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

Twenty-second meeting of the Plants Committee
Tbilisi (Georgia), 19-23 October 2015

Interpretation and implementation of the Convention

Compliance and enforcement

Non-detriment findings

REPORT ON NDF FOR *BULNESIA SARMIENTOI* IN PARAGUAY.

1. This document has been submitted by Paraguay.*

2. The sequence used for development of the subjects investigated was carried out in accordance with the parameters established by the CITES method (Workshop on non-detriment findings, Cancún, Mexico, 2008) and the method used for analysis was that recommended by the International Union for Conservation of Nature (IUCN), published in 2002.

Stage 1. Table - Plants

The explanations for this table are ordered by the respective columns. The type of harvesting (#1.1 a #1.6) to which the national population of *Bulnesia sarmientoi* is subjected was verified.

Types of harvest

#1.1 Artificial propagation: the species does not reproduce artificially.

#1.2 Non-lethal harvesting of fruits/flowers/seeds/leaves: there is no harvesting of fruits, flowers, seeds or leaves.

#1.3 Harvest of bark/roots/wood: harvesting is carried out in accordance with management plans, which are different in each case.

#1.4 Removal of whole plant: all of the wood is used, which removes the entire plant.

#1.5 Removal of whole bulb: the species does not have a bulb.

#1.6 Killing of individual by removal of seeds, leaves, bark, roots, wood.

Wood: use of the wood causes the killing of the individual.

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* *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.*

Bark: Removal of the bark is not very common.

Roots: the roots are not collected.

Seeds: the seeds are not collected.

Summary of the harvesting regime for plant species

Table 2-Plants. Summary of the harvesting regime for plant species

Species: *Bulnesia sarmientoi* Lorenz ex Griseb.

Country: Paraguay **Date (of non-detriment finding):** July 2015 **Period covered by the finding**: 2016

Name: *Ms Teresa Florentin Peña* **Position in the Scientific Authority:** Director of the Department of Biological Research/National Museum of Natural History of Paraguay (DIB/MNHNP)

Is the species endemic? Only found in a few countries? Or widely distributed?: The species is found in few countries

Conservation status of the species (if known): IUCN Overall status: LR **National status:** At risk of extinction.

Type of harvest	Main product	Degree of control	Demographic segment of population harvested			Relative level of harvest (include the number or quantity if known)				*Reason for harvest and percentage (of known)*			Commercial destination(s) and percentages (if known)		
			Immature	Mature	Sex	Low	Medium	Average	Unknown	Subsistence	Commercial	Other	Local	National	International
2.1 Artificial propagation		a) Regulated													
		b) Illegal or unmanaged													
2.2 Non-lethal harvesting of fruits/flowers/seeds/leaves		a) Regulated													
		b) Illegal or unmanaged													
2.3 Harvest of bark/roots/wood		a) Regulated		**X**			**X**				**X**	**X**		**X**	**X**
		b) Illegal or unmanaged		**X**			**X**				**X**				**X**
2.4 Removal of whole plant		a) Regulated													
		b) Illegal or unmanaged													
2.5 Removal of whole bulb		a) Regulated													
		b) Illegal or unmanaged													
2.6 Killing of individual by removal of seeds, leaves, bark, roots, wood	**X**	a) Regulated		**X**					**X**		**X**	**X**	**X**	**X**	**X**
	X	b) Illegal or unmanaged		**X**					**X**		**X**	**X**	**X**	**X**	**X**

From the results in the table it can be deduced that the weakness in terms of harvesting of this species can be found in the harvest and trade control system, rather than in the necessary conditions for harvest, which seem to be favourable and correct. This is because the part of the plant used is the wood, which needs to be an appropriate diameter for use.

With regard to the result obtained on the removal of specimens, this causes the death of these specimens, which is common practice in the western region of Paraguay because woodland areas are replaced by silvopastoral systems, through which all trees are selectively removed.

In the following table, all of the parameters considered can been seen in the first column, while the second column contains options for each parameter and the third column provides the score assigned by the IUCN on a scale of 1 to 5 with the response related to *B. sarmientoi* being highlighted.

1. Factors that affect the management of the harvest regime

Biological characteristics		**Corresponding score**
1. Life form: What is the life form of the species?	Annual	5
	Biennial	4
	Perennial (herbs)	3
	Shrubs and small trees (max. 12 m.)	2
	Trees	1
2. Regeneration potential: What is the regenerative potential of the species concerned?	Fast vegetatively	5
	Slow vegetatively	4
	Fast from seeds	3
	Slow or irregular from seeds or spores	2
	Uncertain	1
3. Dispersal efficiency: How efficient is the species' dispersal mechanism?	Very good	5
	Good	4
	Medium	3
	Poor	2
	Uncertain	1
4. Habitat: What is habitat preference of the species?	Disturbed open	5
	Undisturbed open	4
	Pioneer	3
	Disturbed forest	2
	Climax	1
5. National distribution: ¿How is the species distributed nationally	Widespread, contiguous in the country	5
	Widespread, fragmented in the country	4
	Restricted and fragmented	3
	Localized	2
	Uncertain	1

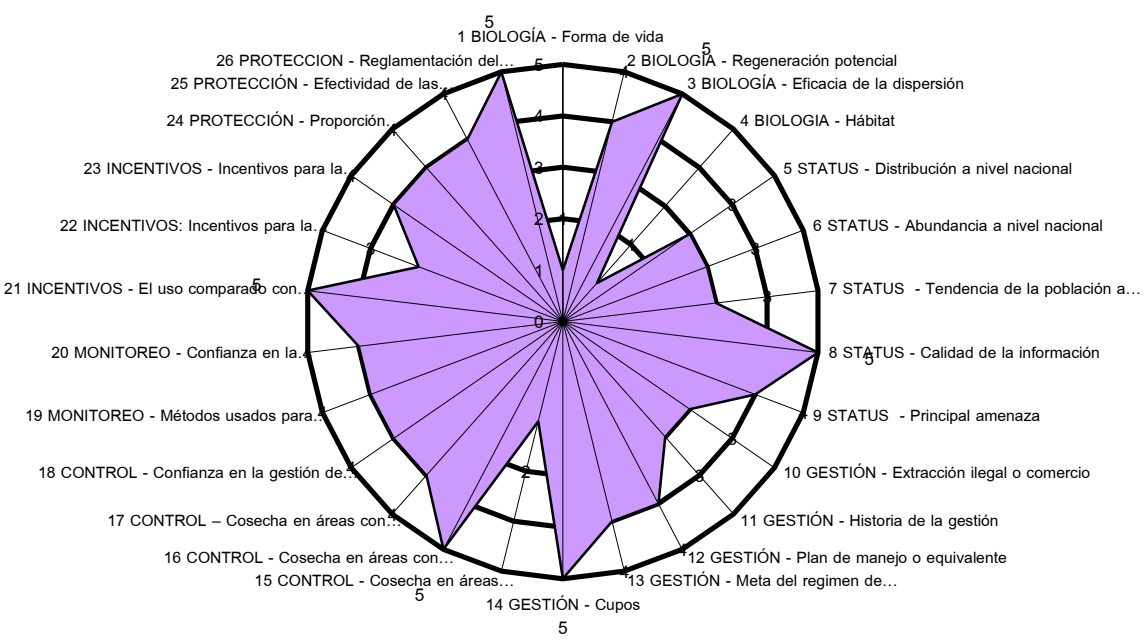
Biological characteristics		Corresponding score
6. National abundance: What is the abundance nationally?	Very abundant	5
	Common	4
	Uncommon	3
	Rare	2
	Uncertain	1
7. National population trend: What is the recent national population trend?	Increasing	5
	Stable	4
	Reduced, but stable	3
	Reduced and still decreasing	2
	Uncertain	1
8. Quality of information: What type of information is available to describe abundance and trend in the national population?	Quantitative data, recent	5
	Good local knowledge	4
	Quantitative data, outdated	3
	Anecdotal information	2
	None	1
9 Major threats: What major threat is the species facing (underline following: overuse/ **habitat loss and alteration** / invasive species/other: and how severe is it?	None	5
	Limited/Reversible	4
	Substantial	3
	Severe/Irreversible	2
	Uncertain	1
10. Illegal harvest or trade: How significant is the national problem of illegal or unmanaged harvest or trade?	None	5
	Small	4
	Medium	3
	Large	2
	Uncertain	1
11. Management history: What is the history of harvest?	Managed harvest: ongoing with adaptive framework	5
	Managed harvest: ongoing but informal	4
	Managed harvest: new	3
	Unmanaged harvest: ongoing or new	2
	Uncertain	1
12. Management plan or equivalent: Is there a management plan related to the harvest of the species?	Approved and co-ordinated local and national management plans	5
	Approved national/state/provincial management plan(s)	4
	Approved local management plan	3
	No approved plan: informal unplanned management	2
	Uncertain	1

Biological characteristics		Corresponding score
13. Aim of harvest regime in management planning: What is harvest aiming to achieve?	Generate conservation benefit	5
	Population management/control	4
	Maximize economic yield	3
	Opportunistic, unselective harvest, or none	2
	Uncertain	1
14 Quotas: Is the harvest based on a system of quotas?	Ongoing national quota: based on biologically derived local quotas	5
	Ongoing quotas: “cautious” national or local	4
	Untried quota: recent and based on biologically derived local quotas	3
	Market-driven quota(s), arbitrary quota(s), or no quotas	2
	Uncertain	1
15. Harvesting in Protected Areas: What percentage of the legal national harvest occurs in State-controlled Protected Areas?	High	5
	Medium	4
	Low	3
	None	2
	Uncertain	1
16. Harvesting in areas with strong resource tenure or ownership: hat percentage of the legal national harvest occurs outside Protected Areas, in areas with strong local control over resource use?	High	5
	Medium	4
	Low	3
	None	2
	Uncertain	1
17. Harvesting in areas with open access: What percentage of the legal national harvest occurs in areas where there is no strong local control, giving de facto or actual open access?	None	5
	Low	4
	Medium	3
	High	2
	Uncertain	1
18. Confidence in harvest management: Do budgetary and other factors allow effective implementation of management plan(s) and harvest controls?	High confidence	5
	Medium confidence	4
	Low confidence	3
	No confidence	2
	Uncertain	1
19. Methods used to monitor the harvest: ¿ What is the principal method used to monitor the effects of the harvest?	Direct population estimates	5
	Quantitative indices	4
	Qualitative indices	3
	National monitoring of experts	2
	No monitoring or uncertain	1

Biological characteristics		Corresponding score
20. Confidence in harvest monitoring: Do budgetary and other factors allow effective harvest monitoring?	High confidence	5
	Medium confidence	4
	Low confidence	3
	No confidence	2
	Uncertain	1
21. Utilization compared to other threats: What is the effect of the harvest when taken together with the major threat that has been identified for this species?	Beneficial	5
	Neutral	4
	Harmful	3
	Highly negative	2
	Uncertain	1
22. Incentives for species conservation: At the national level, how much conservation benefit to this species accrues from harvesting?	High	5
	Medium	4
	Low	3
	None	2
	Uncertain	1
23. Incentives for habitat conservation: At the national level, how much habitat conservation benefit is derived from harvesting?	High	5
	Medium	4
	Low	3
	None	2
	Uncertain	1
Protection from harvest		
24. Proportion strictly protected: What percentage of the species' natural range or population is legally excluded from harvest?	>15%	5
	5-15%	4
	<5%	3
	None	2
	Uncertain	1
25. Effectiveness of strict protection measures: Do budgetary and other factors give confidence in the effectiveness of measures taken to afford strict protection?	High confidence	5
	Medium confidence	4
	Low confidence	3
	No confidence	2
	Uncertain	1
26. Regulation of harvest effort: How effective are any restrictions on harvesting (such as age or size, season or equipment) for preventing overuse?	Very effective	5
	Effective	4
	Ineffective	3
	None	2
	Uncertain	1

Resulting graph
2015

Bulnesia sarmientoi



English translations of graph descriptions:
1 BIOLOGY – Life form
2 BIOLOGY – Regeneration
3 BIOLOGY – Dispersal efficiency
4 BIOLOGY – Habitat
5 STATUS – National distribution
6 STATUS – National abundance
7 STATUS – National population trend
8 STATUS – Quality of information
9 STATUS – Major threats
10 MANAGEMENT – Illegal harvest or trade
11 MANAGEMENT – Management history
12 MANAGEMENT – Management plan or equivalent
13 MANAGEMENT – Aim of harvest regime in management planning
14 MANAGEMENT – Quotas
15 CONTROL – Harvesting in Protected Areas
16 CONTROL – Harvesting in areas with strong resource tenure or ownership
17 CONTROL – Harvesting in areas with open Access
18 CONTROL – Confidence in harvest management
19 MONITORING – Methods use to monitor harvest
20 MONITORING – Confidence in harvest monitoring
21 INCENTIVES – Utilization compared to other threats
22 INCENTIVES – Incentives for species conservation
23 INCENTIVES – Incentives for habitat conservation
24 PROTECTION – Proportion strictly protected
25 PROTECTION – Effectiveness of strict protection measures
26 PROTECTION – Regulation of harvest effort

Conclusion

In the resulting graph it can be seen that the weaknesses are centred on species' habitat loss, management and incentives. Therefore it is recommended that the following should be carried out: population studies, and analysis of files containing forestry inventories by INFONA of areas that have alternative use plans for silvopastoral use, in order to calculate the actual quantity of individuals per department. There continues to be no information on the departments of Alto Paraguay and Presidente Hayes and studies are ongoing. The most complete information will be tools for the development of a

species management plan. Therefore, it will be possible for the Scientific Authority to periodically establish permanent and controlled quotas, which will ensure that trade is not detrimental to the population.

OBTAINING BIOLOGICAL DATA ON THE SPECIES

- Existing biological, ecological, use and threat data for the species were compiled.

- Population data obtained from the field during sampling carried out between 2007 and 2015 in the Chaco were used.

- Some observations were captured on issues such as interspecific relationships and habitat conservation status based on experiences in the field, in particular those made during sampling of palo santo populations between 2007 and 2015 on the sampling plots.

- Distribution data for the species was used, which was obtained from the capture of specimens deposited in the Herbarium of the Faculty of Chemical Sciences of the National University of Asunción, the Museum of Natural History of Paraguay and the Missouri Botanical Garden.

- The database on the Flora of the Southern Cone of the Darwinion Institute of Botany of Buenos Aires was used as a reference for nomenclature and synonyms.

OBTAINING DATA ON SPECIES MANAGEMENT

- Consultations with specialists on species management.

- Non-detriment finding for *Bulnesia sarmientoi* Lorentz ex Griseb. in Paraguay. 2013.

- Postgraduate thesis of Gloria Céspedes. 2011. DEVELOPMENT OF A NON-DETRIMENT FINDING FOR PALO SANTO (*Bulnesia sarmientoi* Lorentz ex Griseb.), IN PARAGUAY

PERMANENT VEGETATION MONITORING PLOTS OF THE NATIONAL UNIVERSITY OF ASUNCION

Internships

- Pasantía Benítez Bate, Maria Elisa. 2006 Análisis de la Estructura Vertical de un bosque semicaducifolio en Parcela Permanente de Medición Rva. Nat. Priv. De la Coop. Multiactiva Ltda. de Fernheim "Laguna Pora" Dpto. de Pte. Hayes, Paraguay.

- Pasantía de Maria Auxiliadora Martinez. 2006. Análisis de la estructura horizontal en PPM de un bosque semicaducifolio. Rva. Nat. Priv. De la Coop. Fernheim “Laguna Pora” Dpto. de Pte Hayes, Paraguay.

- Pasantía de Fabricio Radice Gorostiaga. 2007. Análisis Florístico y distribución espacial de especies en PPM de un bosque semicaducifolio “Palosantal y Labonal” Rva. Nat. Priv. De la Coop. Fernheim “Laguna Pora” Dpto. de Pte Hayes, Paraguay.

- Pasantia de Sylvia Stefania Varela Caballero. 2010. Análisis estructural de un bosque xerófito de la formación “Palosantal y Labonal” con énfasis en la estructura horizontal, en PPM de la biodiversidad, Rva Nat. Laguna Pora, Chaco Seco, Dpto. de Pte. Hayes, Paraguay.

- Pasantia de Jorge Manuel Benítez Peralta. 2013. Cambio estructural de un bosque xerófito de la formación “Palosantal y Labonal” en PPMB, Rva. Nat. Priv. “Laguna Pora”, Chaco seco, Dpto. Pdte. Hayes, Paraguay.

- Pasantía de Hermelinda Villalba Garcete. 2014. Perfil estructural de un bosque xerofítico, en PPMB, Parque Nacional Defensores del Chaco, Chaco Seco, Dpto. Alto Paraguay y Boquerón.

- Pasantía de Gustavo Ariel Torres Benítez. 2014. Análisis de la estructura diamétrica de un bosque xerofítico, en PPMB, Chaco Seco, Parque Nacional Defensores del Chaco. Dpto. Alto Paraguay.

- Pasantía I de Celso Santacruz. 2014. Análisis de la estructura diamétrica de un bosque xerofítico con énfasis en el perfil estructural, Estancia Santa Herminia S.R.L., Ecorregión Chaco Seco, Dptos. de Boquerón y Pte. Hayes.

- Pasantía II de Celso Santacruz. 2014. Análisis de la estructura diamétrica de un bosque xerofítico, Estancia Santa Herminia S.R.L., Ecorregión Chaco Seco, Dptos. de Boquerón y Pte. Hayes.

- Pasantía II de Rocio Resedá Ferreira. 2012. Estructura diamétrica de un bosque xerofito de la formación "Palosantal y labonal" en la parcela permanente de monitoreo de la biodiversidad, Rva. Nat. Priv. Estancia Salazar, Dpto. Presidente Hayes, Paraguay.

- Pasantía de Zoraida Beatriz Molas Pérez. 2011. Análisis estructural de un bosque xerofítico de la formación "Palosantal y Labonal", con énfasis en la estructura horizontal, en PPMB, Rva. Nat. Priv. Estancia Salazar, Dpto. Presidente Hayes, Paraguay.

- Pasantia II de César David Escobar Ovelar. 2011. Análisis de la estructura vertical de un bosque xerofítico "Palosantal y labonal", en PPMB, Rva. Nat. Priv. Estancia Salazar, Dpto. Presidente Hayes, Paraguay.

Thesis

- Tesis de Elvin Rempel Lowen. 2007.Análisis estructural en la parcela permanente de medición de un bosque semi caducufolio "Palosantal y Labonal", Rva. Nat. Priv. de la Cooperativa Fernheim "Laguna Pora", Chaco seco, Dpto Pdte Hayes, Paraguay.

- Tesis de Jorge David Ramírez Ortega. 2011..Evaluación preliminar de la regeneración natural de *Bulnesia sarmientoi* (Palo santo), en la parcela permanente de medición de la biodiversidad, Reserva Natural Privada Estancia Salazar, Dpto. Pdte. Hayes

- Tesis de Evelyn Janina Gill. 2012. Estimación preliminar de stock de carbono en bosque mesoxerofítico alto y bosque mesoxerofítico bajo, Dpto. Alto Paraguay, Chaco.

- Víctor Matías Careaga Piñanez. 2012. Caracterización de dos formaciones boscosas según parámetros dasométricos en el Dpto. de Alto Paraguay – Chaco Seco.

- Tesis de Zoraida Beatriz Molas Pérez. 2013. Estructura y diversidad de un bosque xeromórfico de *Aspidosperma quebracho-blanco* y *Chorisia insignis*, en PPMB, Agroganadera Ita Ka´avo S.A, Chaco Seco, Dpto. de Boquerón, Paraguay.

- Tesis de Celso Santacruz Martínez. 2014. Análisis estructural de un bosque Xerofítico denso Semi Caducifolio, ecorregión Chaco, Dpto. Boquerón**.**

- Tesis de Lila Mabel Gamarra Ruíz Díaz. 2014. Análisis estructural de un bosque xerofítico, en PPMB, Parque Nacional Defensores del Chaco, Chaco Seco. Dpto. de Boquerón y Alto Paraguay.

LITERATURE ON PERMANENT PLOTS ESTABLISHED BY THE NATIONAL UNIVERSITY OF ASUNCION.

- Silva Imas, H. N. y L. Pérez de Molas 2012. Caracterización florística de un bosque xerofito transicional en el Chaco Central. Revista: Investigaciones y estudios de la UNA. Volumen 7 – Número 2. (Articulo)

PERMANENT PLOTS OF THE SECRETARIAT OF THE ENVIRONMENT

- Barreto, R., R. Dure, M. Quintana. 2015. Ea. 47.000, 81 Km N de Loma Plata. Proyecto "Evaluación poblacional del palo santo (*Bulnesia sarmientoi*) en los Departamentos de Presidente Hayes, Boquerón y Alto Paraguay"

- Barreto, R., R. Dure, M. Quintana. 2014. Ea. Tres Palmas. Proyecto "Evaluación poblacional del palo santo (*Bulnesia sarmientoi*) en los Departamentos de Presidente Hayes, Boquerón y Alto Paraguay"

INFORMATION COLLECTION IN THE SAMPLE UNITS OF THE NATIONAL FOREST INVENTORY, WITH EMPHASIS ON CARBON QUANTIFICATION WITHIN THE FRAMEWORK OF THE REDD+-PARAGUAY JOINT NATIONAL PROGRAMME FOR THE PERFORMANCE OF A NATIONAL FOREST INVENTORY

Survey of the forestry component and dendrology and taxonomy efforts for vegetation in different spots and their corresponding sampling plots. This will enable an exhaustive characterization of the sampling units and will provide a wealth of information that will assist the aims of the Programme. The variables and indicators for measuring in sampling units will be the records containing: general information from data collection; location information on the sampling unit; general plot information; records on dead wood, detritus and the undergrowth; natural regeneration measures; and tree measurements with diameter at breast height records defined during the training course. All of these items will contain general data considered in the terms of reference of the Programme, together with detailed planning information and access data for the starting points to enable the necessary verifications.

The overall design of the sampling plot is a square measuring 60 m each side, and in this surface area of 3600 m^2 there are the following spots and transects following the framework of the terms of reference of the Programme:

Collection areas: of the 22 random spots in Boquerón department, in 3 the appearance of *B. sarmientoi* is reported.

Number of spots according to SEAM-INFONA-FAPI codes	Coordinates		Department	District
	X	Y		
3	709434	7417505	Boquerón	Filadelfia
4	744652	7423041	Boquerón	Filadelfia
20	723936	7656779	Boquerón	Filadelfia

Table 7. Spots where the species appears in the plots (See Map No. 2)

NATIONAL FORESTRY INSTITUTE

The data contained in the files on land-use plans, approved in 2012 and 2013, for areas containing palo santo were collected. These data are found in the Plans Archive of the Directorate-General of Forests of the National Forestry Institute.

The data that were taken into account in each file are: Name or trade name, department, district, location, total surface area of the plot, the number of trees per hectare, the diameter at breast height with the following intervals - 10–19 cm, 20–29 cm, 30–39 cm and 40-49 cm, the number of posts (in units) and firewood (in tonnes).

The National Forestry Institute requires strict compliance with RESOLUTION SFN No. 1.105/07 (REFERRING TO PALO SANTO SPECIES – Art 1, which states in its subparagraphs:

b) Prohibit the burning of forest products and subproducts resulting from the implementation of plans authorized the National Forestry Service. The products must be used rationally as firewood, posts, charcoal, essences, roundwood or other wood.

c) The plots to be cleared must not exceed 100 hectares continuously. In these plots, a copse must be left in the range area of the species, corresponding to 5 per cent of the surface of the range area. If the species is found spread around the plot to be cleared, the area destined to be a forest reserve or buffer zone should be increased at a rate of 5 per cent of each plot to be cleared.