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

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TRADE IN *BOSWELLIA* SPP. (BURSERACEAE)

1. This document has been submitted by the United States of America at the request of the TRAFFIC North America in relation to agenda item 66.*

2. The genus *Boswellia* is not CITES-listed; however due to the scale of trade and increasingly unsustainable harvest from the wild it is considered a high priority for intensive research to more fully understand the potential risk to the genus' survival in the wild and to identify if the genus, or some species within it, meet the criteria for a CITES listing.

3. The engagement of the Plants Committee and other stakeholders would be highly beneficial to support a collaborative effort to fully assess the status of this genus and the international trade in its parts and derivatives.

4. This document contains a project outline for an objective, science-based assessment of the conservation and trade of this genus. The Centre for Middle Eastern Plants (Royal Botanic Garden Edinburgh), TRAFFIC, Oman Botanic Garden, Mendel University Brno, Czech Republic, University of Nizwa, Oman, Uppsala University, Centre for Frankincense Environmental and Social Studies, Somaliland and other stakeholders have developed a proposal to address the issues identified in document CoP18. Doc 66 related to the conservation and sustainability of trade in species of *Boswellia*.

Rationale:

5. The genus *Boswellia*, from which frankincense is sourced, contains approximately 20-25 species which are distributed across sub-tropical Africa, the Middle East and South Asia. Use of and trade in frankincense has been ongoing for millennia. With the renewed interest in its uses it has become important to understand the current status of the different species, what they are harvested and used for, and to determine how to ensure their persistence in the face of increasing international demand for their associated products. Information available is currently disparate, unbalanced (some species are well documented whereas others are not) and requires consolidation and extension in order to make recommendations for sustainable trade, conservation targets and possible suitability for CITES listing.

6. Previous studies have collected extremely valuable and robust scientific data about the status of populations of *Boswellia* trees in NE Africa. However, detailed information has been extrapolated from one species in one region and applied to other species in culturally, politically and socio-economically different areas and systems.

7. Around five species of *Boswellia* form the basis of much of the current trade in frankincense; however, as these trees become scarce, attention will turn to some of the other 20-25 species of *Boswellia* and they

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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.*

will increase in importance in international trade. It is vital to really understand the status of all frankincense trees, and how to ensure the drivers of trade become a solution rather than the drivers to extinction.

8. Recent stakeholder workshop "CITES and certification of medicinal and aromatic plants" (2019), outcomes of which are summarized in CoP18 Inf. 36, identified *Boswellia* spp as high-priority taxa for applying the appropriate and rigorous non-regulatory measures (e.g. voluntary certification standards, such as the FairWild Standard), to provide impartial evidence of sustainability of wild-sourcing and trade in species.

9. The published and grey literature on *Boswellia* is extensive, but consolidation and summary is required to identify critical knowledge gaps, and to target and prioritize additional data gathering in order to make recommendations to range states and global authorities to ensure *Boswellia* taxa persist and support livelihoods through sustainable harvesting, trade and re-investment. It is proposed that these data gaps are identified, filled, and acted upon through a series of actions detailed below.

Project outline:

10. The project has been broken down into three components:

1. Data consolidation

- The collation of all existing published and grey literature, including gap analyses to inform additional data gathering, collaboration with range States, workshops and field studies;
- Recent publications detailing long term studies in *B. papyrifera* have uncovered a worrying lack of regeneration potentially brought about by over-harvesting and other threats. Comparable data for other species is inferred but lacking. This component will undertake population level surveys of tree health and regeneration. Focus will not solely be on those taxa considered to be traded in high levels, but will consider those taxa that will become threatened as currently harvested species start to decline;
- Methods will include field surveys to determine distribution, population structure and regeneration, indicators of harvesting levels and effects at selected sites, engagement with harvesters, traders, legislative authorities and government stakeholders; consolidation of trade data, and mapping of trade routes; analyses and recommendations for the conservation of *Boswellia* species in the face of different future trade scenarios;
- See Objective 1 below

2. Dissemination of information

- Publications to inform CITES CoP and Plants Committee, range States, and global institutions recommending actions for sustainable harvesting, trade and positive conservation outcomes for all *Boswellia* species;
- See Objective 2 below;

3. Associated activities

- The majority of *Boswellia* taxa are not too difficult to identify in the field. However, once they are harvested this becomes problematic as products are traded in both unprocessed form as resin and also as oils and exudates. Identification of products, against reference samples and at the point of trade and sale, will give an indication of which species are traded and where they are sold.
- Ongoing work by project partners is seeking to establish chemical fingerprints using a variety of methods. Once achieved, extensive sampling at source, trade and point of sale will allow identification of parts and derivatives in trade.
- A complete monograph of *Boswellia* will be published by lead author Mats Thulin (project partner, Uppsala University) before the end of 2019, in peer reviewed scientific journal, giving taxonomic backbone to future studies (publication coincidental to the project and not a direct output of the project).

- Molecular phylogeny of *Boswellia* will be submitted for publication before end of 2019 by lead author Alan Forrest (CMEP-RBGE work ongoing but to be completed during proposed project).
- See Objective 3 below;

Outputs:

1. The following are expected outputs of the project:

- Full and detailed report on biological and trade data, gap analysis and prioritisation exercise published and circulated as electronic copies to CITES Plants Committee, all stakeholders and interested parties; available to download from and publicized on project partner websites and media;
- Executive summary document compiled from full report, including recommendations, circulated as electronic copies to CITES Plants Committee, all stakeholders and interested parties; available to download from and publicized on project partner websites and media;
- Global Red List Assessments for all species of *Boswellia* to be submitted to the IUCN Red List, national assessments to be submitted to the range State authorities relevant to each species (many of which are endemic to specific States);

Funding is required to cover the cost of the project, and a full breakdown of costs per component is available to all interested Parties and stakeholders. Several positive donors are currently being consulted, with some additional finance available through co-financing from project partner institutes.

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Objective	Actions	Expected Outcomes
1. **Data Consolidation** **a). Consolidation and summary of existing knowledge about *Boswellia* to inform conservation prioritization and sustainable trade outcomes, and to target further data collection;**	**1.1a) Data collection:** historical and contemporary use and trade, harvest and exploitation levels, supply chain characteristics, trade routes and customs data if available;	Comprehensive report detailing and summarizing all existing knowledge about harvesting, use, trade and existing regulations;
	1.2a) Data collection: national and international regulations and legislation in place or under development for species, habitats, sustainable harvesting and national and international trade;	
	1.3a) *Boswellia* Workshop (trade): following data gathering, a workshop to determine the markets, major players, and methods to ensure sustainable harvest, use, trade and livelihood support from a commercial and range state perspective will be hosted.	
	1.4a) Data collection: biology, chemistry, distribution, status and trends;	Comprehensive report detailing and summarizing all existing knowledge;
	1.5a) *Boswellia* Workshop (conservation status): collation of all known distribution data for *Boswellia* species, leading to a workshop with identified experts to construct inferred and modeled global distributions, threat classification and assessment, and IUCN Red Listing for all taxa.	Known, inferred and modelled distribution information for all *Boswellia* species; IUCN Global and range State Red List Assessments for all *Boswellia* species; Formal publication leading to identification of suitable areas and stakeholders for *Boswellia* cultivation, Protected Areas design and sustainable wild-harvesting initiatives;
b). Acquisition of additional comparable field data to enable comparable decision making for all *Boswellia* species;	**1.6a) Data collection:** initiatives and methods relating to cultivation and artificial propagation;	Formal report, including information modelled to infer suitable cultivation localities;
	1.7b) Data collection: comparable field studies in range states to determine population and regeneration status, threats, harvesting intensity	Field studies designed and implemented in at least six range States (India, Oman, Yemen (inc. Soqotra Archipelago), selected States from NE Africa);
	1.8b) Data analyses: analyze existing and new population data, summarize harvesting and trade data;	Formal publication on status of *Boswellia* species globally;
	1.9b) Workshop: stakeholders to assess comparative data to make recommendations to CITES CoP, range States for conservation	Executive summary of entire programme of work, with time-bound recommendations;

	actions and sustainable trade to conserve *Boswellia* species;	
2. **Dissemination of information to inform CITES CoP and Plants Committee, range States, and global institutions recommending actions for sustainable harvesting, trade and positive conservation outcomes for all *Boswellia* species;**	Preparation of entire programme of work into summary publication, peer reviewed and circulated to all stakeholders, to include an assessment of whether the genus, or some species, meet the criteria for CITES listing;	Publication.
3. **Associated activities giving additional information and scientific basis for decision making and capacity development;**	3.1 Identification of chemical fingerprints to enable routine tracing of source, traded and sold products;	Ability to identify *Boswellia* resin to species-level from samples at source, at borders, and at point-of-sale
	3.2 Preparation of monographic taxonomic studies on *Boswellia*;	Publication of monograph of *Boswellia* by lead author Mats Thulin, before end of 2019
	3.3 Analyses of evolutionary relationships and trajectories of *Boswellia*;	Molecular phylogeny of *Boswellia* completed and published by lead author Alan Forrest by mid-2020
	3.4 Capacity development for implementation of recommendations with conservation, trade and range State practitioners;	Increased capacity to deliver actions to conserve *Boswellia* species;