

**Supporting the Implementation of ISSC-MAP in CITES
through the Non-Detriment-Finding-Process**

WWF-Germany Project 53000/533000 No. 08061

Final Report

16 June 2009

**Danna J. Leaman
98 Russell Avenue
Ottawa, Ontario K1N 7X1
Canada**

Contents

1. Background and Rationale	3
2. Significantly traded CITES medicinal plant species and their countries of export	4
3. Guiding principles for formulating Non-Detriment Findings (NDFs)	5
4. Criteria and indicators of ISSC-MAP Version 1 that are covered by the remit of CITES	6
5. Case studies for selected CITES medicinal plant species and participation in the Mexican workshop on NDF	9
6. Summary of results achieved	10

Tables and Figures

Table 1: Significantly traded CITES medicinal plant species and their main countries of export	4
Table 2: Official quotas for 2009 for medicinal plant species	4
Figure 1: Steps for making a CITES Non-Detriment Finding for plants	5
Table 3: ISSC-MAP Criteria and Indicators relevant for CITES NDF	6
Table 4: Case studies of medicinal plant species with proposed NDF procedure	9

Annexes

Annex 1: Report on the Cancun Workshop submitted by the Working Group on Medicinal Plants to the 18 th meeting of the CITES Plants Committee, Buenos Aires (Argentina), 17-21 March 2009 (PC18 WG10 doc. 1)	15
Annex 2: NDF Workshop Case Study 4 "ISSC-MAP" (WG2 – Perennials)	25

1. Background and Rationale

Implementation of the ecological elements of the International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP) in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is one of the priority implementation scenarios identified for this standard¹. At its 14th meeting in June 2007, the Conference of the Parties to CITES called upon the CITES Plants Committee to: “a) develop principles, criteria and indicators for the making of non-detriment findings for wild specimens of high-priority taxa such as timber species, *Prunus africana* and other medicinal plants”². The intersessional period between the CoP 14 and CoP 15 therefore provides an opportunity for progress toward this implementation scenario by making it possible to enshrine elements of the ISSC-MAP in the obligatory process of Non-Detriment Findings (NDF) under article IV 2(a) of the Convention.

At the 17th meeting of the CITES Plants Committee in April 2008, three intersessional working groups were convened with a mandate to develop principles, criteria, and indicators for the making of NDFs for timber species and *Prunus africana*, medicinal plants, and agarwood-producing species³.

The work under this contract was designated to accompany the Plants Committee's NDF process as an opportunity to ensure that the criteria and indicators contained in ISSC-MAP form an integral component in the future making of NDF for CITES medicinal plant species. This work has been closely coordinated with the chair of the Plants Committee working group on medicinal plants, Uwe Schippmann, German Federal Agency for Nature Conservation (BfN).

This work has also been developed in preparation of an International Experts Workshop on NDF methodology, hosted by the Government of Mexico in Cancun in November 2008. The purpose of this workshop was “to analyse and summarize different approaches and paths followed by Scientific Authorities along the NDF decision making process, to provide [CITES] parties with elements that enhance their understanding of what NDFs are and how they can be formulated, and to present the results for consideration of CITES Animals and Plants Committees in 2009, where CITES authorities will assess their applicability, possible endorsement and submission for CoP consideration”⁴.

Results included in this report have been incorporated in the reports of Working Group 10 on Non-Detriment Findings for medicinal plants at the 18th meeting of the CITES Plants Committee⁵ and in the results of the International Experts Workshop on NDF methodology⁶.

¹ Medicinal Plant Specialist Group (2007): International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP). Version 1.0. - Bundesamt für Naturschutz (BfN), MPSG/SSC/IUCN, WWF Germany, and TRAFFIC. Bonn, Gland, Frankfurt and Cambridge (BfN-Skripten 195).

² Decision 14.135 (www.cites.org/eng/dec/valid14/14_135-136.shtml)

³ Item 17 of the PC17 agenda (www.cites.org/eng/com/PC/17/index.shtml)

⁴ Cancun workshop (http://www.conabio.gob.mx/institucion/cooperacion_internacional/TallerNDF/taller_ndf.html)

⁵ PC18 WG10 Doc. 1 <http://www.cites.org/eng/com/PC/18/wg/E-PC18-WG10.pdf>

⁶ PC18 Doc. 14.1 (www.cites.org/eng/com/PC/18/E-PC18-14-01.pdf)

2. Significantly traded CITES medicinal plant species and their countries of export

Since CITES entered into force, 63 plant species have been included in the CITES Appendices because of their over-exploitation for medicinal purposes. They are traded in various commodity forms and in differing volumes. Table 1 lists these species and their countries of export.

Table 1: Significantly traded CITES medicinal plant species and their main countries of export (Source: WCMC trade data)

Species	Country of export	Region
<i>Aloe ferox</i>	South Africa	Africa
<i>Aquilaria malaccensis</i>	India	Asia
	Indonesia	Asia
	Malaysia	Asia
<i>Bletilla striata</i>	China	Asia
<i>Cibotium barometz</i>	China	Asia
	Viet Nam	Asia
<i>Cistanche deserticola</i>	China	Asia
<i>Dendrobium nobile</i>	China	Asia
	Viet Nam	Asia
<i>Gastrodia elata</i>	China	Asia
<i>Guaiacum officinale</i>	Dominican Republic	Americas
<i>Guaiacum sanctum</i>	Mexico	Americas
<i>Hydrastis canadensis</i>	Canada	Americas
<i>Panax quinquefolius</i>	United States	Americas
<i>Prunus africana</i>	Cameroon	Africa
	DR Congo	Africa
	Equatorial Guinea	Africa
	Madagascar	Africa
<i>Pterocarpus santalinus</i>	India	Asia
<i>Rauvolfia serpentina</i>	Thailand	Asia

Table 2 summarizes the annual export quotas which have been issued by some of these countries for significantly traded medicinal plant species.

Table 2: Official quotas for 2009 for medicinal plant species⁷

Country	Species	Quota
Cameroon	<i>Prunus africana</i>	zero
DR Congo	<i>Prunus africana</i>	suspension
Indonesia	<i>Cibotium barometz</i>	900 kg
	<i>Aquilaria spp.</i>	173 250 kg
	<i>Aquilaria filaria & Gyrinops spp.</i>	455 000 kg
Malaysia	<i>Aquilaria malaccensis</i>	205 000 kg

⁷ <http://www.cites.org/eng/resources/quotas/index.shtml>

3. Guiding principles for formulating Non-Detriment Findings (NDFs)

At PC17 the chairs of the three NDF working groups (timber, medicinal plants and Agarwood) were tasked with liaising and reaching agreement on common usage of the terms 'principles, criteria and indicators'. One of the achievements under this contract was the fact that the chairs considered material provided in the ISSC-MAP for defining the principles of NDF making. In their discussions the chairs of the three groups drafted the following generic principles applicable to the NDF process in CITES regardless of the taxa being considered⁸:

- (1) The non-detriment finding (NDF) for Appendix I and II species verifies that traded volumes within the range state are not detrimental to the survival of that species.
- (2) The NDF considers whether the species is maintained throughout its range at a level consistent with its role in the ecosystems in which it occurs.
- (3) The data requirements for an NDF are tailored to appropriate precision according to the resilience or vulnerability of the target species.
- (4) The implementation of an adaptive management scheme based on regular monitoring is an important consideration in the NDF evaluation process.
- (5) The NDF is based on resource assessment methodologies.
- (6) The NDF employs appropriate broad-scale assessment, such as total harvest assessments.

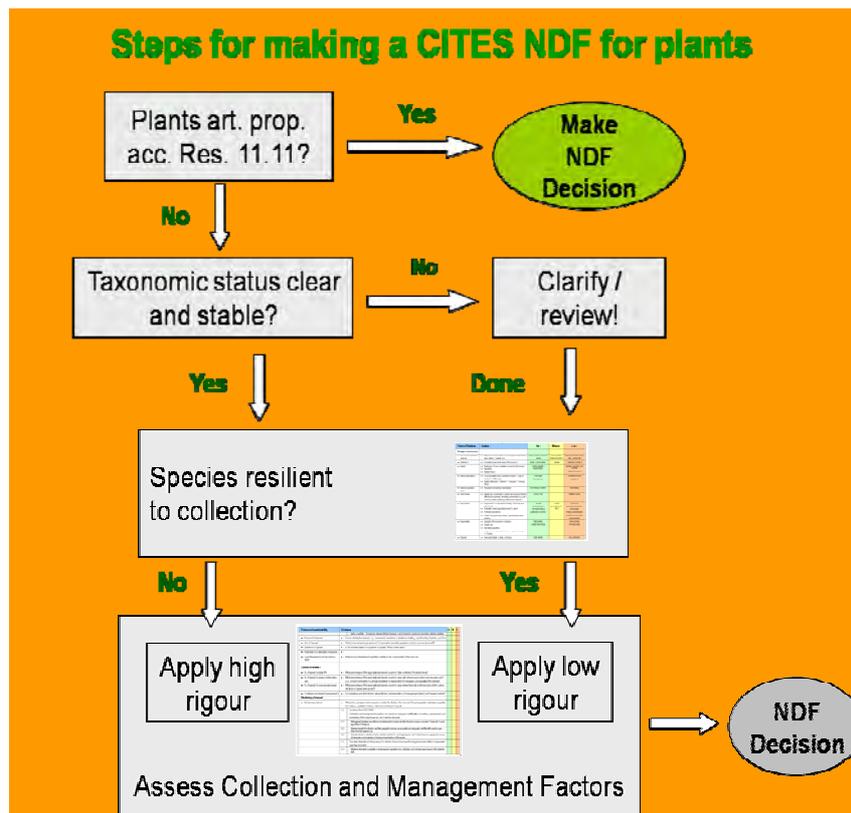


Figure 1: Steps for making a CITES Non-Detriment Finding for plants

⁸ PC18 WG10 Doc. 1 (<http://www.cites.org/eng/com/PC/18/wg/E-PC18-WG10.pdf>)

Comprehensive guidance for CITES Scientific Authorities for the formulation of Non-Detriment Findings (NDFs) was developed under this contract in the preparation of and during the workshop in Cancun in November 2008 in which both the consultant Dr Danna Leaman and the chair of the Plants Committee working group on medicinal plants, Dr Uwe Schippmann, participated.

The proposed framework and process comprises two major steps (see figure 1): The first step evaluates the resilience of species to collection by considering a series of elements. This allows the assessment of the species' overall resilience to collection as high, medium, or low. In a second step a number of factors affecting the management of the collection or harvest have to be considered. For species that are less resilient to collection, greater rigour should be applied, for example, multiple data sources, intensive field study, etc. It is expected that Scientific Authorities will work with the information that is available and seek more extensive information for species with very low resilience. Sources of data will vary, depending on the species and collection situation.

The full guidance which was developed by the Perennial Plants Working Group at the Cancun Workshops and later refined by the consultant is presented in Annex 1.

4. Criteria and indicators of ISSC-MAP Version 1 that are covered by the remit of CITES

The ISSC-MAP builds on larger efforts to define a framework for the sustainable use of biological diversity: Under the Convention on Biological Diversity (CBD), specific guidance for the ecological, socio-economic, and equity basis for conservation and sustainable use of biodiversity has been requested.

The ISSC-MAP responds to all three of these sustainability aspects and is designed to be applicable to the wide array of geographic, ecological, cultural, economic, and trade conditions in which wild-collection of MAP resources occurs. The Standard focuses on best ecological practices but also aims to support responsible social standards and business practices that affect collectors and collection operations.

In contrast to this wide approach, the mandate within CITES with respect to the making of Non-Detriment Findings is much narrower: it focuses only on the ecological aspects of sustainability. Article IV 2a of the Convention requests that "an export permit shall only be granted when [...] a Scientific Authority of the state of export has advised that such export will not be detrimental to the survival of that species". Article 3 of the Convention requests that "export of specimens [...] should be limited in order to maintain that species throughout its range at a level consistent with its role in the ecosystems"

It was therefore necessary to identify those elements of ISSC-MAP which are covered by the mandate of CITES and to exclude those which go beyond this mandate. These elements are included in Table 3.

Table 3: ISSC-MAP Criteria and Indicators relevant for CITES NDF			
Criterion		Nr	Indicator
Principle 1	Maintaining Wild MAP Resources Wild collection of MAP resources shall be conducted at a scale and rate and in a manner that maintains populations and species over the long term.		
Criterion 1.1	Conservation status of target MAP species The conservation status of target MAP species and populations is assessed and regularly reviewed.	1.1.1	Current conservation status of target MAP species is assessed according to the IUCN Red List categories and criteria (version 3.1, 2001) and regularly reviewed.
		1.1.2	For species determined to be Data deficient (DD) or not evaluated (NE) according to the IUCN Red List categories and criteria, sufficient information is gathered to complete and / or review a previous conservation status assessment

Table 3: ISSC-MAP Criteria and Indicators relevant for CITES NDF			
Criterion		Nr	Indicator
Criterion 1.2 Knowledge-based collection practices MAP collection and management practices are based on adequate identification, inventory, assessment, and monitoring of the target species and collection impacts.		1.2.2	Management strategies are defined and implemented to reduce identified threats to species considered “vulnerable” according to the IUCN Red List.
		1.2.3	MAP species targeted for collection and their geographic sources are accurately and adequately identified with voucher specimens from the collection site.
		1.2.5	Internal collection instructions define collection methods for each target MAP species / part of plant based on appropriate sources of information and knowledge of biological characteristics of the species.
Criterion 1.3 Collection intensity and species regeneration The rate (intensity and frequency) of MAP collection does not exceed the target species’ ability to regenerate over the long term.		1.3.1	Baseline information is available on target species’ population size, distribution, and structure (age classes) in the collection area.
		1.3.2	Maximum allowed collection quantities are defined in the internal collection instructions for each species/ part of plant and for each collection area.
		1.3.3	Collection quantities are defined using reliable and practical measurements (e.g., volume, weight, number).
		1.3.4	When appropriate and adequate knowledge / information is not available, a data collection programme is undertaken and any ongoing collection takes a precautionary approach (collected quantities below potential production).
		1.3.5	The proportion of mature, reproducing individuals to retain in the target populations for collection is determined to maintain a baseline population density and a baseline structural and genetic diversity.
		1.3.6	Minimum and maximum age / size class allowed for collection is defined for the target species and collection site in the internal collection instructions.
		1.3.7	The age / size-classes are defined using reliable and practical characters (e.g., plant diameter / DBH, height, fruiting and flowering, local collectors’ knowledge).
		1.3.8	Maximum allowed frequency of collection of the target species, defined in the collection instructions, does not exceed the rate of replacement of adult individuals or plant part collected in the collection region.
		1.3.9	Periods allowed for collection are determined using reliable and practical indicators (e.g., seasonality, precipitation cycles, flowering and fruiting times) and are based on information about the reproductive cycles of target MAP species.
		1.3.10	Consolidated data on collected quantities are available (species/area/year) and confirm compliance with collection instructions.
		1.3.11	Collection quantities, periods and frequency of collection are recorded and confirm compliance with collection instructions.
Principle 2	Preventing Negative Environmental Impacts		
	Negative impacts caused by MAP collection activities on other wild species, the collection area, and neighbouring areas shall be prevented.		
Criterion 2.1 Sensitive taxa and habitats Rare, threatened, and endangered species and habitats that are likely to be affected by MAP collection and management are identified and protected.		2.1.1	Existing species and habitat conservation strategies relevant to the collection area are recognized and included in the management plan
		2.1.2	Knowledge of special functions in the ecosystem / dependent relationships between target MAP and other species is documented and incorporated into management and monitoring
Criterion 2.2 Habitat (landscape level) management Management activities supporting wild MAP collection do not adversely affect ecosystem diversity, processes, and functions.		2.2.1	The habitat management practices applied in the collection area are described.
		2.2.2	Negative impacts of MAP collection practices and management activities on the collection area are identified in the management plan
		2.2.3	Implemented collection methods & tools are appropriate: damage to the plant/plant population is minimised.

Table 3: ISSC-MAP Criteria and Indicators relevant for CITES NDF		
Criterion	Nr	Indicator
	2.2.4	The management plan (acc. Criterion 5.1) includes strategies to prevent or reduce negative impacts on other species and the collection area
	2.2.5	Changes in ecosystem structure, function, and services are monitored and reported
	2.2.7	Landscape-level and intensive management practices promoting MAP resources (e.g. overstorey reduction, enrichment planting) do not negatively affect sensitive species or the ecosystem structure, diversity processes and functions in the collection area.
Principle 3	Complying with Laws, Regulations, and Agreements	
	MAP collection and management activities shall be carried out under legitimate tenure arrangements, and comply with relevant laws, regulations, and agreements.	
Criterion 3.1 Tenure, management authority, and use rights Collectors and managers have a clear and recognized right and authority to use and manage the target MAP resources.	3.1.1	The area where wild collection is carried out is clearly defined and its boundaries established.
	3.1.2	The ownership, tenure, or use rights of the collection area are known over a time-scale that is long enough to fulfil the stated MAP resource management objectives.
Criterion 3.2 Laws, regulations, and administrative requirements Collection and management of MAP resources complies with all international agreements and with national and local laws, regulations, and administrative requirements, including those related to protected species and areas.	3.2.1	Relevant legal, regulatory, and administrative requirements and responsibilities are known and understood by resource managers.
	3.2.2	Management plans, procedures, work instructions and contracts meet relevant legal, regulatory, and administrative requirements.
Principle 5	Applying Responsible Management Practices	
	Wild collection of MAP species shall be based on adaptive, practical, participatory, and transparent management practices.	
Criterion 5.1 Species / area management plan A species / area management plan defines adaptive, practical management processes and good collection practices.	5.1.1	A management plan for sustainable collection exists.
	5.1.2	The management plan includes: a) Plant and habitat conservation strategies b) Internal quality standard according to indicator 6.1.2 c) Documented procedures required by this Standard (e.g. monitoring, measurements and analysis of impacts of collection practices) d) Documents needed by the wild collection company / organization to ensure the effective planning, operation and control of its processes e) Records and documents required by this Standard.
	5.1.4	The management plan is reviewed at regular intervals on a timeframe specified in the plan to ensure its continuing suitability, adequacy, and effectiveness in meeting the objectives of this Standard.
	5.1.5	The management plan takes into consideration any management plan that refers to the collection area and that is produced by the appropriate resource management authority.
	5.1.6	Overlapping and adjacent protected areas and areas with special management objectives are identified.
	5.1.7	Other activities in the area representing potential threats on sustainability of species and habitat are identified (e.g. other collectors in the same area).
	5.1.12	Written internal instructions exist for each collection area on: a) collection sites, b) collection methods, c) maximum collection quantities, d) maximum allowed collection frequency and e) periods to avoid and concentrate collection activities.

Table 3: ISSC-MAP Criteria and Indicators relevant for CITES NDF		
Criterion	Nr	Indicator
Criterion 5.2 Inventory, assessment, and monitoring Management of MAP wild collection is supported by adequate and practical resource inventory, assessment, and monitoring of collection impacts.	5.2.1	Assessment and regular monitoring of the target MAP resources and habitats, and of social / cultural and economic issues related to MAP collection are performed, documented, and incorporated into the management plan.
	5.2.2	Collection instructions specify observations required to monitor collection impacts.
	5.2.3	Periodic regeneration surveys are conducted within the management area using repeatable, comparable survey methods.
	5.2.4	Population size, distribution, and structure (age/size-class distribution) as recorded in the regeneration survey remain equal to or above baseline values and reflect a healthy population.
	5.2.5	Periodic monitoring within the management area confirms that availability, viability and quality of the target resource / part of plant remain stable or increase.

5. Case studies for selected CITES medicinal plant species and Participation in the Mexican Workshop on NDF

The ISSC-MAP with its set of 6 principles, 18 criteria and more than 100 indicators and the general guidance that is being prepared under the recent CoP Decision 14.135 both aim at being applicable to the full array of medicinal plant uses. Besides this, there is also much insight and understanding to be gained from existing best practice examples.

A number of case studies were prepared for the Cancun workshop in November 2008. In the course of this contract, the preparation of case studies of the Cancun perennial plant working group was supported by reviewing drafts prepared by experts and by coordinating a standardised structure and layout for these case studies (Table 4). The consultant prepared a case study and gave a lecture on ISSC-MAP and its potential for the making of meaningful Non-Detriment Findings in CITES (Table 4). A revised resource assessment pathway for ISSC-MAP was developed and presented during the workshop.

Table 4: Cases studies of medicinal plants with proposed NDF procedure

Case studies	Country	Document	Summary
<i>Aquilaria malaccensis</i> (Agarwood)	Malaysia	WG1-CS3	WG1-CS3-S
<i>Taxus</i> (Yew)	Canada	WG1-CS6	WG1-CS6-S
<i>Guaiacum sanctum</i> (Guayacan)	Mexico	WG1-CS7	WG1-CS7-S
<i>Prunus africana</i> (African cherry)	---	WG1-CS8	WG1-CS8-S
<i>Prunus africana</i> (African cherry)	Cameroon	WG1-CS9	WG1-CS9-S
<i>Cibotium barometz</i> (Golden hair dog fern)	China	WG2-CS1	WG2-CS1-S
<i>Pelargonium sidoides</i> (Kalwerbossie)	Lesotho	WG2-CS2	WG2-CS2-S
<i>Nardostachys grandiflora</i> (Jatamansi)	---	WG2-CS3	WG2-CS3-S
ISSC-MAP	Danna Leaman	WG2-CS4 (Annex)	WG2-CS4-S
<i>Panax quinquefolius</i> (American ginseng)	Canada	WG2-CS5	WG2-CS5-S
<i>Panax quinquefolius</i> (American ginseng)	USA and Canada	WG2-CS6	WG2-CS6-S

6. Summary of results achieved

The aim of this contract was to support the implementation of the ecological components of ISSC-MAP within the NDF framework of CITES. Two processes have been facilitated to this end:

The International Experts Workshop held in Cancun in November 2008 aimed at providing guidance for a consistent NDF methodology for animals and plants. Four plant working groups worked in parallel sessions, arranged by life forms, three of them covering medicinal plant species. The consultant took part in the perennial working group, both by facilitating the production of species case studies (Table 4) and through a CITES focused lecture on ISSC-MAP.

The working groups came up with various detailed plant group specific results. A common feature across all groups was the call for a risk analysis component preceding the actual NDF. The overall result of the workshop was a 23-page summary. This report makes special mention of ISSC-MAP on its page 2⁹. It can be stated that the ISSC-MAP and its guidance was acknowledged by the workshop as an important component in the making of Non-Detriment Findings.

The technical advice provided by experts in Cancun has now moved to the political arena of CITES. The Plants Committee has to work on three NDF related decisions (medicinals, timber, agarwood) and has to provide results to CoP15. The working group dealing with NDF and medicinals was supported in its work by this contract through elaborating several reports. It can be stated that contributions provided under this contract have not only refined the results of the perennial group in Cancun but have also resulted in the adoption of the NDF guidance of the PC medicinal plant group by all three PC working groups on NDF.

In the meantime, both Plants and Animals Committee have discussed the proposal made in the Cancun report to prepare a CITES resolution on NDF for adoption at CoP15. However, political will among CITES parties to support this proposal is yet limited: many parties claim that their "sovereign right" to decide how to make NDFs would be restricted by such guidance, no matter how voluntary its formulation. Clearly more negotiations are needed to establish the progress which was made in Cancun on a technical basis within the political framework.

It has also become clear that a series of capacity building workshops is needed to enable CITES parties to make scientifically sound and reliable Non-Detriment Findings. These workshops should be based on "Guidance for CITES Scientific Authorities"¹⁰ (the IUCN checklist) and the Cancun guidance, including the guidance provided by ISSC-MAP.

⁹ <http://www.cites.org/eng/com/PC/18/E-PC18-14-01.pdf>

¹⁰ Rosser, A. & M. Haywood. 2002. Guidance for CITES Scientific Authorities. Checklist to assist in making non-detriment findings for Appendix II exports. - xi+146 pp., IUCN, Gland and Cambridge

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



Eighteenth meeting of the Plants Committee
Buenos Aires (Argentina), 17-21 March 2009

MEDICINAL PLANTS
(PC18 Doc. 14.4)

Membership (as decided by the Committee)

Chair: The observer from Germany.

Party observers: Argentina, Canada, Malaysia, South Africa and the United States of America.

IGOs and NGOs: American Herbal Products Association, Assam Agar Traders & Agaroil Manufacturers' Association, Indena S.p.A. and TRAFFIC.

Mandate

Taking into account all available information and, in particular, the results of Group 2 of the workshop held in Cancún:

1. Develop principles, criteria and indicators for the formulation of non-detriment findings for wild specimens of medicinal plants; and
2. Collaborate with the chairs of the Groups on Timber Species and on Agarwood, and, in this context, assess the possibility to propose either the deletion of Decisions 14.135 and 14.143, or their replacement by a new decision or decisions, with an indication of the budget required for their implementation.

Working Group Results

The group has worked both intersessionally and during PC 18. The full working group report is contained in Annex 1 of this document.

Recommendations

The CITES Plants Committee is asked to:

1. Take note of the guidance document, in particular, information contained in Annex 1, prepared by the working group on NDFs and medicinal plants;
2. Present this NDF guidance document for medicinal plants as part of the consideration of a NDF-specific Resolution;
3. Propose to CoP15 to delete Decision 14.135, parts a) and b), on the basis of the Decision having been fulfilled.

Non-detriment findings

Medicinal plants

WORKING GROUP REPORT

Background

2. At its 14th meeting of the Conference of the Parties (CoP14, The Hague, 2007), the Parties adopted Decision 14.135 Timber species and medicinal plants: non-detriment findings, directed to the Plants Committee, as follows:

The Plants Committee shall:

a) develop principles, criteria and indicators for the making of non-detriment findings for wild specimens of high-priority taxa such as timber species, Prunus africana and other medicinal plants; and

b) before the 15th meeting of the Conference of the Parties, support the organization of a workshop on non-detriment findings for tree species.

3. At the 17th meeting of the Plants Committee (PC17, Geneva, 2008), an intersessional working group (WG) was convened with the mandate to develop principles, criteria and indicators for the making of non-detriment findings (NDFs) for wild specimens of medicinal plants. The group was asked to liaise with the Chairs of the timber and agarwood NDF WGs in order to maintain consistency on key issues – in particular the definitions of principles, criteria and indicators.
4. Mexico organised an International Experts Workshop on NDF methodology which was held in Cancun from 17-22 November 2008. The WG agreed that the report produced by the Perennials group at the Cancun workshop titled 'Perennial Plants Working Group Annex: Guidance for Scientific Authorities in making a CITES Non-Detriment Finding' (PC18 Doc 14.2) includes the general elements that are best-suited for adaptation to medicinal plant NDFs.

Principles

5. At PC17 the Chairs of the three NDF working groups (timber, medicinal plants and Agarwood) were tasked with liaising and reaching agreement on common usage of the terms 'principles, criteria and indicators'. For the term 'principle' the Chairs considered material provided in the International Standard for the Sustainable Wild Collection of Medicinal and Aromatic Plants document (ISSC-MAP), discussions at the Mahogany and Agarwood working group meetings, and the output from the Cancun NDF workshop, in particular the Trees Working Group. The following principles are presented as generic principles applicable to the NDF process in CITES regardless of the taxa being considered.
 - The non-detriment finding (NDF) for Appendix I and II species verifies that traded volumes within the range state are not detrimental to the survival of that species.
 - The NDF considers whether the species is maintained throughout its range at a level consistent with its role in the ecosystems in which it occurs.
 - The data requirements for an NDF are tailored to appropriate precision according to the resilience or vulnerability of the target species.
 - The implementation of an adaptive management scheme based on regular monitoring is an important consideration in the NDF evaluation process.
 - The NDF is based on resource assessment methodologies.
 - The NDF employs appropriate broad-scale assessment, such as total harvest assessments.

Criteria and Indicators

6. The terms 'criteria' and 'indicator' were not used by any Working Group in the Cancun workshop. In the Cancun Perennial Plants Working Group report, the term 'criteria', within the context of elaborating a NDF, correlates with the term 'factors' used in the risk assessment or 'factors' which constitute sustainability. It is suggested that the 'elements of guidance' used in assessing the factors/criteria are the indicators that would be used to measure the adequacy or robustness of an NDF. The WG suggests that the semantics of 'criteria' and 'indicators' distracts from the most critical and essential part of the Decision which is "... for the formulation of non-detriment findings for medicinal plant species". The process outlined here provides guidance for the formulation of an NDF for medicinal plant species. If this process is followed, a Scientific Authority will have confidence that the resultant non-detriment finding is robust and reliable. The WG believes this meets the spirit of the Decision.

Sources and references used

7. The WG tried to build as much as possible upon existing guidance for making NDFs. Particularly valuable is the "Guidance for CITES Scientific Authorities"¹¹ (hereafter called IUCN checklist). Therefore, the factors within Tables 1 and 2 of the IUCN checklist were fully adopted into the tables of the present document.
8. The WG also agreed to use the ISSC-MAP document (PC 16 Inf. 9¹²) as a starting point for its work. ISSC-MAP especially provides additional guidance for evaluating the factors "Management Plan" and "Monitoring Methods" by specifying detailed criteria and indicators.
9. Additional elements were incorporated from the following sources: Cancun Workshop Case Studies¹³, EU-SRG Guidance Paper¹⁴, Susceptibility matrices published by Cunningham (2001) and Peters (1994)¹⁵.

Process for making non detriment findings

10. The process for making non-detriment findings for medicinal plant species (and perhaps all CITES Appendix II plants) builds upon the IUCN Checklist and other references by incorporating the sources of information and methods that can be used to evaluate certain factors as well as identifying when a more rigorous approach is needed (i.e., when more information or more rigorous field methods are needed).
11. **Taxonomy:** According to Res. Conf. 12.11 (Rev. CoP14), species that are listed in the Appendices of CITES should have a valid CITES-recognized name, as reported in CITES-approved checklists. The first step is therefore to assess whether the taxonomic circumscription, including authorities and synonyms, is stable or is dynamic. If the status of the taxon is dynamic, then the taxonomy is usually uncertain (e.g., the taxon may consist of several entities which have to be assessed separately). Sources of information include published floras, CITES checklist, identification guides, and taxonomic experts.
12. **Harvest limits:** Confirm if proposed trade is within existing harvest limits. Determine whether these harvest limits are current and valid for the particular population of the species, taking into consideration any new information regarding the species.

¹¹ Rosser, A. & M. Haywood. 2002. Guidance for CITES Scientific Authorities. Checklist to assist in making non-detriment findings for Appendix II exports. - xi+146 pp., IUCN, Gland and Cambridge

¹² <http://www.cites.org/common/com/PC/16/X-PC16-09-Inf.pdf>

¹³ http://www.conabio.gob.mx/institucion/cooperacion_internacional/TallerNDF/Links-Documentos/WebPage%20-%20Format%20-%2023%20May%2008.doc

¹⁴ Duties of the CITES Scientific Authorities and Scientific Review Group under Regulations 338/97 and 865/2006. <http://ec.europa.eu/environment/cites/pdf/srg/guidelines.pdf>

¹⁵ CUNNINGHAM (2001): Applied ethnobotany. Earthscan; PETERS (1994): Sustainable harvest of non-timber forest plant resources in tropical moist forest. An ecological primer. - WWF Biodiversity Support Program, Washington.

13. **Source of material:** Consider whether the source of the specimen proposed for trade is from the wild or artificially propagated. If the specimen was artificially propagated according to Resol. Conf. 10.13 (Rev. CoP14)¹⁶ and Resol. Conf. 11.11¹⁷, the NDF should address the criteria, as established under these Resolutions. This should complete the NDF process. If the specimen does not meet the criteria of these Resolutions, continue with the process below.
14. **Resilience of the species to collection:** This step involves evaluating the resilience of species to collection by considering the elements in Table 1, which outline factors for high, medium, and low resilience to collection. This table is not an exhaustive list but includes factors that may be most indicative of resilience or vulnerability, based on examples taken from Cunningham (2001) and Peters (1994). It is expected that judgement will be cautionary, for example, if a species has only a few factors of lower resilience and several deemed higher resilience, the species may still be considered as having a lower resilience to collection. Species are evaluated as having higher resilience i.e. less at risk from collection, if most of the resilience factors are in the higher category.
15. **Assessing the management of wild-collection activities:** Table 2 outlines factors affecting the management of the collection or harvest, along with references that provide examples of how each factor may be applied. For species that are less resilient to collection, greater rigour should be used, for example, multiple data sources, intensive field study, etc. In general, it is expected that Scientific Authorities will work with the information that is available and seek more extensive information for species with very low resilience. Sources of data will vary, depending on the species and collection situation. In some cases, reliable information may not be part of an academic study or published in a peer-reviewed journal, but could still be considered to be reliable by the SA. For example, population abundance may be known from only information gathered from local harvesters.

Recommendations

The CITES Plants Committee is asked:

- to take note of the guidance document prepared by the working group on NDFs and medicinal plants;
- to present this NDF guidance document for medicinal plants as part of the consideration of a NDF-specific Resolution;
- to propose to CoP15 to delete Decision 14.135, parts a) and b), on the basis of the Decision having been fulfilled.

Table 1 Assessment of the resilience of the species to collection (draft)

References: (1) IUCN Checklist; (2) Cancun Workshop Case Study Format; (5) Cunningham (2001) and Peters (1994)

Note: Where specific information is lacking with regard to these factors, the reviewer should consider gathering that information or explaining in the NDF why this lack of information does or does not affect your ability to make a non-detriment finding.

Factors of Resilience	Guidance	Higher Resilience	Lower Resilience	Ref
Biological characteristics				
• Life form vs.	• Basic life forms for plants: tree,	Non-lethal harvest of latex,	Lethal harvest of bark,	1, 5

¹⁶ Conf. 10.13 (Rev. CoP14) Implementation of the Convention for timber species for timber species (<http://www.cites.org/eng/res/10/10-13R14.shtml>)

¹⁷ Conf. 11.11 (Rev. CoP14). Regulation of Trade in Plants. (<http://www.cites.org/eng/res/11/11-11R14.shtml>)

Factors of Resilience	Guidance	Higher Resilience	Lower Resilience	Ref
harvested plant part	shrub, perennial, annual, bulb, climber, epiphyte, etc.	flowers, fruits and leaves Short-lived life forms	stem tissue, roots, bulbs, whole plant Long-lived life forms	
• Distribution	• Currently known global range of the species	wide, cosmopolitan	restricted, endemic	2, 5
• Habitat	• Preference: Types of habitats occupied by the species • Specificity • Habitat threat	highly adaptable to various habitat types. habitat well conserved and stable	narrowly specific to one habitat type habitat threatened	1, 2, 5
• National abundance	• Local population sizes: Everywhere small <> Large to medium <> Often large • Spatial distribution: Scattered <> Clumped <> Homogeneous	Populations often large and spread homogenously across the landscape	All known populations everywhere small Scattered thinly across the landscape	1, 5
• National population trend	• Population increasing or decreasing?	increasing or stable	Decreasing	1
• Other threats	• Habitat loss/degradation; invasive alien species (directly affecting the species); harvesting; persecution (e.g. pest control); pollution (affecting habitat a/o species)	none or low	multiple, severe	1, 2
• Reproduction	• Regeneration or reproductive strategy: dioecious, sexual, asexual • Pollination: biotic (specialised vector?), wind • Pollinator abundance • Flower/Fruit phenology: annual, supra-annual, unpredictable	Asexual wind pollinated annually fruiting pollinators common	Dioecious specialised pollinator monocarpic fruiting unpredictable pollinators rare; bats, hummingbirds	2, 5
• Regeneration	• Capacity of the species to reproduce • Growth rate • Sprouting capability • Regeneration Guild: Early Pioneer <> Late Secondary <> Primary	fast growing easily resprouting early pioneer	Slow growing not resprouting primary climax species	1, 5
• Dispersal	• Seed germination: viability, dormancy • Seed dispersal strategy • Disperser abundance • Dispersal efficiency	high viability wind and other abiotic vectors	long dormancy Biotic, with specialized vector	1, 5
Harvest characteristics				
• Harvest specificity	• Indiscriminate collection of other species vs. target species easy to identify	target species easy to identify	Target species hard to identify and therefore harvest accompanied by indiscriminate collection of other species	5
• Demographic	• Are mature and immature plants	collection of all age-classes	highly selective	1, 2

Factors of Resilience	Guidance	Higher Resilience	Lower Resilience	Ref
segment of population	harvested?		collection of one age-class	
• Multiple use	• Multiple, conflicting uses vs. single use or non-competing	single use or non-competing	Multiple, cumulative uses	5
• Yield per plant	• With high yield less individuals are affected by collection	High	Low	
• Scale of trade	• Quantitative information on numbers or quantity, if available; otherwise, a qualitative assessment; • Trade level: High – medium – low • Local, national, international	Low	High	1, 5
• Utilization trend	• Increasing fast <> Slowly increasing <> Stable or decreasing	Stable or decreasing	Increasing fast	5

Table 2. Assessment of factors affecting management of the collection (draft)

References: (1) IUCN Checklist; (2) Cancun Workshop Case Study Format; (3) EU-SRG Guidance; (4) ISSC-MAP; (5) Cunningham (2001) and Peters (1994)

Factors of sustainability	Guidance	Ref
Biological characteristics		
• Role of the species in its ecosystem	Consider the role of the species in the ecosystem and whether ecosystem processes are interrupted or changed by the collection of the species. Is the species a keystone or guild species, do other species depend on it for survival (e.g., food source)? • Scientific literature • Expert (including collector) knowledge • Field observations	2
Population status		
• National distribution	Range and distribution of the species in the country (whether or not the distribution of the species is continuous, or to what degree it is fragmented): • National distribution map, • Herbarium records, surveys or other vegetation inventories • Expert knowledge (all stakeholders) • Field studies • GIS vegetation coverages • Modelling	1, 5
• National conservation status	Conservation status of the species in the country determined through consultation of : • Species Risk Lists • Conservation Data Centres • Experts (all stakeholders) • Scientific literature • Herbarium records • Field surveys (locations, population size, etc.)	2

Factors of sustainability	Guidance	Ref
<ul style="list-style-type: none"> National population trend 	<p>Population increasing or decreasing? To be measured over a time period independent of the harvest</p> <ul style="list-style-type: none"> Refer to conservation status Reported harvests Experts (all stakeholders) Field surveys over short term Field surveys over long term Demographic studies (population viability analyses) 	1
<ul style="list-style-type: none"> Global conservation status 	<p>Refer to global assessment to compare national situation to global range</p> <ul style="list-style-type: none"> Published global assessments (e.g., IUCN Red List, Conservation Data Centres, e.g., Nature Serve) Consult other range states Undertake global assessment with other range states 	2
<ul style="list-style-type: none"> Global Distribution 	<p>Refer to global distribution for national context</p> <ul style="list-style-type: none"> Published global distribution map Consult other range states 	2, 5
<ul style="list-style-type: none"> Global population size and trend 	<p>Refer to global population size and trend for national context</p> <ul style="list-style-type: none"> Published global assessment Consult other range states 	2
Harvest management		
<ul style="list-style-type: none"> Regulated / unregulated 	<p>"Regulated" refers to a sanctioned (government approved or otherwise official) harvest that is under the full control of the manager. Legal status determined through:</p> <ul style="list-style-type: none"> Analysis of market reports on trade volumes Experts (all stakeholders) Trade volume records (e.g. WCMC CITES trade database; statistics from Customs; National or state permit databases) Enforcement reports Field and market surveys 	1, 2
<ul style="list-style-type: none"> Management history 	<p>What is the history of harvest? Is the harvest ongoing or new?</p> <ul style="list-style-type: none"> Literature Experts (all stakeholders, including trade networks) 	1, 2
<ul style="list-style-type: none"> Illegal harvest or trade 	<p>How significant is the national problem of illegal or unmanaged harvest or trade? Assess the levels of both unmanaged and illegal harvest by:</p> <ul style="list-style-type: none"> Collecting market information Collecting information from traders, collectors, wildlife managers Comparing exports and imports with other Parties Comparing CITES permit data to other export data sources (national trade statistics) Analysing enforcement reports Conducting field and market surveys 	1
<ul style="list-style-type: none"> Management plan 	<p>Is there an adaptive management plan related to the collection of the species with the aim of sustainable use?</p> <ul style="list-style-type: none"> National and international legislation relating to the conservation of the species Management plan in place Plan specifies plant and habitat conservation strategies (may include protected areas) Collection practices in place 	1, 2, 4

Factors of sustainability	Guidance	Ref
	<ul style="list-style-type: none"> • Collection practices specify restoration measures (e.g., planting seed when whole plant is removed) • Requirement to keep records of collection • Collection records are reviewed and collection monitored • Management plan is reviewed at regular intervals specified in the plan • Limitations on collection (examples include collection seasons, minimum and maximum age / size class allowed for collection based on proportion of mature, reproducing individuals to be retained, maximum collection quantities, maximum allowed collection frequency, maximum allowed number of collectors) • Periods allowed for collection are determined using reliable and practical indicators (e.g., seasonality, precipitation cycles, flowering and fruiting times) and are based on information about the reproductive cycles of target species. • The age / size-classes are defined using reliable and practical characters (e.g., plant diameter / DBH, height, fruiting and flowering, local collectors' knowledge). 	
Control of harvest		
<ul style="list-style-type: none"> • Percent of harvest in state Protected Areas 	<p>What percentage of the legal national harvest occurs in state-controlled Protected Areas?</p> <ul style="list-style-type: none"> • Harvester information or interviews • Enforcement information or interviews • Park manager information or interviews • Compare location information from permit with maps of protected areas • GIS layers of harvesting and land tenure 	1
<ul style="list-style-type: none"> • Percent of harvest in areas of strong tenure 	<p>What percentage of the legal national harvest occurs in areas with strong local control over resource use? e.g.: a local community or a private landowner is responsible for managing and regulating the harvest</p> <ul style="list-style-type: none"> • Harvester information or interviews • Enforcement information or interviews • Landowner information or interviews • Compare location information from permit with maps of protected areas • GIS layers of harvesting and land tenure 	1
<ul style="list-style-type: none"> • Percent of harvest in open access areas 	<p>What percentage of the legal national harvest occurs in areas where there is no strong local control, giving de facto or actual open access?</p> <ul style="list-style-type: none"> • Harvester information or interviews • Enforcement information or interviews • Compare location information from permit with maps of protected areas • GIS layers of harvesting and land tenure 	1
<ul style="list-style-type: none"> • Proportion of range or population protected from harvest 	<p>What percentage of the species' natural range or population is legally excluded from harvest?</p> <ul style="list-style-type: none"> • Compare distribution map with maps of areas excluding harvest • Information or interviews with wildlife managers 	1
<ul style="list-style-type: none"> • Confidence in effectiveness of strict protection measures 	<p>Are there measures taken to enforce strict protection?</p> <ul style="list-style-type: none"> • Information or interviews with protected areas managers 	1
<ul style="list-style-type: none"> • Effectiveness of regulation of harvest effort 	<p>How effective are any restrictions on harvesting (such as age or size, season or equipment) for preventing overuse?</p> <ul style="list-style-type: none"> • Information or interviews with resource managers 	1
<ul style="list-style-type: none"> • Confidence in harvest management 	<p>Are there effective implementation of management plan(s) and harvest controls?</p>	1

Factors of sustainability	Guidance	Ref
	<ul style="list-style-type: none"> ○ Information or interviews with resource managers 	
Monitoring of harvest		
<ul style="list-style-type: none"> ● Monitoring of collection impact and management practices 	<p>Is management of wild collection supported by adequate identification, inventory, assessment, and monitoring of the target species and collection impacts? Does the rate (intensity and frequency) of collection enable the target species to regenerate over the long term?</p> <ul style="list-style-type: none"> ● Baseline information on population size, distribution, and structure (age classes) ● Records on collected quantities (species/area/year) ● Qualitative indices, e.g., discussions with collectors ● Quantitative indices, e.g., roots per pound collected as an indication of population size, the quantity of national exports ● Identification of target species with voucher specimens from the collection site ● Direct population estimates through field surveys, including surveys of populations before and after harvest (field surveys / data collection program is critical when collected quantities are above potential production) 	4
<ul style="list-style-type: none"> ● Confidence in monitoring 	<p>Are there effective implementation of monitoring and harvest impact controls?</p> <ul style="list-style-type: none"> ● Monitoring confirms that abundance, viability and quality of the target resource / part of plant is stable or increasing 	1
<ul style="list-style-type: none"> ● Other factors that may affect whether or not to allow trade 	<ul style="list-style-type: none"> ● What is the effect of the harvest when taken together with the major threat that has been identified for this species? ● At the national level, how much conservation benefit to this species accrues from harvesting? ● At the national level, how much habitat conservation benefit is derived from harvesting? 	1, 3



NDF WORKSHOP CASE STUDIES
WG 2 – Perennials
CASE STUDY 4
ISSC-MAP
Original language – English

THE INTERNATIONAL STANDARD FOR SUSTAINABLE WILD COLLECTION OF MEDICINAL AND AROMATIC PLANTS (ISSC-MAP) ELEMENTS OF ISSC-MAP RESOURCE ASSESSMENT GUIDANCE RELEVANT TO CITES NDF

AUTHOR

Danna J. Leaman
Chair, IUCN-SSC Medicinal Plant Specialist Group

Overview and background

The International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP)¹ has been developed to meet the needs of industry, governments, certifiers, resource managers, and collectors to understand whether wild collection activities for medicinal and aromatic plants (MAP)² are sustainable, and how to improve collection and resource management operations that are detrimental to the long-term survival of these resources. The ISSC-MAP is itself a generic set of principles and criteria intended for use in a wide range of circumstances.³ The focus of the ISSC-MAP is on the ecological sustainability of wild plant populations and species in their natural habitat, but it also addresses the social and economic context of sustainable use.

¹ Medicinal Plant Specialist Group (2007): International standard for sustainable wild collection of medicinal and aromatic plants (ISSC-MAP). Version 1.0. - Bundesamt für Naturschutz, Bonn (BfN-Skripten 195). Retrieved from www.floraweb.de/proxy/floraweb/map-pro/.

² Definitions of use of plant species often overlap. In this document, the term “medicinal and aromatic plants (MAP)” includes plants used to produce pharmaceuticals, dietary supplement products and natural health products, beauty aids, cosmetics, and personal care products, as well as some products marketed in the culinary/food sector.

³ ISSC-MAP has been prepared by the Medicinal Plant Specialist Group of the IUCN-SSC in collaboration with the German Federal Agency for Nature Conservation (BfN), WWF Germany, and TRAFFIC, based on consultations with more than 150 experts from diverse backgrounds. Version 1.0 was published in 2007 and was introduced to the 16th meeting of the CITES Plants Committee (PC16 Inf. 9).

Table 1: ISSC-MAP consists of six Principles:

1. Maintaining wild MAP resources
2. Preventing negative environmental impacts
3. Complying with laws, regulations, and agreements
4. Respecting customary rights
5. Applying responsible management practices
6. Applying responsible business practices

Pilot projects applying the ISSC-MAP to a range of species, countries, and implementation strategies are currently underway in China, Cambodia, Nepal, India, Ukraine, Bosnia and Herzegovina, Brazil, and Lesotho.

Elements of ISSC-MAP relevant to CITES NDF

Application of the ISSC-MAP in the framework of CITES is one of the priority implementation scenarios identified for ISSC-MAP in the context of legal adoption and policy. Principles 1 and 2, and partly also Principles 3 and 5, correspond with the mandate for CITES NDF as laid down in articles IV 2.a and IV 3. The criteria and indicators underpinning these principles and their applicability for the CITES NDF will be demonstrated and discussed during the Cancun workshop.

Medicinal plants in CITES

More than 300 species of medicinal and aromatic plants are included in CITES Appendices I and II. Only 63 of these species have been included specifically because of the impact of wild collection for international trade based on their medicinal use.

Non-detriment findings have been carried out and published for some CITES-listed medicinal and aromatic plant species, including:

- *Prunus africana*, Bioko Island (PC16 Doc. 10.2.1)
- *Aquilaria* spp. and other wood-producing taxa (PC17 Doc. 17.2)
- *Guaiaacum sanctum* L., Mexico (PC17 Doc. 17.1.3)

The breakdown into the four plant working groups (WG) at the Cancun workshop is done by lifeforms (trees; perennials; succulents; geophytes). Plants used as medicinals are cross-cutting and will be addressed there in the case studies in three of the four plant WGs, including:

- *Guaiaacum sanctum*, *Aquilaria* spp., *Prunus africana*, *Taxus* spp. (Tree WG)
- *Pelargonium sidoides*, *Cibotium barometz*, *Panax quinquefolius* (Perennials WG)
- *Hoodia gordonii*, *Aloe* spp. (Succulents and Cycads WG)

ISSC-MAP Resource Assessment Guidance relevant to CITES NDF

The structure, content, and implementation of ISSC-MAP may contribute to CITES NDF for medicinal and aromatic plants as well as for a broader range of commercially important wild-collected plant species traded internationally for use in non-timber products.

Resource assessment guidance⁴ developed to facilitate implementation of ISSC-MAP Principle 1 (“Maintaining wild MAP resources”) provides a useful methodological framework for field-based studies intended to support CITES non-detriment findings. This guidance elaborates five basic steps needed to design and carry out a resource assessment and monitoring process that meets the requirements of ISSC-MAP, using participatory and adaptive management approaches. These five steps will be explained in and discussed at the Cancun meeting:

- Step 1. **SITUATION ANALYSIS** to gather and evaluate existing knowledge about target or candidate species and the collection situation;
- Step 2. **BASE-LINE INVENTORY** to understand how much of the target/selected species is present within the collection area;
- Step 3. **YIELD AND REGENERATION STUDIES** to understand how much of the desired raw material / plant part(s) the target species produces under natural conditions, the time required for seedlings to replace harvested individual plants and size-classes, and how productivity and regeneration vary across the collection / management area;
- Step 4. **ASSESSMENT OF HARVEST IMPACTS** to determine whether current harvest levels and controls are resulting in adequate resource regeneration and productivity; and
- Step 5. **PERIODIC MONITORING AND HARVEST ADJUSTMENTS** to revise the harvest protocol if the intensity, frequency, timing, and methods of harvest are not sustainable.

⁴ Leaman, D.J. & Cunningham, A.B. (2008): Resource assessment. A guide to implementing Principle 1: Maintaining wild MAP resources.– Draft for review and comment.