

FORESTRY DEPARTMENT

Non-Wood
Forest Products
Working Document
N° 7

THE ROLE OF CITES IN CONTROLLING THE INTERNATIONAL TRADE IN FOREST PRODUCTS

IMPLICATIONS FOR SUSTAINABLE FOREST MANAGEMENT



NON-WOOD FOREST PRODUCTS PROGRAMME

**THE ROLE OF CITES IN CONTROLLING THE
INTERNATIONAL TRADE IN FOREST PRODUCTS
IMPLICATIONS FOR SUSTAINABLE FOREST MANAGEMENT**

**by
Teresa Mulliken
TRAFFIC International**

**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 2009**

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.

To receive copies of this document, please contact:

Non-Wood News

Forest Products and Industries Division
FAO
Viale delle Terme di Caracalla
00153 Rome Italy
Email: non-wood-news@fao.org

This document is available from the NWFP home page at:
www.fao.org/forestry

All comments and suggestions are welcomed.

TABLE OF CONTENTS

Acknowledgements	iii
Executive Summary	v
INTRODUCTION	1
1. CITES BASICS—A GUIDE TO THE CONVENTION	3
Establishment and purpose of CITES.....	3
Membership of CITES.....	3
How CITES works: the fundamentals.....	3
Administration and evolution of CITES.....	5
2. EXPERIENCES WITH PROPOSALS TO LIST SPECIES IN THE CITES APPENDICES	7
Inclusion of species in Appendix II.....	7
3. CITES PERCEPTIONS	13
4. FOREST SPECIES INCLUDED IN THE CITES APPENDICES	17
Trade in CITES-listed plants.....	17
Horticultural plants.....	19
Medicinal plants.....	20
Animal species.....	21
5. EXPERIENCES WITH CITES IMPLEMENTATION AND CHALLENGES WITH NON-COMPLIANCE	23
Appendix I.....	23
Appendix II.....	28
Appendix III.....	37
General issues of compliance.....	44
6. CITES IMPACTS ON FOREST PRODUCT TRADE, PRODUCTION AND CONSERVATION	51
The challenge of assessing CITES impacts in isolation of other factors.....	51
Impacts on trade patterns.....	52
Conservation impacts.....	56
Livelihood impacts.....	57
7. CITES AND THE WORLD TRADE ORGANIZATION	61
Resolution of disputes.....	62
Observer status.....	63
8. WHERE NEXT FOR CITES AND SUSTAINABLE FOREST MANAGEMENT?	65
CITES and the trade in forest products.....	65
Non-wood forest products trade.....	66
CITES as a forum for stimulating discussion and action.....	66
CITES and the CBD.....	67
CONCLUSIONS	69
REFERENCES	71
ANNEX I	77
ANNEX II	79

ACKNOWLEDGEMENTS

I am grateful to the Forestry Department of the Food and Agriculture Organization of the United Nations (FAO), and specifically Christian Mersmann and Sven Walter, formerly of Forestry Department of FAO, for supporting the preparation of this report. Thanks are due to Steven Broad, Chen Hin Keong and Sabri Zain of TRAFFIC International, Ximena Buitrón, formerly of TRAFFIC South America, James Compton of TRAFFIC Southeast Asia, Crawford Allan of TRAFFIC North America, Helen Corrigan, formerly of UNEP-WCMC, and Martin Jenkins for their assistance in providing information and for drafting and commenting on text. Thanks are also due to Dilys Roe of the International Institute for Environment and Development, previous collaboration with whom produced the impact analysis included in the section on CITES impacts on forest product trade, production and conservation, and to John Caldwell of UNEP-WCMC for assisting with provision of CITES annual report data. While recognizing their support, any errors of fact or interpretation remain my full responsibility. The views expressed in this report are my own, and do not necessarily reflect those of TRAFFIC, IUCN – The World Conservation Union, FAO or WWF.

Sincere thanks are extended to peer reviewers Cliona O'Brien, formerly of WWF Global Species Programme; Guido Broekhoven, Forest Governance Project, IUCN Asia Regional Office; Steven Johnson, International Tropical Timber Organization; Hiko Katsuhisa, formerly of Food and Agriculture Organization of the United Nations; Chen Hin Keong, TRAFFIC International; Richard Tarasofsky, Energy, Environment and Development Programme, Chatham House.

Teresa Mulliken
TRAFFIC International

EXECUTIVE SUMMARY

Forests, and forest products, are fundamental to the health and well-being of the vast majority of the world's human population. They play a critical role in the livelihoods of local communities in and around forests and are a source of food, medicines, construction materials, fuel, ornamentation and even companionship, for example in the case of pets. Technological innovation, and specifically improvements in the global transport infrastructure, combined with human migration have served to increase the use and availability of forest products around the world. However, this use is not without a cost – the populations of many wild species have declined as a result of harvest for international trade, some to the point that entire species are threatened with extinction.

In order to address international trade threats to wild species, governments established the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES entered into force in 1975, and has over 160 member governments (Parties). This report explores the role and impact of CITES on the trade in forest products and sustainable forest management throughout its 30-year history, with an emphasis on plant, and specifically timber, species.

BACKGROUND

CITES is a species-based convention, i.e. its provisions are applied to individual species such as Big-leaf Mahogany *Swietenia macrophylla*, rather than to commodities such as timber or biomes such as tropical forest. Its primary aim is to provide a mechanism for international co-operation in order to protect “certain species of wild fauna and flora against over-exploitation through international trade”.

Species covered by the Convention are included in one of its three Appendices. Those included in Appendix I have been determined by CITES Parties to be threatened with extinction and affected or possibly affected by international trade. CITES generally prohibits international commercial trade in these species. Approximately 900 species and subspecies are listed in this Appendix, including timber species such as Alerce *Fitzroya cupressoides*. Species included in Appendix II are those considered by the Parties as not necessarily threatened with extinction, but likely to become so unless trade is closely controlled. Appendix II also includes species similar in appearance to those considered at risk, and for which trade controls are therefore deemed necessary in order to facilitate trade controls for more threatened species. International commercial trade in Appendix II is allowed subject to confirmation that such trade will not be detrimental to the species' survival, or its role in the ecosystems in which it occurs, and is legal in origin. Such trade is subject to issuance of CITES permits. Approximately 32 500 species and subspecies are listed in Appendix II, including all orchids not listed in Appendix I, amounting to nearly 25 000 species, most of which grow in forest habitat. Appendix III includes approximately 300 species that are already protected under national law in at least one CITES Party (the Party requesting the listing), and for which assistance is called for from other Parties in order to help control international trade.

The CITES Appendices are dominated by plant, and specifically forest, species. The Appendices include some 100 tree species, including several traded in the form of timber, for example Big-Leaf Mahogany, and as medicinal products, e.g. African Cherry *Prunus africana*. A far greater number of herbaceous species are covered by CITES, including medicinal plants such as American Ginseng *Panax quinquefolius* and plants used in horticulture such as bromeliads in the genus *Tillandsia*, as well as orchids. Roughly 5000 animal species are covered by CITES; among these are 1500 species of birds, including all but three of the over 300 species of parrots, all pachyderm (elephant and rhinoceros), primate and cat species, a variety of reptiles including all monitor lizards *Varanus* spp. and snakes such as pythons. The majority of these are forest dwelling during at least part of their life cycle.

TRADE IN CITES-LISTED FOREST SPECIES

Like the CITES Appendices, in terms of overall quantities, the international trade in CITES-listed species is dominated by the trade in plants used in horticulture. This includes a wide variety of orchids, bulbous species, such as snowdrops *Galanthus* spp. and cyclamen *Cyclamen* spp., carnivorous plants, such as pitcher plants, and succulent plants, such as succulent euphorbias. Hundreds of thousands of cyclamens and snowdrops, for example, are traded to supply gardeners in Europe and North America. While much of the mass market demand for some species, for example many orchids, is met by cultivation, large-scale wild collection continues for others, such as snowdrops. Difficulties with commercial cultivation, pricing and market structures, and specialist demand for rarer specimens ensure that the trade in wild-collected specimens of many species continues.

A smaller but still significant number of CITES-listed plant species are used medicinally, including as part of localized traditional medicine practices, more widespread traditional medicine, herbal products and pharmaceutical preparations. Over 200 CITES-listed species have been identified as being used for medicinal purposes and likely to be in trade. Some species, e.g. Costus Root *Saussurea costus* are important ingredients in traditional East Asian medicine, while others are used in the preparation of western pharmaceuticals (e.g. Himalayan Yew *Taxus wallichiana*) and phytomedicines (e.g. Cape Aloe *Aloe ferox*). Several species, American Ginseng, for example, are widely used in both East Asian and western herbal products. As with some horticultural species, some medicinal species are increasingly being produced via cultivation, although the majority continue to be harvested from the wild. In the case of species used in traditional medicine, there may be a preference for wild material, as is the case with ginseng.

Of the tree species covered by CITES, some were included in the Appendices in the mid-1970s when the Convention was agreed, and others were added more recently. The main CITES-listed tree product in trade is wood for use in construction, furniture manufacture or handicrafts, mahogany from the genus *Swietenia* being a prime example. However, products of several CITES-listed species are traded for their medicinal properties, e.g. the needles and bark of Himalayan Yew and the bark of African Cherry. Some CITES-listed trees are multipurpose: the wood of Red Sandalwood *Pterocarpus santalinus* is used for the manufacture of furniture and musical instruments, as a dye and medicinally, while the resinous agarwood, produced by Agarwood *Aquilaria malaccensis*, is used in medicine, fragrances and incense. The majority of CITES-listed tree products in international trade comes from wild specimens.

Animal species covered by CITES are traded both as live specimens, e.g. parrots and tortoises for the pet and collector trade, and as parts and derivatives. Products in trade range from elephant ivory carvings to reptile skin fashion items, hunting trophies, and curios. As is the case with plants, many CITES-listed animal species are also traded for medicinal purposes, including forest species such as Brown Bear *Ursus arctos* (gall bladder) and musk deer *Moschus* spp. (musk). A major share of the European and North American market for CITES-listed species used as pets is now met by captive breeding. In the case of reptiles, used live as pets and for their skins, some species are also being “ranched” in their countries of origin, with young taken from the wild and then reared in captivity.

APPLICATION OF CITES TO TIMBER SPECIES

Arguably the most controversial of the proposals to include plant species in the CITES Appendices have involved proposals to list commercially important timber species. Numerous such proposals were put forward during the 1990s and then either rejected or withdrawn. These included proposals for including in Appendix II commercially important timber species such as merbau *Intsia* spp., Ramin *Gonystylus bancanus*, *Entandrophragma* spp. and *Khaya* spp. (sometimes referred to as “African mahoganies”), African Blackwood *Dalbergia melanoxylon*, Mun Ebony *Diospyros mun* and Big-leaf Mahogany. Listing proposals accepted during this period primarily involved species traded for purposes other than timber, for example those traded for their medicinal and/or aromatic properties named above, *Afromosia Pericopsis elata* being one exception.

The vehemence with which CITES-listing proposals for timber species were debated reflected a variety of concerns on the part of range States and industry with regard to the impact of CITES listings on future trade and markets. Among the key arguments made were that the species being proposed for inclusion in Appendix II were not imminently threatened with extinction, that information was insufficient to demonstrate that CITES trade controls were needed, that national level management was sufficient to maintain trade within sustainable levels, and that timber trade issues were more appropriately addressed by inter-governmental organizations (IGOs) such as the International Tropical Timber Organization. The fact that CITES was more widely associated with the trade in endangered species and with trade bans than with sustainable management was also viewed with concern, with CITES timber listings perceived by some as likely to result in a decline in consumer demand for listed species. The objections to CITES timber listings appeared to be based more on general principles than on species-specific concerns – some major timber-producing countries actively opposed listing proposals for non-native species even when those proposals had majority support from range States.

Following the failure of its 1992 proposal to include Big-leaf Mahogany in Appendix II, Costa Rica included this species in Appendix III and the listing took effect in 1995. This required that CITES documentation, either export permits (for Costa Rica) or certificates of origin/re-export (for other countries), accompany all shipments and be inspected on export and import. Although implementation of the Appendix-III listing has been inconsistent, it nevertheless greatly increased the availability of information on the trade in this species. Several other countries, including Brazil and Bolivia, subsequently joined Costa Rica in listing their Big-leaf Mahogany populations in Appendix III. The Appendix-III listing therefore provided a tool to address the problem of illegal logging through increased document inspection on export and import. It also provided importing countries with the legal basis on which to act when there was a question about whether mahogany had been obtained and/or exported legally. Experience with implementing the Appendix-III listing demonstrated that the paperwork and inspection requirements required under CITES were compatible with those already in place—all range States already had regulations concerning mahogany exports—and did not pose a significant administrative burden.

To help address some of the concerns raised by producer countries and the industry, the CITES Parties created a CITES Timber Working Group (TWG), which included representatives from major producer and consumer countries, industry, IGOs and non-governmental organizations (NGOs). The TWG identified and successfully recommended changes to CITES permitting procedures to accommodate practices associated with the international timber trade (e.g. determining final destinations for timber shipments after they have left port) and to standardize descriptive terms used in CITES documents with those used by the industry. Interestingly, the Appendix-III listing for Big-leaf Mahogany was not viewed by participants in the group as having had a negative impact on mahogany markets.

The 12th meeting of the Conference of the Parties to CITES (CoP12, 2002, Santiago), represented something of a watershed for CITES with regard to the trade in timber species. Big-leaf Mahogany was included in Appendix II during this meeting, Appendix-II listing proposals for the species having failed at three previous meetings. Big-leaf Mahogany is the most commercially important timber species yet to be included in the Appendices by a vote of the Parties.

Experiences with the implementation of the Appendix-II listing will undoubtedly shape how the Parties and industry view the role of the Convention in helping control the international trade in timber in future. The role that CITES can continue to play in helping range State governments to prevent illegal exports, by increasing the risk of detection on import, seems unlikely to be controversial, especially given increasing world attention on illegal logging. More likely to be controversial will be the requirement that range States ensure that exports are not detrimental to species' survival. Questions concerning what represents sustainable production such that the species is maintained "throughout its range at a level consistent with its role in the ecosystems in which it occurs" are being raised in considering implementation of the Appendix-II listing. CITES is therefore likely to prompt greater consideration of the impacts of timber extraction for export on sustainable forest management than the traditional forestry constituency. This could have the catalytic effect of bringing forestry experts into the mainstream of CITES discussions and processes.

Although the inclusion of ramin in Appendix III in 2001 was the result of the action of a single Party, Indonesia, rather than a vote of the Parties, experiences with implementing the listing shaped the future of CITES with respect to the trade in timbers. Unlike Big-leaf Mahogany, the international trade in ramin involves a significant quantity of semi-processed and processed items, and therefore poses different challenges for trade control and monitoring. The willingness of the Parties to apply trade controls to large volumes of semi-processed and finished wood products was testified to when they approved inclusion of ramin species in Appendix II, at the 13th meeting of the Conference of the Parties to CITES (CoP13, 2004, Bangkok) by consensus.

APPLICATION OF CITES TO NON-TIMBER FOREST SPECIES

Although generally less controversial (the trade in African Elephant *Loxodonta africana* products notwithstanding), CITES implementation issues for trade in non-timber products are not dissimilar to those for other forest products. All CITES Parties are required to ensure that exports and imports of CITES-listed species are in accordance with the rules of the Convention, which require in the case of Appendix-II listed species that exports are maintained within levels that are not detrimental to the survival of the species in the wild, and that specimens in trade are legally obtained and exported.

Implementation of the CITES “non-detriment finding” requirement has been inconsistent, with trade reviews identifying numerous CITES Appendix II species for which quantities in trade appear to be unsustainable. A Review of Significant Trade (“significant trade review”) process was developed in the late 1980s and subsequently modified to: identify species of concern; seek additional information from exporting range States about trade in those species; and, if necessary, make recommendations aimed at ensuring trade is maintained within sustainable levels. The process provides for further actions such as suspending imports of the species in question if recommendations are not addressed by range States.

Enforcement of CITES trade controls continues to prove a challenge in both developed and developing countries. Demand for many Appendix-I listed species continues despite bans on commercial international trade, prompting the smuggling of rare specimens ranging from Tiger bone to Asian slipper orchids *Paphiopedilum* spp. Among the main enforcement problems identified by the CITES Secretariat are inadequate border controls and control of shipments in transit, inadequate control of shipments via post and courier, and failure to establish penalties for illegal exports or imports sufficient to provide an effective deterrent to would-be smugglers.

CITES IMPACTS ON THE TRADE IN FOREST SPECIES AND FOREST MANAGEMENT

Several studies have been undertaken to evaluate the impacts of CITES on the conservation status of CITES-listed species. Their results have been inconclusive, reflecting in large part the fact that CITES does not operate in isolation of either other regulatory processes (local, national and international) or of changes in markets for wildlife products. The outcomes of individual or multiple conservation actions and associated market conditions are also often poorly documented. It is therefore often difficult to say whether a specific change in the conditions for a particular species is the result of CITES decision-making or other actions undertaken within range or consumer States. Nevertheless, it is possible to draw some general conclusions regarding the impacts of CITES during its 30-year history.

CITES is generally considered as having contributed to species conservation and therefore sustainable forest management. In some cases, this has included a ban on all international commercial trade of a species through its inclusion in Appendix I. For some species, a combination of CITES and national harvest and trade controls have allowed Appendix I species to recover to the point that they have been transferred to Appendix II with a resumption of exports. In other cases, however, species have not recovered or recovered only very slowly. More often, however, species have been maintained in Appendix II, with CITES processes prompting actions to bring trade within sustainable levels, often through a system of export quotas. In some cases decisions have been made to suspend trade in Appendix-II species either by exporting range States, or, in cases where CITES processes have failed to encourage what is considered a sufficient response to concerns by range States, through CITES-recommended import suspensions. CITES attention to conservation concerns has often been accompanied by an increased investment in research into the status and management of the species in trade, sometimes through support related to the significant trade review.

Declines in trade of one species resulting from increased scarcity and/or trade controls has in some cases resulted in increased trade in other species meeting a similar demand. In other cases, demand has been met through more intensive production through captive breeding, artificial propagation or cultivation, e.g. of many orchid species. Increased *ex situ* production has also been prompted by the demand for specific characteristics. In the case of parrots, for example, captive-bred birds often make better pets than do wild-caught birds. Such *ex situ* production often takes place in countries other than the country of origin for wild species, which is often more likely to reflect factors such as the availability of relevant technology, industry structures and access to markets rather than CITES controls. The practice of “ranching” is increasing for some species, e.g. some reptiles, which relies on wild harvest of juveniles. More intensive production systems for wild-harvested bulbs are also being established. As these generally take place within range States and rely on maintaining wild populations capable of withstanding some level of harvest, they are more likely to contribute to conservation and rural incomes in range States than *ex situ* programmes.

CONCLUSIONS

CITES has played an important role in bringing attention to and controlling the international trade in numerous species, both plant and animal, and thereby has contributed to the efforts to bring about sustainable management of forest biodiversity. It has also provided a platform for debating issues surrounding the sustainable use in wildlife and the role that this can play in conservation and rural development.

A key factor preventing CITES from playing its role in supporting sustainable forest management to the full has been the impression given by its name that it only addresses the trade in endangered species, with its primary aim being to prevent that trade. The role of the Convention in helping national governments to maintain the trade in forest and other wildlife products within sustainable levels is all too frequently overlooked.

A second factor reducing the application of CITES to achieving wider sustainable development aims is the tendency for CITES-implementing agencies to operate in isolation from other government departments and inter-governmental organizations concerned with the trade in biodiversity resources. This includes forestry departments and institutions such as FAO. The recent agreement of ITTO to co-operate in CITES implementation for Big-leaf Mahogany is a welcome sign of better collaboration. There has thus far been relatively little engagement with the Convention on Biological Diversity (CBD), although the agreement of the Global Strategy for Plant Conservation holds promise in this regard. There would appear to be other areas for CITES-CBD synergies. Through its capacity for trade monitoring and trade controls, CITES could, for example, be an important tool for delivering on CBD outcomes related to sustainable use, control of invasive species, and benefit sharing in the context of forest resource use. Given the participatory nature of its decision-making processes, CITES trade measures aimed at biodiversity conservation also seem relatively unlikely to be subject to challenges within the World Trade Organization.

Within the international environmental arena, CITES is widely perceived to be a mechanism that responds to crises in the conservation status of species brought about by unsustainable harvest for international trade, so that by the time the Convention has been brought into play, opportunities for sustainable exploitation of the species concerned have been severely curtailed or foreclosed altogether. How effectively CITES will be able to move beyond this to playing a proactive role in sustainable management of species before such crises arise, will depend to a large extent on overcoming existing institutional barriers within and among countries. This will require an increase in communication, information exchange, understanding and respect for the mutually compatible goals and mechanisms of those charged with sustainable forest management and conservation of biological diversity.

Regardless of its relationship with other processes or agreements, CITES will remain first and foremost a convention dedicated to biodiversity conservation, and specifically, to ensuring that international trade in wild species does not threaten their survival. Although the approaches used are likely to evolve, increasingly involving a mix of incentives and regulatory approaches, this central objective will be maintained. For many species, especially those not considered of sufficient commercial importance to attract major interest from other institutions, CITES processes will continue to provide an important mechanism for prompting conservation action, putting the Convention in a position where it can contribute to sustainable forest management.

INTRODUCTION

Forests, and forest products, are fundamental to the health and well-being of the vast majority of the world's human population. They play a critical role in the livelihoods of local communities in and around forests and are a source of food, medicines, construction materials, fuel, ornamentation and even companionship. Technological innovation, and specifically improvements in the global transport infrastructure, combined with human migration and higher standards of living have served to increase the use and availability of forest products around the world. However, this use is not without a cost – the populations of many wild species have declined as a result of harvest for consumption at local and national levels as well as for international trade, some to the point that entire species are threatened with extinction. In response to concerns about over-exploitation of wildlife from forests and other biomes, IUCN – The World Conservation Union worked with national governments to draft an international agreement aimed specifically at reducing the threat posed to wild species by international trade. The resulting Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was opened for signature in 1973 and entered into force in 1975. The initial list of species covered by CITES included forest species familiar throughout the world such as Tigers as well as lesser-known forest species such as the South American conifer species *Alerce Fitzroya cupressoides*.

Much has changed in the more than 30 years since CITES entered into force. Awareness of the importance of forests to human welfare and the need to manage forest resources sustainably has grown throughout the world. National governments and intergovernmental organizations such as the UN Food and Agriculture Organization (FAO) are increasingly seeking to develop programmes for sustainable forest management to secure these resources for future generations. The Convention on Biological Diversity (CBD), adopted in 1992, is similarly approaching the use of forest resources in terms of promoting sustainability, while continuing to place an emphasis on species (biodiversity) conservation. At the same time, the World Trade Organization (WTO) is promoting increased trade liberalization, including through a reduction in non-tariff barriers to trade in goods and services, including forest products.

This report, which was commissioned by FAO, explores the role of CITES in the changing global environments—both natural and policy. It begins with an explanation of the basic provisions of CITES followed by a review of government experiences with including forest species within the Convention, and the reactions to such listings. A summary of the main types of forest species covered by CITES is provided with information on trade volumes for key groups. Implementation of the Convention, including problems of non-compliance, is reviewed, and the wider impact on species conservation, producers and sustainable forest management considered, including through examples provided in a series of case studies. The report concludes with a review of current thinking regarding CITES as it relates to the WTO, and an assessment of likely future directions for CITES as these relate to the trade in forest species and sustainable forest management. The report is up to date as far as the 13th meeting of the Conference of the Parties to CITES (CoP13, 2004, Bangkok).

Trade in forest products extends well beyond the obvious sphere of timber extraction, and involves a wide range of animal and plant species that make use of forest habitats for all or part of their lifecycles. Many species are forest-dependent or forest-dwelling for only part of their life cycle or are found in both forest and non-forest habitats, e.g. elephants. Such species are considered forest species in the present report. Reference is also made to aquatic and semi-aquatic species that are dependent on the presence of forests for maintaining habitat quality, e.g. some species of freshwater turtles. Restrictions on the length of this report have prevented covering any issue in depth. Where possible, therefore, reference is made to publications covering some of these subjects in more detail.

1. CITES BASICS—A GUIDE TO THE CONVENTION

CITES is an international agreement between governments, to ensure that international trade in specimens of wild animals and plants does not threaten species survival. CITES is a species-based, rather than a biome or commodity-based convention, i.e. its provisions are applied to individual species, such as Big-leaf Mahogany *Swietenia macrophylla*, rather than to timber or tropical forest as a whole. As discussed in more detail in the section on CITES perceptions, the majority of species currently covered by CITES are either forest dependent and/or forest dwelling during at least some part of their life cycle. This section provides background information on CITES, as a precursor to following sections dealing with the more specific application of the Convention to trade in forest products.

ESTABLISHMENT AND PURPOSE OF CITES

Because the trade in wild animals and plants often crosses borders between countries, the effort to regulate it requires international co-operation to safeguard certain species from over-exploitation. CITES was conceived with such co-operation in mind. The Convention was drafted as a result of a resolution adopted in 1963 at a meeting of members of IUCN (The World Conservation Union). The text of the Convention was finally agreed at a meeting of representatives of 80 countries in Washington D.C., USA, on 3 March 1973, and CITES entered into force on 1 July 1975. Today, it accords varying degrees of protection to more than 30 000 species of animals and plants, whether traded as live specimens or processed goods.

MEMBERSHIP OF CITES

Member States of CITES are known as Parties. When the government of a State decides that it will be bound by the provisions of CITES, it can adhere to the Convention by making a formal declaration to this effect to the Depository Government, which is the Government of Switzerland. The Convention then enters into force for the State concerned 90 days later. There are over 160 CITES and, as CITES continues to grow, its potential for success becomes greater, as fewer countries can trade free of the checks which CITES requires of its Parties.

HOW CITES WORKS: THE FUNDAMENTALS

CITES works by subjecting international trade in specimens of selected species to certain controls. These require that all imports, exports (and re-exports) of species covered by the Convention be authorized through a system of permits. Different permitting requirements apply, according to a species' category of protection.

Categories of species protection: the CITES Appendices

Any type of wild plant or animal is eligible for listing under CITES. CITES groups species within its remit in one of three lists, or Appendices, according to the level of protection conferred. A species' status in the Appendices is determined according to a set of detailed criteria, which address biological status and the impact that international trade may have upon the species in the wild. Some groups of species are included in their entirety—for example all primates, cacti and corals—while in other cases, it is only a subspecies, or a geographically separate population of a species, that is listed. The Appendices are subject to continual review and amendment by the Parties (see *Administration and Evolution of CITES* below).

Appendix I comprises species that are the most endangered among CITES-listed animals and plants. They are considered threatened with extinction and CITES prohibits their international commercial trade. Only a very limited non-commercial trade in Appendix-I species can take place.

Prior to authorization of trade in Appendix I specimens, the following conditions must be satisfied:

- trade will not be detrimental to the survival of the species in the wild;
- specimens for trade were not obtained illegally;
- a living specimen will be transported and ultimately cared for with minimum risk of damage to its health;
- the specimen will not be used for primarily commercial purposes;
- specimens for re-export were imported in accordance with the provisions of CITES.

Appendix II lists species that are not necessarily now threatened with extinction but which may become so unless trade is closely controlled. It also includes species (sometimes known as “look-alike species”) for which such threat is not predicted, but which so closely resemble more threatened CITES-listed animals or plants that they need regulation in order to assist trade control measures. Prior to authorization of trade in Appendix II specimens, the following conditions must be satisfied:

- trade will not be detrimental to the survival of the species in the wild or its role in the ecosystems in which it occurs;
- specimens for trade were not obtained illegally;
- a living specimen will be transported with minimum risk of damage to its health;
- specimens for re-export were imported in accordance with the provisions of CITES.

Appendix III is reserved for species that are already protected under national law in at least one CITES Party, but for which assistance is called for from other Parties, in order to help control trade.

There are exemptions from the principal regulations relating to each Appendix. These usually fall into one of the following categories:

- plants which have been artificially propagated or animals from authorized captive-breeding sources (Appendix-I specimens in this category are treated as Appendix-II specimens);
- plants or animals for scientific research;
- specimens which were acquired before CITES provisions applied to them;
- specimens which are personal or household effects; and
- plants or animals forming part of a travelling collection or exhibition.

There are special rules in these cases and a permit or certificate will generally still be required.

Further, any Party to CITES may, at the time that a species is included in the CITES Appendices, make a unilateral statement that it will not be bound by the provisions of the Convention relating to trade in that species. These statements are called **reservations**.

Making CITES work: responsibilities of CITES Parties

The effectiveness of CITES is dependent upon the effectiveness of its constituent member countries in implementing the Convention. On joining CITES, a country or territory should undertake certain responsibilities, which are of prime importance for the proper functioning of the Convention. Although CITES is legally binding on Parties, it is not a self-executing treaty. In other words, the Convention provides the framework for operation, but it is incumbent on each Party to ensure that its own legislation and administrative structures are sufficient to implement CITES at the national level. The basic responsibilities of CITES Parties are as follows:

- *Regulating trade according to the CITES Appendices (permitting requirements)*
Trade in CITES-listed species is regulated through a system of permits and certificates. The principal permitting requirements that apply for each Appendix are described below.

Appendix-I specimens

An export permit (or re-export certificate, which typically takes the same form as an export permit) and an import permit are necessary in advance of trade. Shipment by an exporting Party is only allowed once an import permit has been granted by the importing Party.

Appendix-II specimens

Specimens must be accompanied by an export permit (or re-export certificate): no import permit is necessary.

Appendix-III specimens

A Party which has included a species in Appendix III is required to authorize and issue an export permit to accompany a specimen of that species in international trade. Trade in the species from all other Parties requires a certificate of origin or re-export certificate, as appropriate.

CITES Parties may accept documentation equivalent to the permits and certificates described above from non-Parties with which they enter into trade.

- *Designation of national authorities for CITES implementation*
Of initial importance for a new Party, and of fundamental importance afterwards, is the designation of authorities competent to administer the requirements of CITES. These authorities are usually pre-existing ministries or institutions, for example wildlife departments or museums, which take on the added specialized tasks associated with CITES membership. According to the terms of CITES, at least one **Management Authority** and at least one **Scientific Authority** must be designated within a Party and the CITES Secretariat must be informed of the names and addresses of these agencies.

Management Authorities deal with the day-to-day administration of CITES business and are points of contact for CITES affairs within a Party. One of the most important jobs of Management Authorities is to grant or deny permits for trade in CITES-listed specimens, working in partnership with the Scientific Authorities, which monitor the issuance of permits and the trade itself. A Scientific Authority has a duty to inform its Management Authority if trade is thought to be putting the survival of any species at risk. In an attempt to minimize forgery of documents, a Management Authority is obliged, upon request, to provide another Party or the Secretariat with sample stamps, seals or other devices that it uses to authenticate permits and certificates

- *Provision of appropriate legislation and enforcement capacity*
CITES can only be an effective tool if Parties have the means and the will to enforce it. It is vital that the regulatory work of the Management and Scientific Authorities is backed up with the support of the law and of the penal system. Without such enforcement, CITES could not be an effective tool and would amount to no more than so many words. It is therefore a responsibility of the Parties to provide appropriate legislation to implement CITES and the means to enforce accompanying penalties to punish anyone who breaks such laws. For example, a Party should have in place the legal means to apprehend a trader attempting to import a specimen in contravention of CITES and to confiscate the specimen or to return it to the country of export. Likewise, a Party is responsible for making sure that enforcement staff have the legal right to intercept any trader trying to export CITES specimens without permission and that the courts have the power to mete out appropriate punishments. Enforcement is typically a joint responsibility of government agencies such as the police, Customs and wildlife management departments within a Party.

Other principal duties of CITES Parties include:

- the maintenance and submission of trade records and reports
- provision of finances
- attendance at meetings of the Conference of the Parties
- the proper care of live specimens in custody or transport

ADMINISTRATION AND EVOLUTION OF CITES

The text of the Convention provides a basic framework for the implementation of CITES. Regulating international trade in wildlife and wildlife products is a complex and ever-changing exercise, however, and guidance in interpreting the Convention and improving its effectiveness is regularly required. Such review, as well as routine administration of the Convention, is provided by several bodies within CITES, but it is only on the authority of the Parties that the Convention evolves. The Parties to CITES are collectively referred to as the **Conference of the Parties**. Meetings of the Conference of the Parties (CoPs) are held every three years. They provide the occasion for the Parties to consider and vote on proposals to amend the Appendices and to review the effectiveness of the Convention. Consideration of discussion documents from the Parties, permanent committees or other working groups are also an integral part of CoPs and some documents adopted by the Parties take the form of formal recommendations, known as **Resolutions** or **Decisions**. These provide guidance in interpreting the Convention and improving its effectiveness. While Resolutions are intended to be of a more permanent nature, guiding implementation of the Convention over periods of many years, Decisions are intended as highly specific, short-term tools.

CITES is provided with a **Secretariat** administered by the United Nations Environment Programme and located in Geneva, Switzerland. It has a pivotal role, fundamental to the Convention and its chief functions include playing a co-ordinating and advisory role in servicing the Convention. The

Secretariat acts as the repository for information submitted by the Parties and equally as a distribution hub. It arranges regular meetings of the Parties to CITES and of the permanent committees under CITES—the **Standing Committee, Animals Committee, Plants Committee** and **Nomenclature Committee**. The Standing Committee is the senior permanent committee: its key roles include providing policy guidance to the Secretariat and in overseeing its budget, while the other permanent committees provide specialized knowledge in their areas of expertise.

It is not possible in a document of this size to discuss the structure of CITES and CITES-related decision processes in detail. Additional information can be found on the CITES website (www.CITES.org) and in *The Evolution of CITES* (Wjinstekers, 2005), available as a pdf file on the CITES website as well as in hard copy from the CITES Secretariat.

CITES and national legislation

One of the most important aspects of CITES with respect to the trade in forest products lies in its effect on national legislation with regard to identifying and responding to illegal trade. Surprisingly, while most countries have legislation in place to control the export of native wildlife, including timber, many if not most countries lack national legislation allowing the seizure of forest products of suspected or even known illegal origin. As a result, once an illegal shipment has successfully been moved beyond the borders of the originating country, other national governments are generally powerless to react. This is not the case with regard to CITES-listed species, however. The vast majority of CITES Parties have legislation in place that requires imports of CITES-listed species to be accompanied by valid CITES documents. Shipments found to be lacking such documents, or for which the validity of such documents is in question, can be seized and investigations undertaken to confirm legality in co-operation with the country of origin. The CITES Secretariat is equipped to assist in this regard. If the goods are found to have been exported or re-exported illegally, then mechanisms are in place within most CITES Parties to prosecute the offending trader and dispose of the goods seized, including through repatriation.

The potential of CITES as a mechanism to respond to current levels of illegal logging to supply export markets cannot be overstated. Even if all the world's governments were to agree tomorrow that illegal imports should be controlled, it would take many years before the required changes in the national legislation of individual countries would be in place. By contrast, Parties seeking assistance in controlling illegal exports of native timber can readily establish the legal grounds for such assistance by including native species in Appendix III and thereby trigger application of CITES implementing legislation. This was the decision taken by Indonesia with respect to ramin *Gonystylus* spp., for example. In cases where there is also concern that exports, whether illegal or legal, need to be more closely monitored and controlled in order that they are maintained within sustainable levels, the Parties can collectively choose to include individual species or genera in Appendix II.

2. EXPERIENCES WITH PROPOSALS TO LIST SPECIES IN THE CITES APPENDICES

The majority of species listed in the CITES Appendices were included prior to the Convention coming into force in 1975. This includes the largest taxonomic group listed in the Appendices, orchids Orchidaceae. Eleven countries submitted proposals to amend the CITES Appendices at the 1st meeting of the Conference of the Parties (CoP1, 1976, Bern) based on Article XV of the Convention, which establishes the rules for amending the Appendices. At that same meeting, the Parties recognized the need for more detailed criteria for amending the Appendices, adopting *Resolution Conf. 1.1*, which established the “Bern Criteria” as these criteria became known. The Bern Criteria provided relatively general guidance for interpreting Article XV, and were replaced in 1994 with a more quantitative approach to considering inclusion of species in the Appendices, as specified in *Resolution Conf. 9.24* (Fort Lauderdale, 1994). The 1994 criteria also set out the format for the supporting documentation meant to accompany CITES amendment proposals (supporting statement). A process to review the 1994 criteria was established at the time of their adoption and new criteria were adopted at CoP13. Among other things, these add decrease in habitat area as a criterion to include species in Appendix I and add the need for regulation to avoid heightened endangerment as a criterion to include species in Appendix II (*Resolution Conf. 9.24 (Rev. CoP13)*).

The Parties have also established a process aimed at ensuring consultation with range States prior to the submission of CITES amendment proposals. *Resolution Conf. 8.21* recommends that countries considering CITES amendment proposals consult with all range States prior to their submission, and include in the supporting statements of such proposals opinions received from range States. In the case that a Party does not intend to undertake such a consultation, *Resolution Conf. 8.21* recommends that they provide their proposal to the CITES Secretariat a minimum of 330 days in advance of the meeting of the Conference of the Parties, in order that the Secretariat can undertake the consultation.

INCLUSION OF SPECIES IN APPENDIX II

Most of the CITES-listed forest species in trade are included in CITES Appendix II: a variety of proposals have been put forward, including for the listing of bromeliads in the genus *Tillandsia* (1992, Austria and Germany, accepted), Indian Gentian *Gentiana kurroo* (1994, India, withdrawn), Jatamansi *Nardostachys grandiflora* (1997, India, accepted), Asian Ginseng *Panax ginseng* (2000, Russian Federation, accepted following amendment); Lignum Vitae *Guaiacum* spp. (2002, Germany, accepted); ramin *Gonystylus* spp. (Indonesia, accepted).

Inclusion of timber species in Appendix II

Arguably the most controversial of the proposals to include plant species in CITES Appendix II have involved those to list commercially important timber species. Listing proposals for tree species have met with varying success, as shown in **Table 1**.

A wide variety of proposals for tree species was put forward at the eighth Conference of the Parties (CoP8, 1992, Kyoto). Of these, only two were accepted without amendment: Commoner Lignum-vitae *Guaiacum officinale* and Afrormosia *Pericopsis elata*, the latter subject to debate and mixed support from range States, but passed with a vote of 53 to 4 (Anon., 1992). Several proposals were withdrawn before debate, each for different reasons. In the case of Quebracho *Schinopsis* spp., the bark of which is used in leather tanning, Argentina, the proponent and a range State, stated that it was adopting internal measures to manage the species sustainably. Denmark and the Netherlands withdrew proposals for merbau *Intsia* spp. and Ramin *Gonystylus bancanus* owing to strong opposition from many range States. Costa Rica cited internal political problems as it announced its withdrawal of the listing proposal for *Swietenia* spp., adding that this did not lessen their support for an Appendix-II listing. Following debate, the USA narrowed its *Swietenia* proposal to include only *S. humilis* (i.e., excluding *S. macrophylla*), which was accepted (Anon., 1992).

Table 1 CITES Appendix-II listing proposals for tree species (1992-2007)

Year/taxa	Proponent countries	Result
1992		
Ramin <i>Gonystylus bancanus</i>	Denmark and the Netherlands	Withdrawn before debate
Commoner Lignum-vitae <i>Guaiacum officinale</i>	USA	Accepted
Merbau <i>Intsia</i> spp.	Denmark and the Netherlands	Withdrawn before debate
Afromosia <i>Pericopsis elata</i>	Denmark and the UK	Accepted
Quebracho <i>Schinopsis</i> spp.	Argentina	Withdrawn before debate
Neotropical mahoganies <i>Swietenia</i> spp.	Costa Rica	Withdrawn before debate
Neotropical mahoganies <i>Swietenia</i> spp.	USA	Amended to include only Honduras Mahogany <i>S. humilis</i> , then accepted.
1994		
Agarwood <i>Aquilaria malaccensis</i>	India	Accepted
African Blackwood/Mpingo <i>Dalbergia melanoxylon</i>	Kenya, Germany	Withdrawn
Mun Ebony <i>Diospyros mun</i>	Germany	Withdrawn
African mahogany <i>Entandrophragma</i> spp.	Germany	Withdrawn
African mahogany <i>Khaya</i> spp.	Germany	Withdrawn
African Cherry <i>Prunus africana</i>	Kenya	Accepted
Red Sandalwood <i>Pterocarpus santalinus</i>	India	Accepted
Big-leaf Mahogany <i>Swietenia macrophylla</i>	the Netherlands	Rejected
Himalayan Yew <i>Taxus wallichiana</i>	India	Accepted, annotated to exclude chemical derivatives and finished pharmaceutical products.
1997		
Big-leaf Mahogany <i>Swietenia macrophylla</i>	Bolivia, USA	Rejected
2000		
Happy Tree <i>Camptotheca acuminata</i>	China	Withdrawn
2002		
Lignum-vitae <i>Guaiacum</i> spp.	Germany	Accepted
Big-leaf Mahogany <i>Swietenia macrophylla</i>	Guatemala, Nicaragua	Accepted
2004		
Asian yews <i>Taxus chinensis</i> , <i>T. cuspidata</i> , <i>T. fuana</i> , <i>T. sumatrana</i>	China, USA	Accepted, as amended to exclude artificially propagated horticultural specimens.
agarwood-producing species <i>Aquilaria</i> spp. and <i>Gyrinops</i> spp.	Indonesia	Accepted
ramin <i>Gonystylus</i> spp.	Indonesia	Accepted, annotated to exclude seeds, spores and pollen; seedling or tissue cultures obtained <i>in vitro</i> ; and cut flowers of artificially propagated plants.
2007		
Brazil Wood <i>Caesalpinia echinata</i>	Brazil	Accepted
Neotropical cedars <i>Cedrela</i> spp.	Germany*	Withdrawn
Black Rosewood <i>Dalbergia granadillo</i> and <i>D. retusa</i>	Germany*	Withdrawn
Honduran Rosewood <i>Dalbergia stevensonii</i>	Germany*	Withdrawn

*Acting on behalf of the Member States of the European Union.

The broader issue of CITES and timber was also addressed during this meeting. The representative from the International Tropical Timber Organization (ITTO) made a statement drawing attention to the ITTO goal that all tropical timber in trade would be from sustainably managed areas by 2000, and calling for increased co-operation between itself and CITES. Australia, Denmark and The Netherlands made statements supporting the concept of listing tropical timbers in the Appendices as well as closer co-operation with ITTO. Malaysia expressed reservations about timber listings, but also supported the idea of ITTO co-operation (Anon., 1992).

Despite most proposals to list timber species at CoP8 having faced stiff opposition, even more such proposals were put forward at the ninth meeting of the Conference of the Parties in 1994 (CoP9, Fort Lauderdale). Germany submitted several proposals for African species: *Entandrophragma* spp. and *Khaya* spp. (sometimes referred to as "African mahoganies"), African Blackwood *Dalbergia melanoxylon* and Mun Ebony *Diospyros mun*. Germany subsequently withdrew each of these proposals: the proposal for the African mahoganies was withdrawn owing to range State opposition and calls for greater co-operation in management; for Mun Ebony owing to insufficient information being available; and for African Blackwood in response to a range State meeting where it was agreed to investigate the trade and possibly produce a proposal for the following CITES meeting. The proposal to list Big-leaf Mahogany in Appendix II fared somewhat better but was nevertheless defeated, falling six votes short of the necessary two-thirds majority required for adoption (Kelso, 1995).

In contrast to the proposals for timber species, all four proposals put forward to CoP9 for tree species used for their medicinal and/or aromatic properties were accepted. Although the proposal for the agarwood-producing species Agarwood *Aquilaria malaccensis* faced some range State opposition, it was nevertheless accepted by the necessary two-thirds' majority of the Parties. The proposals for African Cherry *Prunus africana* and Himalayan Yew *Taxus wallichiana* faced no such opposition (Kelso, 1995).

Although not the subject of a listing proposal, Ramin *Gonystylus bancanus* was once again the topic of discussion, with the Netherlands putting forward a recommendation for all range States to co-operate with each other and importing countries to develop measures to ensure that the trade was sustainable, and to put forward an Appendix-II listing proposal to the 10th meeting of the Conference of the Parties (CoP10, 1997, Harare). This was met by very strong objections from Malaysia, with more than a dozen other countries also voicing concern. The proposal from the Netherlands was put to a vote, but did not receive a single vote of support, nor was the Netherlands successful in re-opening debate at a later stage (Kelso, 1995).

During CoP10 only one listing proposal was put forward for a tree species, with the third attempt to include Big-leaf Mahogany in Appendix II failing for a third time, once again by a very narrow margin. There was also a single proposal put forward at the 11th meeting of the Conference of the Parties (CoP11, 2000, Gigiri), this time from China for Happy Tree *Camptotheca acuminata*, a species valued primarily for its medicinal qualities, which was subsequently withdrawn. At the 12th meeting of the Conference of the Parties (CoP12, 2002, Santiago) two timber proposals were submitted, one for inclusion of Lignum vitae *Guaiacum* spp. in Appendix II and the other, yet again, for inclusion of Big-leaf Mahogany in Appendix II. Both were accepted. The listing of Big-leaf Mahogany, the most widely traded timber species yet to be included in the Appendices, was viewed by many as a watershed in the history of CITES and timber.

At CoP13, Appendix II proposals for tree species related to yews, agarwood-producing species and ramin. Proposals to include Asian yews *Taxus chinensis*, *T. cuspidata*, *T. fuana* and *T. sumatrana*, and ramin in Appendix II were adopted by consensus and a proposal to include agarwood-producing species *Gyrinops* spp. and remaining *Aquilaria* spp. in Appendix II was adopted following a vote (71 in favour, nine against and 23 abstentions).

Timber proposals were again the subject of controversy at CoP14. While a proposal by Brazil to include the Brazilian endemic Brazil Wood *Caesalpinia echinata* in Appendix II was adopted by consensus, proposals submitted by Germany, on behalf of the Member States of the European Union, to include a number of Latin American tree species (the entire genus *Cedrela* and three species of rosewood *Dalbergia*) in Appendix II met with strong opposition from range States, who questioned the merits of the proposals and believed that they had been insufficiently consulted in

their preparation. In the face of this opposition, Germany withdrew these proposals. In their stead an action plan was adopted in which Parties undertook to continue to collect knowledge on *Cedrela odorata* and the three *Dalbergia* species, so that the Plants Committee could prepare recommendations regarding these species for CoP15.

Medicinal plants

The experience with listing proposals for tree species above illustrates a generally greater acceptance of, or perhaps, more accurately, lack of opposition to, the use of CITES for regulating the trade in species used for medicinal purposes. Most of the medicinal plant proposals that have failed in the last 15 years have done so owing to insufficient information and/or a belief that international trade was not a significant concern, not a wider response against CITES-listing for medicinal species *per se*. In addition, most medicinal plant proposals were put forward by a range State, which tends to catalyse wider support from the Parties. Opposition by one or more range States can have significant impacts, however. In the case of Asian Ginseng, for example, the proposal was amended to exclude all but the Russian population following opposition from the Republic of Korea, which cultivates this species in large quantities and was concerned about the administrative burden associated with the issuance of CITES export permits.

While not a forest species, it is nevertheless informative to consider the response to the proposal to list the Kalahari Desert medicinal plant species Devil's Claw *Harpagophytum* spp. in Appendix II, submitted by Germany at CoP11. This proposal sparked considerable opposition from the Centre for Research Information Action in Africa (CRIAA SA-DC), an association of development workers that works with the main group harvesting the species in Namibia, the San. CRIAA SA-DC organized a petition against the listing claiming it would negatively impact on the livelihoods of the San by reducing trade and increasing a shift to cultivation. This is the first time that such a public debate concerning livelihood impacts emerged with regard to the CITES listing of a non-timber plant species; previously, such arguments were largely limited to debates concerning the trade in African Elephant *Loxodonta africana*.

During discussions of the proposal at CoP11, range States voiced appreciation for Germany's efforts, but stated that they felt that the listing proposal was premature. In response, Germany withdrew the proposal and put forward a draft decision calling for compilation of additional information regarding the harvest and trade of this species to be reviewed by the Plants Committee, who would prepare a report for CoP12. This was supported by the range States (*CoP11 Com.I 11.11*, 14 April 2000). The Plants Committee report was considered during CoP12, and additional actions agreed, including: collection of updated information on the management of the species within range States; negotiation by range and importing States with the Devil's Claw industry to obtain support for management programmes that promoted development within communities harvesting the resource; and exploration by range States of how processes within other treaties (presumably the CBD), could provide support for "sustainable resource use and fair trade" (CITES *Decisions 12.63–12.65*). A variety of other processes have also evolved concurrent with the CITES attention on this species, including investment by the Government of Germany in projects within Namibia, a review of the potential application of certification to this species by FAO, a review by Fauna and Flora International of livelihood issues associated with trade, and a series of stakeholder workshops aimed at producing an action plan addressing conservation and development concerns. It is arguable that without the CITES proposal, there would have been far less attention to the species, and more specifically, the plight of the San people dependent on collecting it as a source of income. Efforts to cultivate the species were already underway in South Africa, a common commercialization path for many medicinal plant species destined for western markets; however, unlike for many other species, in this case, international attention has been focused on the possible impacts of such commercialization on rural collectors.

At CoP13, the genus *Hoodia* was included in Appendix II at the request of the main trading range States, Botswana, Namibia and South Africa. The importance of trade in the species to rural livelihoods was noted and a special annotation to the listing proposed and accepted that exempted from CITES controls specimens labelled as having been produced in accordance with the proponent countries' national controls on harvesting and production. Concern was expressed at the time that the process for implementing the labelling provision was unclear and might result in subsequent confusion on the part of importing Parties.

Inclusion in Appendix I

Most forest (plant) species included in Appendix I were transferred to this Appendix from Appendix II, primarily rare species traded for horticultural purposes, e.g. 17 *Aloe* species endemic to Madagascar (1994, Madagascar and Switzerland), and orchids such as *Dendrobium cruentum* (1994, Thailand). Listing in Appendix II is not the “slippery slope” to Appendix I as it is often painted, however; relatively few species have been transferred to Appendix I in the past decade, viewed in part as a demonstration of the successful implementation of Appendix-II listings and of the Review of Significant Trade (“significant trade review”) process (see text on non-detriment findings in section on experiences with CITES implementation and challenges with non-compliance).

Populations of only two timber species have been transferred from Appendix II to Appendix I: the coastal Chilean population of *Alerce Fitzroya cupressoides* which was transferred back to Appendix I in 1987, albeit with a reservation by Chile (withdrawn in 2004), having been transferred from Appendix I to Appendix II in 1983; and the Argentinian population of Monkey Puzzle *Araucaria araucana*, which was transferred to this Appendix from Appendix II in 2000 at the request of Argentina. The population was considered to meet the criteria for Appendix-I listing, and the listing deemed necessary to regulate the trade in seeds better (the trade in which is generally not covered under Appendix II) and to unify the trade status in both range States (Argentina and Chile) (CoP11 Prop. 11.55). The listing of Brazilian Rosewood *Dalbergia nigra* in Appendix I in 1992 at the request of Brazil represents the only direct listing of a tree species in this Appendix since the Appendices were first agreed.

Appendix I transfer proposals for plant species are generally not the subject of much controversy, in contrast to listing proposals for some animal species, most notably African Elephant the debate surrounding which has been widely covered and so will not be covered here (e.g. see Mofson, 2000). Appendix-I listings have also been controversial for some parrot species, e.g. Goffin’s Cockatoo *Cacatua goffini*, from Indonesia (Jepson, 2003). Common points of contention include: whether or not a species meets the biological criteria for inclusion in Appendix I; whether banning trade, especially of species that may be considered a pest in the areas in which they occur, and therefore face persecution and/or need control in any event, is the best means to secure conservation objectives; and whether national trade control measures are sufficient.

Opponents of Appendix-I listings for some species have cited as a major concern the difficulty of transferring a species back to Appendix II owing to the greater burden of proof required that such a transfer would not be detrimental to the species concerned. Various mechanisms have been put in place to ease the transition to Appendix II, e.g. the establishment of export quotas to accompany such a transfer.

Deletion from the Appendices

Generally speaking, proposals to delete plant species from the Appendices are less controversial than are proposals to delete animal species. This reflects, in part, that de-listing proposals for plants are generally produced following detailed consideration in the Plants Committee, with the result that the scientific merits are considered sound, and the relatively lower attention afforded plant proposals by many NGOs, especially animal welfare organizations, as well as many Parties, during CITES debates. Among the species that have been deleted from Appendix II are Copey Oak *Quercus copeyensis* (Switzerland, 1992), Golden Camellia *Camellia chrysantha* (China, 1997) and Northern Bitter-root *Lewisia maguirei* (USA, 2002). Animal species deleted from Appendix II include the Elephant Seal *Mirounga angustirostris* and the Roan Antelope *Hippotragus equinus* (following CoP8, 1992); the Sonoran Green Toad *Bufo retiformis* (USA, 2000); and the Orange-throated Whiptail *Cnemidophorus hyperythrus* (USA, 2002).

3. CITES PERCEPTIONS

The perception of CITES by various groups—ranging from governments and inter-governmental bodies to industry associations and non-governmental organizations—has changed and evolved throughout the Convention's 30-year history. This has been, in part, a result of the evolution of CITES itself. Initially viewed as a convention that worked solely by restricting or even banning international trade in endangered species, the role of CITES has evolved considerably in recent years to well beyond that mandate.

There is perhaps no better illustration of this evolving role in the context of forest species than in the response to proposals for the listing of commercial tree species in Appendix II of CITES. Until 1992, only 11 timber species were listed in the CITES Appendices, none of which were in large-scale international trade. Proposals to list Big-leaf Mahogany, Ramin *Gonystylus bancanus* and Merbau *Intsia palembica* in Appendix II at CoP8 in 1992 were defeated, as were similar proposals for Big-leaf Mahogany at CoP9 and CoP10. While a number of range States (such as Costa Rica and Nicaragua) have supported and actually proposed timber listings, the larger tropical timber-producing countries, including Malaysia, Brazil and Cameroon, generally opposed these listings. Opponents have cited a variety of reasons, including administrative burdens, increased costs for industry, perceived implementation and enforcement difficulties, and the lack of a need for CITES trade controls given the status of existing stocks (e.g. see Chen and Perumal, 2002; Anon., 2003a). Some have explicitly argued that, because most of the timber species that have been considered for inclusion in the CITES Appendices are tropical, the appropriate international forum for dealing with them is ITTO.

However, perhaps the root of opposition to such listings was the perception, especially by tropical timber-producing countries and the timber industry, that CITES was a trade ban mechanism—and the negative market implications of such a perception. This is also linked to the wider political argument that such trade bans discriminate against developing countries, especially tropical countries. There is also a strong sense amongst many developing countries that CITES imposes obligations on Parties without being in a position to provide adequate support, in the form of additional finance and capacity-building, to enable those Parties to meet their obligations fully.

The perception of CITES-listing as a trade ban was an issue that was the subject of a great deal of discussion in the CITES Timber Working Group that was established at CoP9, which included members from range and consumer States, as well as international organizations such as ITTO (see section on experiences with CITES implementation and challenges with non-compliance). Recommendations from the Group were adopted in a CITES Resolution (*Resolution Conf. 10.13*) which urged improvement of public understanding of the role of the Convention in the conservation of timber species. It called on Management Authorities to work with governmental agencies (including local governments), non-governmental organizations, industry and the general public to develop and provide information on the objectives, provisions and implementation of the Convention to counter the misconception that the inclusion of species in the Appendices represents a ban on the trade in specimens of these species, and to disseminate the message that international trade and use of timber species included in Appendices II and III are generally permitted and can be beneficial.

These efforts at greater co-operation and engagement appear to have borne fruit at CoP12. An Appendix-II listing proposal for Big-leaf Mahogany was put forward at that meeting. Bolivia, Brazil, Malaysia and Peru, amongst others, opposed it, as they contended: the proposal lacked a scientific basis; the species could be domestically managed; and that the matter could be dealt with by the CITES Mahogany Working Group. However, it was significant that a major timber producing country, Indonesia, made an intervention during CoP12 in support of the Big-leaf Mahogany listing. The proposal was accepted after a narrow vote (see section on forest species in the CITES Appendices). However, the notion that this represented a significant turning-point in the role of CITES in regulating trade in commercially important timber species received a set-back at CoP14 when, as noted above, three out of four such proposals met with strong opposition from range States and were withdrawn.

Despite opposition by some ITTO members to CITES listings of commercial timber species, delegates at the 34th session of the International Tropical Timber Council (ITTC) in May 2003 (Panama City) agreed to emphasize collaboration with the CITES Secretariat through technical, scientific and financial co-operation. ITTO members who were Big-leaf Mahogany range States were

also requested to identify their needs for effective implementation of CITES Appendix II, as well as assistance and projects needed to address those needs (ITTC Decision 7(XXXIV)). Collaboration between CITES and ITTO has increased significantly in recent years, with the work programme for 2006–2007 including, for example, the joint organisation of a May 2006 ramin experts workshop (Kuala Lumpur), and the June 2006 meetings of the CITES Mahogany Working Group in Lima, Peru. ITTO allocated USD250 000 to support CITES implementation in its budget and, with the CITES Secretariat, was developing a major funding proposal for submission to the European Commission to assist members to implement Appendix-II listings of timber species (ITTO and CITES, 2006). At CITES CoP14 a decision was adopted that specified close cooperation between the secretariats of CITES and ITTO, and urged consultation of ITTO over listing proposals.

CITES Timber Working Group

At CoP9, CITES Parties considered a document presented by the UK Government concerning problems with implementation of the Convention for timber species, as well as CITES listing proposals for several species. The Parties decided to establish a temporary working group to consider implementation of the Convention for timber species. The Timber Working Group (TWG) included representatives from the following timber exporting and importing countries: Brazil, Cameroon, Canada, Costa Rica, European Union, Ghana, Japan, Republic of Korea, Malaysia, Switzerland and the USA. Representatives were also included from ITTO, the International Hardwood Products Association, IUCN – the World Conservation Union, and TRAFFIC. In addition to looking at CITES implementation for timber, including identification of parts and derivatives in trade, the group was tasked with looking at the relationship between CITES and other international organizations, e.g. ITTO.

The TWG met twice prior to CoP10, and provided a detailed report to CoP10 accompanied by a series of recommendations aimed at addressing aspects of CITES implementation specific to the timber trade, as well as the more general issue of the application of CITES Appendix III (CoP10 Doc.10.52). The Parties adopted these recommendations, which included several aimed at addressing specific characteristics of the international timber trade. These included, for example, the practice of “splitting” shipments subsequent to their export, with the effect that their final export destinations may not be known at the time that CITES export permits are issued, and the holding of timber shipments in bonded warehouses for long periods prior to their final delivery. To accommodate such circumstances, the Parties agreed that the validity of a CITES permit for a timber species could be extended to up to 12 months (as opposed to the usual six months) or the destination changed on CITES permits for timber shipments, subject to specific conditions. Recommendations were also accepted with regard to the use of standard terms and definitions for timber products in trade to be covered by the Convention. Agreement was reached with regard to a process for consulting international organizations in the development of CITES listing proposals for timber species (*Resolution Conf. 10.13*). In the case of Appendix-III listings, agreement was also reached to extend the validity of “certificates of origin” to 12 months, and, in the case of timber species, to considering including only that geographically separate population for which the inclusion would best achieve the aims of the Convention, i.e. not the species across its entire range (*Resolution Conf. 9.25 (Rev)*). Other recommendations included expanded efforts to educate the public regarding the meaning of CITES listings, e.g. that Appendix-II listings did not constitute a trade ban (*Resolution Conf. 10.13*).

The International Wood Products Association (IWPA), which had opposed the Big-leaf Mahogany proposal, issued a press release following its acceptance stating that “the CITES listing is not a ban or a boycott...mahogany can continue to be harvested in a sustainable manner, and traded....This offers double assurances to exporters, importers and their customers that the mahogany they purchase and use is well-taken care of, and that it will continue to be available to them for many years to come” (Frost, 2002).

While commercial timber may have been among the more high-profile forest products in the CITES debate, non-wood forest products, in all their different forms, also feature on the CITES agenda—ranging from high profile issues such as the CITES ban on trade in elephant ivory to lesser known issues such as the CITES listings of medicinal plants. The Appendix-I listing of African Elephant

prompted vigorous objections by southern African countries such as Zimbabwe, which viewed CITES decisions as increasingly based on politics rather than science, as not being supportive of land use policies based on sustainable wildlife use, and requiring major changes in CITES procedures and principles (Mofson, 2000). In contrast, a review of the perceptions of stakeholder groups involved in the wild bird trade in five of the main countries exporting CITES-listed birds did not reveal any general opposition to CITES, but rather recognition of the need to establish management systems that ensured sustainability (Thomsen *et al.*, 1992).

One would have thought that medicinal plants would have been an ideal model by which CITES could demonstrate its usefulness as a sustainable management tool, with strong involvement from stakeholders such as the medical and pharmaceutical industry and primary producers. At least 230 plant species included in CITES are known to be traded for medicinal purposes, with tens of these specifically included in the Appendices expressly because of the need to regulate trade in medicinal material. Many commercially important medicinal plant species are not listed in the Appendices and implementation of the Convention for those that are is poor. As a result, medicinal plant stakeholders have not given much attention to the CITES process, with the exception of some Parties, most notably Germany, and an NGO in the case of the proposal to list Devil's Claw in Appendix II, as noted in the preceding section.

In contrast, orchid specialists, including hobbyists and commercial growers as well as conservationists, have been actively involved in trying to influence CITES with regard to the trade and trade controls. The Orchid Conservation and Action Plan of the IUCN/SSC Orchid Specialist Group (1996) contains numerous references to CITES, including a review of the treatment of orchids within the Convention, and recommendations regarding CITES approaches to the trade.

The impact of CITES listings on consumers is often cited, but poorly studied—governments, inter-governmental organizations, industry and NGOs all fully recognise the potential impact of a CITES listing or decision on the international trade in wildlife products. The resistance of the timber industry and timber-producing countries to the CITES-listing of Big-leaf Mahogany is a case in point, their fears being that such a listing would be perceived as an international trade ban by consumers or cause consumers to reject the timber if they perceive it as somehow "endangered". The counter-argument from listing proponents is that such listings may give assurances to the consumer that the product is from legal sources and coming from sustainably-managed forests—a sentiment voiced even by the IWPA, as indicated in the quote above—and may even encourage market demand. There has also been growing interest in further exploring the role of CITES in certification processes. Nevertheless, even when a wildlife product is banned from international trade, the message that it is "threatened" may not necessarily dim demand and, in some cases, may even increase it owing to a perceived rarity value.

The perceptions of CITES by many different interest groups as a trade ban, only dealing with endangered species of charismatic megafauna, is no longer as prevalent as it was in previous years. Instead, CITES is increasingly being recognized as an international trade mechanism for sustainable use of a wide range of wild animal and plant products, including commercially valuable commodities. However, consensus has yet to be reached on exactly what role CITES can and should play in helping to balance the interests of conservation with those of economic development.

4. FOREST SPECIES INCLUDED IN THE CITES APPENDICES

Around 28,000 species of plants are included in the CITES Appendices. Of these, the great majority are in one plant family, the Orchidaceae, currently believed to contain around 25 000 species. Because most orchids are forest-dwellers, it follows that the Appendices are dominated by forest-dwelling plants. In addition to orchids, a number of the remaining 3000 or so plant species included in the Appendices are also forest species, including timber trees such as Big-Leaf Mahogany, medicinal plants such as American Ginseng, and plants used in horticulture, such as bromeliads in the genus *Tillandsia*. Several CITES-listed plant groups are primarily found in arid habitats, e.g. cacti, Cactaceae, aloes *Aloe* spp. and succulent euphorbias Euphorbiaceae. Around 90% of plants in the appendices are in Appendix II, with most of the remainder (around 300 species) in Appendix I and a handful in Appendix III.

Most of the roughly 5000 animal species covered by CITES are similarly forest dwelling during at least part of their life cycle. The CITES Appendices include approximately 1500 species of birds, including all but three of the over 300 species of parrot Psittaciformes, approximately 300 species of raptors Falconiformes, and a variety of songbirds Passeriformes. The largest terrestrial animal species covered by CITES, and arguably the species with the largest impact on the Convention's evolution in the past 20 years, is African Elephant. All other pachyderms (elephants and rhinoceroses) are also included in the Appendices, as are all primates and cat species Felidae, a variety of reptile species including all monitor lizards *Varanus* spp. and snakes such as pythons Pythonidae spp. and boas Boidae spp., and several insects, e.g. birdwing butterflies *Ornithoptera* spp. Several aquatic species covered by CITES, e.g. Pirarucu *Arapaima gigas* and Black Caiman *Melanosuchus niger* of the Amazon, are forest-dependent, as the quality of the freshwater ecosystems in which they occur depends on surrounding forest cover. Detailed information on the species included in the CITES Appendices can be found on the CITES website (www.cites.org) and in the species database maintained by UNEP-WCMC (www.unep-wcmc.org.uk).

The CITES Trade Database maintained by UNEP-WCMC on behalf of the CITES Secretariat provides a useful indicator of the international demand for CITES-listed species. Unfortunately, CITES trade data, which rely on trade reporting by CITES Parties, are often incomplete. Illegal trade, an indicator of a demand beyond that which is allowed under CITES and/or national trade controls, is often not detected and generally poorly reported by CITES Parties when discovered. This includes what is likely to be a large volume of regional cross-border trade, for example in species traded for meat. The reporting of the source of specimens in CITES trade data is also inconsistent, reducing the ability to determine the number of wild versus captive-bred or artificially propagated specimens in international trade. A decision to limit inclusion in the CITES Trade Database of trade data for Appendix-II species traded as manufactured products and artificially propagated plants, except when such data are provided electronically, further reduces the ability to judge trade in or demand for forest products from CITES-listed species. Finally, CITES trade data do not reflect the production of CITES-listed species for domestic trade; a major share of the demand for parrots in the USA, for example, is met through captive breeding in that country. Examples of CITES-recorded trade for forest dwelling CITES-listed species are provided in **Tables 4, 5, and 7** below and in Annexes I and II.

TRADE IN CITES-LISTED PLANTS

The following discussion has been somewhat artificially grouped according to the form and use of specimens in trade.

Tree species

Some 100 tree species are included in the CITES Appendices (**Table 2**). Some of these species were included in the Appendices in the mid-1970s when the Convention was agreed, while others were added in the 1990s and early this decade based on acceptance of proposals demonstrating that international trade was likely to pose a threat to the species if not more closely controlled.

Table 2 Tree species listed in the CITES Appendices (October 2007)

Appendices	Scientific name Common name	Year listing effective	NOTES Annotation (uses)
Appendix I	<i>Abies guatemalensis</i> Guatemala Fir	1975	(Timber)
	<i>Araucaria araucana</i> Monkey Puzzle	1979	(Timber, horticulture) Originally listed in Appendix II, Chilean population transferred to Appendix I in 1979; remaining populations in 2000
	<i>Dalbergia nigra</i> Brazilian Rosewood	1992	(Timber)
	<i>Fitzroya cupressoides</i> Alerce	1975	(Timber) Chile coastal population transferred to Appendix II in 1983 and back to Appendix I in 1987
	<i>Pilgerodendron uviferum</i> Ciprés de las Guaitecas	1975	
	<i>Podocarpus parlatorei</i> Parlatore's Podocarp	1974	
Appendix II	<i>Aquilaria</i> and <i>Gyrinops</i> spp. agarwood-producing species	2005	#1 (Medicinal/Fragrance/Flavouring) <i>Aquilaria malaccensis</i> originally listed in Appendix II in 1995
	<i>Caesalpinia echinata</i> Brazil Wood	2007	#10 (Timber)
	<i>Caryocar costaricense</i> Ají	1975	#1 (Timber)
	<i>Gonystylus</i> spp. ramin	2005	#1 (Timber) Genus includes 27 species
	<i>Guaiaacum</i> spp. Lignum-vitae	2003	#2 (Timber, medicinal, flavouring) <i>Guaiaacum sanctum</i> Hollywood Lignum Vitae listed in 1975; <i>Guaiaacum officinale</i> Commoner Lignum Vitae listed in 1992; genus includes 4-6 species
	<i>Oreomunnea pterocarpa</i> Caribbean Walnut	1975	#1 (Timber) Originally listed in Appendix I in 1975, transferred to Appendix II in 1992
	<i>Pericopsis elata</i> Afromosia	1992	#5 (Timber)
	<i>Platymiscium pleiostachyum</i> Quira Macawood	1989	#1 (Timber) Originally listed in Appendix I in 1975, transferred to Appendix II in 1989
	<i>Prunus africana</i> African Cherry	1995	#1 (Timber/Medicinal)
	<i>Pterocarpus santalinus</i> Red Sandalwood	1995	#7 (Timber/Dye/Medicinal)
	<i>Swietenia humilis</i> Mexican Mahogany	1975	#1 (Timber)
	<i>Swietenia macrophylla</i> Big-leaf Mahogany	2003	#6 (Timber) Listed in Appendix III in 1995; Appendix-II listing effective 15 November 2003
	<i>Swietenia mahagoni</i> American Mahogany	1992	#5 (Timber)
	<i>Taxus chinensis</i> , <i>T. cuspidata</i> , <i>T. fuana</i> , <i>T. sumatrana</i> , <i>T. wallichiana</i> Asian yews	2005	#2 (Medicinal) <i>Taxus wallichiana</i> originally listed in Appendix II in 1995
Appendix III	<i>Cedrela odorata</i> West Indian Cedar	2001	#5 Listed by Peru and Colombia (Timber)
	<i>Dipteryx panamensis</i> Almendra	2003	Listed by Costa Rica (Timber)
	<i>Magnolia liliifera</i> var. <i>obovata</i>		#1 Listed by Nepal
	<i>Tetracentron sinense</i>		#1 Listed by Nepal
	<i>Podocarpus neriifolius</i> Yellow wood	1975	#1 Listed by Nepal (Timber)

#1 Designates all parts and derivatives, except:

- a) seeds, spores and pollen (including pollinia);
- b) seedling or tissue cultures obtained *in vitro*, in solid or liquid media, transported in sterile containers;
- c) cut flowers of artificially propagated plants and

#2 Designates all parts and derivatives, except:

- a) seeds and pollen;
- b) seedling or tissue cultures obtained *in vitro*, in solid or liquid media, transported in sterile containers;
- c) cut flowers of artificially propagated plants; and
- d) chemical derivatives and finished pharmaceutical products.

#5 Designates logs, sawn wood and veneer sheets.

#6 Designates logs, sawn wood, veneer sheets and plywood.

#7 Designates logs, wood-chips and unprocessed broken material.

#10 Whole artificially propagated plants in pots or other small containers, each consignment being accompanied by a label or document stating the name of the taxon or taxa and the text 'artificially propagated', are not subject to the provisions of the Convention.

CITES-reported trade in the main Appendix-II tree species in international trade for the period 1999–2003 is shown in **Annex I**. Data on the trade in wild specimens of certain other Appendix-II plant species are included as **Annex II**.

The main CITES-listed tree product in trade is wood for use in construction, furniture manufacture or handicrafts, mahogany from the genus *Swietenia* being a prime example. However, products of several species are traded for their medicinal properties, e.g. the needles and bark of Himalayan Yew, used in the production of the anti-cancer agent Paclitaxel and the resinous agarwood, produced by *Aquilaria malaccensis* and several other species, used to produce medicine, fragrances and incense. Some CITES-listed trees are multi-purpose: the wood of Red Sandalwood *Pterocarpus santalinus* is used for the manufacture of furniture and musical instruments, as a dye and medicinally (IUCN and TRAFFIC Network, 1994).

Most of the CITES listings for trees and other plant species are "annotated" such that only certain parts and derivatives are covered by CITES trade controls. Seeds, spores and pollen are excluded for most plant species, including several tree species. In the case of species traded primarily as timber or wood products, trade controls generally exclude finished products.

HORTICULTURAL PLANTS

The trade in CITES-listed plant species is dominated by the trade in plants used in horticulture, Lange (1999) noting that listings in the Appendices have almost exclusively been limited to species used for this purpose. This includes a wide variety of orchids, bulbous species such as snowdrops and cyclamen, carnivorous plants such as pitcher plants and succulent plants such as succulent euphorbias. A very rough distinction can be made in the demand for ornamental plants between that of the mass market, horticulturists and specialist collectors. Hundreds of thousands of cyclamens and snowdrops, for example, are traded to supply gardeners in Europe and North America. The demand for these species is met through large-scale wild collection as well as cultivation; trade in artificially propagated specimens of the most widely traded cyclamen, *Cyclamen persicum*, has been exempted from CITES trade controls.

Orchids, pitcher plants, cycads and succulent euphorbias, which tend to require more specialized husbandry, are more often traded to horticulturists, including specialist collectors. However, some species and hybrids (orchids) are now artificially propagated in large quantities for the mass market, with exemptions from CITES trade controls provided for some artificially propagated specimens. For these and other plant groups, collectors create a small but often unsustainable demand for wild specimens of rare species, e.g. Asian slipper orchids *Paphiopedilum* spp. Sandison *et al.* (1999) noted that there was a sizeable trade in illegally collected *Paphiopedilum*, for example, which are included in CITES Appendix I (banning international commercial trade) and vulnerable to over-collection as many grow in small colonies.

The ornamental plant trade also involves tree ferns *Cyathea* spp., which are traded both as live specimens and as sections of trunk, the latter used as media for growing other species e.g. orchids (Sandison *et al.*, 1999). Plant parts of other species are also traded for floral arrangements, including the

pitchers of pitcher plants (e.g. *Sarracenia* spp.) and flowers such as orchids. Cut flowers from artificially propagated plants are excluded from CITES trade controls.

As indicated above, much of the mass horticultural market demand for CITES-listed plant species is met through cultivation and artificial propagation. This reflects in part the nature of this demand, where preference is for morphological characteristics (including uniformity and "perfect" specimens) as well as low prices, as opposed to for individual species; species not able to be produced in sufficient quantities for the mass market will disappear from it. Some species, e.g. snowdrops, continue to be supplied from the wild in large quantities, although cultivation is increasing. A growing interest in "species" bulbs, i.e. non-hybrids, was noted in the USA in the late 1980s (Marshall, 1993), which may also account for continued trade in wild specimens even where cultivated stocks are available and less expensive.

By contrast, specialist collectors and breeders are frequently in search of new and/or rare species to bring into their collections, species that are not yet available from cultivation. This demand drives a small and legal international trade in a wide variety of Appendix-II species, as well as an illegal trade in both Appendix-II and Appendix-I species, e.g. the Asian slipper orchids referred to above, and South African cycads.

MEDICINAL PLANTS

A large number of plant species included in the CITES Appendices are used medicinally, including as part of localized traditional medicine practices, more widespread traditional medicine, herbal products and pharmaceutical preparations. A smaller but significant number of CITES species are traded internationally for medicinal uses. Lange (1999) identified 14 plant species specifically included in the Appendices owing to the medicinal trade, and a further 216 included in the Appendices for other purposes but also having medicinal uses. Schippmann (2001) identifies over 230 CITES-listed species used medicinally and either in or potentially in international trade. This includes, for example, a number of orchids in the genus *Dendrobium* used in traditional East Asian medicine (TEAM). Several additional species have been included in the Appendices owing to medicinal use since 1999, including Yellow Adonis *Adonis vernalis*, used in the preparation of phytomedicines in Europe, *Taxus* spp. and *Aquilaria* spp.

As with the trade in horticultural plants, a rough distinction can be made with regard to the international demand for CITES-listed medicinal plants. Some species, e.g. the *Dendrobium* referred to above, Costus Root *Saussurea costus* and Cistanche *Cistanche deserticola*, are important ingredients in TEAM. The international trade in Himalayan Yew, which has local medicinal uses, appears primarily to supply demand from the Western pharmaceutical industry. Like the trade in Yellow Adonis, the trade in the bark of African Cherry and Cape Aloe *Aloe ferox* largely supplies the manufacture of European phytomedicines. Several species, e.g. American Ginseng, are widely used in both TEAM and Western herbal products.

Traditional medicine practices continue to supply the majority of the world's healthcare, particularly in the developing countries, and are the major forms of healthcare in the world's two most populous countries, China and India. Expanding populations and declining domestic supplies are requiring both China and India to import increasing quantities of medicinal plant materials. The use of TEAM and other traditional medicine practices is also expanding beyond traditional geographic boundaries, necessitating an increased international trade in order to meet demand. The growing popularity of plant-based healthcare products (herbal products) in the USA and Europe is also creating an increased demand for raw materials.

As with the international trade in horticultural specimens, mass market demand for several CITES-listed medicinal plants is increasingly being met through cultivation or other forms of intensified production. This includes, for example, North American and European demand for American Ginseng. However, unlike horticultural species, which supply a leisure market, most medicinal species are not easily substitutable. Furthermore, some consumers exhibit a preference for wild material, owing to a belief in its greater efficacy. In the case of American Ginseng, for example, in 1995, the wholesale value of dried wild roots was USD1099/kg compared to USD354/kg for dried cultivated roots, reflecting the preference for wild material in East Asian markets (Robbins, 1999). There is every indication that this price discrepancy continues. The opposite pricing structure could emerge for species used in western medicinal therapies owing to the preference for standardized material from documented sources. This could lead to a continued demand for wild, i.e. lower priced, materials, however, until such time as cultivation was price competitive with wild production.

A substantial proportion of the trade in most CITES-listed medicinal plant species continues to be in wild materials. Given the importance of the income derived from these and other non-wood forest products, this provides an opportunity to address socio-economic interests in the context of sustainable forest management. If meeting the demand for medicinal plants is not managed more effectively, both the wild species and those dependent upon them for healthcare and incomes are likely to suffer.

ANIMAL SPECIES

The CITES Appendices include approximately 650 mammal, 1700 bird, 600 reptile and 100 amphibian species, as well as a much smaller number of individual subspecies and populations (T. Inskipp, UNEP-WCMC, *in litt.* 27 August 2003). Forest species are traded both as live specimens, e.g. parrots for the pet trade, and as parts and derivatives, ranging from elephant ivory carvings to snake skin watchstraps.

Live animals

The international trade in live animals has been dominated by the trade in wild birds and reptiles. The trade in live reptiles, including many CITES-listed species, grew dramatically during the late 1980s and early 1990s. Changes in the trade in CITES species appears to have been driven to a large extent by the US market, which was responsible for 82% of CITES-reported trade in 1992, compared with only 28% 10 years earlier. In 1995, over 2.5 million live reptiles were imported into the USA.

Trade shifts have been linked to shifts in supply, e.g. the growing availability of an increasing number of species; shifts in demand, e.g. changing lifestyles making reptiles more suitable pets than other species requiring greater care; improvements in husbandry; and increased trade restrictions for other species (Hoover, 1998). Among the CITES-listed reptiles popular in international trade are Iguana *Iguana iguana* (making up 45% of US imports in 1995), a variety of chameleons and tortoises, snakes such as pythons and boas, and monitor lizards *Varanus* spp. A growing proportion of the trade in several species, e.g. Iguana, involves specimens that have been captive-bred or "ranchled" (raised in captivity from eggs); other species, e.g. Horsfield's Tortoise *Testudo horsfieldii*, continue to be sourced primarily from the wild.

Unlike the trade in live reptiles, the trade in wild-caught CITES-listed birds has declined significantly since the late 1980s. This reflects in part the increased availability of captive-bred specimens, stemming from the decline in the availability of wild specimens of many species, and the increased demand for captive reared birds, which are more suitable as pets than are wild-caught specimens. Another important factor reducing global trade volumes was the suspension of imports of most wild CITES-listed birds into the USA, once the largest market for CITES-listed birds, and specifically parrots, of which all but two species (Cockatiels *Nymphicus hollandicus* and Budgerigars *Melopsittacus undulatus*) are included in the Appendices.

Parts and derivatives

Parts and derivatives of CITES-listed species are traded in a variety of forms and for a variety of uses, ranging from decorations to medicines. From 1995-1999, reported trade included, for example, an annual average of 1.2 million crocodilian skins, of which approximately 300 000 were declared as being from wild sources, a further 1.7 million lizard and snake skins and 150 000 furs (J. Caldwell, UNEP-WCMC *in litt.* to T. Mulliken, TRAFFIC International, 2001), used to make a variety of wearing apparel and accessories. Products such as elephant ivory are also traded for ornamentation and use as name seals, the international trade in elephant ivory having been banned in 1989, and subsequently only allowed under very specific conditions established by the Conference of the Parties.

Numerous CITES-listed species are traded for their medicinal properties, including forest species such as Brown Bear *Ursus arctos* (gall bladder), musk deer *Moschus* spp. (musk) and Asian pangolins *Manis* spp. (scales). Despite their listing in Appendix I and national hunting and export bans in range States, the trade in Tiger and rhinoceros products continues, primarily to supply the trade in traditional East Asian medicine.

The international trade also includes dried and stuffed specimens used as curios or for display, for example scorpions *Pandinus* spp. and birdwing butterflies *Ornithoptera* spp., and hunting trophies, an annual average of 21 000 trophies having been traded from 1995 to 1999 (J. Caldwell, UNEP-WCMC *in litt.* to T. Mulliken, TRAFFIC International, 2001). The international trade in CITES-listed species for meat primarily involves aquatic and grassland species, e.g. freshwater turtles, although some mammal species are also traded internationally for meat, e.g. Asian pangolins. However, the domestic trade in the meat of these species can be much more widespread, e.g. in the case of peccaries in South America.

5. EXPERIENCES WITH CITES IMPLEMENTATION AND CHALLENGES WITH NON-COMPLIANCE

Over 160 countries have joined CITES and thereby agreed to comply with the Convention's requirements with respect to the export, import and re-export of species covered by the Convention. This has implications not only for governments but also for individuals, organizations and businesses involved in the trade in CITES-listed species who are based in, rely on goods from or travel to countries that are CITES Parties.

As noted in the section on CITES basics, CITES implementation is directly dependent on the actions of individual member States. Member governments are required to have a legislative framework sufficient to control trade in accordance with the Convention's provisions, and to establish, implement and, where necessary, enforce associated trade rules and procedures. In the case of Appendix-I species, for which international trade is banned in all but "exceptional" circumstances, this primarily involves: preventing, identifying and responding to illegal trade; determining whether requests to trade Appendix-I species conform to the criteria set by the Convention and Resolutions; and implementing permitting and inspection requirements in the case that such trade is allowed. The trade in Appendix-II species places a relatively larger burden on countries of export, which are required to ensure that all trade is maintained within sustainable levels and is accompanied by valid CITES permits, and that live animals are properly prepared for and transported in a manner that is not detrimental to their well-being. The responsibility of importing countries is primarily to ensure that all CITES Appendix-II shipments presented for import are accompanied by and match the required CITES export/ permits, and that transport requirements for live specimens have been adhered to. Importing countries are similarly required to confirm that the appropriate CITES documentation accompanies Appendix-III shipments, such documentation being an export permit in the case of shipments from countries listing a species in Appendix III, and certificates of origin/re-export from other countries.

Experiences with CITES implementation for Appendix-I, -II and -III forest species are described below, and further illustrated by case studies. Concerns regarding non-compliance are noted, as are the types of actions taken to address these concerns. Some aspects of CITES implementation and related areas of non-compliance are common across all three Appendices, e.g. those associated with national legislation. These are discussed later in this section. A discussion of non-compliance by individuals and commercial interests is also provided. Further examples of experiences with CITES implementation can be found in the section on the impact of the Convention on trade volumes, production strategies, conservation and rural livelihoods.

APPENDIX I

Species included in Appendix I have been determined by CITES Parties to be "threatened by extinction" and affected or possibly affected by international trade. In order to reduce trade threats to the species, and therefore, it can be argued, to sustainable management of the forest areas where they occur, international trade in wild specimens is banned except in "exceptional circumstances" (CITES Article II). Trade in such circumstances must not be detrimental to the species' survival, and further, imports must not be for "primarily commercial purposes" (Article III). A general exception is provided for under the Convention for specimens produced via artificial propagation or captive breeding according to criteria agreed by the Parties, for those obtained prior to CITES' entry into force in the country in question, so called "pre-Convention specimens", and for personal and household effects (Article VII). The main challenges facing CITES authorities with regard to implementing this Appendix, therefore, relate to determining the origin of specimens proposed for export, the use to which they will be put on import, and controlling illegal trade.

CITES Parties have adopted and, over the years, amended several resolutions aimed at guiding interpretation and application of the terms "artificially propagated" (see *Conf. 11.11(Rev. CoP13)* Regulation of trade in plants) and "captive-bred" (see *Conf. 10.16 (Rev.)*, Specimens of animal species bred in captivity) with respect to commercial trade. Although relating also to the trade in Appendix-II and -III specimens, these definitions have most often been debated in terms of their relation to the trade in Appendix-I specimens. Among the requirements of the current resolutions are ensuring that founder stock was obtained in a manner that was both legal and not detrimental to the wild populations of the species concerned. Proof of the legal origin of founder stock in countries

lacking possession controls can be especially problematic, especially for long-lived species. Plant and animal breeders may not have been required to maintain records regarding how they obtained the specimens in their possession, and therefore to maintain evidence that specimens were obtained in accordance with these resolutions.

Appendix-I specimens captive-bred or artificially propagated for commercial purposes are allowed to be treated as Appendix-II specimens in accordance with CITES Article VII. In order to facilitate the ability of both exporting and importing authorities to confirm that specimens in trade are from facilities meeting CITES requirements, systems have been established to register such facilities with the CITES Secretariat (*Conf. 12.10 (Rev. CoP13)*, Guidelines for a procedure to register and monitor operations that breed Appendix-I animal species for commercial purposes; *Conf. 9.19 (Rev. CoP13)*, Guidelines for the registration of nurseries exporting artificially propagated specimens of Appendix-I species). At the time of writing, 144 facilities have been registered for Appendix-I animal species, covering only 1 mammal, 13 bird and 7 reptile species. The number of nurseries registered for artificial propagation of Appendix-I specimens of plant species is 102, however these relate to a much larger number of species—several plant nurseries were registered as breeders of over 40 Asian slipper orchid species, for example. This can be seen as an indication of the complexity and associated initial transaction costs associated with the registration process. Exports of artificially propagated and captive-bred specimens are not limited to these facilities, however, as attested to by the large volumes of artificially propagated specimens in trade.

International trade for scientific purposes is considered non-commercial under the Convention, with a registration system for facilities having been adopted (*Conf. 11.15 (Rev. CoP12) Non-commercial loan, donation or exchange of museum and herbarium specimens*). The Convention similarly does not prohibit the export of sport hunted trophies of Appendix-I specimens where this has been shown not to be detrimental to species survival, although importing countries may take stronger domestic measures prohibiting the import of such trophies. A specific provision has been made for the export of limited quantities of trophies of several species, in recognition that trophy hunting can make a positive contribution to conservation and/or be used to deal with nuisance animals. This includes trophy export quotas for a total of over 2500 Leopards *Panthera pardus* from 13 African countries in 2006. In both cases, the understanding is that the purpose of the import will not be for primarily commercial purposes. The Parties have sought to clarify what is meant by primarily commercial, noting the particular interpretation difficulties posed with regard to the trade for captive breeding and for biomedical research (*Resolution Conf. 5.10, Definition of 'primarily commercial purposes'*).

The general problem of enforcing CITES trade controls for wild specimens is covered later in this section. As demonstrated by the case study of *Paphiopedilum* included here, reports of seizures of Appendix-I specimens (e.g. see the “Seizures and Prosecutions” section of the *TRAFFIC Bulletin*) and discussion documents presented to CITES meetings, widespread illegal trade in wild Appendix-I specimens continues.

Case Study—Asian slipper orchids *Paphiopedilum* spp.

These orchids are relatively slow growing, often showy, and highly sought after by specialist collectors. Found primarily in South-east Asia (with some species occurring in China), these orchids comprise the largest single group of orchids in horticulture; more than 12 000 hybrids have been developed during the last 140 years (IUCN/SSC Orchid Specialist Group, 1996). *Paphiopedilum* are traded as cut flowers (primarily in Europe), and for use as indoor plants. Although most of the international trade consists of artificially propagated specimens, significant numbers of wild specimens have been traded internationally, albeit illegally, since early 1990.

Along with all other orchids, all Asian slipper orchid species were included in CITES Appendix II, effective 1975. In 1989 the Netherlands proposed transferring the entire genus to Appendix I owing to concerns regarding the threatened status of many species and evidence of widespread international trade. There was conflicting information regarding the status of species in the genus at the time the proposal was put forward. According to Cribb (1987), at least 25 of the approximately 60 species described at that time were threatened; several reviewers of the Netherlands' proposal disagreed, however, believing that only a small number were threatened (IUCN/SSC Trade Specialist Group *et al.*, 1989).

The Netherlands' proposal had the support of the CITES Plants Working Group (which would subsequently become the Plants Committee) and was initially accepted without opposition when considered in committee (CoP7 Com. I 7.7 (Rev.)). However, when the proposal was tabled for final acceptance in the plenary session of the meeting, Thailand objected, stating that the genus was economically important in the region, that transfer to Appendix I was not appropriate at that time, and called for re-opening of debate (CoP7 Plen 7.7). It is interesting to note that export of this species was banned from Thailand under Royal Decree at the time (IUCN/SSC Trade Specialist Group *et al.*, 1989). No other Parties supported Thailand's request to re-open debate. The Netherlands was given the floor, noting that all range States had been consulted regarding the proposal and only Thailand had objected, and that the proposal would not ban trade in artificially propagated specimens. The proposal was therefore accepted (CoP7 Plen 7.7).

A review of CITES annual report data before and after the Appendix-I listing shows a dramatic decline in the CITES-reported trade of *Paphiopedilum*. Approximately 480 000 orchids were reported as imported during 1989, the year before the CITES listing came into effect, of which nearly 294 000 (61%) were reported as having been exported from Thailand. A further 136 500 orchids were reported as imported from Taiwan, with smaller numbers from other countries in Asia: the Philippines (14 100), Malaysia (7200), Singapore (6600), Indonesia (2400), China (1600), Hong Kong (1200) and India (800). No source was reported for approximately 286 000 of the orchids in trade (60%), of which 282 000 were imported from Thailand, with the presumption being that they were of wild origin. Virtually all of the remainder of *Paphiopedilum* reported in trade were stated to have been artificially propagated. However, Yokoi and Milliken (1991), in their study of Japan's Asian slipper orchid trade, and Callister (1992), who reviewed the trade in Australia, questioned the accuracy of the reporting of specimens as artificially propagated, noting that inaccurate indication of source was commonly used to avoid trade controls on wide specimens.

In 1991, fewer than 56 000 *Paphiopedilum* were reported as imported by CITES Parties, of which only 26 flasks and five plants were imported from Thailand. Over twice that number (125 000) was reported as exported by CITES Parties, virtually all reported as having been artificially propagated. This included 25 000 artificially propagated *Paphiopedilum* reported as exported from Denmark to other countries in Europe, of which fewer than 1000 were reported as imported during that year.

The decline in imports from Thailand was especially marked, and was likely to reflect in part a CITES Standing Committee recommendation to suspend all imports of CITES-listed specimens from that country in April 1991 (CITES *Notification No. 633*), owing to poor CITES implementation. A 1989 study documented problems including the issuance of export permits for orchid species that did not occur in Thailand, the annual export of several million wild orchids with "little or no control", and the import of large quantities of orchids from neighbouring countries without the knowledge of CITES authorities (Luxmoore, 1989:1). Such imports included Asian slipper orchid species, e.g. *Paphiopedilum charlesworthi* from Myanmar. It is informative to note that at that time Thailand did not report on the export of plant specimens in its CITES annual reports. Data provided by the Royal Forest Department show the earlier scale of the orchid trade from Thailand, however: from 1986 to 1988, Thailand exported over 15 million orchids (staff at the Royal Forest Department, *in litt.* to CITES, 16 November 1988, cited in Luxmoore, 1989). The recommended ban on imports was lifted in April 1992 (CITES *Notification No. 673*).

A full 10 years following the effective date of the Appendix-I listing, the international trade in *Paphiopedilum* had declined still further, with only 26 000 plants reported as exported, all of which were reported as artificially propagated. Of these, less than 10% originated from range States (2062 from Thailand, 324 from Malaysia), with the majority being from Europe, Australia and New Zealand, and the USA. Reported trade in cut flowers and tissue cultures was minimal, with live plants (possibly including flasks seedlings) making up the trade. Based on import records, Taiwan, not a CITES Party, was the source of 17 000 artificially propagated orchids, and Japan of 11 000. According to the IUCN/SSC Orchid Specialist Group (1996:41), the majority of international trade during the mid-1990s involved seedlings, "flasks" (presumably flasks seedlings and/or tissue cultures) and "bare root" mature plants. The domestic trade was considered to be larger than the international trade,

Despite the Appendix-I listing and the large number of artificially propagated plants on the market, wild specimens, especially of newly described species, continued to be in high demand several years after the listing, both as items for individual collections and as a source of genetic material for creating new hybrids (IUCN/SSC Orchid Specialist Group, 1996; US Government, 2001).

Wild specimens of illegal origin have been said to be offered for sale often (CITES Secretariat, 2002a). According to German authorities, South-east Asian orchids are among the plant groups most frequently traded illegally to Germany. A shipment of 57 wild *Paphiopedilum*, described on accompanying documentation as having been artificially propagated, were found to have been wild-collected and seized in 2001 (CITES Management Authority of Germany, 2002). Thai authorities seized 148 specimens of wild *Paphiopedilum* in April 2002, and a further 6 specimens in June, the latter having been hidden in a shipment of artificially propagated orchids, a common method for smuggling plants from Thailand (Thitiprasert, 2002).

Among the incentives to collect wild specimens in this genus is the potential to be the first to describe a new species. In 2001, Switzerland's CITES Management Authority submitted a document to the CITES Plants Committee detailing 33 taxa newly described since the late 1980s (CITES Management Authority of Switzerland, 2001). An investigation by the German CITES Management Authority identified a German hobbyist, who had imported plants illegally, when he published the description of several new species in a taxonomic journal (CITES Management Authority of Germany, 2002). A 1991 study of the Asian slipper orchid trade in Japan (Yokoi and Milliken, 1991) noted that wild-collected specimens were favoured by Japanese collectors owing to their unique characteristics, which set them apart from plants produced via tissue culture. In 2001, a Japanese orchid breeder commenting on a renewed boom in the interest in *Paphiopedilum*, stated that breeders and growers were seeking to "draw out their own unique qualities" rather than to "find some feature or other to throw into an unrecognisably complex and cosmetic hybrid" (Tanaka, 2001).

According to a document prepared by the USA for the 11th meeting of the CITES Plants Committee (US Government, 2001), specimens of newly discovered species were appearing in international trade in less time than would be feasible to establish artificial propagation programmes in accordance with CITES criteria. The USA noted that in some cases, species were appearing in trade that had not been authorized for export from known range countries, or for which information was insufficient to determine whether parental stock had been established in a manner not detrimental to the survival of wild populations. A series of recommendations contained in the US document were accepted by the Plants Committee. These included: examining whether existing trade controls were sufficient to prevent illegal trade; assessment of the capacity for artificial propagation in range States; exploring avenues for technical exchanges with and capacity building in range countries in order to produce artificially propagated specimens in a manner not detrimental to species survival; exploring the use of nursery registration towards achieving greater control over the trade; and issuing a CITES Notification to Parties advising of species banned from export by range States and/or where legitimate artificial propagation programmes were not yet in place. It appears that actions taken to implement these recommendations were minimal.

However, several other efforts have been targeted at improving trade controls for *Paphiopedilum*. Assistance was provided to the Government of Thailand to control the illegal trade in native orchid species better, which often involved mis-declaration of either the source or the species of orchid in trade. Thailand's CITES Management Authority collaborated with the CITES Secretariat and the UK CITES Scientific Authority for Plants in developing a training programme for orchid identification. An orchid expert from Thailand worked at the offices of the Royal Botanic Gardens, Kew, for six months, receiving training in CITES matters and developing an identification guide for wild and artificially propagated Asian slipper orchid and *Vanda* species (Allan, 1997). The manual has been used in Thailand in conjunction with regular training of border inspectors and these efforts are viewed as having been successful in improving CITES implementation for orchid species in that country (Thitiprasert, 2002). Taiwan, an important player in the international orchid trade and a major producer of artificially propagated orchids, established a nursery registration scheme in 1998 for *Paphiopedilum* and several other orchid genera (Anon., 1999).

Further attention is required regarding the status of Asian slipper orchid species in the wild. Cribb (1987), cited by the IUCN/SSC Orchid Specialist Group (1996), noted that many species were naturally rare owing to restricted distributions, and further, that many species had been over-collected. The Group called for population studies to be undertaken for *Paphiopedilum* and other species "known to be endangered but otherwise poorly known" (IUCN/SSC Orchid Specialist Group, 1996:126).

Conclusions

The CITES Appendix-I listing for *Paphiopedilum* appears to have greatly reduced the international trade in wild specimens of this genus, especially as regards trade from Thailand. This seems likely to have reduced the threat to species that were being over-harvested for export, and therefore to have contributed to sustainable forest management. It has not, however, eliminated the trade in such specimens, as evidenced by the information on illegal trade reported above, especially with regard to newly discovered species.

Given that artificial propagation of Asian slipper orchid species has a long history, it is impossible to know whether the Appendix-I listing resulted in a significant increase in what was already a well-established pattern of bringing species into cultivation and/or producing hybrids. Alternatively, some might argue that, by restricting legal access to new germplasm from wild specimens to breeders outside range States, artificial propagation had been impeded. If this point is considered in the light of the access and benefit-sharing objectives of the CBD, it could be argued that CITES is increasing the potential for range States to benefit from the genetic diversity represented by these species. The US document put forward to the CITES Plants Committee calls for increased technology transfer and other support to range States in establishing programmes for artificial propagation, an approach that is in line with CBD objectives. Tanaka (2001) proposes this approach, with wild harvests providing stock for artificial propagation within range States, and exports limited to artificially propagated plants.

In theory, should increased information on the conservation status of Asian slipper orchid species in trade demonstrate that some level of legal harvest for export was sustainable, then such harvests could provide an economic incentive for forest conservation. Export of wild-collected specimens would require the transfer of these species back to Appendix II, which in turn would require solid evidence both of the species' status and the ability of range countries to control exports. However, given the relatively small market for wild specimens and the pattern of artificial propagation and hybridization, it is not clear that a sufficient market would exist for wild specimens to create a lasting management strategy based on trade. Again, it might make greater economic sense for range countries to allow managed harvest of wild specimens in order to establish domestic propagation programmes.

Case Study – *Alerce Fitzroya cupressoides*

The South American temperate forest species *Alerce*, an extremely long-lived coniferous tree, has been harvested since the end of the 16th century for its durable timber, used in house construction and roof shingles (Golte, 1996). *Alerce* has been declared a “national monument” in Chile, where the majority of remaining stands occur; only 3800 mature trees are believed to remain in Argentina, the only other range State. It has been classified as Endangered by IUCN (IUCN, 2006), overexploitation having eliminated this species from the majority of its former range, with any future exploitation considered unsustainable owing to the limited and slow regeneration of this species (Schellevis and Schouten, 1999).

Alerce was included in Appendix I when the Convention entered into effect in 1975, thereby banning commercial international trade in this species. CITES annual report data show exports from Chile in 1977, 1980 and 1982, presumably from “pre-Convention” stock, i.e. stock removed from the wild prior to the Convention coming into force. In 1983, Chile proposed the transfer of their coastal population to Appendix II owing to large numbers of trees killed in the coastal zone 30 years earlier (by fire) from which timber could be legally sourced, and a national ban on felling of live specimens. Chile made a commitment to implement trade controls including marking of specimens in trade and limiting exports to certain ports in its proposal, which was accepted.

In 1987, Argentina submitted a proposal to transfer Chile's coastal population back to Appendix I, arguing that this was necessary to improve enforcement of trade controls (CoP6 Com. I 6.10 – Summary Report of the Committee I Meeting). The CITES Plant Working Group supported the proposal “as this provides the only certain protection of this species”, but also supported the right of Chile to allow exports of timber from dead trees once the pre-Convention stock was exhausted, and under certain conditions. At that time, remaining pre-Convention stock was estimated at between 33 000 and 35 400 m³ (CoP6 Com. 6.23 Statement on *Fitz-roya* [sic] *cupressoides*). Chile presented arguments against the proposal, including that the species was not endangered and did not meet the

Bern Criteria, that they were undertaking numerous conservation and research initiatives, that exports were limited to wood from dead trees, and that they had not been consulted by Argentina in the preparation of the proposal. The CITES Secretariat was noted as not supporting the proposal. Other Parties expressed support for the proposal, however, in conjunction with the suggestions put forward by the Plants Working Group, and it was accepted by a vote of 34 to 7 (CoP6 Com. I 6.10 – Summary Report of the Committee I Meeting). Chile subsequently reiterated their arguments in plenary, believing that scientific considerations had not been taken into account, and announced that they would take a reservation on the transfer of this species to Appendix I (CoP6 Plen. 6.8 (Rev.)).

The effect of Chile's reservation was that Chile could continue to treat exports of the species as if it were included in Appendix II, while all other Parties would be required to treat trade as if it were in Appendix I, i.e. prevent imports of all but pre-Convention stock and personal effects (under certain conditions). Chile continued to report exports of this species during the late 1980s and early 1990s, however very few corresponding imports were reported by countries other than the USA. Trade volumes generally declined during this decade, however 12 t of Alerce was reported as imported by the USA in 1999.

Chile sought to clarify the status of pre-Convention stocks in 1995, asking the CITES Secretariat to communicate the names of the only three businesses holding such stocks to all CITES Parties (CITES *Notification 886*). In 2000, Chile provided information on the status of the stocks held by these companies, which totalled approximately 889 m³ (CITES *Notification No. 2000/039*) and, in April 2005, lifted its reservation on the Appendix-I listing.

Illegal logging and trade

Illegal logging of Alerce has been reported recently despite national harvest controls; 28 reports of illegal logging were reported between 1987 and 2002 (Neira, *et al.*, 2002). A case of 76 trees being felled was reported in 1995 (Anon., 1995). Twelve individuals were arrested for illegal cutting of Alerce, however penalties imposed are low compared to the value of the timber, said to be USD7 per linear inch harvested, traders receiving an estimated USD10 per linear inch (Anderson, 2003). According to WWF, more than 2500 Alerce trees were cut by clandestine logging companies operating in the 120 000-acre Rio Blanco Sur property in Chile's coastal range during 2003 (WWF, 2003). Further research is required to determine whether timber from illegally logged trees is destined for domestic or foreign markets, i.e. whether CITES trade controls should be able to assist in reducing the markets for illegal timber. CITES annual report data show the seizure of 20 t of Alerce in 1989, with the country of origin unknown, but almost certainly Chile given the lack of remaining stands or stocks of this timber in Argentina. A further four tonnes were seized by Switzerland in 1994. Seizures of several shipments of seeds and live plants have also been reported by other countries.

Conclusions

The CITES Appendix-I listing for Alerce draws attention to the issues related to trade in pre-Convention stock, and further, the effect of a country taking a reservation on the transfer to Appendix I of an Appendix-II species. Despite Chile having sought to retain the right to trade in this species, its markets were severely constrained by the Appendix-I listing, with trade declining significantly in the decade following the re-transfer of this species to Appendix I. Unfortunately, as is often the case with CITES-listed species, information regarding the impact of the CITES listing on domestic harvests and trade is unclear.

APPENDIX II

Appendix-II species are those that are not necessarily at immediate risk of extinction but may become so unless international trade is strictly regulated. Central to the implementation of CITES is ensuring that the trade in Appendix-II species is maintained “at levels that will not be detrimental to the survival of the species”, and specifically, at levels that will “maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs and well above the level at which that species might become eligible for inclusion in Appendix I” (Article IV). Responsibility for ensuring that exports of Appendix-II species are not detrimental to those species is shared by each Party's CITES Management and Scientific Authorities.

Many countries have taken the step of adopting annual export quotas as a means of maintaining trade within sustainable levels. In some cases, the transfer of species from Appendix I to Appendix II has been accompanied by the establishment of CITES-agreed quotas, e.g. for some crocodylian species. In others, the quotas have been reduced voluntarily following concerns expressed during significant trade reviews, which are discussed in more detail below.

Significant trade review and non-detriment findings

It became apparent in the early 1980s that exports of some Appendix-II species were not being maintained within sustainable levels. The Parties therefore established a process to review trade in Appendix-II species in order to identify species for which trade appeared to be unsustainable and to recommend remedial actions. This is the significant trade review) process. A review process for Appendix-II animal species was formalized in 1989 with the agreement of *Resolution Conf. 8.9*, which provided for a periodic review of trade data and other information, more detailed reviews of the trade in species for which information indicated that trade might be unsustainable, and development of recommendations aimed at specific Parties in cases where these more detailed reviews indicated reason for concern. Provision was made to take action against Parties that failed to respond to these recommendations, e.g. to recommend a suspension of imports of the species in question from those Parties. CITES *Resolution Conf. 8.9* has now been superseded by *Resolution Conf. 12.8 (Rev. CoP13)*, but the basic principles remain. Examples of taxa covered by the Animals Committee reviews are summarized in **Table 3**.

Efforts have also been made to identify funding for field projects in order to assist Parties with implementing recommendations such as those to improve the availability of information on biology and management. A manual to assist Scientific Authorities with making non-detriment findings has also been prepared and distributed by IUCN–The World Conservation Union (Rosser and Haywood, 2002). However, determining sustainable export levels for animal species, especially in areas where harvests are for domestic use and trade as well as export, remains a key challenge to successful implementation of the Convention.

The Plants Committee initially adopted a less formalized approach to the review of the trade in Appendix-II species, reviewing trade in particular groups, e.g. orchids and bulbous species, such as snowdrops *Galanthus* spp. and cyclamens *Cyclamen* spp. and species traded for particular purposes (medicinal plants), with the following groups among those reviewed:

- Bulb exports from Turkey (focus on snowdrops *Galanthus* spp. and cyclamens *Cyclamen* spp.; included and establishment of an export quota system)
- Bulb exports from Georgia (management framework based on experience in Turkey)
- Orchids exported from China (examination of distribution, conservation status, markets, extent of cultivation, medicinal use, preparation of species data sheets, identification of priorities for action, development of a species database)
- Orchids exported from Thailand
- Orchids in the genus *Dendrobium*
- African Cherry
- *Aquilaria malaccensis* (Review of trade and trade controls)
- Jatamansi and Kutki *Picrorhiza kurrooa* (Taxonomy, status, trade and trade controls)
- Cycads
- Afrosmosia
- CITES-listed medicinal plants (review of available information on trade and conservation status)

The Committee also considered information on taxa traded in large volumes presented by Committee members and observers, e.g. succulents. As demonstrated in the case study on *Galanthus* spp., the significant trade process for plants was successful in attracting conservation investment as well as attention, with the result that a sustainable management plan was developed and implemented for these species in Turkey, with similar work initiated in Georgia. In the case of *Aquilaria malaccensis*, the significant trade review drew attention to inadequacies in Appendix II implementation by both exporting and importing countries, and the need to consider the wider trade in all agarwood-producing species.

Table 3 Animal taxa Included in CITES significant trade reviews as of CoP13

Taxonomic Group	Number of Taxa Reviewed	Examples of Taxa Reviewed
Mammals	39	Species traded as skins, e.g. South American foxes <i>Pseudalopex</i> spp. (three) and <i>Conepatus humboldtii</i> , peccaries (<i>Pecari tajacu</i> , <i>Tayassu pecari</i>), Leopard Cat <i>Prionailurus bengalensis</i> , Lynx <i>Felis lynx</i> and fiber, e.g. Vicuña <i>Vicugna vicugna</i> ; species whose parts are used in traditional medicine, e.g. Saiga <i>Saiga tatarica</i> , pangolins <i>Manis</i> spp. (seven), musk deer <i>Moschus</i> spp. (four), species traded as live specimens for research, e.g. macaques <i>Macaca</i> spp. (two)
Birds	79	Primarily parrot species (73) traded live for the pet trade. One subspecies (<i>Rhea americana albescens</i>) traded as skins and feathers
Reptiles	114	Primarily species traded live for the pet trade, e.g. 46 chameleons <i>Chamaeleo</i> spp., 27 day geckos <i>Phelsuma</i> spp., Iguana <i>Iguana iguana</i> , various tortoises. Also species traded for skins, e.g. Spectacled Caiman <i>Caiman crocodilus</i> , and some traded both live and as skins, e.g. pythons <i>Python</i> spp., monitor lizards <i>Varanus</i> spp.
Amphibians	8	six forest dwelling frogs (e.g. tree frogs <i>Dendrobates</i> spp.) traded live for the pet trade, two bullfrogs <i>Rana</i> spp. primarily traded as meat (legs)
Fish	10	Anadromous and freshwater sturgeons, trade primarily involving eggs (caviar) and meat
Molluscs	7	six giant clams <i>Tridacna</i> spp. traded as shells and meat (some species) and Queen Conch <i>Strombus gigas</i> (traded as shells and meat). All marine coastal species, traded as meat and shells
Insects	12	11 birdwing butterflies <i>Ornithoptera</i> spp. and <i>Trogonoptera brookiana</i> , native to southeast Asian forests (primarily traded as dead specimens); Emperor Scorpion <i>Pandinus imperator</i> , native to W. African forest, traded as live and dead specimens.

The process for reviewing significant trade in plant species is now the same as that for animal species and governed by *Resolution Conf. 12.8 (Rev. CoP13)*.

As well as identifying concerns with regard to the trade in particular species, the significant trade review process indicated that particular Parties were having difficulties maintaining trade within sustainable levels. As a result, a pilot process was established for reviewing Appendix II trade at a country level, with Madagascar selected to be the subject of the first pilot review. This review involved active engagement and co-operation with CITES authorities in Madagascar.

Jenkins (2000:55) comments that the significant trade process is “a compromise in which the Parties have acknowledged that CITES cannot operate as it is currently structured. They have surrendered a little of their sovereignty to ensure that the convention can achieve its objectives through a multilateral process that involves a high degree of consultation and co-operation....the exporting country retains ultimate control over the management of the species.”

As with the trade in Appendix-I species, there is a problem of illegal trade in specimens of many Appendix-II species. As legal specimens are also in trade, the illegal trade is often more difficult to detect and/or confirm, e.g. when it involves unauthorized cross-border trade among range States, often for subsequent re-export (see, for example, information on the trade in African Grey Parrots provided in the section on CITES impacts on forest product trade, production and conservation). Difficulties in accurately identifying the source of specimens in trade is also prevalent with the trade in Appendix-II species, with specimens mis-declared as having been produced *ex situ*, thereby avoiding requirements concerning origin or non-detriment findings, when in fact they were harvested from the wild.

Case Study – Snowdrops *Galanthus* spp.

Unlike *Paphiopedilum*, snowdrops *Galanthus* spp., small, early blooming plants native to Europe, are legally harvested and traded by the millions to supply gardeners and their gardens around the world. A review of the *Galanthus* trade was undertaken by TRAFFIC and WWF UK in 2002 (Inskipp, 2003), from which much of the following text has been drawn.

Turkey is traditionally the major source of bulbs of snowdrop and cyclamen *Cyclamen* species for the international market and remains the leading exporter. Bulbs are collected by Turkish villagers, for whom their sale is a valuable source of income. They are exported to other countries, most frequently to the Netherlands, where they are re-packaged and re-exported to their final destinations, including the UK, Germany, and the USA. Bulbs exported from Turkey continue to be predominantly wild-collected or wild-transplanted, although there has been a substantial increase in the development of propagation initiatives in recent years. However, propagation is difficult for some species.

International concern about the impacts of collecting on wild populations led to the listing of snowdrops in CITES Appendix II in 1989. However, neither Turkey nor Georgia became CITES Parties until 1996, with the result that the Appendix-II listing was not implemented in these two countries until after that time.

Actions to bring the trade within sustainable levels were taken in Turkey, however, with a Flowerbulb Technical Committee established in 1989. The Scientific Authority of the European Economic Community's CITES Committee undertook a mission to Turkey in 1993, which documented that Turkey had implemented a scientific and management structure to advise on harvest and export of snowdrops and other species. The mission also reported to the CITES Plants Committee that there was no evidence that exports of two species, Turkish Giant Snowdrop *Galanthus elwesii* and *G. ikariae* were unsustainable and that the Government of Turkey had expressed a strong commitment to join CITES. The Plants Committee recommended that the CITES Standing Committee write to the Government of Turkey to urge the country to join the Convention (Anon., 1993), which it did three years later.

In order to assist CITES Parties with implementing the Convention, in 1999 the UK CITES Scientific Authority for Plants produced a checklist for *Galanthus* and several other bulb genera (Davis, 1999). This was followed by development of a project by the UK Scientific Authority to work with its counterpart in Turkey to examine the distribution of *Galanthus* species in the wild. This included the production of distribution maps that could be used in conjunction with field data to assess the impact of wild-collection, with a goal of informing recommendations to “promote and maintain sustainable trade”, and repatriation of Turkish distribution data to Turkey's CITES Scientific Authority (Royal Botanic Gardens, Kew, 2000).

The Flowerbulb Technical Committee establishes quotas for wild-collected and transplanted bulbs permitted for annual export, following field inspections made by scientific teams. Another important measure has been the reduction of the collecting period, with collection primarily in May, when plants are in mature fruit. Education programmes by NGO scientists have produced very positive results in collecting villages. Now only export-sized bulbs are collected from the wild and while some small bulbs are inevitably dug up during the collecting process, these are now immediately replanted by collectors thus helping to make the bulb collecting more sustainable (Ekim, 1998).

Efforts have been under way since 1992 to develop cultivation of *Galanthus* species in Turkey. Flora and Fauna International (FFI) has partnered with the leading Turkish conservation body, Türkiye Dogal Hayati Koruma Dernegi (DHKD), to support propagation of bulbs in Turkey. The project developed low technology methods for local growers to produce bulbs which could be classified as truly “artificially propagated”. The project is chiefly limited to one species—*Galanthus elwesii*. By 2000 the number of villagers involved in bulb-growing with this project had increased to 250 and bulb production had increased to 1237 kg (approximately 200 000 bulbs). The annual income from bulb production in the villages in 2000 was approximately USD5800, or around USD75-90 per family, an income estimated to be four times higher than would be obtained from sale of an equal number of wild bulbs. The price paid for the bulbs represented over 12% of the final market price, in contrast to the previous figure of one percent from wild collection.

In 2000 the report of the Chairman of the CITES Plants Committee to the 14th meeting of the Conference of the Parties to CITES (CITES Doc. 11.11.2) stated, “*The bulb trade in Turkey involves probably thousands of collectors each year. Collecting takes place over a large part of Turkey and is very well regulated. The Plants Committee has recommended the Turkish regulatory system is an excellent example for other countries trading in the same type of species*”. Turkey’s export quotas for 2003 included eight million *Galanthus* bulbs.

The quest for large and inexpensive supplies of snowdrop bulbs led to the expansion of the trade into Georgia (Oldfield, 1999), from which export of the species *Galanthus woronowii* bulbs started in 1994. Harvesting takes place primarily in fields, where bulbs may occur naturally following earlier land clearance, or have been transplanted (CITES Scientific Authority of Germany, 2001). Harvesting is estimated to involve approximately 1500 villagers, who are responsible for producing the plants on their lands, and these bulbs are subsequently shipped to foreign markets by export companies (Association Green Alternative, 2002).

Concern regarding the sustainability of harvests within Georgia prompted a visit to this country in 1999 by several EU Scientific Authorities and NGOs, who concluded that further research on the distribution and abundance of the species was needed in order to establish sustainable harvest quotas. This was followed in 2001 by a project by the German CITES Scientific Authority to evaluate the status of and threats to *Galanthus* species, review harvest management and production from farm fields, and increase understanding of the scientific basis for determination of national export quotas. This work was undertaken via communication with Georgia’s CITES Scientific Authority and in co-operation with local botanists. A field survey focused on bulb production from farm fields, some of which had been established in and were adjacent to areas with wild populations in conjunction with a form of shifting cultivation, and others that were far from wild sources.

The scientific basis used by Georgia’s Scientific Authority for establishing export quotas was questioned, and the lack of sufficient resources for the Scientific Authority noted. Germany’s Scientific Authority made a series of recommendations including limiting exports to a single species (*G. woronowii*) and establishing more conservative quotas, further review of production patterns, development of cultivation programmes, and provision of additional technical and financial support to Georgia’s Scientific Authority (CITES Scientific Authority of Germany, 2001). Following consideration of the report of German’s Scientific Authority, the Plants Committee recommended continued co-operation between the German and Georgian CITES authorities and support from other CITES Parties with regard to sustainable management of *G. woronowii*. The Committee also recommended that plants produced on farm fields in Georgia be considered as harvested from the wild (they had previously been described as “ranching”). *Galanthus woronowii* is now the subject of CITES significant trade review, which has reported that collection of bulbs from natural plant communities is prohibited in Georgia, but enforcement is weak and more natural habitat has been transformed into cultivated land. The total area of currently cultivated land with *G. woronowii* in Georgia should nevertheless largely be sufficient to meet the global demand for bulbs from that country. Therefore, trade in this species from Georgia was considered Least Concern at that time. However, this conclusion was short-lived, as the species was selected for a further review under the significant trade review process during the 14th meeting of the Plants Committee (2004, Windhoek).

Of concern in relation to the trade in wild bulbs is the danger to rare species dug by accident or deliberately for replanting and trade. The snowdrop *Galanthus krasnovii* is one such species, known from only one locality in Georgia, and also from north-east Turkey. There have been concerns that this species has entered Europe mixed with shipments of *G. woronowii* (Oldfield, 1999).

Conclusions

The CITES Appendix-II listing for *Galanthus* species has prompted a focus on and investment in the development of sustainable management regimes in the two main exporting countries. In the case of Turkey, this investment appears to have supplemented efforts already well under way with regard to establishing controls on the harvest and trade of these species. In Georgia, however, the investment has come at an earlier stage, and there is greater concern regarding the sustainability of export levels. Should sufficient investment be made in Georgia, it appears that CITES will be able to ensure that harvest and trade of these species are managed in a way that can make a long-term contribution to both sustainable forest management and rural livelihoods.

One threat to this scenario could be the increase in commercial *ex situ* cultivation, e.g. in the Netherlands, which has an extensive bulb propagation industry. Efforts to encourage gardeners to “think before they buy” could encourage this trend if insufficient information is provided regarding the sustainability and economic importance of the wild bulb trade. A labelling agreement with the Dutch bulb industry, the “Dutch Bulb Labelling Agreement”, calls for all bulbs to be labelled as “bulbs from wild source” or “bulbs from cultivated stock”. When a TRAFFIC survey of US bulb sales identified a Dutch trader as labelling bulbs as “Grown in Turkey”, i.e. not following this agreement, the trader responded by committing to only providing US markets with *Galanthus* bulbs cultivated in the Netherlands in future (TRAFFIC North America, 1999).

Case Study – Agarwood *Aquilaria malaccensis*

Agarwood, the resinous, fragrant wood produced by several species of the genus *Aquilaria*, including *Aquilaria malaccensis*, has uses ranging from incense and perfume to medicine. Agarwood products are traded in the form of wood pieces, chips, powder and oil, as well as finished products such as incense. When measured in terms of price per unit weight, agarwood is one of the world’s most valuable non-timber forest products—agarwood oil generally sells for between USD50 00–10 000 per kilogramme (Barden *et al.*, 2000). *Aquilaria malaccensis* has been classified as Vulnerable by IUCN (Oldfield *et al.*, 1998), with five other *Aquilaria* species also considered threatened and at risk from overexploitation for agarwood: *A. beccariana* (Vulnerable); *A. crassna* (Critically Endangered); *A. cumingiana* (Vulnerable); *A. hirta* (Vulnerable); *A. microcarpa* (Vulnerable).

Concern regarding over-exploitation of *Aquilaria malaccensis* prompted the Government of India to propose this species for listing in CITES Appendix II at CoP9. This proposal was accepted despite opposition expressed during the CITES meeting by some other range States. The listing took effect on 16 February 1995. As is shown below, the CITES listing prompted a suite of actions aimed at improving the sustainable management of agarwood-producing species, these actions extending beyond the single species included in the CITES Appendices.

Implementation of the CITES listing was complicated from the start by the fact that only one of the several known agarwood-producing species was included in the CITES Appendices. Additional research has shown that agarwood is not only produced by several *Aquilaria* species, but also by some species in the genera *Gonystylus*, *Gyrinops*, *Phaleria* and *Aetoxylon*. Implementation of the listing for *Aquilaria malaccensis* therefore presented CITES Management Authorities in both exporting and importing countries with a significant challenge.

The CITES Plants Committee made review of CITES implementation for *Aquilaria malaccensis* a priority under the CITES significant trade review process for plants during 1998–2000. TRAFFIC was contracted by the CITES Secretariat to review implementation in key range States. The detailed findings of this review, a desk study, are available on TRAFFIC’s website (Barden *et al.*, 2000), and are summarized below.

Trade data provided in CITES annual reports provided one measure of implementation. Reporting of trade in *Aquilaria malaccensis* was inconsistent between 1995 and 1997, owing to the identification problems noted above. CITES annual report data were likely to have included data for species other than *A. malaccensis*. Trade reporting by exporting countries, especially Indonesia and Malaysia, appeared far more comprehensive than did reporting by importing countries during this period, with seven CITES Parties reported as export destinations that did not have corresponding import records in their CITES Annual Reports. Exports were also reported to four non-Parties.

Identification of wood to the species level based on visual inspection was found to be difficult and beyond the reach of many enforcement personnel, and identification of products such as oil would seem to be impossible without the use of laboratory techniques. As a result, enforcement authorities in two of the main exporting range States, Indonesia and Malaysia, appeared not to differentiate between agarwood from *Aquilaria malaccensis* and other *Aquilaria* species in trade.

In Indonesia and Malaysia, the governments instituted CITES export permit requirements for *Aquilaria malaccensis*. Indonesia also established export (and possibly harvest) quotas for individual regions as well as the country as a whole. It did not appear that Scientific Authorities were involved in making non-detriment findings in Malaysia, nor was the basis for the establishment of export quotas for *A. malaccensis* clear in Indonesia, although the Scientific Authority was consulted. Further, it

appeared that both the Indonesian and Malaysian Governments were responding to the difficulty of identifying the species in trade by choosing to classify much of the legal (CITES-permitted) agarwood exports as *A. malaccensis*. As a result, CITES annual report data for these two countries and corresponding import destinations may reflect trade in species in addition to *A. malaccensis*. Alternatively, it is possible that *A. malaccensis* exports are not reflected in these data, having been mis-declared at the time of export in order to avoid CITES controls.

In India, once a primary agarwood supplier and found still to be a key trans-shipment point and processing centre, the government had not implemented CITES import or re-export controls for *Aquilaria malaccensis*. Furthermore, a unilateral ban on exports and re-exports of unprocessed agarwood was not being enforced, with exports of chips and agarwood documented in India's Customs export data but not in CITES annual reports.

Very little information was available with respect to agarwood exports from other *Aquilaria* range States, a few of which had implemented export bans.

There were indications that the listing was not being implemented in most of the agarwood consumer countries: few Parties noted as export destinations in CITES annual report data were recording corresponding imports in their CITES annual reports. Hong Kong and Singapore were notable exceptions, however. Several key consumer countries in the Middle East were/are non-Parties, further reducing the effectiveness of the listing's implementation.

Despite these shortcomings, the inclusion of *Aquilaria malaccensis* in CITES Appendix II was found to have increased the transparency of the international agarwood trade (trade data to 2003 are provided in **Table 4**), and seems likely to have increased the ability of Indonesia and Malaysia to control their exports of *A. malaccensis* and other agarwood-producing species.

The findings and accompanying recommendations from Barden *et al.*, 2000 were provided to the CITES Plants Committee, which prepared a series of draft decisions calling for further action for presentation to CoP11. Among the resulting Decisions agreed were directions to the Plants Committee to: continue the review of the trade in the genus *Aquilaria*; seek mechanisms for identifying species in trade and improving trade reporting; and identify additional *Aquilaria* species that might merit inclusion in Appendix II (Decisions 11.112 and 11.113). A pilot project with the National Herbarium in the Netherlands was established to investigate the feasibility of using DNA markers for species identification, and TRAFFIC was asked to assist with further trade reviews.

Subsequent research by TRAFFIC focused on CITES implementation in New Guinea, which is split into two political entities, the Indonesian province of Papua and the independent State of Papua New Guinea. Papua is believed to be the most important source of agarwood exported from Indonesia (Indonesian Directorate of Forest Protection and Nature Conservation, *in litt.* to TRAFFIC Oceania, 2002), largely identified as *Aquilaria filaria*. Agarwood exports from Papua New Guinea were found to have begun relatively recently, in 1997 (Zich and Compton, 2002). Conservation action for *Aquilaria malaccensis* in Papua New Guinea, likely to have been stimulated to a large extent by research prompted and/or funded as a result of the CITES listing, included development of harvesting guidelines for communities in Papua New Guinea (Singadan and Gunn, 2003), a review of the economics of the agarwood industry aimed at increasing economic incentives for sustainable management (Gerber, *in prep.*), and submission by the Papua New Guinea Government of a Technical Co-operation Project proposal for further work on agarwood to FAO. The first phase of the "Eaglewood management project TCP/PNG/2901" has been implemented and the second phase has been planned to address several outstanding issues.

Research confirmed the difficulty of identification of species in trade, and the likelihood that species other than *Aquilaria malaccensis* were being recorded in CITES annual report data. Indonesia had established separate national export quotas for *A. malaccensis* and *A. filaria* based on their different areas of natural distribution, with all exports of agarwood from Papua believed to consist of *A. filaria*. However, these quotas did not take into account the fact that other agarwood producing species occurred in these areas, so the quota, harvest and trade data for both species were therefore likely to include harvest and trade in other species as well. Papua New Guinea did not have export quotas, but had established and convened several meetings of an Inter-Agency Committee specifically to discuss the trade in agarwood, and had a 10% levy on exports to provide funds for forest management and development of the industry (Zich and Compton, 2002).

Table 4 CITES-reported net exports of *Aquilaria* spp. (1999-2003)

Country	Term	Unit	1999	2000	2001	2002	2003	Total
Canada	<i>Aquilaria malaccensis</i>	g	0	0	0	0	468	468
China	<i>Aquilaria</i> spp.	kg	0	0	0	0	0	0
China	<i>Aquilaria malaccensis</i>	kg	0	0	0	0	18	18
China	<i>Aquilaria malaccensis</i>	bottles	0	13 200	0	0	0	13 200
China	<i>Aquilaria malaccensis</i>	cartons	45	4610	650	0	0	5305
China	<i>Aquilaria malaccensis</i>	g	0	0	0	1170	0	1170
China	<i>Aquilaria malaccensis</i>	kg	0	0	101	6	172	279
China	<i>Aquilaria sinensis</i>	boxes	0	0	0	1	0	1
China	<i>Aquilaria sinensis</i>	kg	0	0	0	0	42	42
China	<i>Aquilaria sinensis</i>	derivatives	0	0	0	1	0	1
China	<i>Aquilaria malaccensis</i>	kg	0	3000	4	0	0	3004
China	<i>Aquilaria sinensis</i>	kg	0	0	0	0	287	287
China	<i>Aquilaria malaccensis</i>	kg	0	0	0	0	72	72
Germany	<i>Aquilaria malaccensis</i>	kg	0	0	0	0	300	300
Germany	<i>Aquilaria malaccensis</i>	specimens	0	1	0	0	0	1
Hong Kong	<i>Aquilaria malaccensis</i>	kg	1000	0	0	0	0	1000
Hong Kong	<i>Aquilaria malaccensis</i>	kg	1318	0	0	0	0	1318
Hong Kong	<i>Aquilaria malaccensis</i>	timber	0	0	0	2	0	2
Indonesia	<i>Aquilaria</i> spp.	kg	0	0	0	0	71	71
Indonesia	<i>Aquilaria filaria</i>	kg	0	0	0	0	36 858	36 858
Indonesia	<i>Aquilaria malaccensis</i>	kg	76 401	81 377	74 826	70 546	50 144	353 294
Indonesia	<i>Aquilaria malaccensis</i>	powder	0	0	0	0	1	1
India	<i>Aquilaria malaccensis</i>	g	0	780	685	0	0	1465
India	<i>Aquilaria malaccensis</i>	extract	5	0	0	0	0	5
India	<i>Aquilaria malaccensis</i>	oil	0	2	0	0	0	2
India	<i>Aquilaria malaccensis</i>	powder	0	9050	0	0	0	9050
Myanmar	<i>Aquilaria malaccensis</i>	live	0	0	0	0	6	6
Malaysia	<i>Aquilaria</i> spp.	kg	477 000	836 000	0	0	0	1 313 000
Malaysia	<i>Aquilaria malaccensis</i>	m ³	0	0	0	14	0	14
Malaysia	<i>Aquilaria malaccensis</i>	kg	43 530	65 500	26 000	145 424	337 670	618 124
Malaysia	<i>Aquilaria malaccensis</i>	live	0	0	0	0	7550	7550
Malaysia	<i>Aquilaria malaccensis</i>	live	0	0	0	15	0	15
Malaysia	<i>Aquilaria</i> spp.	kg	7660	4000	0	0	0	11 660

Country	Term	Unit	1999	2000	2001	2002	2003	Total
Malaysia	<i>Aquilaria malaccensis</i>	kg	0	0	0	0	19 800	19 800
Malaysia	<i>Aquilaria</i> spp.	m ³	0	0	101	0	0	101
Malaysia	<i>Aquilaria</i> spp.	kg	0	0	283 587	0	0	283 587
Malaysia	<i>Aquilaria malaccensis</i>	specimens	0	0	0	2	0	2
Netherlands	<i>Aquilaria malaccensis</i>	dried plants	0	2	0	0	0	2
Singapore	<i>Aquilaria filaria</i>	kg	0	0	0	0	2193	2193
Singapore	<i>Aquilaria malaccensis</i>	chips	0	0	650	0	0	650
Singapore	<i>Aquilaria malaccensis</i>	chips	56 414	0	37 909	0	0	94 323
Singapore	<i>Aquilaria malaccensis</i>	derivatives	0	200	0	0	0	200
Singapore	<i>Aquilaria malaccensis</i>	logs	0	0	0	117	0	117
Singapore	<i>Aquilaria malaccensis</i>	oil	0	0	0	0	30	30
Singapore	<i>Aquilaria malaccensis</i>	powder	4708	0	5300	10 819	0	20 827
Singapore	<i>Aquilaria</i> spp.	sawn wood	0	0	31	0	0	31
Singapore	<i>Aquilaria malaccensis</i>	timber	474	339	3194	0	2449	6456
Singapore	<i>Aquilaria malaccensis</i>	timber pieces	0	0	192	0	0	192
Thailand	<i>Aquilaria</i> spp.	chips	0	0	0	0	149	149
Taiwan	<i>Aquilaria malaccensis</i>	timber pieces	0	0	500	0	0	500
Viet Nam	<i>Aquilaria malaccensis</i>	chips	0	0	246	0	0	246
Unknown	<i>Aquilaria malaccensis</i>	derivatives	0	0	0	3	0	3

Source: CITES annual report data compiled by UNEP-WCMC.

Note: 2001 data likely to be incomplete.

Consideration of the results of this research by the Plants Committee resulted in a further set of Decisions being agreed at CoP12 (*Decisions 12.66–12.71*). These included directions that further research be undertaken, aimed at: developing tools to aid in the identification of products in trade to the species level; increasing knowledge of the distribution of agarwood-producing species supplying the trade; and on trade dynamics including in major importing and re-exporting countries and territories. Development of a standard method for ensuring that harvests for export were maintained within sustainable levels, as required under CITES Article IV, was called for, as was re-evaluation by IUCN of the threatened status of all agarwood-producing species. With a view to assisting implementation of these Decisions, TRAFFIC Southeast Asia undertook research into the trade dynamics in Indonesia, Malaysia, Singapore and Taiwan and also assisted in the development of a methodology for making non-detriment findings. The work was undertaken in consultation with the CITES Management Authorities of Indonesia, with agreement reached to work with the Indonesian Gaharu (agarwood) Traders' Association to undertake field assessments and to work collaboratively to develop this methodology.

Decision 12.74, also agreed at CoP12, established inclusion of *Aquilaria malaccensis* in the significant trade review process in the period following CoP12. The resulting review, presented at the 14th meeting of the CITES Plants Committee (see Annex 2 of *PC14 Doc. 9.2.2*), gave rise to recommendations which varied in degree of urgency depending on the range State, but the situation was classed as being of most concern in Malaysia. A listing proposal for the genera *Aquilaria* and *Gyrinops* was tabled at CoP13 on the grounds that demand for agarwood within the Middle East and Asia was supplied almost entirely from unmanaged, wild-harvested stocks and illegal trade was reportedly widespread: and because identification of agarwood products in trade was extremely difficult, inclusion in Appendix II of all species in the genera was required for effective implementation of the CITES listing of *A. malaccensis*. The proposal was accepted and the listing became effective in January 2005.

Conclusions

The listing of *Aquilaria malaccensis* in CITES Appendix II prompted a suite of actions aimed not only at improving the sustainable management of *A. malaccensis*, but also of other agarwood-producing species, including via their listing in the same Appendix. Reported exports of *A. malaccensis* from Indonesia fell significantly after 1995, presumably reflecting management decisions, e.g. export quotas, made by the government, at least in part. (On the other hand, this could have been reflecting a move to mis-declare *A. malaccensis* as another *Aquilaria* species in order to circumvent the new controls.) Despite initial resistance from some range States, there now appears to be support for CITES-related actions with regards to agarwood-producing species.

APPENDIX III

In contrast to the case for Appendix-I and -II species, decisions to include species in Appendix III are made unilaterally by individual range States. Experiences with implementation of the CITES Appendix-III listing for Big-leaf Mahogany demonstrate that CITES Parties are in general less familiar with the requirements of implementing listings for species in this Appendix. This is especially the case with regard to implementation for specimens exported from countries other than those that actually listed the species in Appendix III. Based on the limited reviews conducted thus far, implementation of Appendix-III listings appears highly variable.

Inclusion of species in Appendix III has resulted in an increased ability to control the illegal trade of CITES-listed specimens from range States, in part by providing a legal basis on which importing countries can question the source of suspect shipments. In the case of ramin species listed in Appendix III by Indonesia in August 2001, the Government of Malaysia was able to seize two unauthorized shipments from Indonesia owing to the lack of accompanying CITES documents (Hin Keong Chen, TRAFFIC International, *in litt.* to T. Mulliken, TRAFFIC International, June 2003). Further, the listing increased the transparency of trade in the listed species, helping to identify trade in apparent violation of national trade controls. Appendix III

trade data have been used in the development and analysis of proposals to include species in Appendix II, e.g. as was the case for the Hill Myna *Gracula religiosa*. There is no information to indicate that the listing was important to controlling the illegal trade in bird species from Ghana, as discussed in the related case study, below.

The fact that Appendix-III listings can be put into place at any time can present a challenge for CITES implementation. In the case of the ramin listing, mechanisms to implement Appendix III were not initially in place in Malaysia. The Government responded rapidly to the listing by appointing the Malaysian Timber Industry Board (MTIB), which has the necessary infrastructure, to issue CITES certificates of origin for ramin. The Government also took out a reservation on the listing for all but sawn logs and timber, viewing implementation for finished products as too difficult to enforce owing to problems of identification (H.K. Chen, TRAFFIC International, *in litt.* to T. Mulliken, TRAFFIC International, June 2003).

There is no indication that Appendix-III listings have had a significant impact on legal trade volumes for listed species, in contrast to concerns expressed that CITES listings would result in trade declines. For example, information presented to CITES Timber Working Group members, which included representatives from the timber industry, indicated that the Appendix-III listing had not prompted a reduction of the legal international trade in mahogany.

Case Study—Big-leaf Mahogany *Swietenia macrophylla*

A brief history of efforts to include Big-leaf Mahogany in CITES Appendix II is presented in the section on experiences with proposals to list species in the Appendices, and will not be reiterated here. Instead, this section will focus on the experiences of CITES Parties with regard to implementing the Appendix-III listing for this species. Much of the following text is drawn from earlier works examining CITES implementation, particularly Buitrón and Mulliken (2003). Further information on the implementation of the Appendix-III listing for Big-leaf Mahogany can also be found in TRAFFIC (2001) and Buitrón and Mulliken (1997).

In 1995, following unsuccessful proposals to include the species in Appendix II during CoP8 and CoP9, Costa Rica placed Big-leaf Mahogany in Appendix III. The listing was restricted to the populations of the Americas, thereby excluding plantation timber from non-range States, and to saw-logs, sawn wood and veneers, thereby excluding plywood and finished products. The impacts of Costa Rica's action were not limited to this country alone, but felt by mahogany producer states from the southernmost part of the species' range in Bolivia and Peru to its northern limits in Mexico, and by consumer States in North America and Europe.

The Appendix-III listing represented the first CITES-related requirement to control a high volume trade in a timber species. Furthermore, for the range States, it represented the first CITES-related requirement to implement a system for monitoring legal trade in timber; the only other CITES-listed neotropical timber species were included in Appendix I (Alerce, Brazilian Rosewood, Monkey Puzzle population of Chile) and/or banned from export by range States (Monkey Puzzle population of Argentina). In fact, for most range States, it represented the first application of Appendix III to any trade. It is perhaps not surprising, therefore, that at the start, implementation was far from comprehensive.

A 1997 TRAFFIC review revealed problems with implementation ranging from complete ignorance of Appendix III requirements on the part of some Management Authorities to problems in identifying mahogany at the time of export and import (Buitrón and Mulliken, 1997). There was widespread confusion regarding Appendix III "Certificate of Origin" requirements, with a variety of documents being used and accepted, including Customs certificates, often issued by offices other than CITES Management Authorities. Implementation with regard to import and re-export controls within Latin America was very limited. Import controls in the main known countries of import, the USA and the UK, were established but implemented inconsistently; no import controls were established in the Dominican Republic, which was a previously unknown but increasingly important export destination for Big-leaf Mahogany.

Major impediments to effective implementation identified by Buitrón and Mulliken (2003) included:

- Lack of understanding of Appendix-III requirements as applied to exports, imports and re-exports;
- Insufficient human and financial resources to implement the listing effectively within Management Authorities and at border points;
- Lack of co-ordination among the different agencies charged with forestry administration, CITES and Customs controls, including with respect to information sharing (evidenced, for example, by widely differing data on trade volumes amongst different agencies in the same country);
- Low levels of co-ordination among the CITES Management, Customs and other authorities in different (especially adjoining) range States with regard to controlling cross border trade;
- Ineffective information management and reporting of trade in CITES annual reports; and
- Difficulties with identifying timber in trade.

CITES Mahogany Working Group

At CoP10 (Harare,1997), the exporting countries of Brazil and Bolivia and the biggest importer—the USA—agreed to form a working group to examine the status, management and trade of Big-leaf Mahogany throughout its range. Other range countries voiced support for this initiative. The working group met in June 1998, attended by member countries of the Amazon Cooperation Treaty (ACT), Panama, several importing countries, a number of international organisations, including FAO and ITTO, and various NGOs. Despite agreements for increased and often joint action and information sharing to secure the sustainable management of Big-leafed Mahogany, there was little evidence of significant progress by CoP11. The Parties agreed at CoP11 to establish, under *Decision No. 11.4*, a formal CITES “Mahogany Working Group of the Conference of the Parties” (MWG), which was to include the participation of all range States and key consumer countries. The MWG was charged to: review the effectiveness of Appendix-III listings and study appropriate measures to widen their geographic scope; analyse legal and illegal trade; review studies of the status of the species; and encourage exchange of information among CITES Management and Scientific Authorities. The Group was directed to report on its findings and to provide recommendations for consideration at CoP12. The report contained a series of recommendations aimed at addressing the need for better information on the status and silviculture of the species in order to ensure sustainable management, problems with trade controls and reporting, and illegal trade both within and from the region (*CoP12 Doc. 12.47*). The inclusion of Big-leaf Mahogany in CITES Appendix II was not viewed as negating the need for the Mahogany Working Group, which has subsequently held meetings in 2003 and 2006.

Implementation problems did not go unnoticed, however. Unlike for other Appendix-III listings, Appendix-III implementation for Big-leaf Mahogany was subject to regular reviews, including during meetings of mahogany and timber working groups established by the Parties. Communications with government staff in the course of these reviews not only drew their attention to problems identified, but also provided an opportunity for explaining CITES procedures and providing advice. This helped trading Parties to improve their procedures where deficiencies were found, e.g. in the case of Bolivia, Brazil, Peru, the USA, the UK, and the Dominican Republic. The possibility of further Appendix-II listing proposals may also have prompted exporting range States to demonstrate that they were taking action to implement Appendix III and otherwise bring trade under greater control.

Both Bolivia and Brazil agreed to include their populations in Appendix III in 1997, following defeat of the Appendix-II listing proposal. Both they and Mexico did so in 1998, followed by Colombia and Peru in 2001. For each of these countries, the main impacts were the requirement that CITES export permits, rather than certificates of origin, accompanied all shipments exported, and that these shipments were obtained in accordance with the laws of that country with regard to the protection of fauna and flora. This last requirement was especially relevant in the case of Brazil and Peru, where illegal logging was known to be widespread. The Appendix-III listing by these countries required them to ensure that timber

to be exported had been obtained legally, and enabled importing countries to seek confirmation of that fact in the case that questions arose. All Parties were required to report on their trade (see **Table 5**).

Appendix-III implementation remained problematic, however, undermining the effectiveness of the listing in reducing illegal trade. Concern regarding illegal harvests in Brazil prompted the government to suspend all harvest authorizations. There were reports from Peru of illegal logging in protected areas, including indigenous reserves. Indications that illegally logged timber was being exported prompted seizures of large quantities of mahogany presented for import into the USA and Europe in 2001. The Appendix-III listing provided a basis for these seizures: in response to information on illegal logging, including from Brazil's CITES Management Authority, some importing Parties questioned whether the timber had been obtained in accordance with Brazil's laws for the protection of fauna and flora as required under Appendix III.

Despite concerns that Appendix-III controls would present an administrative burden, interviews during reviews of CITES Appendix III implementation indicated that this was not the case; rather, CITES controls mirrored or complemented national export and import controls. In fact, the trade controls already in place in most if not all range States were stricter than those required under Appendix III. As most countries that had listed Big-leaf Mahogany in Appendix III were seeking to ensure that timber to be exported had not only been obtained legally, but also sustainably, their aims were closer to those of Appendix II.

Conclusions

The Appendix-III listing for Big-leaf Mahogany had a variety of impacts with regard to the trade in this species. First, the listing helped to quantify trade volumes, documenting trade flows from countries of origin to importing countries, including a previously unrecognized destination, the Dominican Republic. This information was useful for further consideration of the impacts of the trade on populations within range States. The listing, in combination with Appendix-II listing proposals, also prompted greater attention to and investment in controlling the international trade in this species, including greater collaboration among range States and between range States and consumer countries. Finally, it served as a type of pilot project for implementing and examining the wider issue of CITES trade controls for timber species traded in high volumes. It seems very likely that the combined effects of the Appendix-III listing were instrumental in the subsequent agreement to list this species in Appendix II, effective during CITES CoP13, this listing entering into effect in November 2003.

Implementation of the Appendix-II listing for Bigleaf Mahogany has however proved problematic. In 2005 the CITES Plants Committee expressed extreme concern regarding the implementation of Article IV of the Convention for the species following its inclusion in Appendix II (see document PC15 Summary Record). In 2006 the CITES Secretariat reported to the Standing Committee that it had found extensive indications of illegal harvest and trade of the species in Peru, and recommended that the Standing Committee advise Parties to suspend import of the species from Peru. It also urged the Standing Committee to include Bigleaf Mahogany in the Review of Significant Trade process (document SC54 Doc. 31.1). The Standing Committee did not agree to the first recommendation, instead asking Peru to report on progress in implementation to the next meeting of the Standing Committee, and the Secretariat withdrew its request for Bigleaf Mahogany to be included in the Review of Significant Trade (SC54 Summary Record). Following a report from Peru, the Standing Committee agreed a series of recommendations at its 55th meeting in June 2007 (SC55 Summary Record). Problems with implementation of the listing were discussed further at CoP14 and an Action plan for the control of international trade in Bigleaf Mahogany was adopted at the meeting (Decision 14.145). More generally, the CoP also directed the Plants Committee to 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 (Decision 14.135).

Table 5 Net exports of Big-leaf Mahogany Swietenia macrophylla* (1999-2003)

Country	Term	Unit	1999	2000	2001	2002	2003	Total
Argentina	sawn wood	m ²	0	2692	0	0	0	2692
Austria	carvings		0	0	0	1	0	1
Austria	veneer	m ²	0	0	0	0	638	638
Bolivia	sawn wood	m ³	8453	10 313	7612	7175	8603	42 156
Brazil	carvings		0	0	0	0	9	9
Brazil	sawn wood	m ³	54 794	39 815	40 403	40 372	8409	183 793
Brazil	sawn wood	Kg	121 905	18 552	0	0	0	140 457
Brazil	timber	m ³	0	0	9	1072	0	1081
Brazil	veneer	m ³	5055	3621	4468	3508	467	17 119
Brazil	veneer	Kg	0	2544	0	0	0	2544
Brazil	veneer	m ²	0	789 081	0	28	0	789 109
Brazil	carvings		13	0	0	0	0	13
Brazil	sawn wood	cm ³	0	0	0	66 080	0	66 080
Brazil	sawn wood	m ³	2326	2029	709	1173	190	6427
Brazil	sawn wood	shipments	1	0	0	0	0	1
Canada	sawn wood		0	24 841	0	23 196	0	48 037
Canada	timber	M	5819	0	0	0	0	5819
Canada	timber pieces		0	0	0	0	9	9
Canada	veneer	cm ³	0	203	0	4 762 196	732 866	5 495 265
Canada	veneer	m ³	0	805	0	0	2	807
Canada	veneer	m ²	0	88 872	0	0	40 354	129 226
Canada	veneer		2	0	0	0	0	2
Colombia	sawn wood	m ³	0	0	0	37	0	37
Colombia	sawn wood	g	0	0	0	100	0	100
Cuba	carvings		0	0	1	0	0	1
Cuba	furniture	items	0	27	371	0	0	398
Cuba	sawn wood	m ³	0	0	0	0	61	61
Denmark	timber	m ³	4	0	0	0	0	4
Denmark	veneer	m ²	0	0	0	0	3015	3015
Dominican Republic	timber	m ³	0	30	0	0	0	30
Ecuador	sawn wood	m ³	77	0	0	50	225	352

Country	Term	Unit	1999	2000	2001	2002	2003	Total
Ecuador	timber	m ³	0	0	0	40	0	40
France	carvings	kg	0	0	0	18	0	18
France	timber	m ³	0	0	0	5	0	5
France	veneer	m ²	0	0	0	0	846	846
Germany	timber pieces		0	12	0	0	0	12
Guatemala	sawn wood	m ³	374	2716	3134	2482	785	9491
Guatemala	veneer	cm ³	0	0	0	0	165 000	165 000
Guatemala	veneer	m ³	0	0	0	0	21	21
Honduras	sawn wood	m ³	12	0	15	0	39	66
Honduras	timber	m ³	1312	665	555	0	0	2532
Indonesia	carvings		284	0	0	0	0	284
Italy	veneer	m ³	0	0	0	0	18	18
Italy	veneer	m ²	0	0	0	30 032	29 117	59 149
Jamaica	carvings		0	0	0	0	19	19
Mexico	sawn wood	m ³	0	0	0	1728	0	1728
Mexico	timber	m ³	0	0	150	0	0	150
Mexico	veneer	m ³	43	41	0	0	0	84
Mexico	veneer	m ²	0	12 636	0	0	0	12 636
Malaysia	live		0	0	3	0	0	3
Nicaragua	carvings		0	0	0	0	141	141
Nicaragua	sawn wood	m ³	5164	3863	5991	7278	158	22 454
Nicaragua	sawn wood	kg	0	69 029	0	0	0	69 029
Nicaragua	timber pieces		0	0	0	0	940	940
Panama	sawn wood	m ³	23	542	2135	765	280	3745
Panama	timber	m ³	0	660	0	0	0	660
Panama	timber pieces		25	0	0	0	0	25
Peru	sawn wood	m ³	51 487	33 047	39 371	54 006	2436	180 347
Peru	sawn wood	kg	37 101	0	0	0	0	37 101
Peru	sawn wood	shipments	0	0	0	1	0	1
Peru	timber	m ³	0	0	2091	37	0	2128
Peru	veneer	cm ³	0	0	0	0	348 000	348 000
Peru	veneer	m ³	0	2	4	0	0	6
Spain	carvings		0	0	1200	0	0	1200

Country	Term	Unit	1999	2000	2001	2002	2003	Total
Spain	veneer	m ²	0	0	1204	0	0	1204
Sri Lanka	carvings		0	734	755	496	0	1985
Sri Lanka	furniture	items	0	0	0	0	613	613
Suriname	sawn wood	m ³	0	0	9	0	6	15
Sweden	sawn wood	kg	0	880	0	0	0	880
Switzerland	carvings		0	0	2	0	0	2
Switzerland	sawn wood	m ³	0	0	0	0	0	0
Switzerland	sawn wood	kg	0	0	0	80	0	80
Switzerland	sawn wood	m ²	0	0	0	80	0	80
Switzerland	veneer	m ²	0	0	0	0	2013	2013
UK	carvings		0	0	0	0	1	1
UK	sawn wood		0	0	0	8	0	8
UK	veneer	m ²	337	0	0	0	0	337
USA	sawn wood	cm ³	0	0	0	693 466	0	693 466
USA	sawn wood	m ²	66	34 476	0	0	0	34 542
USA	timber	m ³	0	0	0	0	0	0
USA	timber pieces		0	0	0	0	11	11
USA	veneer	m ²	106 377	0	106 542	149 453	954	363 326
USA	veneer		54	0	0	0	0	54
Venezuela	sawn wood	m ³	0	0	27	0	0	27
Unknown	seeds	kg	0	0	0	0	2	2

Source: CITES annual report data compiled by UNEP-WCMC.

Notes: 2001 data likely to be incomplete; * includes data for trade recorded as *Swietenia* spp.

Case Study—Bird species native to Ghana

In 1976, Ghana included a variety of bird species in CITES Appendix III, including several entire bird families, e.g. Ploceidae spp. (weavers and sparrows) and Anatidae spp. (waterfowl). The Appendix-III listings were not limited to species native to Ghana, putting into place CITES documentation requirements for a wide range of species. In 1985, the Parties adopted *Resolution Conf. 5.22*, which, among other recommendations, called on Parties to limit their Appendix-III listings to species that were native to their countries and for which national protective legislation could be shown to be in place. Ghana's Appendix-III listings were modified accordingly (see **Table 6**), reducing the number of bird species covered to approximately 115, of which only one, Fulvous Whistling Duck *Dendrocygna bicolor*, was also listed in this Appendix by another country (Honduras).

Ghana's Appendix III-listings require all CITES Parties exporting listed species to issue certificates of origin, and importing countries to check that shipments of these species offered for import are accompanied by such certificates, or CITES export permits in the case of birds exported from Ghana. Furthermore, the listings require that CITES Parties report on all trade in these species in their CITES annual reports. The listings therefore require administrative investment on the part of CITES Parties in controlling the trade in species not identified as being at risk from international trade. Reported exports of Rose-ringed Parakeets *Psittacula krameri*, for example, exceeded 420 000 birds from 1976 to 2002. Reported exports of Cut Throat (Ribbon Finch) *Amadina fasciata* topped 900 000 birds during this period, of which only 75 were reported as originating/exported from Ghana.

The majority of the birds in trade continued to be from wild-caught sources; only 821 of the over 900 000 Cut Throats reported as exported, for example, were reported as having been bred in captivity, as were approximately 66 000 of the over 420 000 Rose-ringed Parakeets.

Ghana's reported exports amounted to just over 30 000 birds during this period; whether these figures would have been much higher without the Appendix-III listing is impossible to ascertain. However, the fact that large quantities of these species, many of which have a relatively low value in trade, are available from other countries would seem to indicate that there would not be a strong incentive to smuggle these species from Ghana.

Conclusions

There is no evidence to indicate how monitoring trade volumes of this magnitude have contributed to supporting efforts to control the export of these species from Ghana, and therefore secure their conservation there. It is equally unclear that the trade controls and monitoring as a result of the Appendix III-listings have been necessary to secure the conservation status of these species throughout their range. Of the over 70 passerine (songbird) species listed in Appendix III by Ghana, only one, Green Avadavat *Amandava formosa*, listed in 1976, has subsequently been included in CITES Appendix II. Similarly, none of the 19 dove and pigeon species listed by Ghana in Appendix III have been included in Appendix II. All but three parrot species were listed in Appendix II in 1981, however this does not seem to be linked to Ghana's 1976 Appendix-III listing of the entire parrot family.

GENERAL ISSUES OF COMPLIANCE

Government

Martin (2000:31) argues that CITES "suits Parties where wildlife control is strongly centralized and efficiently managed, where citizens have legal rights to use wildlife only as permitted by government agencies and where this central control is popularly accepted." He continues that CITES will not work in countries lacking central controls or where the interests of rural peoples making use of wildlife are not considered. As demonstrated below, much of the emphasis on compliance issues concerns relates to such centralized processes.

Concerns regarding compliance with CITES provisions have been expressed at each meeting of the Conference of the Parties, compliance being understood to mean "the fulfilment by the contracting Parties of their obligations under a multilateral environmental agreement and any amendments to the multilateral environmental agreement" as set forth in the UNEP Guidelines on compliance with and Enforcement of Multilateral Environmental Agreements (CITES *CoP12 Doc. 26*).

Table 6 Bird species included in CITES Appendix III by Ghana

<i>Ardea goliath</i>	<i>Estrilda astrild</i>	<i>Ploceus melanocephalus</i>
<i>Bubulcus ibis</i>	<i>Estrilda caerulescens</i>	<i>Ploceus nigerrimus</i>
<i>Casmerodius albus</i>	<i>Estrilda melpoda</i>	<i>Ploceus nigricollis</i>
<i>Egretta garzetta</i>	<i>Estrilda troglodytes</i>	<i>Ploceus pelzelni</i>
<i>Ephippiorhynchus senegalensis</i>	<i>Lagonosticta rara</i>	<i>Ploceus preussi</i>
<i>Leptoptilos crumeniferus</i>	<i>Lagonosticta rubricata</i>	<i>Ploceus tricolor</i>
<i>Threskiornithidae ibises, spoonbills</i>	<i>Lagonosticta rufopicta</i>	<i>Ploceus vitellinus</i>
<i>Bostrychia hagedash</i>	<i>Lagonosticta senegala</i>	<i>Quelea erythrops</i>
<i>Bostrychia rara</i>	<i>Lagonosticta vinacea</i>	<i>Sporopipes frontalis</i>
<i>Threskiornis aethiopicus</i>	<i>Lonchura bicolor</i>	<i>Vidua chalybeata</i>
<i>Alopochen aegyptiacus</i>	<i>Lonchura cantans</i>	<i>Vidua interjecta</i>
<i>Anas acuta</i>	<i>Lonchura cucullata</i>	<i>Vidua larvaticola</i>
<i>Anas capensis</i>	<i>Lonchura fringilloides</i>	<i>Vidua macroura</i>
<i>Anas clypeata</i>	<i>Mandingoa nitidula</i>	<i>Vidua orientalis</i>
<i>Anas crecca</i>	<i>Nesocharis capistrata</i>	<i>Vidua raricola</i>
<i>Anas penelope</i>	<i>Nigrita bicolor</i>	<i>Vidua togoensis</i>
<i>Anas querquedula</i>	<i>Nigrita canicapilla</i>	<i>Vidua wilsoni</i>
<i>Aythya nyroca</i>	<i>Nigrita fusconota</i>	
<i>Dendrocygna bicolor</i>	<i>Nigrita luteifrons</i>	
<i>Dendrocygna viduata</i>	<i>Ortygospiza atricollis</i>	
<i>Nettapus auritus</i>	<i>Parmoptila rubrifrons</i>	
<i>Plectropterus gambensis</i>	<i>Pholidornis rushiae</i>	
<i>Pteronetta hartlaubii</i>	<i>Pyrenestes ostrinus</i>	
<i>Agelastes meleagrides</i>	<i>Pytilia hypogrammica</i>	
<i>Columba guinea</i>	<i>Pytilia phoenicoptera</i>	
<i>Columba iriditorques</i>	<i>Spermophaga haematina</i>	
<i>Columba livia</i>	<i>Uraeginthus bengalus</i>	
<i>Columba uncinata</i>	<i>Amblyospiza albifrons</i>	
<i>Oena capensis</i>	<i>Anaplectes rubriceps</i>	
<i>Streptopelia decipiens</i>	<i>Anomalospiza imberbis</i>	
<i>Streptopelia roseogrisea</i>	<i>Bubalornis albirostris</i>	
<i>Streptopelia semitorquata</i>	<i>Euplectes afer</i>	
<i>Streptopelia senegalensis</i>	<i>Euplectes ardens</i>	
<i>Streptopelia turtur</i>	<i>Euplectes franciscanus</i>	
<i>Streptopelia vinacea</i>	<i>Euplectes hordeaceus</i>	
<i>Treron calva</i>	<i>Euplectes macrourus</i>	
<i>Treron waalia</i>	<i>Malimbus cassini</i>	
<i>Turtur abyssinicus</i>	<i>Malimbus malimbicus</i>	
<i>Turtur afer</i>	<i>Malimbus nitens</i>	
<i>Turtur brehmeri</i>	<i>Malimbus rubricollis</i>	
<i>Turtur tympanistría</i>	<i>Malimbus scutatus</i>	
<i>Psittacula krameri</i>	<i>Pachyphantes superciliosus</i>	
<i>Corythaeola cristata</i>	<i>Passer griseus</i>	
<i>Crinifer piscator</i>	<i>Petronia dentata</i>	
<i>Musophaga violacea</i>	<i>Plocepasser superciliosus</i>	
<i>Serinus canicapillus</i>	<i>Ploceus albinucha</i>	
<i>Serinus leucopygius</i>	<i>Ploceus aurantius</i>	
<i>Serinus mozambicus</i>	<i>Ploceus cucullatus</i>	
<i>Amadina fasciata</i>	<i>Ploceus heuglini</i>	
<i>Amandava subflava</i>	<i>Ploceus luteolus</i>	

Resolution Conf. 11.3 Compliance and Enforcement, agreed at CoP11, calls for strengthened controls on the trade in CITES-listed species. *CoP12 Doc. 26*, a document prepared by the CITES Secretariat for CoP12, noted that efforts to improve compliance have focused on the following areas:

- Designation of CITES Management and Scientific Authorities
- Ensuring that trade only takes place after the prior granting of the appropriate CITES documents
- Maintaining records of trade and preparing annual reports
- Taking appropriate measures to enforce the Convention
- Responding to Secretariat communications with regard to potential compliance problems

Particular areas of concern and action have included the development of CITES implementing legislation, provision of annual reports, establishment of Management and Scientific Authorities, annual reporting of trade, ensuring that trade in Appendix-II species is maintained within sustainable levels, and increasing proper permit issuance and enforcement of CITES trade controls, as discussed in more detail below.

Both developed and developing countries have been identified as failing to comply with one or more provisions of the Convention. As noted by the CITES Secretariat, "A poor economy may be a plausible excuse for inadequate CITES controls in a developing country, but inadequate controls in the developed world are more likely to be the result of a lack of political will" (*CoP10 Doc. 10.28 (Rev.)*). Efforts to address non-compliance have focused on enhanced information exchange, investment in capacity building for CITES implementation, especially for developing countries, and as a last resort, recommendations to suspend trade with Parties found not to be complying with specific provisions of the Convention.

National legislation

As noted in the section on CITES basics, by becoming a Party to CITES, national governments agree to adopt a system of legislation, regulations and procedures necessary to implement the Convention's provisions. This includes establishing a system of permitting and border controls sufficient to ensure that government-sanctioned exports and re-exports are in accordance with CITES requirements, and to monitor both exports and imports sufficiently in order to identify and penalize trade in violation of the treaty.

National legislation provides the foundation for CITES implementation. However, as of the early 1990s, very few Parties had enacted specific CITES-implementing legislation, with most instead relying on provisions within existing wildlife legislation and/or Customs or foreign trade legislation (de Klemm, 1993). During CoP8, the Parties responded by adopting a resolution that urged all Parties to establish sufficient implementing legislation, and directed the CITES Secretariat to "identify those Parties whose domestic measures did not provide them with the authority to: designate at least one Management and Scientific Authority; prohibit trade in violation of the Convention; penalize such trade; or confiscate specimens illegally traded or possessed" (*Resolution Conf. 8.4*). The Secretariat, Parties and organizations were also encouraged to provide support and technical assistance to Parties whose CITES implementing legislation was insufficient. Among the support provided was the distribution of a book providing guidelines for the development of CITES implementing legislation (de Klemm, 1993). Specific assistance has also been given to individual Parties.

The results of the Secretariat's review were presented at CoP9. Of the 87 countries, territories and one regional economic entity (European Union) subject to the first phase of the review, 18 (21%) were believed to have legislation that met all the basic requirements, 41 (47%) were believed to have legislation that met some of the requirements, and 28 (32%) were believed to have legislation that was found generally not to meet the requirements (*CoP12 Doc. 9.24 (Rev.)*). The Parties therefore agreed several Decisions calling for mechanisms to improve domestic legislation, with provision made for the potential suspension of commercial international trade in CITES-listed species with those Parties not demonstrating that they were taking positive steps to develop sufficient legislation.

Reviews continued during CoPs 10, 11, 12 and 13 and intervening meetings of the Standing Committee, with consideration of punitive actions limited to those Parties engaged in significant levels of trade in CITES-listed species. Some Parties have made substantial improvements to their CITES implementing legislation in response to what has become known as the CITES National Legislation Project. However, inadequate CITES implementing legislation remains a concern; as of September 2004, scores of Parties were still considered to be lacking sufficient legislation. For a

more detailed review of the history of the CITES National Legislation Project see Reeve (2002) and for more recent developments, see www.cites.org.

Specific problems have been observed with regard to CITES-implementing legislation for plants. The CITES Secretariat (2002b) noted that few Parties had incorporated all CITES plant species within a single harmonized piece of legislation. Instead, most countries rely on existing laws, e.g. forestry legislation for timber and other plant legislation for non-timber plant species. This has been noted as giving rise to a number of problems, as such laws are often limited in scope and “only cover certain categories of species, products or operations”, and do not provide controls on artificially propagated specimens (CITES Secretariat, 2002a:15).

Management and Scientific Authorities

CITES requires that each Party establish Management and Scientific Authorities responsible for the day-to-day implementation of the Convention, as described in the section on CITES basics. In most cases Parties have established a single Management Authority, which is the central agency responsible for issuing CITES permits and monitoring trade volumes. Inspection of shipments in trade and other aspects of enforcement are often allocated to agencies such as Customs and phytosanitary authorities. A number of countries have established more than one Management Authority, with separate authorities given competence for the trade in animals and plants, and/or for issuing permits from a given region. Others have designated separate Management Authorities for timber species (CITES Secretariat, 2002b). Parties similarly may establish more than one Scientific Authority, e.g. separate authorities for dealing with the trade in animals and plants, as is the case in the UK, or for dealing with the trade in marine species, as is the case for Iceland.

Significant progress has been made with regard to the establishment of these authorities, with only one Party having failed to designate a Management Authority as of 1997 (*CoP10 Doc. 10.8 (Rev.)*). Nine Parties had failed to designate a Scientific Authority as of June 2002 (*CoP12 Doc. 27*). Concern remains, however, with regard to the functioning of both Management and Scientific Authorities, as evidenced below.

Implementation of permitting requirements

CITES Management Authorities are responsible for issuing CITES permits, ensuring that trade is not conducted without the appropriate documentation and monitoring permitted trade. Various mechanisms have been developed to improve implementation of CITES permitting requirements, including establishing a standard format for permits and the information to be contained therein, the most recent version of which is detailed in *Resolution Conf. 12.3 (Permits and Certificates)*. Such standardization greatly facilitates the ability of government staff charged with shipment inspection to confirm the validity of documentation as well as trade reporting and monitoring.

Management Authorities are required to determine and approve not only the species and number of specimens to be exported, but also their source (e.g. wild, artificially propagated) and the purpose for which the trade is said to be taking place. The last-mentioned check is especially relevant with regard to the trade in Appendix I specimens, the import of wild specimens of which is only allowed for non-commercial purposes.

CITES permitting requirements are different for captive-bred and artificially propagated specimens, in that a “certificate” of captive breeding or artificial propagation can be used in lieu of a CITES export permit. However, the Parties have encouraged use of CITES permits as such certificates (*Resolution Conf. 12.3*).

Options for confirming the source of specimens range from accepting the word of the permit applicant to undertaking inspections of facilities in cases where the source is declared as *ex situ*. In some cases, e.g. orchids traded as flaked seedlings, confirmation of source is possible through inspection of the specimens to be exported. There have been numerous instances of concern regarding mis-declaration of the source of specimens in trade, e.g. with regard to live bird exports from South Africa in the 1980s and early 1990s (Bodasing and Mulliken, 1996; Mulliken, 1995). The mis-declaration of the origin of plants in trade was considered “very frequent” by the CITES Secretariat, who noted that fraudulent claims could be very difficult for the non-specialist to detect (CITES Secretariat, 2002c).

In 1997, the CITES Secretariat identified the following compliance problems with regard to issuance and verification of CITES permits (from *CoP10 Doc. 10.28 (Rev.)*):

- Issuance of export permits for trade volumes exceeding those allowed by national or CITES quotas.
- Issuance of re-export permits without confirming the validity of export permits accompanying the shipments upon import: the Secretariat considered the use of re-export procedures to be the most common method of “laundering” illegal specimens.
- Confirmation of permit validity: The validity of permits is generally confirmed at the time of export or import, with confirmation therefore often the responsibility of Customs officers or another agency rather than the CITES Management Authority. However, Customs or other officials may not have experience with or access to information necessary to confirm a permit’s validity.

Annual reporting

CITES Parties are required to provide to the Secretariat annual reports of all imports, exports and re-exports of CITES-listed species. These reports provide the foundation for analysis of CITES implementation and the review of trade in particular species. There is concern regarding the failure of some Parties to provide CITES annual reports either in their entirety or within the timeframes specified. Although overall submission has reached 80%, only 35-60% of CITES annual reports were received by the annual deadline established (31 October of the year following the year in which trade takes place) for the period 1975–2002 (*CoP12 Doc. 22.1*). The timeliness of reporting was reported as appearing to reflect “political will and administrative organization” rather than the level of development of the country involved. Few countries were availing themselves of the offer of assistance with compiling annual reports by UNEP-WCMC (*CoP12 Doc. 22.1*).

CoP11 adopted *Decision 11.37*, which stipulated that the Standing Committee could authorize suspension of trade with any Party failing to submit annual reports for three consecutive years without sufficient justification. Such suspensions have since been put into action as, for example, in the case of CITES *Notification to the Parties No. 2002/064*, in which the Standing Committee called for the suspension of trade with eight countries.

Enforcement

The CITES Secretariat refers to enforcement as “measures that are imposed to ensure that trade in specimens of CITES-listed species does not occur without being covered by valid permits or certificates”. This includes inspection of shipments and accompanying CITES documents upon export or import, investigation of potential illegal trade, and prosecution of violations. Enforcement of CITES provisions in 1997 was considered by the CITES Secretariat to be improving overall, although it continued “to be inadequate in many instances” (*CoP10 Doc. 10.28 (Rev.)*). Reeve (2002:249) took a much dimmer view, calling enforcement “the Achilles’ heel of CITES”.

Among the enforcement problems identified by the CITES Secretariat were:

- **Inadequate border controls:** Failure to identify shipments lacking or accompanied by incorrect CITES documentation was considered a persistent problem. The reasons for this shortcoming included lack of sufficient staff resources and/or training, a lack of willingness on the part of staff and agencies, and high volumes of traffic at ports or border crossings (*CoP10 Doc. 10.28 (Rev.)*).
- **Inadequate control of shipments in transit:** Some Parties lacked sufficient legislation to control shipments in transit, whereas others were apparently simply unwilling to do so (*CoP10 Doc. 10.28 (Rev.)*).
- **Inadequate control of shipment via post and courier:** Illegal shipment of specimens, especially reptiles and plants, which can survive during transport for relatively long periods, was increasing (*CoP12 Doc. 12.27*).
- **Failure to establish and/or assess penalties for non-compliance in a manner that provides a sufficient deterrent to those considering illegal exports or imports.** The CITES Secretariat noted during CoP12 that the most common response to seizures of illegal wildlife was confiscation of the specimens involved (*CoP12 Doc. 27*). In the case of highly valuable wildlife products, e.g. rare orchids, the potential gain to be made from a successful smuggling attempt outweighs the potential cost of the shipment’s being detected.

Inadequacies in these controls persist, as does the attention of the Parties to addressing these deficiencies (see, for example, CITES *Decisions 13.84–87*).

Non compliance by individuals and commercial interests

Mechanisms for avoiding CITES trade controls vary depending on the level and nature of demand, the types of specimens in trade, and whether or not legal specimens are also available in trade. In cases where there is a large and persistent demand that cannot be met from a legal source, e.g. in the case of elephant ivory, sophisticated trade networks have evolved in order to smuggle ivory from range countries in Africa to consumer countries in East Asia. This includes, for example, the shipment of ivory via courier, and the carving and painting of ivory blocks to make them resemble wood, and therefore reduce the chance of detection.

In the case of individuals, failure to comply with CITES provisions is frequently a matter of ignorance. Travellers (tourists) form perhaps the largest single group of CITES violators. In terms of dead specimens of Appendix-II species, some flexibility is allowed with regard to the trade in “personal possessions” including tourist items, leaving it up to the discretion of the exporting country whether a CITES export permit is required. However, some countries, e.g. those of the European Union, have established stricter domestic measures and generally require that such permits have been obtained regardless of whether they are required by the exporting country. Such exemptions are not allowed for Appendix-I species. *Resolution Conf. 10.6 Control of Trade in Tourist Souvenir Specimens* recommends that it also should not apply to live specimens. Commonly seized tourist items made from forest species include elephant ivory specimens, orchids, and reptile skin products. *Resolution Conf. 10.6* calls on both exporting and importing countries to educate travellers about these restrictions, with NGO and government campaigns in this regard ranging from airport displays and brochures to airline videos having been implemented.

In the case of live plants, illegal collectors are generally interested in a specific group, *Paphiopedilum* and Mexican cacti in the genus *Turbinicarpus* having been named as two examples. Professional smugglers are said to be more concerned with commercial value (CITES Management Authority of Germany, 2002), as shown by the examples given in the case study of *Paphiopedilum*. It seems likely that a similar pattern exists for the trade in live animals, with seizures ranging from one or two specimens to large shipments, as evidenced by seizures recorded in the Seizures and Prosecutions section of the *TRAFFIC Bulletin*.

There seems to be a greater ignorance on the part of commercial interests and individuals with regard to controls on the trade in plant parts and derivatives, e.g. species used in traditional medicine. This seems likely to reflect in large part the lower level of attention given by the media and enforcement officials to the trade in plant parts as opposed to the trade in animal products such as ivory in the media and by enforcement officials. In 2000, 73% of the 22 premises surveyed by TRAFFIC in England selling traditional East Asian medicine were aware that selling rhinoceros and Tiger products was illegal, but were largely unaware of controls for other CITES-listed species, e.g. the Appendix-I listed medicinal plant species Costus Root (Inskipp, 2003).

Reeve (2002) cited numerous seizures in her review of CITES compliance, commenting that “potential profits and low risks of detecting illegal wildlife trade provide an incentive for smugglers and dealers prepared to bend and break the rules.” Moyle (2003) argued that trade bans could increase the incentive to trade illegally, by increasing the price for products on foreign markets by reducing legal supplies but not demand.

The transaction costs associated with acquiring CITES permits and playing by the rules also provide an economic incentive for some traders to ship wildlife products without accompanying documents. In the case of the trade in bear gall bladders from North America, ‘t Sas-Rolfes (2000) observed that the number of export permits issued in the mid-1990s was much lower than would have been required for the much larger volume of trade known to exist. He contended that much of the trade took place “informally between individuals who” were “reluctant to comply with Customs formalities”, adding that he considered the major effect of the Appendix-II listing for these species had been “to increase the administrative burden on all those involved in Canada’s trophy hunting business” (‘t Sas-Rolfes, 2000).

6. CITES IMPACTS ON FOREST PRODUCT TRADE, PRODUCTION AND CONSERVATION

Several efforts to assess the impacts of CITES on the conservation of CITES-listed species have been undertaken. In 1996, Environmental Resources Management undertook a study on improving CITES effectiveness on behalf of the CITES Standing Committee following a Decision at CoP9 (ERM, 1996). This was followed by an effectiveness study conducted by IUCN – the World Conservation Union (IUCN, 2000). A more recent study, by the International Institute for Environment and Development and TRAFFIC (Roe *et al.*, 2002), reviewed the impacts of CITES and other trade controls on trade volumes, production strategies, conservation and rural livelihoods. The following text is taken largely from (Roe *et al.*, 2002), which made reference to earlier studies and included a more detailed analysis of impacts on trade volumes, production methods and livelihoods.

THE CHALLENGE OF ASSESSING CITES IMPACTS IN ISOLATION OF OTHER FACTORS

Determining the impacts of the change in the CITES status of a species is not straightforward, as a variety of influences, both regulatory and market-related, can influence conservation and trade. As noted by IUCN (2000) “To tease out the direct contribution of the CITES trade measures to changes in trade patterns and the conservation status of the species listed in the various Appendices, a multivariate analysis would be necessary. The combination of needing to consider confounding factors that may effect the effectiveness of the trade measures, and the difficult issue of achieving a measure of effectiveness for each species, makes the task of providing an independent evaluation of the trade measures impossible at this time.”

CITES trade controls are rarely implemented independently of national level harvest and trade controls. Inclusion of a species in Appendix II, for example, may result in far greater regulatory changes than simply subjecting international trade to issuance and review of CITES export permits. Some range State governments may limit their response to issuing export permits, this requirement coming on top of, but not influencing, other measures already in place. Others may set in motion a complex process of increased access restrictions, e.g. harvest quotas, seasons or even bans, and inspection and regulation of domestic sale (e.g. via licences, permits) as well as controlling exports. Importing Parties may similarly impose an array of trade restrictions. Separating out the impacts of CITES from among such a range of measures which may or may not be linked is challenging.

CITES impacts are determined in part by enforcement effort and effectiveness. The fact that trade and/or associated harvest controls have been put in place does not mean that they will be adhered to. Incentives for compliance will be weighed against incentives for non-compliance, including the likelihood of illegal harvest or trade being detected, and, if it is, the scale of penalties likely to be applied. In the case of African Elephants, for example, Dublin *et al.* (1995) found that poaching rates correlated strongly with enforcement effort in range States. The illegal trade in rhinoceros horn, Tiger bone, rare parrots, orchids and other wildlife products provides further evidence that many people believe that the potential benefits of illegal harvest and trade outweigh the risks.

CITES does not act in isolation of market forces, and in some cases acts in concert with them, further complicating efforts to identify the impacts of CITES alone. CITES meetings provide a focus for debate on the trade in individual species and wider issues, e.g. animal welfare concerns such as those associated with the wild bird trade. Most issues groups (and governments) are seeking to influence public opinion and policy simultaneously. Bearing in mind that the two are linked, it becomes difficult if not impossible to separate the impacts of campaigning and news coverage from those strictly related to changes in regulatory measures.

There are numerous examples where a change in fashion in US and European consumer markets coincided with a change in trade regulations, e.g. with regard to the trade in spotted cat skins and African Elephant ivory. In some cases a change in consumer preference in response to campaigning may have a greater impact than changes in trade controls. The CITES listing proposal to include Devil's Claw *Harpagophytum* spp. in CITES Appendix II put forward in 2000 illustrated how in some cases, simply voicing concerns that a species might be threatened by overexploitation within a CITES forum can be enough to alter market dynamics, at least temporarily, without any corresponding change in international trade controls having taken place. In this case, the CITES

listing proposal and attendant debate and publicity led to at least a temporary decrease in industry demand (Cole and du Plessis, 2001).

The presence or threat of increased regulations can also lead to increased demand by increasing a product's rarity value and/or prompting stockpiling of products. In 1990, bird breeders began increased buying of Moluccan Cockatoos *Cacatua moluccensis* when the species was proposed for transfer to Appendix I, months before the CITES meeting where the proposal was discussed (Mulliken, 1992). A similar situation occurred in 1995, with US imports of Egyptian Tortoise *Testudo kleinmanni* increasing significantly just before the species was transferred to Appendix I in 1995 (C. Hoover, TRAFFIC North America, *in litt.* to A. Barden, TRAFFIC International 2002), and an increase in seizures of pangolin *Manis* spp. scales prior to consideration of the transfer of *Manis* spp. to Appendix I in 2000.

Factors entirely unrelated to conservation/welfare concerns and/or trade controls also impact on trade volumes, further complicating the effort to identify the impacts of changes in trade controls. These include market responses to changing fashion trends and economic conditions in countries of export or import. The US television show *Baretta*, which featured a Sulphur-crested Cockatoo *Cacatua sulphurea*, is credited with a rapid expansion in the US market for pet birds (Kahler and Wolrab, 1998), and the cartoon *Teenage Mutant Ninja Turtles* is reported to have prompted increased demand for pet turtles in the UK soon after its debut (Williams, 1999).

Bearing in mind these and other factors influencing wildlife trade patterns, it is nevertheless possible to identify strong correlations between increased CITES trade controls and changes in production, harvest and trade patterns. In some cases these changes are a clear result of changes in trade controls, i.e. causative, while in others it appears that they are more indirectly linked.

IMPACTS ON TRADE PATTERNS

Quantities of CITES-listed species in international trade

CITES and related trade measures have resulted in a reduction in the international trade of many CITES-listed species, as is illustrated by comparison of CITES data on parrot exports for 1989 and 1999 (Table 7). Exports of wild birds from four of the top five bird-exporting countries in the late 1980s declined by over two-thirds from the late 1980s to the late 1990s. These declines were a result of a combination of CITES-related trade measures and yet stronger domestic measures, both export and import controls. These included exporting country responses to recommendations resulting from the CITES significant trade review process; Standing Committee-recommended import bans in cases where such recommendations were not adhered to by the exporting Parties; and a nearly complete cessation of imports of wild CITES-listed birds into the USA, which had previously been the largest importer of parrots, in the early 1990s. The decline in exports from Tanzania is most notable, with reported exports dropping from approximately 38 000 birds in 1989 to just 10 birds in 1999, and export quotas from over 116 000 birds to just 52. Only exports from Guyana remained relatively stable.

The CITES-reported trade in cat skins from wild sources similarly shows an overall decline subsequent to the listing of most large cats in CITES Appendix I in 1975 (with the exception of Lion *Panthera leo* and Puma *Puma concolor*), and all remaining wild cat species in Appendix II in 1977. CITES trade controls corresponded to national export bans in many cases, e.g. with respect to spotted cat exports from many South American countries, and corresponding import bans, e.g. in the European Union. Reported international trade dropped from approximately 450 000 skins in 1980 (Nowell and Jackson, 1996) to roughly 45 000 in 1999. The decline in trade has been credited to NGO campaigns discouraging the wearing of furs, as well as to CITES, trade monitoring, which helped reveal large quantities of skins being laundered into trade via intermediary countries (IUCN 2000; Nowell and Jackson, 1996). Trade in 1999 was dominated by exports of roughly 37 000 Leopard Cats *Prionailurus bengalensis* from China. The only other species traded as skins in commercial quantities during the late 1990s were Eurasian Lynx *Lynx lynx* and Bobcat *Lynx rufus*, trade therefore having shifted entirely from the southern to the northern hemisphere. As is evidenced by the trade in fox *Dusicyon* spp. from Argentina, and trade figures for peccary (e.g. Collared Peccary *Pecari tajacu*), the international trade in some mammal skins also remains strong.

Table 7 Changes in parrot exports* from the five main producer countries 1989/1990 and 1999

	1989/1990		1999	
	Quotas	Exports	Quotas	Exports
Argentina	1990 export quotas	1990 exports		
<i>Cyanoliseus patagonus</i>	no limit	0	7000	7498
<i>Myiopsitta monachus</i>	no limit	0	20 000	3370
<i>Amazona aestiva</i>	23 000	22 744	1660	1516
<i>Aratinga acuticaudata</i>	15 000	12 740	7500	3096
<i>Nandayus nenday</i>	15 000	11 810	6000	2947
Other species	20 500	15 265	3500	1957
Total all species	>73 500	62 559	45 660	20 384
Guyana	1989 export quotas	1989 exports		
<i>Amazona amazonica</i>	15 000	7588	9000	8828
<i>Aratinga pertinax</i>	3000	0	500	15
<i>Amazona farinosa</i>	2300	1016	1000	1159
<i>Amazona ochrocephala</i>	2000	1070	1000	1055
<i>Ara ararauna</i>	2000	1806	720	792
Other species	8380	3845	3700	4050
Total all species	32 680	15 325	15 920	15 899
Indonesia	1989 capture quotas	1989 exports	export quotas	
<i>Cacatua goffini</i>	8400	7241	-	0
<i>Cacatua sulphurea</i>	7625	6480	-	48
<i>Eos bornea</i>	5750	7327	225	368
<i>Lorius garrulus</i>	5125	3738	225	264
<i>Trichoglossus haematodus haematodus</i>	5000	5439	-	**325
Other species	42 250	42 546	3455	4666
Total all species	74 150	72 771	3905	5671
Senegal	export quotas		export quotas	
<i>Poicephalus senegalus</i>	26 000	38 524	16 000	15 431
<i>Psittacus erithacus</i>	8000	17 405	-	1
Other species	0	0	0	0
Total all species	34 000	55 929	16 000	15 432
Tanzania	1990 capture quotas	1990 exports	export quotas	
<i>Agapornis fischeri</i>	100 000	33 634	-	0
<i>Agapornis pullaria</i>	6250			0
<i>Poicephalus cryptoxanthus</i>	2500	126	0	0
<i>Poicephalus gulielmi</i>	2500	1575	40	0
<i>Poicephalus meyeri</i>	2500	1412	0	0
Other species	0	0	0	10
Total all species	116250	37 822	52	10

Sources: Thomsen *et al.*, 1992; CITES annual report data compiled by UNEP-WCMC; CITES Notifications.

*Top five species for which quotas were set in 1989/1999.

**All *Trichoglossus haematodus* subspecies.

In contrast to the trade in parrot and cat species, the trade in the skins of wild specimens of several CITES-listed reptile species, while declining somewhat, has still numbered in the hundreds of thousands since the imposition of CITES trade controls. Average annual exports of Water Monitor *Varanus salvator*, for example, dropped from 1.4 million during 1983-1989 (Jenkins and Broad, 1994) to 787 000 from 1995 to 1999. Average annual exports of Nile Monitor *V. niloticus* were just over 500 000, 1983-1989, but declined to 333 000 in the period 1985-1999. CITES data show that an annual average of approximately 570 000 tegu *Tupinambis* spp. skins were traded 1995-1999, reported trade fluctuating among individual species in this "taxonomically confused" genus. Trade in some CITES-listed species has increased in recent years, e.g. of live specimens of CITES-listed amphibian species such as poison arrow frogs in the genus *Dendrobates*.

In the case of some Appendix-I species, it has been suggested that trade restrictions have had little impact on trade volumes and that the trade has simply moved from being legal to illegal (du Plessis, 2000). 't Sas-Rolfes (2000), with regard to rhinoceroses, for example, stated: "the Appendix-I listings led to a sharp increase in the black market price of rhino horn which simply fuelled further poaching and encouraged speculative stockpiling of horn." IUCN (2000) has similarly speculated that the Appendix-I listing "raised the stakes" and may have stimulated poaching in range countries, and therefore presumably international trade to consumer markets. This study concluded further that trade restrictions worked best where demand was highly elastic. If demand is inelastic (as appears to be the case with rhinoceros horn) "a ban will have little effect on the incentives for illegal trade and may even perversely encourage illegal trade in some cases" (IUCN, 2000).

Species in trade

Where demand is for a commodity type rather than a particular species, a decline in the trade in one species will often correspond with an increase in the trade in another species with similar features (although not necessarily similar species). Reduced availability of one species owing to declines in wild populations, increased trade restrictions or both, as is often the case (the latter prompted by the former), are often offset by increased harvest and trade of other species. This was seen in the case of the trade in spotted cat skins, where a decline in the availability of furs from large species, e.g. Leopard *Panthera pardus* was followed by an increase in trade in smaller species, e.g. Ocelot *Leopardus pardalis* (Nowell and Jackson, 1996). Similarly, in Madagascar, a moratorium on imports of all but four species of chameleon was put in place in 1996 in response to a failure by the Government of Madagascar to respond to recommendations made under the CITES significant trade review process. Following implementation of the moratorium, exports of two of the remaining four chameleon species allowed in trade increased dramatically, with less sizeable but nevertheless noticeable increases in exports of the other two. There similarly appears to have been a shift in the ivory trade with the Appendix-I listing of African Elephant. According to Stiles and Martin (2001), since the ivory ban, ivory carvers have increasingly switched to other products including Hippopotamus *Hippopotamus amphibius* teeth and pig tusks. The export of Hippopotamus ivory from Africa increased significantly following the listing, rising from close to five tonnes in 1989 to approximately 13.5 t in 1991 and 1992 (De Meulenaer *et al.*, 1994).

Source countries involved in trade

Although trade restrictions often result in an overall decline in trade volumes, in cases where species occur in more than one range State, increased trade controls and therefore reduced exports from one country may be offset by increased exports from another.

One of the most clear-cut examples of this phenomenon involves exports of African Grey Parrots *Psittacus erithacus* during the 1980s and early 1990s. Exports shifted from country to country in response to increased trade restrictions implemented by countries of export and import. The reported country of origin for African Greys imported into South Africa shifted from Togo (where African Greys are only found in small numbers, indicating that the parrots in trade were unlikely to have originated from there) in the early and mid-1980s, to Ghana (where exports took place despite having been banned since 1986) and Guinea (where export volumes exceeded the estimated population of the species in that country). In the case of exports from Guinea, when the CITES authorities of that country failed to respond to a significant trade review recommendation to establish an export quota, the CITES Standing Committee recommended that all Parties ban imports. A flurry of exports to South Africa took place between the time this ban was announced and when it took effect. Exports subsequently shifted to the Democratic Republic of the Congo and Cameroon in the early 1990s (Mulliken, 1995). Large numbers of African Grey Parrots were reported as exported from Senegal to the USA and Europe (over 17 000 exported in 1989 against a quota of 8000) despite the fact that the species does not occur in Senegal.

Wildlife production methods

An increasingly common form of substitution for wild specimens of restricted species, and one actually promoted by CITES, is specimens produced through captive-breeding, artificial propagation/cultivation and “ranching”. CITES provides clear incentives for increased captive production. The text of the Convention includes specific exemptions for specimens produced via captive breeding and artificial propagation of both Appendix-I and Appendix-II species. The Parties have adopted a series of Resolutions with regard to interpreting and implementing these exemptions. The Parties have also agreed a series of resolutions with regard to the trade in ranched specimens, which in CITES terminology equates to specimens reared in captivity from specimens (generally eggs or juveniles) produced in the wild. The ranching concept was developed as a means to facilitate transfer of Appendix-I species to Appendix II. Ranching schemes work on the theory that the typically high juvenile mortality rate for wild species means that a proportion of eggs or juveniles can be removed from the wild without being detrimental to the wild population (Hutton *et al.*, 2001). The resolution setting the conditions for a transfer to Appendix II in conjunction with ranching (current *Resolution Conf. 11.16*) requires that the associated schemes be beneficial to the species’ conservation in the wild, e.g. through increased habitat protection or augmentation of the wild population through release of specimens. The range and diversity of captive and semi-captive production systems for animals is reflected in a document prepared for the CITES Animals Committee (*AC17.4*), which seeks to clarify the application of terminology and exemptions.

In some cases such *ex situ* production takes place within range States, for example in the case of many reptile species. This was the case for crocodylians according to MacGregor (2001). All crocodylian species were included in the CITES Appendices in 1975. MacGregor has observed that the trade has followed a U-shaped curve since the early 1980s. Trade declined from over 1.5 million skins in 1985 to a low of approximately 0.5 million skins in 1989, then climbed to 1.2 million skins in the late 1999. However, his analysis also showed that trade shifted among different crocodylian species during this period and with respect to the method of production. Exports of crocodylian skins reported as originating from wild sources declined from over one million skins in 1985, i.e. virtually all skins in trade, to approximately 70 000 skins in 1999. Skins from captive-bred sources increased during this same period from approximately 1400 to 856 000, and from ranched sources from approximately 18 000 to 256 000.

The trade in live specimens of some other reptile species, e.g. Iguana *Iguana iguana*, have followed a similar pattern—the vast majority of the 1.1 million live Iguanas imported into the USA in 1995 were captive-bred in Colombia and El Salvador (Hoover, 1998). However, increasing numbers of specimens of species traded for the pet trade and other uses have been produced outside range States, as is also the case for many lovebirds *Agapornis* spp. and orchid species. This is likely to reflect at least in part the greater access to the technology and resources required for large scale commercial production (e.g. veterinary care, greenhouse facilities and sterile growth media), as well as, in the case of live animals, reduced shipping and quarantine costs and associated reduced mortality.

While many efforts at increasing captive or semi-captive production are at least in part a direct response to CITES trade restrictions, e.g. in the case of Royal Python *Python regius* ranching, in other cases efforts to increase production artificially, often *ex situ*, were already underway at the time trade restrictions were imposed. This was the case with respect to ranching of Nile Crocodile *Crocodylus niloticus* in Zimbabwe, for example, as well as the captive breeding of many parrot species.

Numerous incentives exist for *ex situ* production beyond avoiding CITES trade controls. These include increasing supplies, improving product quality, securing greater control over markets, and/or a combination of these and other factors. Homma (1994, cited in Simons, 1996) has developed a model around the hypothesis that extractivist economies generally lead to cultivation. His model suggests that such economies are divided into four phases: expansion; stabilisation at a point where supply and demand are balanced and close to the maximum extractive capacity; decline owing to a reduction in the resource and increased extraction costs; and finally, cultivation. Numerous CITES-listed species in trade have followed this pattern, from orchids to lovebirds. However, this seems to be unlikely to be the case for those species where wild specimens are perceived as being of higher quality. In the case of American Ginseng, for example, trade in the more valuable wild specimens to East Asian markets has been seen to continue side-by-side with the much larger trade in cultivated specimens.

Changes in the trade in Fischer's Lovebirds

The most highly traded of the parrot species during the 1980s, the small but colourful Fischer's Lovebird *Agapornis fischeri* is found only in Tanzania. Reported exports of this species from Tanzania rose dramatically during the 1980s, averaging over 53 000 birds per year from 1983–1990, and peaking at over 87 000 birds in 1987. Reported exports from 1983–1990 totalled approximately 428 000 birds (Edwards and Broad, 1992). Taking into account pre-export mortality, estimated at 16–28%, Moyer (1995) estimated a total harvest of 644 500–711 000 birds from 1982–1992.

Concern regarding the impacts of the trade on the species' wild populations prompted Fischer's Lovebird to be included in the first CITES significant trade review (Inskipp *et al.*, 1988), which concluded that the trade might present a "possible problem", i.e. that trade might be resulting in the decline of the species' wild populations, but available information was insufficient to make such a judgement. The species was reviewed under the process again in 1992, at which time available information indicated that it was suffering major population declines. The CITES Animals Committee therefore recommended to the CITES Management Authority of Tanzania that 1) an export moratorium on the species be put in place until such time as a population survey had been carried out; and 2) to undertake such a survey. This survey determined that the species remained widespread, the range actually having increased somewhat, but that population densities in harvestable areas were extremely low, the overall population having suffered a "drastic reduction" (Moyer, 1995). The author of the survey recommended a continued moratorium on exports until at least 2001 to allow the species to recover. This recommendation was followed and exports continued to be banned: only two birds were recorded in trade from Tanzania from 1995 to 2003.

Inskipp and Corrigan (1992) noted that Fischer's Lovebirds breed prolifically in captivity. It seems unlikely that they could have predicted the growth in the international trade in captive-bred birds coinciding with the ban on exports from Tanzania, however. Net exports from non-range States, which are likely to have involved captive-bred specimens, increased from approximately 11 000 in 1991 to 95 000 in 1999, exceeding the peak exports recorded during a single year from Tanzania. China appears in CITES data as the main country of export in 1999 (nearly 74 000 birds), followed by South Africa (approximately 12 000 birds). Tanzania, once the only country in which Fischer's Lovebirds occurred and from which they could be supplied to foreign markets, lost all revenues resulting from the international trade of this species in a matter of years. An increase in captive production for this and several other lovebird species had already begun prior to the first significant trade review, but few were likely to have foreseen that one day foreign captive-breeders would be supplying the entire market for this species.

Declining populations within and the export ban from Tanzania seem likely to be only one of several factors influencing the shift to captive production. US import restrictions on wild-caught parrots were also likely to have provided an incentive to breeders of this species. Increased demand for captive-bred birds by the public in Europe and North America in response to animal welfare concerns and recognition that hand-raised birds tend to make better pets than wild ones are also likely to have provided incentives for increased captive production. Even if Tanzania had continued to export wild-caught Fischer's Lovebirds in commercial quantities (even assuming that this could have been sustained, which seems very unlikely given population trends), it seems probable that trade would gradually have become dominated by captive-bred birds. In 1999 alone, over 100 000 Peach-faced Lovebirds *Agapornis roseicollis* were reported in international trade, almost all of which would have been captive-bred. Although there will continue to be a collectors' and breeders' market for some of the rarer lovebird species, the mass market for lovebirds will almost certainly continue to be supplied by captive breeding in future.

CONSERVATION IMPACTS

As noted at the beginning of this section, assessing the specific impacts of trade controls on the conservation status of species in trade is difficult and in some cases, impossible. This relates both to a lack of accurate information on the status of numerous species in trade and the difficulties in identifying which of the many factors influencing population trends, e.g. habitat loss, offtake for subsistence use, changing weather patterns (e.g. rainfall), might be responsible for an increase or decrease in observed population levels. According to du Plessis (2000), conservation-motivated trade controls such as CITES assume that trade is the major factor causing the decline in a given species, and other factors may be overlooked. If this is so, increased trade regulations may be successful at halting or restricting the export of wild species, but will not necessarily address the root causes of species decline, with the result that the conservation impact of these regulations may be limited. Moreover, while it may be possible to say what has happened since the change in the protected status of a species, what would have happened if the species had not been protected is not known. Similarly, improvements (or at least reduced rates of decline) in species' wild populations following a CITES listing may not in fact reflect CITES, but perhaps other factors, e.g. increased enforcement effort in range States or decreased demand.

There have been several studies of the effectiveness of CITES (effectiveness being measured in terms of its impact on the conservation status of a species) undertaken thus far, however these have produced mixed results. One of the earliest, Trexler (1990), claims that there is no evidence that CITES has improved the conservation status of any species. ERM (1996) concluded that:

- CITES was “moderately effective” for as many species as those for which it had had “minimal effect”, and that there were examples where it was considered to have been wholly effective;
- There were direct positive effects where there had been well-regulated captive breeding or ranching programmes, or there had been significant improvements to national implementing legislation;
- Indirect positive effects included a rise in public awareness of the status of threatened species leading to increased research and conservation efforts, especially for Appendix-I species; and
- A minority of contracting Parties believed that CITES had had a negative effect on certain Appendix-I species.

Of the 12 species reviewed, CITES was viewed as having been effective for two, moderately effective for a further four and to have had a minimum effect for three. Information was considered insufficient to judge in the case of the remaining three species. Martin (2000) is more pessimistic with regard to CITES’ effectiveness, arguing that “there are no species whose numbers have increased so dramatically after being placed on the CITES Appendices that the improvement is obvious.” In contrast, a study on the use of trade measures within CITES (OECD, 1997) concludes that “it is more plausible to presume that, at the overall level, the status of species conservation is better off than it would have been if CITES had not existed at all”. Like the ERM study, IUCN (2000) concluded that CITES and associated measures have been successful for some groups, e.g. spotted cats, and appear to have been unsuccessful for others, e.g. rhinoceroses. In the latter case, the authors note that the question remains whether the decline in rhino numbers would have been faster or slower without the Convention.

There are conflicting opinions regarding whether the financial value that commercial trade gives to wildlife is or can be beneficial to species conservation. Some argue that wildlife must pay its way while others contend that commercial use will ultimately lead to overexploitation, and both hold up numerous examples to back up their points. As shown by the examples below, the reduction in CITES trade controls for several Appendix-I species have coincided with an increase in wild populations and/or a decrease in illegal or unsustainable harvests. Two of the most commonly cited examples are Nile Crocodile and Vicuña, both of which were listed in Appendix I when CITES came into force and have been transferred to Appendix II under ranching and/or quota schemes. It is important to bear in mind, however, that earlier imposition of trade controls similarly coincided with population increases, and, especially in the case of Vicuña, were necessary at the time to prevent further declines in the species’ wild population.

LIVELIHOOD IMPACTS

Although concerns regarding the potential negative livelihood impacts of increased trade controls are increasingly voiced during debates over whether to expand CITES protection measures, there do not appear to have been many studies to gauge the actual impacts once such measures have been implemented. Exceptions to this general rule include work to document the effects on rural communities in Zimbabwe of the transfer of African Elephant to CITES Appendix I, and on Arctic communities of increased trade restrictions for marine mammals. A study of the ban on the international trade in Goffin’s Cockatoo *Cacatua goffini* (see below) is a rare example where the socio-economic as well as conservation implications of preventing international trade in certain species have been examined.

Despite the lack of analysis, it is clearly possible to infer that increased controls on international trade will have at least short term negative economic impacts on rural collectors, and, to a greater extent, wildlife traders and exporters. These may range from marginally increased transaction costs to a total loss of access to hunting/collecting rights and foreign markets. Most of the individuals involved in the wildlife trade are not solely dependent on the trade for their livelihoods. Impacts on traders are likely to be more significant than on collectors since traders are likely to be more dependent on wildlife-derived incomes, whereas collectors are likely to include wildlife trade as one element of a diverse livelihood strategy. However, for the poorest groups, harvest of wildlife for sale on to export markets may be one of the few opportunities for earning a cash income which, even in small amounts, can make a critical difference to livelihood security.

Transaction costs of trade controls

Increases in trade controls are often accompanied by increases in bureaucracy and associated transaction costs, and specifically costs related to acquiring permits and licences that may be required for harvesting, selling and/or exporting wildlife. An example is provided in the case of the ranching of the valuable birdwing butterflies by the Hatam people in the Arfak Mountains Nature Reserve in Irian Jaya, Indonesia, where acquiring a CITES export permit took three to six months (BCN, 1997). The delays in securing export permits made it difficult to respond to external orders (Wells *et al.*, 1999). Poachers are not subject to similar transaction costs, and are able to sell butterflies at prices that undercut those of the Hatam. The penalties for illegal trade are often no more than confiscation of the butterflies, and bribery in cases of detection by government officials is said to occur (BCN, undated).

In the late 1990s, communities engaged in captive breeding of Iguanas *Iguana iguana* in Nicaragua had to obtain a sales permit every year before they were allowed to sell Iguanas to a middleman. In order to get the sales permit, their breeding programme first had to have approval from the Department of Environment and Natural Resources. Obtaining the sales permit involved transport costs and sometimes also accommodation costs. Exporters were required to show proof that breeding sites had been inspected and to secure approval for transport from the Department of Environment and Natural Resources prior to being issued CITES export permits (Imbach and Guttierrez, 1999).

In commenting on government regulations related to the control of the handling and transport of forest products, Warner (1995) argued that such regulations generally did not benefit collectors nor assist in conservation of the resource. Further, she argued that increased export restrictions, e.g. a limit on exports to include only processed products, could have the effect of creating a black market, with few benefits going back to producers, and an increase, rather than a ban, on harvests in cases where the latter was the desired effect. In his analysis of trade restrictions affecting the international trade in non-wood forest products, Iqbal (1995) noted the existence of CITES but, unlike for several other types of trade controls, e.g. phytosanitary measures and State [national] policies, did not credit CITES as having a distorting effect on international trade.

Loss of income

A total ban on commercial international trade in wild species or wildlife products, e.g. as a result of a CITES Appendix-I listing, can have rapid and significant impacts on the incomes of people dependent on access to external markets for their livelihood. As is shown in example for Goffin's Cockatoo *Cacatua goffini* below, such trade bans can have negative impacts from both the conservation and livelihoods perspective.

Case Study—Goffin's Cockatoo *Cacatua goffini*

Goffin's Cockatoo, also known as Tanimbar Corella – is endemic to the Indonesian Tanimbar Islands where it is considered an agricultural pest, damaging nearly two percent of the islands' maize crop every year in the early 1990s (Cahyadin *et al.*, 1994). Goffin's Cockatoo was listed in CITES Appendix II in 1981. The Government of Indonesia established capture quotas for this and other parrot species in the 1980s, this quota peaking at 8400 birds in 1989. The International Council for Bird Preservation (ICBP, now BirdLife International) included Goffin's Cockatoo in their 1988 *World Check-List of Threatened Birds* (Collar *et al.*, 1988) owing to concern over trade volumes, given the restricted range of this species. In January 1992, the conservation status of the species was assessed as "Critical", i.e. having a 50% probability of extinction in five years, during a "Parrot Conservation Assessment and Management Workshop" of ICBP and the IUCN/SSC Captive Breeding Specialist Group (IUCN and ICBP, 1992). The US Government submitted a proposal to transfer Goffin's Cockatoo to CITES Appendix I at CITES CoP8 (March 1992); this proposal would have been written before the assessment of the species as "Critical". The proposal was accepted by the Parties despite a report from the Indonesian delegation that the birds were still abundant (Jepson *et al.*, 2001). This resulted in a ban on international trade effective June 1992.

Prior to the international trade ban, export of Goffin's Cockatoos had been controlled by a Chinese family, who recruited two people in each of the villages along the only road on the island of Yamdena, the largest island of the Tanimbar group, to trap birds during the maize harvest in March

and April. In 1992, trappers received between USD3.75 and 6.50 per bird with an average catch of 30–50 birds a day—or USD112–325 for a two-person team. This was a substantial sum of money considering that the average household income was approximately USD250 per annum (Jepson *et al.*, 2001). For those farmers whose maize crops were destroyed or damaged by the birds, the revenue from the trade provided valuable compensation as well as a significant source of additional cash income (MacKinnon, 1998). Although this income accrued to a relatively small number of people, according to Jepson *et al.* (2001), because these individuals were distributed among the villages, it was likely that the benefits were spread more widely through onward spending and support to dependents.

Since the ban on international trade, this source of cash income has largely been lost. Some Goffin's Cockatoos are sold in the domestic trade in Java but they are not popular species locally. Jepson *et al.* (2001) report that local people remain angry about the trade ban. Farmers now keep the cockatoos away from their crops either by burning tyres—a practice which represents a serious risk of causing wildfires (Snyder *et al.* 2000)—or by continuing to trap them. Since the cockatoos can no longer be exported to foreign markets, and since there is only a small domestic market, they are simply killed (MacKinnon, 1998). In addition, Jepson *et al.* (2001) report that the mistrust by Tanimbar Islanders of conservation NGOs as a result of the trade ban has compromised BirdLife's plans to establish a protected area on Yamdena, which could have contributed to the conservation of these birds and other endemic species.

No data exist to assess what the effect of the trade ban has been on the wild population of Goffin's Cockatoos. However, a survey conducted by Jepson and others in 1993 found that the species was widespread and occurred at relatively high densities on Yamdena (Jepson *et al.*, 2001). Despite information that the species was not threatened, a proposal by the Government of Indonesia to transfer the species back to Appendix II in 1994 was withdrawn in the face of "vehement NGO opposition". Subsequent assessments (1996, 2000 and 2004) of its status according to the IUCN Red List were "lower risk–near threatened" (Baille and Groombridge, 1996; Hilton-Taylor, 2000) and "near threatened" (IUCN, 2006).

Available information indicates that the trade in Goffin's Cockatoos did not present a threat to the species at the time the CITES Appendix I proposal was put forward, and further, that if there had been a conservation concern, banning trade was not necessarily the best way to address it. The fact that trapping and extermination of the birds by local farmers is taking place in the wake of the export ban demonstrates that other factors besides market demand are driving removal of specimens from the wild.

Case Study—CITES and African Elephants *Loxodonta africana*

The debate concerning the elephant ivory trade ban, and its subsequent reopening, is perhaps one of the best known and highly contentious issues in the recent history of CITES. Concern regarding high levels of poaching of African Elephants across much of the Africa prompted the transfer of this species from CITES Appendix II to Appendix I in 1989. This listing and the subsequent ban on the international trade in African Elephant products, and specifically ivory, is one of the best known and most hotly debated cases of international intervention in wildlife trade and conservation. The Appendix-I listing has sparked intensive debates over the relative merits of trade prohibitions and using the controlled trade in wildlife products to secure conservation aims, and whether peoples and states have sovereign rights over decisions to sell and export of native wildlife.

Southern African countries arguing against the Appendix-I listing pointed out, *inter alia*, that exploitation of elephant products constituted an important economic resource for local people and provided an incentive for their conservation (Roth and Merz, 1997). However, it could be argued that since the revenues from the ivory trade generally accrue to government departments, e.g. in the case of ivory products generated from culls in national parks, banning the trade was likely to have had little effect on the wildlife-based incomes of local people except where this impacted on employment in government departments and/or the tourism industry. In countries where authority for wildlife resources has been devolved to the local level, however, as is the case in some parts of Zimbabwe for example, there can be a direct financial impact on communities.

The Governments of Botswana, Namibia and Zimbabwe were successful in proposing the transfer of their African Elephant populations to Appendix II in 1997. The 1997 *Report of the CITES Panel of*

Experts on the African Elephant noted that, while the majority of Zimbabwe's ivory stockpile belonged to the Department of National Parks and Wildlife Management (DNPWLM), 26% by weight belonged to Rural District Councils (RDCs) participating in the CAMPFIRE programme. Child (1993) estimated that this 6.5 t of ivory was worth a potential—but at that time unrealisable—US \$ 1.6 million. The Government of Zimbabwe stated that, were the sale of the ivory stockpile to be allowed, revenues generated would be allocated to the various RDCs on a tusk-by-tusk basis. Although funds generated through CAMPFIRE are spent according to local priorities, including wildlife management and returns to local communities, the CAMPFIRE Association indicated that, in the case of the ivory stockpile, they would recommend to member RDCs that resulting revenues be used for elephant conservation projects. By contrast, in the case of Botswana, revenues from the sale of ivory stockpiles were destined to go to the government treasury (CITES Panel of Experts, 1997). Once the populations of Botswana, Namibia and Zimbabwe were transferred to Appendix II, one-off sale of stockpiled ivory to Japan was allowed in 1999, under strict conditions, and with the proviso that revenues generated would benefit elephant conservation.

The CITES Appendix-I listing has had an impact on the livelihoods of stakeholders other than those benefiting from raw ivory sales, notably ivory carvers. Prices for worked ivory have declined overall since 1989, in some cases by as much as 90% (Stiles and Martin, 2001). Many carvers have left the trade or switched to other products including wood, bone, Hippopotamus or pig tusks, silver or gold. In the mid 1980s, Zimbabwe's ivory business supported around 200 carvers—a figure which had declined to only 35 by 1999.

Impacts were also felt as a result of the loss of access to markets for another valuable wildlife product—hide—the international trade in which was also banned by the Appendix-I listing. A study conducted by the Africa Resources Trust (ART) in 1994 estimated that, had CAMPFIRE communities been allowed to export elephant hide, the potential return in 1992 could have been USD93 000 (Dawe and Hutton, 1994). Export of elephant hide and leather goods from Zimbabwe was allowed to resume with the transfer of the populations of this country to Appendix II in 1997.

Yet another livelihood concern associated with the Appendix-I listing was the potential increase in human-elephant conflict as a result. Increased elephant populations and human-elephant conflict were reported for Botswana in 1997, including increases in human deaths and crop damage (CITES Panel of Experts on the African Elephant, 1997).

Opinion is divided as to the effectiveness of the Appendix-I listing on elephant conservation. A study by the IUCN SSC African Elephant Specialist Group and TRAFFIC, based on available and, admittedly, patchy data and information from 1988 to 1993 found that the ban had “not halted the illegal offtake of elephants” and that there was little doubt that ivory had continued “to be traded both within Africa and internationally since the CITES ban took effect”. The authors attributed this mainly to the lack of capacity of some range States to protect their elephants in the face of declining law enforcement budgets (Dublin *et al.*, 1995). Stiles and Martin (2001) claimed that it was “widely agreed that the CITES ban, which started in 1990, and the associated publicity campaign greatly reduced the volume of trade and demand for ivory. This achieved its intended result of decreasing the poaching of elephants, at least until recently”. However, this “wide agreement” is by no means evident in the literature and until sufficient data have been collected the debate on the effectiveness of the ban is likely to continue.

7. CITES AND THE WORLD TRADE ORGANIZATION

The WTO has as its three main objectives: “to help trade flow as freely as possible, to achieve further liberalization gradually through negotiation, and to set up an impartial means of settling disputes” (WTO, 2003). The WTO has 149 Parties (October 2006), of which the vast majority (132 in 2003) are also Parties to CITES (WTO, 2003; WTO CTE, 2003).

Although focused on trade liberalization, the WTO does refer to the issue of environmental protection, as highlighted in the preamble to the Agreement Establishing the World Trade Organization, where WTO members recognize that:

their relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services, **while allowing for the optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so** in a manner consistent with their respective needs and concerns at different levels of economic development.

Conservation of natural resources is specifically referred to in Article XX of the General Agreement on Tariffs and Trade (GATT), which largely governs the trade in goods and to which WTO members agree to adhere. Under Article XX, WTO members may adopt measures “necessary to protect human, animal or plant life or health” (paragraph b) or “relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption” (paragraph g). Application of such measures is required to be in a manner that does not discriminate among countries where the same conditions prevail and is not a “disguised restriction” on international trade.

A general commitment to environmental protection in the context of sustainable development was reiterated in the Ministerial Declaration adopted during the fourth WTO Ministerial Conference (Doha, November 2001), which includes a restatement of the Article XX principles and states that:

“...the aims of upholding and safeguarding an open and non-discriminatory multilateral trading system, and acting for the protection of the environment and the promotion of sustainable development can and must be mutually supportive”.

The Doha Declaration also called for further co-operation with UNEP and other intergovernmental environmental organizations in this regard. Of specific relevance to CITES was the agreement to undertake “negotiations” on the relationship between WTO rules and trade obligations contained within multilateral environmental agreements (MEAs), and procedures for information exchange between WTO and MEAs, including criteria for granting observer status (Paragraph 31(i)). These negotiations took place within special sessions of the Trade and Environment Committee (Committee on Trade and Environment, CTE), a subsidiary of the Trade Negotiations Committee set up by the Doha Declaration. The deadline for these negotiations was 1 January 2005 (Anon., 2003c).

At issue in these negotiations and earlier discussions is whether and what types of trade measures adopted under CITES and other MEAs might violate WTO provisions, and whether the provisions of the MEA or WTO would take precedence. The Doha Declaration refers to “specific trade obligations set out in” MEAs, and one of the first stages of the negotiation process was to try to agree what constituted such obligations (e.g. see a review of a CTE Special Session meeting (ICTSD, 2003a) and a summary of submissions from WTO members (TN/TE/S/3/Rev.1, available from the WTO website)). The CTE has prepared a document providing background on several MEAs, including CITES, and including a matrix categorizing trade measures contained therein (WT/CTE/W/160/Rev.2). Although a wide range of views has been presented at these negotiations, no consensus has been reached on any aspect of the debate, including definitions (R. Tarasofsky, in litt. to TRAFFIC International, 7 November 2006).

As discussed in earlier, the text of the CITES Convention establishes specific trade measures with regard to the trade in species listed in its Appendices. Explicit in becoming a Party to CITES is the requirement that national governments agree to these measures. Other trade measures have been

established via Resolutions, e.g. the establishment of export conditions for selected Appendix-I species. CITES Parties, either individually or collectively, have also implemented trade measures in response to recommendations from the CITES Standing Committee, which serves as the governing body between meetings of the Conference of the Parties. Recommendations from the Animals and Plants Committees and the CITES Secretariat have also included the establishment of trade measures, e.g. export quotas. While not having the collective weight of the Parties behind them, these recommendations are nevertheless generally given serious consideration in view of the potential for additional trade measures to be recommended by the Standing Committee or agreed by the Conference of the Parties at a later date. It can be argued that the above measures are in accordance with the provisions of GATT Article XX with respect to the trade in natural resources.

Many of the trade measures adopted by CITES relate to the origin of specimens that have been produced for trade. Specimens that are captive-bred or artificially propagated according to CITES agreed criteria are exempt from certain permitting provisions, for example. Similarly, in the case of split-listings, commercial trade in specimens of a particular species may be permitted from one country (whose populations of the species are included in Appendix II) but not from another (whose populations are included in Appendix I). In either case, the actual products in trade would be similar, i.e. "like products" as referred to in GATT Articles I(1) and XIII(1), discrimination among which is prohibited. In recent years, however, the criteria for "likeness" have become more flexible so that, for example, consumer preferences that discriminate between otherwise "like" products are accepted grounds for differentiated treatment (R. Tarasofsky, in litt. to TRAFFIC International, 7 November 2006).

Some CITES Parties have imposed unilateral trade measures that have been linked at least in part to CITES implementation. Restrictions on the import of certain CITES-listed species, for example, have been imposed by the USA and the European Union on grounds that evidence is lacking that exports are being maintained within sustainable levels. Such "stricter domestic measures" are provided for in the text of the Convention. Their application has been criticized as undermining the multilateral approach to controlling trade in CITES-listed species established by CITES (e.g. see Hutton, 2000). Within a WTO context, however, such measures are probably interpretable as "non-specific" and therefore not discriminatory (R. Tarasofsky, in litt. to TRAFFIC International, 7 November 2006).

RESOLUTION OF DISPUTES

Both CITES and the WTO incorporate mechanisms for resolving disputes between individual members, and are similar in their approach of encouraging members to resolve those disputes bilaterally prior to invoking a more formal process. In the case of CITES, Parties failing to resolve a dispute can mutually submit that dispute to arbitration, with specific mention made of the Permanent Court of Arbitration at The Hague, with the decision considered binding (Article XVIII). To date no Parties have elected to pursue such arbitration.

Similarly, no country has thus far lodged a complaint with the WTO with regard to trade measures imposed in conjunction with a mandate from CITES, either through the text of the Convention itself, changes in the CITES Appendices, CITES resolutions or recommendations of the Standing Committee. Dickson (2000) attributed this in part to the fact that most WTO members were also CITES Parties, and therefore could participate in CITES decision-making processes, and to the ability of Parties to take "reservations" with regard to more restrictive changes in the Appendices, functionally making them a non-Party with respect to implementing that decision. He later noted that the lack of disputes was also likely to reflect the relatively small number of commercially important species covered by the Convention (Dickson, 2002), a point echoed by Oxley (2002). Participants in a workshop on CITES and WTO trade rules agreed that conflicts would be more likely in the case of additional listings of economically important forest species (Cooney, 2001). They also agreed that stricter domestic measures imposed by one or more Parties were more likely to become the subject of a dispute than were trade measures agreed multilaterally in conjunction with CITES processes. Non-Parties were also considered more likely to dispute CITES decisions within the WTO than were Parties. Although the negotiations established by the Doha Declaration have specified consideration of WTO and MEA trade measures in the context of Parties to those MEAs, it should be noted that questions remain concerning the treatment of non-Parties.

Although no disputes have yet to be brought before the WTO in the context of CITES trade measures, there remains uncertainty and some concern regarding whether MEAs or WTO would take precedence in the case of such a dispute. On the one side are those who argue that disputes regarding MEA trade-related measures should be solved within the MEAs themselves, with all MEA trade-related measures automatically being considered WTO compatible (Reeve, 2002). An enhanced mechanism for addressing disputes within MEAs, including CITES, has also been suggested as a means to reduce the potential for disputes arising for trade measures involving non-Parties (Reeve, 2002; UNEP, 2001). On the other side are those (mostly developing countries) who believe that WTO rules should take precedence, with Article XX providing sufficient provision for trade measures enacted for environmental purposes (Dickson, 2000).

OBSERVER STATUS

In theory, increased communication between WTO and MEA-related bodies should facilitate the development of a mutually agreeable solution concerning potential disputes regarding trade measures. Beyond the issue of disputes, potential is also seen in identifying and promoting synergies between MEAs and the WTO (UNEP, 2001; UNEP, 2002). As noted above, the Doha Declaration specifically called for “negotiations” to consider procedures for information exchange between WTO and MEAs, including criteria for the granting of observer status to MEAs. CITES has observer status within the CTE, but not within “special sessions”, e.g. those organized to consider the relationship between the WTO and MEAs. More generally, many environmentally important decisions may be made in other WTO bodies, such as the Committee on Technical Barriers to Trade, where there is no access by CITES (R. Tarasofsky, in litt. to TRAFFIC International, 7 November 2006.). As noted by CTE’s Director, the situation is quite the opposite within MEAs, with WTO allowed to observe meetings on request (Sorenson, 2002). CITES and several other MEAs were granted ad hoc observer status at the February meeting of the CTE special session, although this is apparently on a provisional basis (ICTSD, 2003b). MEA Secretariats participating in the May 2003 CTE special session were excluded during discussions of information exchange and observer status, and their interventions limited on the issue of trade measures (ICTSD, 2003a). This approach would appear at cross-purposes to the goals of increased co-operation and, specifically, of identifying practical means of increasing information exchange. The whole question of observer status has become the subject of wider political controversies with the WTO (R. Tarasofsky, in litt. to TRAFFIC International, 7 November 2006).

Additional discussion of the relationship between CITES and the WTO can be found in the proceedings of the UK Workshop on CITES and WTO Trade Rules (Cambridge, September 2000), available from www.biodiversityeconomics.org/pdf/000929-01.PDF. The International Centre for Trade and Sustainable Development (www.ictsd.org) also provides regular updates on WTO-related meetings.

8. WHERE NEXT FOR CITES AND SUSTAINABLE FOREST MANAGEMENT?

Multilateral processes, including within multilateral agreements such as CITES and intergovernmental organizations such as FAO, do not evolve in isolation. In considering the future role of CITES with respect to promoting sustainable forest management, one must therefore also consider some of the other processes currently at work with regard to the trade in forest species. Among the most important of these in the past 15 years are the agreement of the CBD in 1992, discussed below, and the establishment of the WTO in 1995, discussed previously. Increases in bilateral trade negotiations and the growth of regional voting blocs will also shape the role of CITES in years to come. As discussed below, major world developments such as the 2003 Severe Acute Respiratory Syndrome (SARS) outbreak and fears over avian influenza may also influence the future of CITES.

CITES AND THE TRADE IN FOREST PRODUCTS

Timber trade

As has been mentioned, CoP12 represented something of a watershed for CITES with regard to the trade in forest products, with the inclusion in Appendix II of Big-leaf Mahogany, the most commercially important timber species yet to be included in the Appendices by a vote of the Parties. This proposal was accepted with the support of the majority of range States and importing countries, and notwithstanding objections of the three major exporting countries and parts of the timber industry. Experiences with the implementation of the Appendix-II listings for Big-leaf Mahogany and ramin will undoubtedly shape how the Parties and industry view the role of the Convention in helping to control the international trade in timber in future.

The role that CITES can continue to play in helping range State governments to prevent illegal exports, by increasing the risk of detection on import, seems unlikely to be controversial, especially given increasing world attention to illegal logging. As noted in the section on CITES basics, CITES is extremely powerful in providing a multi-lateral mechanism for responding to illegal trade in timber and other forest products, and specifically in giving importing countries the legal grounds upon which to assist exporting countries in the detection and investigation of suspect shipments.

Experience with implementing the Appendix-III and Appendix-II listings for Big-leaf Mahogany has demonstrated that the paperwork and inspection requirements required under CITES are compatible with those already in place, and do not pose a significant administrative burden. More challenging is the requirement that range States ensure that exports are not detrimental to species' survival.

Questions concerning what represents sustainable production such that the species is maintained "throughout its range at a level consistent with its role in the ecosystems in which it occurs" are being raised in considering implementation of the Appendix-II listing. CITES is therefore likely to prompt greater consideration of the impacts of timber extraction for export on sustainable forest management beyond the traditional forestry constituency. This could have the catalytic effect of bringing forestry experts into the mainstream of CITES discussions and processes.

Unlike Big-leaf Mahogany, the international trade in ramin involves a significant quantity of semi-processed and processed items, and therefore poses different challenges for trade control and monitoring. The willingness of the Parties to apply trade controls to large volumes of semi-processed and finished wood products remains to be seen.

CITES Parties, through the Plants Committee, reviewed the status and trade of a number of additional timber species against the CITES listing criteria. CITES Parties are likely to look most favourably on proposals brought forward by range States for the species concerned. This is especially true in the case of proposals brought forward for species of little international commercial importance, and for proposals with 100% range State support. As has been seen with Big-leaf Mahogany, proposals concerning species of major commercial importance, especially those where one or more range States object, are likely to continue to be hotly debated.

NON-WOOD FOREST PRODUCTS TRADE

Given past history, it is almost certain that CITES Parties will continue to pay greater attention to the trade in animal *versus* plant species with respect to all aspects of CITES implementation, from development of CITES listing proposals to capacity building for CITES implementation. Animal species likely to be proposed for inclusion in the Convention in future include those traded as pets and those used in traditional medicine, as their international trade tends to be more visible, especially in the North, and therefore better documented.

Although the Parties have accepted in principle that trade can have positive conservation impacts (e.g. see *Resolution Conf. 8.3*), debates in the lead up to and during CITES meetings demonstrate clashes of opinion with regard to the risks *versus* the benefits of allowing trade, including the possible role of legal trade in providing a cover for and/or stimulating illegal trade. These disagreements are invariably thrown most sharply into focus in the discussions on the African Elephant.

The outbreak of SARS in East Asia and the potential links to the consumption of wild species for meat is likely to have prompted greater efforts to enforce CITES and other trade controls by Customs and other government officials, as well as greater monitoring and control of domestic harvests and trade. Once the aetiology of the disease is better known, the SARS outbreak could also prompt a shift either towards or away from captive production of wild species for human consumption. As the main international agreement combining monitoring of wild species in trade with classification and documentation of their methods of production, CITES could be asked to play a much greater role in tracking the movement of wild specimens across international borders, in the interests of controlling the spread of diseases such as SARS and avian influenza.

Despite the fact that the unsustainable international trade in plants and plant-based products almost certainly far exceeds the trade in specimens of animal origin, it seems unlikely that plants other than those producing timbers will gain centre stage in the foreseeable future. Most of the major horticultural groups in trade are already covered by the Convention, with attention therefore likely to be focused on implementation rather than adding additional species to the CITES Appendices. The main emphasis seems set to remain on capacity building in range States, including with regard to the making of non-detriment findings, support for identification at borders, and application of trade controls to artificially propagated specimens.

The trade in medicinal and aromatic plants could receive increased attention in the coming years, in response to growing awareness of the scale of this trade and positive experiences thus far with regard to the CITES listings of some species, e.g. American Ginseng, *Taxus* spp. and agarwood. Experience with the proposal to list the Kalahari Desert species Devil's Claw *Harpagophytum* spp. in Appendix II seems likely to shape development of future proposals, however, and to encourage greater consideration of the potential socio-economic impacts of such listings. Whether this will be the case remains to be seen; most medicinal plant collectors lack the voice provided by the NGO that was actively working with Devil's Claw harvesters at the time this proposal was put forward.

There is no indication at present that trade in some of the more commercially important plant species currently of conservation concern, e.g. some rattans, will become the focus of CITES attention in the near future. As noted below, however, the agreement of the Global Strategy for Plant Conservation, which includes specific trade targets, could help prompt CITES action with regard to trade in such species. CITES could provide a central role in helping to improve trade monitoring, expanding the knowledge available regarding the volume and origin of plant products in trade. Although such information would appear to be vital to development of sustainable forest management strategies, thus far it is not being captured effectively at either the national or the international level. Failing the development of other mechanisms to track the trade in commercially important forest species, it is not unlikely that some CITES Parties will seek to use CITES in this regard, through the listing of species in either Appendix II or Appendix III.

CITES AS A FORUM FOR STIMULATING DISCUSSION AND ACTION

It seems likely that CITES will continue to serve as a forum for prompting attention to and action on the trade in wild species or commodities even when they are not covered by the Convention. For example, although a 1994 proposal to include the edible nests of swiftlets *Collocalia* spp. in Appendix II was not accepted, the resulting debate prompted the agreement of *Resolution Conf. 9.15* calling for

action on the part of range and consumer States to secure the conservation of the species. As a result, a workshop to discuss swiftlet use, trade and conservation was convened in Indonesia during which the ASEAN Task Force for the Conservation of Edible Nest Swiftlets was formed. Subsequent meetings of the task force and actions on the part of range and consumer States were viewed by the CITES Animals Committee as having successfully addressed the potential research management problem, which therefore recommended that the intention of the Resolution had been met and could therefore be repealed (AC Doc.11.11.1). The 2000 proposal to include Devil's Claw in Appendix II similarly resulted in Decisions calling for further research and action within range States, including the convening of multi-stakeholder workshops; reviews of progress made remains on the agenda of CITES CoPs and Plants Committee meetings. CoP agenda points have also included efforts to increase action on conservation concerns such as the trade in wild species for meat, which, while involving CITES-listed species, is not limited to CITES species by any means.

CITES AND THE CBD

The agreement of the CBD in 1992 helped focus the world's attention on the role of biodiversity in supporting human development, on the need to ensure that biodiversity resources were used sustainably, and on the importance of sharing the benefits from the use of genetic resources with the countries in which those resources originated. Discussions within the CBD have also helped draw greater attention to the threat posed by the introduction of alien invasive species, and the need to take action to control international trade in species likely to become invasive. The agreement of the Global Strategy for Plant Conservation by the sixth meeting of the Conference of the Parties to the CBD (2002, the Hague) helped spotlight the importance of plant conservation. Debates concerning access and benefit sharing and intellectual property rights have similarly increased attention to the role played by plants in human development. Unlike CITES, which continues to be dominated by discussions of the trade in animal species (and particularly elephants), plants are taking centre stage in the CBD.

Thus far there has been little concrete action with regard to increasing CITES-CBD synergies, although some Parties, e.g. Norway, are seeking to bring CITES practices into greater alignment with CBD objectives such as that on sustainable use (see CITES CoP12 Doc. 17), and others have noted that *ex situ* production of wild species represents a transfer of genetic resources. The harvest for export of CITES-listed species is often not considered in the development of National Biodiversity Action Plans, which can constitute a framework for the development of forest management and economic development goals linked to the sustainable use of wild species. There is relatively little cross-participation in meetings of the two conventions, limiting the potential for identifying practical points of engagement.

Given that CITES incorporates mechanisms both to monitor and control the trade in biodiversity resources, there is the potential for it to be applied more extensively by national governments seeking to ensure that such trade is in accordance with their sustainable-use objectives and national laws. Furthermore, the lessons learned from CITES implementation thus far could be applied to controlling the international trade in alien species and genetic resources.

As a step toward facilitating greater CITES–CBD synergies, several government and non-governmental organizations organized a workshop to explore this issue. Recommendations from this workshop, which was held in April 2004, are being fed into the subsequent business of the Conferences of the Parties to both conventions. In addition, CITES in the context of implementation of the Global Plant Conservation Strategy was discussed during the 13th meeting of the CITES Plants Committee (August 2003, Geneva). Such actions, and the fact that sustainable use, trade in invasive alien species, and access and benefit sharing are set to continue to be the focus of national and international attention, suggest that CITES could play a more active role in sustainable forest management in the context of support for CBD implementation.

Potential conflicts between CITES and the WTO were covered in the preceding section and will not be covered in depth here. Perhaps most important in shaping the future role of CITES will be increased emphasis on more effective implementation of CITES processes rather than the application of stricter domestic measures where there is concern that trade is unsustainable. This could include, for example, further development of the significant trade review process as a means of responding rapidly to information indicating that trade in a particular species is unsustainable.

CONCLUSIONS

CITES has played an important role in bringing attention to and controlling the international trade in numerous species, both plant and animal, and thereby has contributed to the sustainable management of forest biodiversity. However, the Convention has thus far not been used to its full potential in supporting sustainable forest management. Key among the constraints to its use in this regard is the impression given by its name that it only addresses the trade in endangered species, with its primary aim being to prevent that trade. The role of the Convention in helping national governments to maintain the trade in forest and other wildlife products within sustainable levels is generally overlooked.

A second factor reducing the application of CITES to achieving wider sustainable development aims is the tendency for CITES implementing agencies to operate in isolation from other government departments and inter-governmental organizations concerned with the trade in biodiversity resources, e.g. forestry and fisheries departments and institutions such as FAO. Within the international environmental arena, CITES is widely perceived to be a mechanism that responds to crises in the conservation status of species brought about by unsustainable harvest for international trade, so that by the time CITES has been brought into play, opportunities for sustainable exploitation of the species concerned have been severely curtailed or foreclosed altogether. How effectively CITES will be able to move beyond this to playing a proactive role in sustainable management of species before such crises arise will depend to a large extent on overcoming these institutional barriers. This will require an increase in communication, information exchange, understanding and respect for the mutually compatible goals and mechanisms of those charged with sustainable forest management and conservation of biological diversity.

Regardless of its relationship with other processes or agreements, CITES will remain first and foremost a convention dedicated to biodiversity conservation, and specifically, to ensuring that international trade in wild species does not threaten their survival. Although the approaches used are likely to evolve, increasingly involving a mix of incentives and regulatory approaches, this central objective will be maintained. For many species, especially those not considered of sufficient commercial importance to attract major interest from other institutions, CITES processes will continue to provide a critical mechanism for prompting conservation action, and thereby contribute to sustainable forest management.

REFERENCES

- Allan, C.** (Comp.) (1997). *Making CITES Work: Examples of Successful Implementation and Enforcement*. TRAFFIC International, Cambridge, UK.
- Anderson, S.** (2003). Greater Sanctions Readied for Alerce Forest Destruction. *The Santiago Times*. www.chirongroup.com/splash/stimes/chiparticle.php3?story_id=1026, viewed 27 July 2003.
- Anon.** (1992). Eighth meeting of the Conference of the Parties to CITES. *TRAFFIC Bulletin* 13(1):9-22.
- Anon.** (1993). Report of the meeting of the CITES Plants Committee, 6–8 September 1993, Brussels, Belgium.
- Anon.** (1995). Illegal Alerce felling detected in Region X. Chile Information Project—"Santiago Times" -- Political, Environment, Human Rights, Economic News. <http://ssdc.ucsd.edu/news/chip/h95/chip.19950407.html#a4>. Viewed 27 July 2003.
- Anon.** (1999). Taiwan establishes orchid registration scheme. *TRAFFIC Dispatches* 11:2.
- Anon.** (2000). Plants Committee Chairman Report Doc. 11.11.2, Eleventh Meeting of Conference of the Parties, 10-20 April 2002, Gigiri, Kenya.
- Anon.** (2003a). Tropical timber producers fret about new regulations. *Inside the ITTO*. www.itto.or.jp/inside/current_news/may15_2003_regul.html. Viewed 23 August 2003.
- Anon.** (2003b). The American Orchid Society. <http://orchidweb.org/services.html>. Viewed 23 August 2003.
- Anon.** (2003c). Doha Development Agenda; How the negotiations are organized. www.wto.org/english/tratop_e/dda_e/work_organ_e.htm. Viewed June 2003.
- Association Green Alternative** (2002). *Wildlife Trade in Georgia*. Tbilisi, Georgia.
- Baile, J. and Groombridge, B.** (1996). *1996 IUCN Red List of Threatened Species*. IUCN, Gland, Switzerland and Cambridge, UK.
- Barden A., Awang A., Mulliken T. & Song M.** (2000). Heart of the matter: Agarwood use and trade and CITES implementation for *A. malaccensis*. TRAFFIC International, Cambridge, UK
- BCN** (1997). *Butterflies in the Rain Forest of Irian Jaya, Indonesia*. Biodiversity Conservation Network www.bcnet.org/bsp/bcn/projects/irianjaya97.htm. Viewed 26 March 2002.
- BCN** (undated). Butterflies Aren't Free. Biodiversity Conservation Network. www.bcnet.org. Viewed 26 March 2002.
- Bodasing, A. and Mulliken, T.** (1996). *South Africa's Wildlife Trade at the Crossroads: CITES Implementation and the Need for a National Reassessment*. TRAFFIC East/Southern Africa – South Africa, Johannesburg, South Africa.
- Buitrón, X. and Mulliken, T.** (1997). *CITES Appendix III and the Trade in Big-Leafed Mahogany*. TRAFFIC, Cambridge, UK.
- Buitrón, X. and Mulliken, T.** (2003). The bigleaf mahogany and CITES Appendix III. *CITES World* 11:7-8.
- Cahyadin, Y, Jepson, P and Manoppo, B.I.** (1994). *The Status of Cacatua goffini and Eos reticulata on the Tanimbar Islands*. PHPA/Birdlife International, Bogor, Indonesia.
- Callister, D.** 1992. Australian imports of Asian slipper orchids. *TRAFFIC Bull.* 12(3): 59-67.
- Chen, H.K. and Perumal, B.** (2002). *In Harmony with CITES? An Analysis of the Compatibility Between Current Forestry Management Provisions and the Effective Implementation of CITES-listing for Timber Species in Malaysia*. TRAFFIC Southeast Asia, Kuala Lumpur, Malaysia.
- Child, B.** (1993). A perspective from Zimbabwe: the elephant as a natural resource. *Wildlife Conservation* 96(2): 60-61.
- CITES Management Authority of Germany** (2002). Illicit trade in live plants. *CITES World* 9:1-3.
- CITES Scientific Authority of Germany** (2001). Harvesting techniques of *Galanthus* in Georgia. PC11 Doc. 9.1.b. Eleventh meeting of the CITES Plants Committee. 3-7 September 2001, Langkawi, Malaysia.
- CITES Management Authority of Switzerland** (2001). Illegal trade in *Paphiopedilum* spp. (Agenda item 24.2); Some recently described taxa in the genus *Paphiopedilum*. PC 11 Inf. 8.
- CITES Panel of Experts** (1997). Report of the Panel of Experts on the African Elephant on the Review of the Proposals Submitted by Botswana, Namibia and Zimbabwe to Transfer their National Populations of *Loxodonta africana* from Appendix I to Appendix II. CITES CoP Document 10.89 (Rev.) Annex 3.
- CITES Secretariat** (1997). Review of Alleged Infractions and Other Problems of Implementation of the Convention. CoP10 Doc. 10.28 (Rev.)

- CITES Secretariat** (2002a). Is that orchid wild-collected or artificially propagated? *CITES World* 9:3-5.
- CITES Secretariat** (2002b). Plants in Legislation. *CITES World* 9:15-15.
- CITES Secretariat** (2002c). From the Editor. *CITES World* 9:1.
- Cole, D. and du Plessis, P.** (2001). *Namibian Devil's Claw* (*Harpagophytum spp.*). *A Case Study on Benefit-Sharing Arrangements*. Directorate of Environmental Affairs, Windhoek, Namibia.
- Collar, N.J., Andrew, P., Gonzaga, L.P., Grimmett, R.F., Johnson, T.H., Stattersfield, A.J. and Stuart, S.N.** (1988). *Birds to Watch: ICBP World Checklist of Threatened Birds*. ICBP Technical Publication. International Council for Bird Preservation, Cambridge, UK.
- Compton, J.** (2002). Agarwood (Gaharu) Harvest and Trade in New Guinea [Papua New Guinea and the Indonesian province of Papua (formerly Irian Jaya)]. An information document prepared by TRAFFIC Oceania for the Twelfth Meeting of the CITES Plants Committee, with reference to CITES *Decisions 11.112 and 11.113* regarding *Aquilaria spp.* *PC12 Doc. 8.3*.
- Cooney, R.** (2001). In *The UK Workshop on CITES and WTO Trade Rules*. Ed by B Dickson, J. Hutton and SD Broad, pp. 68-74. Cambridge: Africa Resources Trust and TRAFFIC International.
- Cribb, P.** (1987). *The Genus Paphiopedilum*. Royal Botanic Gardens, Kew and Collingridge Books, Richmond and Twickenham, UK.
- Davis, A.P.** (1999). *The CITES Bulb Checklist*. Royal Botanic Gardens, Kew, UK.
- Dawe, M. and Hutton J.M.** (1994). *An Analysis of the Production and Economic Significance of Elephant Hide in Zimbabwe*. Africa Resources Trust, Harare, Zimbabwe.
- de Klemm** (1993). *Guidelines for Legislation to Implement CITES*. IUCN, Gland, Switzerland and Cambridge, UK.
- De Meulenaer, T., Weiler, P. and Vanden Bloock, A.** (1994). Recent trends in international trade of *Hippopotamus ivory*. *TRAFFIC Bulletin* 15 (1): 47-49.
- Dickson, B.** (2000). CITES and GATT/WTO: The potential for conflict. In *The UK Workshop on CITES and WTO Trade Rules*. Ed by B Dickson, J. Hutton and SD Broad, pp. 68-74. Cambridge: Africa Resources Trust and TRAFFIC International.
- Dickson, B.** (2002). International conservation treaties, poverty and development: The case of CITES. *Natural Resource Perspectives*. Overseas Development Institute, London, UK.
- Dublin, H.T., Milliken, T. and Barnes, R.F.W** (1995). *Four Years After the CITES Ban: Illegal Killing of Elephants, Ivory Trade and Stockpiles*. IUCN, Gland, Switzerland.
- du Plessis, M.A.** (2000). CITES and the causes of extinction. In: Hutton, J.M. and Dickson, B. (Eds). *Endangered Species, Threatened Convention, The Past, Present and Future of CITES*. Earthscan, London, UK.
- Edwards, S.R. and Broad, S.R.** (1992). Wild bird trade: perceptions and management in the United Republic of Tanzania. In: Thomsen, J.B., Edwards, S.R. and Mulliken, T.A. (Eds). *Perceptions, Conservation and Management of Wild Birds in Trade*. TRAFFIC International, Cambridge.
- Ekim, T.** (1998). Conservation Measurements Taken on Exported Geophytes of Turkey. Report to Regional European Meeting in Czech Republic, 1998.
- ERM** (1996). *Study on How to Improve the Effectiveness of CITES*. Environmental Resources Management, London, UK.
- Frost, B.** (2002). Trade Uninterrupted by Mahogany Decision. International Wood Products Association Press Release, November 15, 2002.
- Gerber, N.** (in prep.). *Capturing the Resource Rent; An Economic Assessment of the Gaharu (agarwood/eaglewood) Trade in Papua New Guinea*. TRAFFIC Oceania and WWF South Pacific Programme, Sydney, Australia and Suva, Fiji.
- Golte, W.,** (1996). Exploitation and conservation of *Fitzroya cupressoides* in southern Chile. In Hunt, D. (ed.). *Temperate Trees Under Threat*. International Dendrology Society, Great Britain.
- Hilton-Taylor, C.** (2000). *2000 IUCN Red List of Threatened Species*. IUCN, Gland, Switzerland and Cambridge, UK. www.redlist.org.
- Homma, A.** (1994). Plant extractivism in the Amazon: limitations and possibilities. In: Clusener-Godt, M. and Sachs, I. (Eds). *Extractivism in the Brazilian Amazon: Perspectives on Regional Development*. *MAB Digest* 18, 34-57.
- Hoover, C.** (1998). *The U.S. Role in the International Live Reptile Trade: Amazon Tree Boas to Zululand Dwarf Chameleons*. TRAFFIC North America, Washington, DC, USA.
- Hutton, J.** (2000). Who knows best? Controversy over unilateral stricter domestic measures. In: Hutton, J. and Dickson, B. (Eds) (2000). *Endangered Species Threatened Convention. The Past, Present and Future of CITES*. Earthscan, London, UK.

- Hutton, J. and Dickson, B.** (Eds) (2000). *Endangered Species Threatened Convention. The Past, Present and Future of CITES*. Earthscan, London, UK.
- Hutton, J.M., Ross, P. and Webb, G** (2001). *Using the Market to Create Incentives for the Conservation of Crocodilians: A Review*. IUCN/SSC Crocodile Specialist Group, IUCN, Gland, Switzerland.
- ICTSD** (2003a). MEA secretariats ambivalent about WTO environment negotiations. *Bridges Trade BioRes* 3(9). 15 May 2003.
- ICTSD** (2003b). WTO Environment Committee allows ad-hoc attendance to MEA Secretariats. *Bridges Weekly Trade News Digest* 7(6). 19 February 2003.
- Imbach, A. and Guttierrez, I.** (2000). *Evaluating Eden Initiative: Central America and Dominican Republic*. Unpublished report to the Evaluating Eden project. London, International Institute for Environment and Development.
- Inskipp, C.** (2003). *Making a Lasting Impression: The impact of the UK's wildlife trade on the world's biodiversity and peoples*. WWF UK and TRAFFIC, Godalming and Cambridge, UK.
- Inskipp, T., Broad, S. and Luxmoore, R.** (1988). *Significant Trade in Wildlife: A Review of Selected Species in CITES Appendix II*. IUCN and CITES Secretariat, Gland, Switzerland and Cambridge, UK.
- Inskipp, T. and Corrigan, H.** (1992). A Review of Significant Trade in Animal Species Included in CITES Appendix II. Report to the CITES Animals Committee. World Conservation Monitoring Centre, Cambridge, UK.
- Iqbal, M.** (1995). *Trade Restrictions Affecting International Trade in Non-Wood Forest Products*. Non-Wood Forest Products Series. UN Food and Agriculture Organization, Rome, Italy.
- ITTO and CITES** (2006). Enhanced collaboration and synergies between ITTO and CITES 2006/2007 Work Programme Activities. Powerpoint presentation for the third meeting of the CITES Mahogany Working Group.
www.cites.org/common/prog/mwg/MWG3/Proyecto_CITES_ITTO_MWG_01Jul06.ppt
- IUCN** (2000). *The Effectiveness of Trade Measures Contained in the Convention on International Trade in Endangered Species of Wild Fauna and Flora*. UNEP Economics, Trade and Environment Unit, Geneva, Switzerland.
- IUCN** (2006). *2006 IUCN Red List of Threatened Species*. www.iucnredlist.org. Downloaded on 19 October 2006.
- IUCN and ICBP** (1992). Proceedings of the IUCN/SSC Captive Breeding Specialist Group and ICBP Parrot Conservation Assessment and Management Workshop, 14-17 January 1992. Unpublished report.
- IUCN/SSC Orchid Specialist Group** (1996). *Orchids; Status Survey and Conservation Action Plan*. IUCN, Gland, Switzerland and Cambridge, UK.
- IUCN/SSC and TRAFFIC Network** (1994). *Analyses of Proposals to Amend the CITES Appendices Submitted to the Ninth Meeting of the Conference of the Parties*. IUCN and TRAFFIC, Cambridge, UK.
- IUCN/SSC Trade Specialist Group, TRAFFIC and the World Conservation Monitoring Centre** (1989). *Analyses of Proposals to Amend the CITES Appendices Submitted to the Seventh Meeting of the Conference of the Parties*. Cambridge, UK.
- Jenkins, M. and Broad, S.** (1994). *International Trade in Reptile Skins. A Review and Analysis of the Main Consumer Markets*. TRAFFIC International, Cambridge, UK.
- Jenkins, R.W.G.** (1997). *Management and Use of Python regius in Benin and Togo*. Report Prepared for Directorate General XI Commission of the European Union. IUCN SSC, Cambridge, UK.
- Jenkins, R.W.G.** (2000). The significant trade process; making Appendix II work. In: Hutton, J. and Dickson, B. (Eds) (2000). *Endangered Species Threatened Convention. The Past, Present and Future of CITES*. Earthscan, London, UK.
- Jepson, P.** (2003). The need for a better understanding of context when applying CITES regulations: the case of an Indonesian parrot – *Tanimbar corella*. In: Oldfield, S. (Ed.) (2003). *The Trade in Wildlife; Regulation for Conservation*. Earthscan, London, UK.
- Jepson, P., Brickle, N. and Chayadin, Y.** (2001). The Conservation Status of the *Tanimbar Corella* and Blue-streaked Lory on the Tanimbar Islands, Indonesia: Results of Rapid Contextual Survey. *Oryx*. 35 (3): 224-233.
- Kahler, S.C. and Wolrab, T.I.** (1998). *Forum Delivers Bird's-eye View of Welfare*. American Veterinary Medical Association. www.avma.org/onlnews/javma/jan98/s011598l.htm, viewed 15 March 2002.

- Kelso, B.J.** (1995). Ninth meeting of the Conference of the Parties to CITES. *TRAFFIC Bulletin* 15(2):63-76.
- Lange, D.** (1999). *Identification and Training for Medicinal and Aromatic Plants Covered by CITES and EU Regulation 2307/97*. German Federal Agency for Nature Conservation, Bonn, Germany.
- Luxmoore, R.** (1989). The implementation of CITES in Thailand. In: Barzdo, J., Broad, S., Inskipp, T. and Luxmoore, R. (Eds). *Problems in CITES Implementation: Case Studies in Four Selected Countries*. World Wide Fund for Nature, Gland, Switzerland.
- MacGregor, J.M.** (2001). International Trade in Crocodylian Skins: Review and Analysis of the Economic Issues for Conservation. Unpublished report to Africa Resources Trust and TRAFFIC.
- MacKinnon, K.** (1998). Sustainable use as a conservation tool in the forests of South-East Asia. In: Milner-Gulland, E.J. and Mace, R. (Eds) *Conservation of Biological Resources*, Blackwell Science, Oxford, UK.
- Marshall, N.** (1993). *The Gardener's Guide to Plant Conservation*. World Wildlife Fund, Washington, DC, USA.
- Martin, R.B.** (2000). When CITES works and when it does not. In: Hutton, J. and Dickson, B. (Eds) (2000). *Endangered Species Threatened Convention. The Past, Present and Future of CITES*. Earthscan, London, UK.
- Mofson, P.** (2000). Zimbabwe and CITES: Influencing the international regime. In: Hutton, J. and Dickson, B. (Eds) (2000). *Endangered Species Threatened Convention. The Past, Present and Future of CITES*. Earthscan, London, UK.
- Moyer, D.C.** (1995). *The Status of Fischer's Lovebird Agapornis fischeri in the United Republic of Tanzania*. IUCN Species Survival Commission, Gland, Switzerland and Cambridge, UK.
- Moyle, B.** (2003). Regulation, conservation and incentives. In: Oldfield, S. (Ed.) (2003). *The Trade in Wildlife; Regulation for Conservation*. Earthscan, London, UK.
- Mulliken, T.A.** (1992). The wild bird trade - an overview. In: Thomsen, J.B., Edwards, S.R. and Mulliken, T.A. (Eds), *Perceptions, Conservation and Management of Wild Birds in Trade*. TRAFFIC International, Cambridge, UK.
- Mulliken, T.** (1995). *South Africa's Trade in African Grey Parrots*. TRAFFIC East/Southern Africa – South Africa, Johannesburg, South Africa.
- Neira, E., Verscheure, H., and Revenga, C.** (2002). *Chile's Frontier Forests. Conserving a Global Treasure*. World Resources Institute, Washington, DC, USA.
- Nowell, K. and Jackson, P.** (Eds) (1996). *Wild Cats: Status Survey and Conservation Action Plan*. IUCN, Gland, Switzerland and Cambridge, UK.
- OECD** (1997). *Experience with the Use of Trade Measures in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*. Organisation for Economic Co-operation and Development, Paris, France.
- Oldfield, S.** (1999). Collected wisdom. *The Garden*, September 1999.
- Oldfield, S.** (Ed.) (2003). *The Trade in Wildlife; Regulation for Conservation*. Earthscan, London, UK.
- Oldfield, S., Lusty, C. and MacKinnon, A.** (1998). *The Word List of Threatened Trees*. World Conservation Press, Cambridge, UK.
- Oxley, A.** (2002). Environmental protection and the WTO. In: Morris, J. (Ed.) *Sustainable Development: Promoting Progress or Perpetuating Poverty?* Profile Books, London, UK.
- Reeve, R.** (2002). *Policing International Trade in Endangered Species. The CITES Treaty and Compliance*. Earthscan, London
- Robbins, C.** (1999). *American Ginseng: The Root of North America's Medicinal Herb Trade*. TRAFFIC North America, Washington, DC, USA.
- Roe, D., Mulliken, T., Milledge, S., Mremi, J., Mosha, S. and Grieg-Gran, M.** (2002). *Making a Killing or Making a Living? Wildlife trade, trade controls and rural livelihoods*. IIED, London, UK.
- Rosser, A. and Haywood, M.** (2002). *Guidance for CITES Scientific Authorities: Checklist to assist in making non-detriment findings for Appendix II exports*. IUCN, Gland, Switzerland and Cambridge, UK.
- Royal Botanic Gardens, Kew** (2000). Species Distribution Mapping for the Genus *Galanthus*. Inf. PC10.1, Tenth meeting of the Plants Committee, Shepherdstown, USA, 11-15 December 2000.
- Sand, P.H.** (1997). Commodity or taboo? International Regulation of Trade in Endangered Species. In: Bergeson, H.O. and Parmann, G. (Eds) (1997). *Green Globe Yearbook of International Co-operation on Environment and Development 1997*. Oxford University Press, Oxford, UK.

- Sandison, M.S., Clement Muñoz, M., de Koning, J. and Sajeva, M.** (1999). *CITES and Plants: A User's Guide*. Royal Botanic Gardens, Kew, Richmond, UK.
- Schellevis, N. and Schouten, J.** (1999). *Alerce (Fitzroya cupressoides (Milina) I. M. Johnston)*. In: Farjon, A. and Page, C.N. (1999) (Eds). *Conifers – Status Survey and Action Plan*. IUCN/SSC Conifer Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.
- Schippman, U.** (2001). *Medicinal Plants Significant Trade Study, CITES Projekt S-109, Plants committee Document PC9.1.3 (Rev.)*. German Federal Agency for Nature Conservation, Bonn, Germany.
- Simons, A.J.** (1996). ICRAF's strategy for domestication of non-wood tree products. In: Leakey, R.R.B., Temu, A.B., Melnyk, M. and Vantomme, P. (Eds). *Domestication and Commercialization of Non-timber Forest Products in Agroforestry Systems*. Non-Wood Forest Products No. 9. Food and Agriculture Organization, Rome, Italy.
- Singadan, M. and Gunn, B.** (2003). *Guidelines for harvesting gaharu wood by village communities in Papua New Guinea*. PNGFA and CSIRO, Lae, Papua New Guinea.
- Sorenson, J.** (2002). Speaking Points. Session on Information Exchange and Observer Status: Opening Remarks by the WTO Secretariat. Geneva, Switzerland, 11 November 2002.
- Snyder, N., P. McGowan, J. Gilardi, and A. Grajal** (editors). (2000). *Parrots: Status Survey and Conservation Action Plan 2000-2004*. IUCN, Gland, Switzerland and Cambridge, UK.
- Stiles, D. and Martin, E.B.** (2001). Status and trends of the ivory trade in Africa, 1989-1999. *Pachyderm*. Jan-June, 30:24-36.
- Tanaka, T.** (2001). *Paphiopedilum* and the Washington Treaty (CITES) – An ideal opportunity for popularising *Paphiopedilum* by propagation. Prepared for *New Orchids* 101. Translated by Yoko Otsuki. www.orchid.or.jp/orchid/people/tanaka/CITES/enwashington.html, Viewed 23 August 2003.
- Thitiprasert, W.** (2002). CITES implementation for plants by Thailand. *CITES World* 9:13-14.
- Thomsen, J.B., Edwards, S.R. and Mulliken, T.A.** (Eds) (1992). *Perceptions, Conservation and Management of Wild Birds in Trade*. TRAFFIC International, Cambridge, UK.
- TRAFFIC** (2001). *CITES Appendix III Implementation for Big-leafed Mahogany Swietenia macrophylla*. TRAFFIC, Cambridge, UK.
- TRAFFIC International** (1999). Implementation of trade controls for *Aquilaria malaccensis*. Significant Trade Progress reports. Ninth Meeting of the Plants Committee.
- TRAFFIC North America** (1999). Dutch bulb trader complies with labelling agreement. *TRAFFIC North America* 2(2):5.
- Trexler, M.** (1990). *The Convention on International Trade in Endangered Species of Wild Fauna and Flora: Political or Conservation Success?* University of California, Berkeley, USA.
- 't Sas-Rolfes, M.** (2000). Assessing CITES: four case studies. In: Hutton, J. and Dickson, B. (Eds) (2000). *Endangered Species, Threatened Convention. The Past, Present and Future of CITES*. Earthscan, London, UK.
- UNEP** (2001). Chairman's Summary. *UNEP Meeting on Compliance, Enforcement and Dispute Settlement in Multilateral Environmental Agreements and the World Trade Organization*. Geneva, 26 June 2001.
- UNEP** (2002). Multilateral Environmental Agreements and the WTO: Building synergies. UNEP, Geneva, Switzerland.
- US Government** (2001). Illegal Trade in *Paphiopedilum* Spp. Eleventh Meeting of the CITES Plants Committee. PC11 Doc. 24.4.
- Warner, K.** (1995). *Marketing, Valuation and Pricing of NWFPs*. Beyond Timber: Social, Economic and Cultural Dimensions of Non-Wood Forest Products in Asia and the Pacific. Regional Expert Consultation, 28 November - 2 December 1994, Bangkok.
- Wells, M., Guggenheim, S., Khan, A., Wardojo, W. and Jepson, P.** (1999). *Investing in Biodiversity. A Review of Indonesia's Integrated Conservation and Development Projects*. The World Bank, Washington, D.C.
- Wijnstekers, W.** (2005). *The Evolution of CITES. A Reference to the Convention on International Trade in Endangered Species of Wild Fauna and Flora, 8th edn*. CITES Secretariat, Geneva, Switzerland.
- Williams, T.** (1999). The terrible turtle trade. *Audubon* 44 101(2).
- WTO** (2003). Trading into the Future. The Introduction to the WTO. www.wto.org/english/thewto_e/whatis_e/tif_e/tif_e.htm. Viewed 23 June 2003.
- WTO CTE** (2003). *Matrix on Trade Measures Pursuant to Selected Multilateral Environmental Agreements*. WT/CTE/W/160/Rev.2, TN/TE/S5.

- WWF** (2003). Stop Massive Logging of Old Growth Forest in Chile.
www.takeaction.worldwildlife.org/action.asp?step=2&item=2275. Viewed 27 July 2003.
- Yokoi, K. and Milliken, T.** (1991). Trade in wild-collected slipper orchids in Japan. *TRAFFIC Bulletin* 12(1/2):12-16.
- Zich, F., and Compton, J.** (2002). *The Final Frontier: Towards Sustainable Management of Papua New Guinea's Agarwood Resource*. TRAFFIC Oceania and WWF South Pacific Programme, Sydney, Australia and Suva, Fiji.

Annex I

Exports of Appendix II tree species traded in an annual average quantity of over 100 specimens* (1999-2003)

Taxon	Term	Unit	1999	2000	2001	2002	2003	5 year average
LEGUMINOSAE (FABACEAE)								
<i>Pericopsis elata</i>	LIV	m ³	0	0	0	0	78	16
<i>Pericopsis elata</i>	SAW	m ³	30,309	13,861	11,087	11,639	15,445	16,468
<i>Pericopsis elata</i>	TIP	m ³	0	104	32	0	0	27
<i>Pericopsis elata</i>	TIP	kg	0	0	46,825	0	0	9,365
<i>Pterocarpus santalinus</i>	EXT	kg	2,497	0	0	0	0	499
<i>Pterocarpus santalinus</i>	TIM	m ³	30	0	0	0	0	6
<i>Pterocarpus santalinus</i>	TIM	kg	0	0	0	0	96,000	19,200
<i>Pterocarpus santalinus</i>	TIM	m	0	20	0	0	0	4
MELIACEAE								
<i>Swietenia macrophylla</i>	CAR		0	0	0	0	19	4
<i>Swietenia macrophylla</i>	SAW	m ³	0	0	0	0	2,306	461
<i>Swietenia macrophylla</i>	VEN	m ³	0	0	0	0	0	0
<i>Swietenia mahogoni</i>	CAR		0	0	0	0	250	50
<i>Swietenia mahogoni</i>	SAW		0	133	0	0	0	27
<i>Swietenia mahogoni</i>	SAW	m ³	0	1	0	0	64	13
<i>Swietenia mahogoni</i>	TIP		0	0	835	835	0	334
ROSACEAE								
<i>Prunus africana</i>	BAR	kg	780,049	529,761	634,165	327,562	689,253	592,158
<i>Prunus africana</i>	CHP	kg	0	0	0	0	0	0
<i>Prunus africana</i>	DPL	kg	1	8	0	0	4	3
<i>Prunus africana</i>	EXT	kg	223,272	341,504	2,200	800	110,758	135,707
<i>Prunus africana</i>	LVS	kg	0	0	0	0	0	0
<i>Prunus africana</i>	POW	kg	443,022	486,669	60,000	543,300	468,000	400,198
<i>Prunus africana</i>	ROO	kg	0	1	0	0	0	0
<i>Prunus africana</i>	SAW	m ³	0	0	0	0	0	0
<i>Prunus africana</i>	SPE	kg	0	0	1	0	0	0
TAXACEAE								
<i>Taxus spp.</i>	EXT	kg	0	0	0	0	8	2
<i>Taxus wallichiana</i>	DER	kg	4,000	0	0	0	0	800
<i>Taxus wallichiana</i>	EXT	kg	0	56	38	3	50,000	10,019

Annex II

Gross exports of Appendix II plant species other than orchids traded in an annual average quantity of over 100 specimens* (1999-2003)

Taxon	Term	Unit	1999	2000	2001	2002	2003	5 year average
AMARYLLIDACEAE								
<i>Galanthus elwesii</i>	LIV		5,500,000	5,500,000	5,361,900	5,976,530	5,650,000	5,597,686
<i>Galanthus woronowii</i>	LIV		2,000,000	15,000,042	1,931,100	14,000,285	2,000,000	6,986,285
APOCYNACEAE								
<i>Pachypodium</i> spp.	LIV		365	30	125	5	219	149
<i>Pachypodium bispinosum</i>	LIV		210	160	150	400	3,617	907
<i>Pachypodium brevicaule</i>	LIV		102	203	470	0	505	256
<i>Pachypodium densiflorum</i>	LIV		106	37	215	3	514	175
<i>Pachypodium succulentum</i>	LIV		30	100	100	500	458	238
ARALIACEAE								
<i>Panax quinquefolius</i>	LIV		14	0	0	0	0	3
<i>Panax quinquefolius</i>	ROO		80	20	0	0	0	20
<i>Panax quinquefolius</i>	ROO	kg	30,918	36,904	46,372	34,807	34,083	36,617
BERBERIDACEAE								
<i>Podophyllum hexandrum</i>	LIV		10	0	0	0	0	2
<i>Podophyllum hexandrum</i>	ROO	kg	570	16,000	0	0	0	3,314
<i>Podophyllum hexandrum</i>	SEE		30	0	0	0	0	12
CACTACEAE								
<i>Cactaceae</i> spp.	LIV		41	53	1	0	0	19
<i>Cactaceae</i> spp.	LIV	kg	60	0	0	0	0	12
<i>Cactaceae</i> spp.	STE		8,417	7,544	1,600	1	0	3,512
<i>Cactaceae</i> spp.	TIP		1	0	9	0	0	2
<i>Carnegiea gigantea</i>	LIV		0	10	0	0	0	2
<i>Carnegiea gigantea</i>	TIM		52,300	30,000	120,000	135,500	0	67,560
<i>Carnegiea gigantea</i>	TIM	m ³	74	74	0	98	49	59
<i>Carnegiea gigantea</i>	TIM	kg	0	0	0	19,560	3,350	4,582
<i>Carnegiea gigantea</i>	TIP		13	10	0	0	0	5
<i>Echinopsis</i> spp.	LIV		0	500	1,864	0	0	473
<i>Echinopsis</i> spp.	STE		920	14,893	34,982	7,890	540	11,845
<i>Echinopsis</i> spp.	TIM		0	5	0	0	0	1
<i>Echinopsis</i> spp.	TIP		810	0	600	0	0	282
<i>Echinopsis chiloensis</i>	LIV		0	19,371	0	3,900	3,020	5,258

<i>Echinopsis chiloensis</i>	STE		37,755	14,112	10,686	39,185	67,432	33,834	
<i>Echinopsis chiloensis</i>	TIP		0	0	5,812	0	0	1,162	
<i>Echinopsis cuzcoensis</i>	STE		0	1,500	950	0	900	670	
<i>Echinopsis pachanoi</i>	LIV		0	6	400	30	0	87	
<i>Echinopsis pachanoi</i>	STE		1,100	2,672	2,232	1,910	0	1,583	
<i>Echinopsis peruviana</i>	LIV		0	0	0	80	0	16	
<i>Echinopsis peruviana</i>	STE		0	0	510	28,810	1,300	6,124	
<i>Echinopsis peruviana</i> ssp. <i>puquiensis</i>	STE		475	23,846	2,630	2,498	2,550	6,400	
<i>Echinopsis/Eulychnia</i> spp.	STE		235,041	282,554	88,733	0	0	121,266	
<i>Eulychnia acida</i>	LIV		1,750	165,111	1,525	0	3,310	34,339	
<i>Eulychnia acida</i>	STE		186,868	89,498	59,536	152,171	147,616	127,138	
<i>Eulychnia acida</i>	STE	kg	0	0	800	0	0	160	
<i>Eulychnia acida</i>	TIM		0	0	0	0	260	52	
<i>Opuntia</i> spp.	LIV		2	0	0	1	0	1	
<i>Opuntia</i> spp.	STE		0	0	700	0	0	140	
<i>Opuntia</i> spp.	TIP		0	2,000	0	0	0	400	
<i>Opuntia acanthocarpa</i>	LIV		0	0	0	50	0	10	
<i>Opuntia bigelovii</i>	STE	kg	0	0	435,000	2,545	0	87,509	
<i>Opuntia bigelovii</i>	TIM	m ³	30	0	0	0	0	6	
<i>Opuntia bigelovii</i>	TIM	kg	0	4,019	0	150	250	884	
<i>Opuntia bigelovii</i>	TIP		175,184	0	0	0	0	35,037	
<i>Opuntia bigelovii</i>	TIP	kg	0	170,000	435,000	0	0	121,000	
<i>Opuntia fulgida</i>	STE		0	35	2,442	2,527	0	1,001	
<i>Opuntia fulgida</i>	STE	kg	0	0	1	0	0	0	
<i>Opuntia fulgida</i>	TIM	kg	4,000	0	0	35	0	807	
<i>Opuntia fulgida</i>	TIP		0	600	0	0	0	120	
<i>Opuntia imbricata</i>	STE	kg	0	8,000	34,776	16,000	0	11,755	
<i>Opuntia subulata</i>	STE		0	0	24,250	0	0	4,850	
<i>Stenocereus thurberi</i>	STE		0	0	0	0	10	2	
<i>Stenocereus thurberi</i>	TIM	kg	15,000	0	0	0	0	3,000	
CYATHEACEAE									
<i>Cyathea</i> spp.	DPL		316	942	1,729	0	166	631	
<i>Cyathea</i> spp.	DPL	m ³	115	0	0	0	0	23	
<i>Cyathea</i> spp.	DPL	kg	90	0	875	1,826	14,400	3,438	
<i>Cyathea</i> spp.	LIV		31	1	512	0	53	119	
<i>Cyathea</i> spp.	TIM		0	1,072	0	0	0	214	

<i>Cyathea australis</i>	LIV			209	180	519	576	332	363
<i>Cyathea contaminans</i>	DPL			0	0	1,000	0	2,550	710
<i>Cyathea contaminans</i>	DPL	kg		0	0	0	0	2,478	496
<i>Cyathea contaminans</i>	TIM			405,788	231,326	124,588	866,780	427,888	411,274
<i>Cyathea contaminans</i>	TIM	kg		0	0	997,529	0	900	199,686
<i>Cyathea contaminans</i>	TIM	SHIP		147,638	0	0	0	168,295	63,187
<i>Cyathea cooperi</i>	LIV			0	0	10	0	0	2
<i>Cyathea cunninghamii</i>	DPL			0	1	3	0	0	1
<i>Cyathea cunninghamii</i>	LIV			525	1,885	1,319	3,074	3,601	2,081
<i>Cyathea cunninghamii</i>	TIM			0	0	67,456	0	0	13,491
<i>Cyathea dealbata</i>	DPL			0	0	0	0	150	30
<i>Cyathea dealbata</i>	LIV			685	914	536	4,256	662	1,411
<i>Cyathea lepifera</i>	LIV			597	0	3,900	0	0	899
<i>Cyathea lepifera</i>	TIM			41,305	2,760	3,300	0	0	9,473
<i>Cyathea lepifera</i>	TIM	kg		0	1,260	0	0	0	252
<i>Cyathea medullaris</i>	DPL			0	12	0	0	150	32
<i>Cyathea medullaris</i>	LIV			887	786	501	4,391	820	1,477
<i>Cyathea medullaris</i>	TIM			6	0	0	0	0	1
<i>Cyathea smithii</i>	DPL			0	0	0	0	150	30
<i>Cyathea smithii</i>	LIV			348	544	1,062	4,115	515	1,317
CYCADACEAE									
<i>Cycas media</i>	LIV			0	500	52	0	0	110
<i>Cycas revoluta</i>	LIV			322	31,157	56,790	50,040	875	27,837
<i>Cycas revoluta</i>	LIV	kg		0	13,789	10,338	0	0	4,825
DICKSONIACEAE									
<i>Cibotium barometz</i>	DER			1,200	0	0	0	0	240
<i>Cibotium barometz</i>	DER	FLA		0	10,000	423	0	0	2,085
<i>Cibotium barometz</i>	DER	kg		19	505	6,635	1,457	11,732	4,070
<i>Cibotium barometz</i>	DER	SHIP		1,910	1,696	2,389	0	0	1,199
<i>Cibotium barometz</i>	LIV			0	27	0	50	0	15
<i>Cibotium barometz</i>	ROO	kg		213,000	185,000	167,200	151,809	58,139	155,030
<i>Dicksonia fibrosa</i>	DPL			0	130	0	0	0	26
<i>Dicksonia fibrosa</i>	LIV			4,225	2,241	198	0	0	1,333
<i>Dicksonia sellowiana</i>	DPL			4,200	0	0	0	0	840
<i>Dicksonia squarrosa</i>	DPL			16	2,850	0	0	0	573
<i>Dicksonia squarrosa</i>	LIV			60,722	64,168	23,166	0	0	29,611
<i>Dicksonia squarrosa</i>	TIM			0	80	0	0	0	16

EUPHORBEACEAE										
<i>Euphorbia antisiphilitica</i>	EXT	kg	0	0	98,000	0	0	0	0	19,600
<i>Euphorbia antisiphilitica</i>	WAX	kg	0	0	0	208,000	0	0	191,525	79,905
<i>Euphorbia candelabrum</i>	DPL		0	0	0	0	0	0	4,500	900
<i>Euphorbia candelabrum</i>	STE		0	0	1,330	0	0	0	0	266
<i>Euphorbia lophogona</i>	DPL		0	35	0	0	0	0	0	7
<i>Euphorbia lophogona</i>	LIV		10	0	0	0	0	0	11,200	2,242
<i>Euphorbia poissonii</i>	LIV		0	230	100	100	100	100	100	106
<i>Euphorbia primulifolia</i>	LIV		65	61	81	0	0	0	417	125
<i>Euphorbia primulifolia</i>	STE		0	0	3	0	0	0	0	1
<i>Euphorbia primulifolia</i> var. <i>begardii</i>	LIV		0	0	0	0	0	0	5	1
<i>Euphorbia silenifolia</i>	LIV		0	5	100	300	300	200	200	121
<i>Euphorbia stellata</i>	LIV		0	2	100	150	150	2,988	2,988	648
<i>Euphorbia venenifera</i>	LIV		0	0	200	200	200	200	200	120
LEGUMINOSAE (FABACEAE)										
<i>Pericopsis elata</i>	LIV	m ³	0	0	0	0	0	0	78	16
<i>Pericopsis elata</i>	SAW	m ³	30,309	13,861	11,087	11,639	15,445	15,445	15,445	16,468
<i>Pericopsis elata</i>	TIP	m ³	0	104	32	0	0	0	0	27
<i>Pericopsis elata</i>	TIP	kg	0	0	46,825	0	0	0	0	9,365
<i>Pterocarpus santalinus</i>	EXT	kg	2,497	0	0	0	0	0	0	499
<i>Pterocarpus santalinus</i>	TIM	m ³	30	0	0	0	0	0	0	6
<i>Pterocarpus santalinus</i>	TIM	kg	0	0	0	0	0	96,000	96,000	19,200
<i>Pterocarpus santalinus</i>	TIM	m	0	20	0	0	0	0	0	4
LILIACEAE										
<i>Aloe spp.</i>	LIV		27	165	80	150	378	378	378	160
<i>Aloe arborescens</i>	EXT	kg	0	0	0	0	79,438	79,438	79,438	15,888
<i>Aloe ellenbeckii</i>	EXT	kg	70,000	40,000	66,875	0	0	0	0	35,375
<i>Aloe ferox</i>	DPL		0	12,453	8,000	8,000	11,800	11,800	11,800	8,051
<i>Aloe ferox</i>	DPL	kg	124	0	0	80	0	0	0	41
<i>Aloe ferox</i>	EXT		504	199	33,496	102,660	42,314	42,314	42,314	35,835
<i>Aloe ferox</i>	EXT	kg	324,939	286,086	360,801	342,713	444,094	444,094	444,094	351,726
<i>Aloe ferox</i>	EXT	l	0	0	28,786	90,168	125,124	125,124	125,124	48,816
<i>Aloe ferox</i>	LIV		27,635	32,928	90	90	0	0	0	12,149
<i>Aloe ferox</i>	LIV	kg	2,500	0	0	0	0	0	0	500
<i>Aloe ferox</i>	TIP		0	0	55,101	0	29,528	29,528	29,528	16,926
<i>Aloe ferox</i>	TIP	kg	0	0	0	0	11	11	11	2

<i>Aloe fievellii</i>	LIV		0	10	0	0	0	0	0	0	0	2
MELIACEAE												
<i>Swietenia macrophylla</i>	CAR		13	735	1955	501	170	4				
<i>Swietenia macrophylla</i>	SAW	m ³	0	0	0	0	2,306	461				
<i>Swietenia macrophylla</i>	VEN	m ³	0	0	0	0	0	0				
<i>Swietenia mahogoni</i>	CAR		0	0	0	0	250	50				
<i>Swietenia mahogoni</i>	SAW		0	133	0	0	0	27				
<i>Swietenia mahogoni</i>	SAW	m ³	0	1	0	0	64	13				
<i>Swietenia mahogoni</i>	TIP		0	0	835	835	0	334				
NEPENTHACEAE												
<i>Nepenthes mirabilis</i>	LIV		0	0	420	6,375	3,600	2,079				
<i>Nepenthes mirabilis</i>	SPE		0	0	0	0	13	3				
RANUNCULACEAE												
<i>Hydrastis canadensis</i>	DPL	kg	0	0	0	60	0	12				
<i>Hydrastis canadensis</i>	ROO	kg	130	1,421	256	60	0	373				
ROSACEAE												
<i>Prunus africana</i>	BAR	kg	780,049	529,761	634,165	327,562	689,253	592,158				
<i>Prunus africana</i>	CHP	kg	0	0	0	0	0	0				
<i>Prunus africana</i>	DPL	kg	1	8	0	0	4	3				
<i>Prunus africana</i>	EXT	kg	223,272	341,504	2,200	800	110,758	135,707				
<i>Prunus africana</i>	LVS	kg	0	0	0	0	0	0				
<i>Prunus africana</i>	POW	kg	443,022	486,669	60,000	543,300	468,000	400,198				
<i>Prunus africana</i>	ROO	kg	0	1	0	0	0	0				
<i>Prunus africana</i>	SAW	m ³	0	0	0	0	0	0				
<i>Prunus africana</i>	SPE	kg	0	0	1	0	0	0				
SARRACENIACEAE												
<i>Sarracenia purpurea</i>	LIV		0	0	40	0	0	8				
<i>Sarracenia purpurea</i>	LVS		0	0	566	0	0	113				
SCROPHULARIACEAE												
<i>Picrothiza kurrooa</i>	DER	kg	0	0	100	0	0	20				
<i>Picrothiza kurrooa</i>	EXT	kg	0	0	0	300	0	60				
<i>Picrothiza kurrooa</i>	ROO	kg	0	0	100	300	0	80				
STANGERIACEAE												
<i>Bowenia serrulata</i>	LIV		0	17,500	21	0	0	3,504				
<i>Bowenia serrulata</i>	LVS		3,020	18,700	0	0	0	4,344				
<i>Bowenia serrulata</i>	STE		1,890	13,700	0	0	0	3,118				

ZYGOPHYLLACEAE										
<i>Guaiacum</i> spp.	SAW		m ³		0	0	0	0	0	0
<i>Guaiacum officinale</i>	TIP			2,834	0	0	0	0	0	567
<i>Guaiacum sanctum</i>	LVS			0	0	0	0	0	150	30
<i>Guaiacum sanctum</i>	SAW			0	1	0	0	0	0	0
<i>Guaiacum sanctum</i>	SAW		m ³	171	297	149	232	245	219	

Source: UNEP-WCMC (2005), extracted from PC 15 Doc. 10.2.1 (Rev1), Review of Significant Trade in specimens of Appendix-II species. Selection of species for trade reviews after CoP13.

Note: Artificially propagated specimens and re-exports were excluded from these data. Trade data for *Swietenia macrophylla* are limited to those subsequent to the species being listed in Appendix II. See **Table 5** for data also including the trade reported prior to the Appendix-II listing.