphs 4 and 5 a supporting statement was drawn up based on Annex 6 of Resolution Conf. 9.24 (Rev. CoP16) "Criteria for Amendment of Appendices I and II" (Annex 1), including a summary chart on trade of the species (Annex 2).

Results and conclusions

7. Main results:
 - a) *Tillandsia mauryana* is a species endemic to Mexico; its range occupies less than 2.259 km² in the state of Hidalgo.
 - b) *T. mauryana* is a rupicolous species, and occurs on the vertical faces of limestone cliffs. Although the species has relatively high abundance values, demographic analyses show that the population growth rate is (λ) less than one, which suggests that the population is decreasing.
 - c) *T. mauryana*'s range is located mainly in the Protected Natural Area Metztitlán Gully Biosphere Reserve; however, there is some pressure from rock mining (of rocks where the plants grow), road-building, and urban development.
 - d) At a national level, there are no records of utilization, or of legal or illegal trade of the species.
 - e) At an international level, although there is no record of exports from Mexico in the UNEP-WCMC database, there are records of exports from other countries using source code 'A' (artificially propagated). Furthermore, there are web pages in several countries outside Mexico that are selling the species.
8. Based on an analysis of the species based on the criteria provided by Resolution Conf. 9.24 (Rev. CoP16), it can be concluded that:
 - a) Although the species meets the biological criteria for inclusion in Appendix I, based on paragraph A i) of Annex 1, *T. mauryana* does not meet the trade criteria provided by Annexes 2a and 2b for inclusion in Appendix II, given that there is no evidence of international trade of *wild* specimens of the species; furthermore, the species does not resemble any other CITES-listed species.
 - b) Accordingly, it is recommended that *T. mauryana* be removed from CITES Appendices in view of the fact that there are national measures in place for its conservation, especially:
 - i) The new Management Programme for the Protected Natural Area Metztitlán Gully Biosphere Reserve, which encompasses most of the known range of the species, will include specific action for protection of *T. Mauryana* (Elimelec Anzures. Biosphere Reserve Manager. CONANP *pers. com.* 2014).
 - ii) Proposal to include *T. mauryana* in Official Mexican Standard NOM-059-SEMARNAT-2010, in the special protection category (*pr*); the aforementioned proposal is currently under consideration at the Secretariat for the Environment and Natural Resources (SEMARNAT).

Recommendations to the Plants Committee

9. The Plants Committee is invited to:
 - a) take note of the results of this review; and
 - b) make any relevant comments and recommendations, and, if necessary, to duly improve and support any proposal that is submitted by Mexico at CoP 17 to amend the Appendices and eliminate this species from the Appendices.

Summary of the supporting statement on *Tillandsia mauryana*

1. Taxonomy

- 1.1 Class: Liliopsida
- 1.2 Order: Poales
- 1.3 Family: Bromeliaceae Juss.
 - Subfamily: Tillandsioidea
- 1.4 Genus, species or subspecies, including author and year: *Tillandsia*, *Tillandsia mauryana* L.B. Sm
- 1.5 Scientific synonyms: *Viridantha mauryana* (L.B. Sm.) Espejo
- 1.6 Common names: Spanish: Tecolotito
- 1.7 Code number: Not applicable

2. Overview

See introduction

3. Species characteristics

3.1 Distribution

Tillandsia mauryana is a species that is endemic to the state of Hidalgo in Mexico. *T. mauryana* was considered to occur in the states of Hidalgo, Guerrero, Oaxaca, Zacatecas, Jalisco, and Morelos; however, its occurrence has only been confirmed in Hidalgo, where 31 sites were located in the municipalities of Metztitlán, Zimapán, El Cardonal, and Atotonilco el Grande. The majority of these sites are located in the Metztitlán and Tolantongo Gullies at the Metztitlán Gully Biosphere Reserve, as shown in Figure 1. The species occurs over an area of approximately 2260 km² (figure 1).

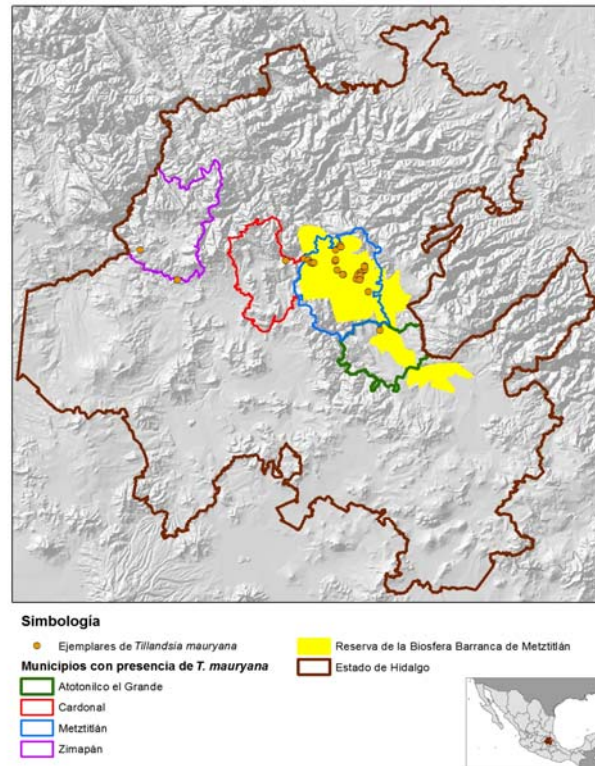


Figure 1. Located populations of *Tillandsia mauryana* (Valverde *et al.* 2013).

3.2 Habitat

The habitats where *T. mauryana* is distributed are limestone cliff walls –of different orientations and heights– that form part of Mezquital-like ecosystems (13% of sites), lowland deciduous forest (65%), and sarcocaulous shrubland (22%). Altitude of species locations varied between 994 and 1989 m.a.s.l., which suggests that distribution reaches higher altitudes than initially reported (i.e., 1300–1800 m; Espejo-Serna 2003). Climate (according to the Köppen classification, as modified by Enriqueta García; in GEQ, 2002) at range sites are: semi-arid (BS1hw) in Metztitlán; temperate-subhumid (C(wo)) in El Cardonal; temperate semi-arid (BS1kw) in Zimapán; and temperate arid (BSokw) in Atotonilco el Grande.

3.3 Biological characteristics

Tillandsia mauryana is a perennial herb that is propagated from seed; seeds are feather-like, and are wind dispersed. When released, *T. mauryana* seeds can stick to rock surfaces and germinate to produce seedlings. The seedling stage seems to be highly vulnerable, with an annual growth rate of 0.89 cm². Growth rate varies depending on the development stage of each plant; plants can live for several years, in some cases up to 35 years.

T. mauryana plants are able to reproduce at an early age (around 2 years); the larger the plant, the greater the possibility of it reproducing. However, according to a study by Valverde *et al.* (2013), only a small proportion of the population (approximately 13%) reproduces each year, and it seems that specimens that reproduce one year will not reproduce the following year. Plants flower from December until May (Espejo-Serna, 2003).

Vegetative reproduction is uncertain. It is not uncommon to see several rosettes bunched together; however, it is possible that this is the result of several seeds germinating in the same spot, forming a cluster of rosettes.

3.4 Morphological characteristics

Tillandsia mauryana forms a dense, sphere-shaped rosette that is never more than 15 cm tall, and up to 20 cm in diameter. It is formed by several whole-margin leaves, covered with radial peltate trichomes, which give the plants a cottony appearance (Espejo-Serna, 2003). Leaves are recurved, with subulate, conduplicate blades; measured from base, leaves can be 6–10 cm long, and 3–7 mm wide. Phyllotaxy: distichous. (Espejo-Serna, 2003).

Inflorescence of *T. mauryana*: nidular, compound florescence, usually no peduncle (if any, normally less than 1 cm long) (Fig. 2). Flowers are tubular-shaped; sepals are green at base and pink at apex, and approximately 11–17 mm long; petals are straight at base and rounded at apex; medial and apical parts are greenish, and basal part whitish, petal size 17–21 mm long by 2.5–3 mm wide. The flower is protected by a pinkish, ovate bract (Espejo-Serna, 2003). Stamens are flat and filiform, with black oblong anthers; ovaries are ovoid-shaped and filiform, i.e., long and thin; fruits are oblong capsules, rostellate at apex, and measure approximately 2.3 cm. Caudate, feather-like seeds, wind-dispersed, 15mm long.

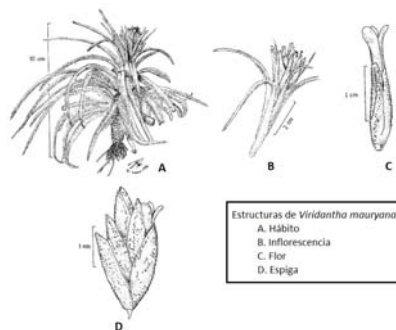


Figure 2. Structural and morphological details of *Tillandsia mauryana*. Image of rosette, inflorescence, flower, and spike (Source: Espejo-Serna, 2003, modified by Valeria Petrone).

3.5 Function of the species in its ecosystem

No data available.

4. Status and trends

4.1 Habitat trends

In a study of local populations of *T. mauryana*, Valverde *et al.* (2013) found that 87% of the populations were located in the Metztlán region, in the Metztlán Gully Biosphere Reserve; accordingly, these populations are protected.

The status of the habitat both inside and outside the Reserve was evaluated; level of disturbance was estimated for 30 populations of *T. mauryana* by quantifying and identifying the main factors causing disturbance. Disturbance level was rated on a scale of 1 to 10, and the following causal factors were included: 1) rock-mining activities; 2) accessibility; 3) urban development; 4) livestock farming; and 5) agriculture. Results showed disturbance indices ranging from 0.4 to 7.7. The main causes of the higher disturbance indices were found to be rock mining and urban development, both of which had a negative impact on the populations of *T. mauryana*.

4.2 Population size

Due to site inaccessibility, it was only possible to evaluate abundance and population density in 9 of the 31 populations located. These parameters were estimated from photographs; thus, it was not possible to count smaller plants.

Based on estimates, abundance varied between 3 and 304 individuals; density ranged from 0.09 to 4.14 ind/m². Average proportion of reproductive individuals per population: 14%, although this percentage varied significantly between 8% and 45%. In the population comprising 3 individuals, no reproductive specimen was found.

Table 1. List of 9 populations of *T. mauryana* for which density and abundance were evaluated

Population No.	Municipality	Abundance (reproductive individuals)	Density (ind/m ²)	Vegetation type
1	Metztlán	22 (10)	0.35	Lowland forest
2	Metztlán	304 (45)	0.64	Lowland forest
3	Metztlán	3 (0)	0.09	Sarcocaulouscent shrubland
4	Metztlán	106 (17)	1.61	Lowland forest
5	Metztlán	206 (18)	3.27	Lowland forest
6	Metztlán	160 (21)	2.86	Lowland forest
7	Metztlán	130 (13)	2.2	Lowland forest
8	Metztlán	232 (26)	3.68	Sarcocaulouscent shrubland
9	Metztlán	256 (20)	4.14	Sarcocaulouscent shrubland

4.3 Population structure

As part of a demographic study of a population of 307 individuals of *T. mauryana* located in the Metztlán Gully, Hidalgo, and for the purpose of determining the population structure, the population was subdivided into six size categories, by rosette size (calculated as an ellipse in which the area: $A = \pi \times [(largest\ diameter/2) \times (smallest\ diameter/2)]$). The most abundant categories were category 3 (individuals with an area between 10 and 50 cm²) and category 5 (individuals with a rosette area between 100 and 300 cm²) (Fig. 3). Individuals in category 1 (seedlings and small individuals) represented scarcely 6% of total. The proportion of reproductive individuals per category varied (between 5% and 41%), duly increasing among larger-sized individuals. The highest proportion of reproductive individuals was observed in category 6. The number of reproductive structures per plant also varied, ranging from plants producing a single flower to one plant that produced 20 flowers.

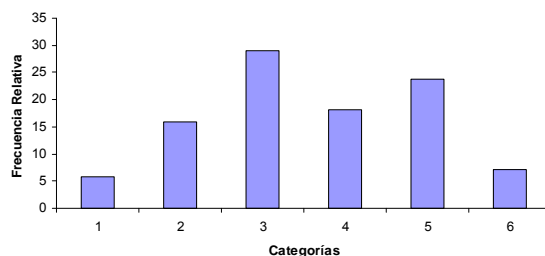


Figure 3. Description of size structure in the study population of *Tillandsia mauryana* in the Metztlán region. Size intervals: category 1: 0.1 – 1.9 cm²; category 2: 2 – 9.9 cm²; category 3: 10 – 49.9 cm²; category 4: 50 – 99.9 cm²; category 5: 100 – 299.9 cm²; category 6: greater than 300 cm²

4.4 Population trends

From May 2012 until May 2013, a demographic study was carried out on a population in the Metztlán Gully (Valverde *et al.*, 2013). The study population is located on a cliff wall that is relatively easy to access. Researchers were able to access plants to measure the length and width of rosettes, and count the number of fruits.

Plants were individually monitored over a one-year period in order to calculate the probability of mortality, permanence, growth, or retrogression for each category. Reproductive contribution was estimated, based on the number of seedlings produced by an average individual (Tables 2 and 3). These values were

estimated using an empirical method (Menges, 1990), taking into account the number of seedlings observed in 2013, which were assigned to a category based on the number of individuals and reproductive effort (in terms of the number of reproductive structures produced).

Table 2. Number and proportion of reproductive individuals observed in different size categories of the population of *Tillandsia mauryana* during the study period (May 2012 – May 2013).

Category	No. of reproductive individuals/	
	No. of individuals in category	Proportion of reproductive individuals
1	1 / 18	0.056
2	2 / 49	0.041
3	2 / 89	0.022
4	8 / 56	0.143
5	17 / 73	0.233
6	9 / 22	0.409
Total	39 / 307	0.127

Table 3. Number of plants that died, and mortality rate observed in each size category of the study population of *T. mauryana* between May 2012 and May 2013.

Category	No. of individuals that died/ No. of individuals in category		Mortality rate
1	6 / 18	0.333	
2	4 / 49	0.082	
3	6 / 89	0.067	
4	5 / 56	0.089	
5	5 / 73	0.069	
6	0 / 22	0	
Total	26 / 307	0.085	

Based on the demographic parameters obtained, a Leftkovitch matrix was constructed and analyzed by the power method to obtain the asymptotic growth rate of the population (λ), stable structure of size categories (vector w), and reproductive values for each category (vector v). Subsequently, an elasticity analysis was performed, and population viability analyzed. The results of this analysis were used to estimate the finite rate of population growth: 0.981, which suggests that the population is decreasing in number.

Further, the elasticity matrix showed that permanence of plants in category 5 was the factor that most contributed to the value of λ . Thus, plants in category 5 should be more closely monitored: if their survival is affected, it will have a significant impact on the population growth rate. Reproduction of category 5 plants also contributed most to the value of λ , compared to reproduction of individuals in the remaining categories.

Results of the population viability analysis show that the most negative effects would occur if mortality was to increase by 20%, in which case the population would become extinct within 80 years; the most positive effects, which would guarantee permanence of the population, would be achieved if there was a 20% decrease in current mortality rates.

4.5 Geographic trends

No accurate data available for current geographic trends of *Tillandsia mauryana*.

5. Threats

The main factor that is threatening wild populations of *T. mauryana* is rock mining, which is a serious, immediate threat for the survival of existing populations of *T. mauryana*. A further factor, which also represents a major

threat, is urban development; pressure to change land use is increasingly more intense, particularly in areas near the town of Metztitlán.6.

6. Utilization and trade

6.1 Utilization in Mexico

The genus *Tillandsia* (commonly known as airplants) is one of the groups belonging to the family Bromeliaceae that is most sought by enthusiasts and collectors (Negrelle *et al.*, 2011). More than one hundred rare and attractive species of the genus *Tillandsia* are sold as ornamental plants. These airplants include *Tillandsia mauryana*, which is sold exclusively as ornamental plants or to collectors; there is no record of any other type of use. However, the local population is unaware that *Tillandsia mauryana* is more valuable, in commercial terms, when sold for ornamental (or other) purposes.

6.2 Legal trade

In order to obtain information about utilization at a national level, and to collect data on seizures, and domestic and international trade, on 13th April 2012, CONABIO consulted relevant national authorities: the General Directorate for Wildlife (DGVS-SEMARNAT), the General Directorate of Forest and Soil Management (DGGFS), and the Federal Attorney's Office for Protection of the Environment (PROFEPA), by means of an official letter, Ref. OF.DEAI-104/2012. As of July 2013, there was no record of utilization, seizures, or domestic trade of this species.

Furthermore, the data on international trade of *T. mauryana* on record at UNEP-WCMC (United Nations Environment Programme-World Conservation Monitoring Centre database, (consulted in October 2013) show that in the period 1992-2010, 129 artificially propagated plants and 10 seeds were exported (said plants were mainly from Switzerland (29%), and Hungary (66%); seeds were from the United States). Mexico was not included in the list of exporters.

In order to obtain further data relating to the trade of *T. mauryana*, an Internet search was made of sites offering plants from this species. The search identified: country hosting the Internet website; source of plants on offer; plant size or development stage; whether a CITES permit was required; and whether there were any restrictions on shipment.

In order to better understand the workings of the international trade, on 24th October 2013, CONABIO consulted the CITES Authorities in the countries where the species is traded, as well as the representatives of all regions, and the countries involved in Internet sales of the plants (OF. DGCII-401-13). The purpose of the consultation was to find out the size and stage of development of plants in trade, the source of any such plants, and information on approved nurseries.

The following Parties were consulted (13 Parties): Peru, Singapore, United States, Thailand, Germany, Switzerland, Hungary, Netherlands, France, Spain, Brazil, Check Republic, and Lithuania. The request for information was as follows:

- a) Are you aware of any trade in *Tillandsia mauryana* in your country?
- b) If so, please specify the type of specimen in trade: a) seeds; b) juvenile plants (4–8 cm diameter); c) adult plants (9–20 cm diameter); d) unknown specimens; or e) other.
- c) Please specify the origin of specimens in trade (artificially propagated, wild, both, or source unknown).
- d) If available, please provide contact (and other) details for nurseries offering *T. mauryana* for sale in your country.
- e) Please provide any other relevant information on trade in *T. mauryana*.

Eight Parties responded to the request for information: Germany, United States, Netherlands, Peru, Switzerland, Brazil, Czech Republic, and Canada, four of which —Germany, United States, Switzerland,

and Czech Republic— confirmed existing trade of this species. All of the aforementioned countries, except United States, reported that the plants in trade are artificially propagated, and are mainly juvenile (4–8 cm diameter) and adult plants (9–20 cm diameter). United States pointed out that the source of the plants available on Internet websites is unknown; furthermore, they have no record in their annual trade database of any export, re-export, or import of this species, nor have they received any requests to issue export permits for the species.

Four countries —Brazil, Canada, Netherlands, and Peru— reported that there is no trade in this species in their countries.

The Annex hereto includes a summary of the replies received in response to our request for information.

6.3 Parts and derivatives in trade

Based on the information requested as per Section 6.2, it is clear that the main specimens in trade are whole plants and seeds.

6.4 Illegal trade

PROFEPA, the CITES Compliance and Enforcement Authority in Mexico, has examined its records for the past five years (2009 al 2013) and reports that no seizures of this plant have been made to date; furthermore, there is no record of illegal trade in the UNEP-WCMC trade database.

There is a number of companies on Internet advertising the sale of artifically propagated specimens of *T. mauryana*; although *T. mauryana* is endemic to Mexico, none of the aforementioned companies are Mexican; countries with the highest number of Internet sites selling this species are U.S.A. and Germany. Furthermore, the UNEP-WCMC database has no records of exports from Mexico; thus, the source of the parent plants, or of the seeds used to produce the plants being sold by other countries, is unknown.

6.5 Real or potential impacts of trade

No data.

7. Legal instruments

7.1 National

Management and use of the species are regulated by the General Law on Sustainable Forest Development (LGDFS), particularly by the articles provided in Section 3 thereof: "Use of non-timber forest resources", and by Articles 53–61 of the implementing Regulation of the General Law on Sustainable Forest Development, which provides the requirements, validity of notifications and authorizations, and periods for utilization of non-timber forest resources, based on recovery and regeneration times for the species and its usable parts. Furthermore, the Official Mexican Standard NOM-005-SEMARNAT-1997 establishes the procedures, criteria, and technical and administrative specifications for sustainable use, transport, and storage of bark, stems, and whole plants from forest vegetation occurring in natural populations. The aforementioned Standard includes plant groups from the families: Bromeliaceae, Cactaceae, Orchidaceae, and ferns.

It is important to note that, based on the results of the study carried out by Valverde *et al.* (2013), a proposal was submitted recently to include *T. mauryana* in Official Mexican Standard NOM-059-SEMARNAT-2010, in the category of Special protection (Pr).

7.2 International

Given that this species has been listed in Appendix II since 1992, with Annotation #4, international trade of the species is currently regulated by the provisions of the CITES Convention.

8. Management of the species

8.1 Management measures

According to data from the General Directorate of Forest and Land Management (DGGFS) up to 2013, there are no records of applications for authorization to use *T. mauryana*.

8.2 Population monitoring

According to the provisions of the aforementioned LGDFS, the Federal Attorney's Office for Protection of the Environment (PROFEPA) is the competent institution for forest inspection and monitoring; the LGDFS also defines infringements and corresponding penalties.

There are no specific measures in place for monitoring the species unless utilization of the species involves populations that occur in the Metztitlán Gully Biosphere Reserve (See paragraph 9.4.).

8.3 Control measures

8.3.1 International

International control measures are applied through the General Directorate for Wildlife (DGVS-SEMARNAT) – the CITES Management Authority of Mexico which issues export permits and certificates, and the Federal Attorney's Office for Protection of the Environment (PROFEPA-SEMARNAT) – the CITES Compliance and Enforcement Authority in Mexico.

8.3.2 National

Control measures are established by the Federal Attorney's Office for Protection of the Environment (PROFEPA-SEMARNAT), the Mexican Authority for CITES Enforcement and Application. The species is CITES-listed; accordingly, PROFEPA implements yearly programmes and special operations to control illegal trade in wildlife at the main retail and distribution centres throughout the country.

8.4 Artificial propagation

There is no data at a national level on nurseries or facilities that artificially propagate *T. mauryana*. However, based on the information from Germany, it seems that the plant is easily propagated from seed, but requires over 20 years to first flowering.

8.5 Habitat conservation

The Metztitlán Gully Biosphere Reserve, in the state of Hidalgo, was declared a Protected Natural Area and classified as a Biosphere Reserve on 27th November 2000. As such, the Reserve has a management programme in place: *Management Programme for the Metztitlán Gully Biosphere Reserve*, according to which, if an endemic species such as *T. mauryana* is utilized, it should be used rationally and with greater care, as if it were a non-endemic species and/or widely distributed. According to the study, over 80% of the local populations of *T. mauryana* are distributed in Metztitlán; accordingly, utilization should be subject to the recommendations provided in the Reserve Management Program.

Furthermore, the National Commission for Knowledge and Use of Biodiversity (CONABIO) designated the Metztitlán Gully a priority zone for conservation, given that it forms part of the biological corridor in the arid areas of the Central Mexican Plateau.

8.6 Safeguards

- a) The Metztitlán Gully Biosphere Reserve, in the state of Hidalgo, was declared a Natural Protected Area on 27th November 2000; the Reserve accounts for the largest part of the known range of this species.

b) Proposal to include the species in NOM-059 in the category of special protection (pr).

9. Information on similar species

Tillandsia mauryana has no problems with similarity to other CITES-listed species belonging to the genus *Tillandsia*. However, the complexity of this genus means that it does resemble other species that occur in Mexico and to which it is closely related.

The genus *Tillandsia* is a highly heterogeneous group in terms of vegetative and floral characters, making its taxonomy complicated at genus and subgenus level. Accordingly, complexes or groups of species have been defined, with more or less similar characters (Espejo-Serna, 2002). *Tillandsia mauryana* forms part of the *Tillandsia-Vriesea* complex, which, in turn, is included in the *Tillandsia plumosa* complex comprising six species: *T. mauryana*, *T. artroviridipetala*, *T. plumosa*, *T. ignesia*, *T. tortillis* and *T. Lepidosepala* (Espejo-Serna, 2003, proposed a new genus—*Viridantha*—for this complex). The six species included in the complex clearly share several common morphological characteristics, and in some cases, share the same range (Espejo-Serna, 2003).

10. Consultations

Given that this is an endemic species, no other countries were consulted.

11. Further observations

No observations

12. References

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Summary of replies received in response to international consultations

Country	Name/MA or SA	E-mail	Trade		Plant size(diameter in cm)	Origin	Observations
			YES	NO			
1. Germany	Hajo Schmitz-Kretschmer/SA	schmitzh@bfh.de	X		9–20 cm	Artificially propagated from seed	Reply reports 2 nurseries. Informs that trade seems to be limited to only a few collectors. Seeds are easily propagated, but take a long time (>20 year) until first flowering. Some nurseries offer plants propagated in other nurseries in Germany or the Netherlands, but no further details are known.
2. United States	Anne St. John/MA and SA	managementauthority@fws.gov	X		4–8 cm, 9–20 cm, and size unknown	Unknown	An Internet search showed 4 websites selling plants of unknown origin. There is no record of exports, re-exports, or imports of <i>T. mauryana</i> in the U.S. CITES Annual Report trade database for 1998–2012. The MA has not received any applications for export permits for this species.
3. Netherlands	Koen van Geenen/ MA	CITES@dienst-regelingen.nl		X	Not applicable	Not applicable	Reply indicates that no CITES documents have been issued for import or export of <i>T. mauryana</i> .
4. Peru	Fabiola Núñez y Harol Gutierrez Peralta / SA	hgutierrez@minam.gob.pe		X	Not applicable	Not applicable	Reply indicates that the MA has authorized a nursery for production of this type of species.
5. Switzerland	Ursula Moser/MA	ursula.moser@bvet.admin.ch	X		Unknown	Artificially propagated	Reply includes a table showing registered imports (2006–2012); all imports are from Hungary and involve artificially propagated specimens.
6. Brazil	Davi de Oliveira Paiva Bonavides/SA	davi.bonavides@itamaraty.gov.br		X	Not applicable	Not applicable	No trade of the species in this country.

7.	Czech Republic	Silvie Ucová/SA	silvie.ucova@nature.cz	X		4–8 cm	Artificially propagated	Reply indicates that the majority of specimens are from Holm nursery in Germany. There are several specimens of parent plants from which seeds are obtained.
8.	Canada	Adrienne Sinclair/SA	adrienne.Sinclair@ec.gc.ca		X	Not applicable	Not applicable	No trade of the species in this country.